

Clinical radiology **Scotland workforce 2019** summary report

August 2020

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...radiologists in Scotland battle daily to support an inadequately funded service and maintain patient safety and standards.

Foreword

The 2019 radiology workforce census summary report for Scotland paints a similar picture to those of previous years. It remains a mystery why a rapidly expanding key specialty is still questioning its sustainability. An unsustainable radiology service will negatively impact patient care and safety in this country.

Despite well-intended initiatives, including a five-year programme of increasing trainee numbers, attempts at international recruitment and a national integrated picture archiving and communication system (PACS) which includes the ability to report nationally, the substance of this report is all too familiar to radiologists in Scotland who battle daily to support an inadequately funded service and maintain patient safety and standards.

Demand for radiology services continues to increase annually and outstrip our capacity to provide them; vacancy rates are chronic and remain stubbornly high; ongoing trainee attrition rates to consultant posts outside Scotland continue. In combination with predicted consultant retirement levels over the next five years, the situation cannot improve and is likely to deteriorate. Maintenance of a work-life balance has resulted in increased demand for less than full-time working (LTFT) which impacts significantly on the available workforce.

This year's report highlights particular difficulties in breast and interventional radiology, where services are under intense pressure. Increased recruitment to both of these areas is vital. Interventional radiology (IR) has an estimated shortfall of 45% and numbers have reduced by 3% per year over the past five years in comparison to a growth of 4% per year across the UK as a whole. The supply of IR and diagnostic services is patchy at best and the report highlights significant regional variations, undermining the delivery of 'equity of care', one of the flagship principles of healthcare in Scotland.

Perhaps if there is one key finding that highlights the depth of the problem, it is that outsourcing costs have increased from £3.5 million to £14.5 million over the last five years (2014–2019). Therefore, it can be of no surprise that not one health board in Scotland was able to meet its reporting requirements within contracted hours in 2019. If the money spent on outsourcing were invested internally, numbers of radiologists could be boosted by approximately 50% and most issues would be addressed.

It is, however, not all doom and gloom. Consultant radiology numbers grew by 5% between 2018 and 2019 (compared to average growth of 1% per year over the preceding five years) and with a national integrated PACS system and ability to report nationally, progress is being made. The reality, however, is that these increased posts will only, at best, match numbers of retirements; the solution will require further investment and a long-term vision. A number of solutions have been proposed in this report, but key and central to this is increasing trainee numbers and, in particular, expanding the numbers of IR trainees. The five-year programme of ten additional diagnostic trainees per year has been beneficial, and increased to 12 in 2020 to accommodate two additional IR trainee posts.

This should be continued with further additional expansion in the number of trainee IR and diagnostic posts.

Retention of trainees to secure consultant posts in Scotland (approximately one in ten take up consultant posts in England) and a reduction in numbers of early consultant retirements would also provide significant benefit. To achieve this, working conditions should be improved, but progress is frustratingly slow. More flexible working patterns, including working from home with home reporting PACS facilities, is key to addressing this issue and should be implemented immediately (as proposed by the Scottish Standing Committee to the Chief Medical Officer in Scotland in 2019). If we continue as is, with one-in-three radiologists reporting feeling stressed and burnt-out, the situation will only worsen, potentially resulting in increased sickness levels and poor retention of staff at all levels.

In conclusion, trainee numbers need to be boosted further, in particular in IR. Retention is vital at trainee, SAS-grade and consultant levels. Home reporting facilities are key to these issues and have many benefits – please see recommendations on page 6.

Dr Grant Baxter

Chair of the Scottish Standing Committee

Professor Mark Callaway

Medical Director, Professional Practice, Clinical Radiology

Executive summary

Objectives

This report provides details of the radiology workforce in Scotland in 2019, with a focus on regional variation, the estimated shortfall of consultant clinical radiologists and workforce forecasts over the next five years. It goes on to make recommendations on how to tackle the radiology workforce shortage in Scotland. Closing the gap between the radiology workforce supply and demand is essential to support safe and effective care for patients.

This report for Scotland supplements the *Clinical radiology UK workforce census 2019 report*.¹ Please refer to the UK report for UK-wide radiology trends and information such as census timings and methodology.

Key findings

Workforce shortages in clinical radiology are negatively affecting patient care in Scotland by delaying the diagnoses and treatment of many conditions, including cancer, and restricting the availability of minimally invasive interventional radiology procedures. This has implications for patient safety. Of concern, clinical directors at two-thirds of the health boards in Scotland feel there are not enough consultant radiologists to deliver safe and effective patient care.

Furthermore, workforce shortages are pushing up NHS outsourcing, insourcing and locum costs to the extent that this expenditure in Scotland in 2019 reached an estimated £14.5 million. For context, £14.5 million is equivalent to the combined salaries of approximately half of the existing consultant clinical radiologist workforce in Scotland.²

Workforce shortages are putting the radiology workforce in Scotland under immense pressure. This pressure increases significantly the likelihood of stress and burnout and staff leaving the profession, further exacerbating workforce shortages in Scotland.

This report estimates that there is a current shortfall of 141 whole-time equivalent (WTE) consultant clinical radiologists in Scotland.* This is equivalent to a 31% shortfall, indicating severe workforce shortages. The situation is likely to worsen, as a fifth of consultant clinical radiologists in Scotland are forecast to retire within five years and there are insufficient trainees to fill the pending vacancies. At a time when there is continued growth in demand for diagnostic and interventional radiology, it is clear that patients will be adversely affected unless urgent action is taken to rectify the radiology workforce shortages in Scotland.

This report highlights that, while there is a severe shortage of consultant clinical radiologists across Scotland, the shortage is particularly severe in some regions and for some specialist posts. Of particular concern:

- There is a severe shortage of interventional radiologists in Scotland, estimated to be 45% (n=32). Provision of interventional radiology in Scotland is patchy, with inadequate IR services in South West Scotland; this is unsafe and puts patients at risk.
- The shortage of breast radiologists in Scotland is likely to increase rapidly over the coming five years, as many specialists are approaching retirement age and few of the newly qualified consultant clinical radiologists are choosing to specialise in this area.
- The shortage of consultant clinical radiologists in North East Scotland** is estimated to be 43% (n=45).

*A WTE is a whole-time (or full-time) doctor contracted for ten programmed activities (PAs) per week, equivalent to a 40-hour week.

**Includes NHS Grampian, NHS Highland, NHS Tayside and NHS Western Isles.

Recommendations

The COVID-19 era has highlighted diagnostics and interventional radiology as being vital to the NHS. The increase in training numbers in recent years, while welcome, is not sufficient to close the growing gap between supply and demand for radiology services.

To address radiology workforce shortages in Scotland, our recommendations are:

- **Increase training places:** the number of clinical radiology training places needs to be increased, including additional funding for interventional radiology posts, as soon as is practical following the COVID-19 recovery period. The welcome but modest increase in training numbers in recent years is not sufficient to close the growing gap between supply and demand. Radiology remains a popular specialty among doctors in Scotland; training posts are oversubscribed so increased numbers can be easily achieved with adequate funding.
- **More flexible working patterns:** NHS Employers must improve working conditions to increase staff morale and improve staff retention at all levels. Key to this is more flexible working, including working from home and multi-site working. The ability to work from home with a fully integrated PACS workstation remains the number one demand from staff in Scotland to improve retention. Other advantages of home working include:
 - The potential to reduce the inequity of access to radiology services highlighted in this report as radiologists can report both locally and nationally
 - Potential gains in workforce capacity and efficiency could reduce outsourcing costs
 - Greater flexibility to deal with unforeseen circumstances such as the COVID-19 pandemic.
- **Highlight shortages of specialists:** the RCR and Scottish Standing Committee should promote breast radiology as a career to help reduce the shortage of breast radiologists.

1. The radiology workforce in Scotland in 2019

There were 347 consultant-grade radiologists employed by 12 health boards in Scotland in September 2019. This includes NHS, academic and mixed NHS/academic posts.

Table 1. Clinical radiology workforce (headcount) – Scotland regions, 2019

	North East Scotland	South East Scotland	South West Scotland	Scotland total
Consultant-grade	67	85	195	347
Specialty trainee	21	58	79	158
SAS-grade	2	1	1	4
Total	90	144	275	509

[SAS-grade comprises associate specialists, specialty doctors and trust-grade staff.]

Taking into account the contracted hours of less than full-time (LTFT)* doctors, the total of 347 consultant clinical radiologists in Scotland equates to 319 WTEs. After five years of stagnant growth (averaging 1% per year), Scotland saw an increase of 16 consultant clinical radiologists (WTEs) between 2018 and 2019, equivalent to 5% workforce growth. However, North East Scotland saw continued low growth, with an increase of just one consultant clinical radiologist (WTE) over the past year.

Specialty trainees comprise 31% of the radiology workforce in Scotland, broadly comparable to the 29% trainee ratio across the UK workforce as a whole.** Within Scotland, the trainee ratio is lowest in the North East (24%) and highest in the South East (41%). This is concerning because the supply of consultants in North East Scotland may be hindered by the tendency for clinical radiology trainees to take up consultant posts in the regions where they undertook their specialty training.

*LTFT is defined as working fewer than ten PAs (equivalent to a contract of 40 hours) per week.

**In this context radiology workforce refers to consultant clinical radiologists and specialty trainees (it excludes SAS-grade doctors).

Census data highlight significant variation in the clinical radiology workforce distribution per capita across Scotland. These data are summarised in Table 2. In Scotland, there are 5.8 consultant clinical radiologists per 100,000 population, broadly comparable to the 5.6 per 100,000 seen across the UK as a whole.³ North East Scotland has only 4.4 consultant clinical radiologists per 100,000 population, indicating that workforce shortages are likely more severe in North East Scotland than in other parts of the country. However, it should be noted that these figures are simplistic; they give a broad indication of the relative supply of consultant clinical radiologists across regions or countries, but do not take into account any local factors which may increase or decrease the local demand for radiology services. Taking into account the severe clinical radiology workforce shortages across the UK, it should be noted that regions, or countries, with a relatively high number of consultants per population compared to the UK average may still have significant shortages.¹

Table 2. Radiology workforce per 100,000 population – Scotland regions, 2019³

	North East Scotland	South East Scotland	South West Scotland	Scotland total
Consultant clinical radiologists (WTE)	60	75	183	319
Consultant clinical radiologists (WTE) per 100,000 population	4.4	5.4	6.9	5.8
Consultant clinical radiologists (WTE) and specialty trainees per 100,000 population	6.0	9.5	9.8	8.7

[Due to rounding, numbers in this table may not add up precisely to the totals provided.]

Interventional radiology

Interventional radiology (IR) is a subspecialty of clinical radiology. Interventional radiologists perform minimally invasive image-guided procedures, including emergency treatment for patients with bleeding, sepsis and stroke. The demand for IR has increased over many years, as has the range and complexity of IR procedures. However, with ongoing workforce shortages, IR provision remains patchy in Scotland. This is unsafe and puts patients at risk.

The census data provide the following indications of a shortage of interventional radiologists (IRs) in Scotland.

- In 2019, there were 40 WTE IRs in Scotland, a decrease of eight IRs over the past five years (equivalent to a decrease of 3% per year). In stark contrast, the UK IR workforce has grown by an average of 4% per year over the past five years.
- The UK has an average of ten IRs per million population. In comparison, Scotland has seven IRs per million population and the North East of Scotland has only five.
- IRs comprise 18% of the consultant clinical radiology workforce across the UK. In Scotland, IRs make up 13% of the workforce.

- Health boards need a minimum of six interventional radiologists (IRs) (WTE) to provide an effective and sustainable 24-hour IR service.⁴ Alternatively, health boards need formal arrangements in place to transfer patients to other health boards for IR procedures. A quarter of the 12 health boards in Scotland were unable meet these requirements in 2019. To meet these standards, census data indicate that the minimum number of additional IRs required in Scotland is 32. This equates to a 45% shortfall of interventional radiologists in Scotland.

2. Workforce supply and attrition

Thirty-five funded consultant clinical radiologist vacancies were reported in Scotland in September 2019. This equates to a vacancy rate of 10%, broadly comparable to the UK vacancy rate of 11%. Within Scotland, the North East had the highest vacancy rate at 14%. However, as highlighted in the UK report, vacancies reported through the annual census significantly understate the true extent of clinical radiology workforce shortages; vacancies may be restricted due to lack of funding or lack of suitable candidates, or may be postponed to allow internal candidates time to complete their specialty training. In Scotland, more than three-quarters (80%, n=28) of vacancies have been unfilled for a year or more, indicating a severe shortage of suitable candidates.

Supply of new consultant clinical radiologists in Scotland most frequently comes from specialty training within Scotland, but overseas recruitment (or recruitment from the rest of the UK) is increasingly common.

Clinical radiology specialty training

RCR training data show that, on average, 32 doctors have started specialty training in clinical radiology in Scotland each year, over the past three years. Clinical radiology trainees in Scotland took an average of five years and nine months to complete their specialty training and gain a Certificate of Completion of Training (CCT) over the past five years.* A small number of trainees (on average three per cohort, equivalent to approximately 10%) withdrew and did not complete their clinical radiology training.

Over the next five years, it is estimated that 96 doctors (WTE) will take up consultant clinical radiology posts in Scotland following completion of specialty training; approximately nineteen are expected to join the workforce each year. This forecast accounts for expected attrition, including an estimated 12% who will complete their specialty training but not take up consultant posts in Scotland.** Nineteen newly appointed consultant clinical radiologists (WTEs) in 2020 will only fill approximately half of the 35 funded vacancies reported in 2019. Current training numbers are clearly inadequate to cover current vacancies, let alone gaps resulting from upcoming retirements and rising demand.

Overseas recruitment

Radiology departments in Scotland are increasingly turning to overseas recruitment to try to fill consultant radiologist vacancies. In 2019, half of the 12 health boards in Scotland attempted to recruit from overseas. However, overseas recruitment has proven difficult, with only two-thirds (four health boards) which attempted it in 2019 reporting any successful recruitment attempts.

Retirements

The numbers of consultant clinical radiologists leaving the workforce varies from year to year, but the general trend across the UK over the past five years has been one of increased attrition rates. The most frequently cited reason for UK consultant clinical radiologists leaving the profession is retirement. The average (median) age of retirement of consultant clinical radiologists in the UK in 2019 was 60 years.

Based upon the UK average age of retirement of 60 years, an estimated 65 WTE consultants in Scotland – equivalent to 20% of the current consultant workforce – are expected to retire over the next five years. This level of attrition will put considerable additional strain on the

*Includes trainees who have undertaken additional interventional radiology training.

**Based on the UK trends observed over the past five years.

radiology workforce. Table 3 shows that a high level of consultant retirements is forecast in North East Scotland (22% of consultant workforce) over the next five years.

Table 3. Forecast retirements – Consultant clinical radiologists, Scotland regions, next five years (to 2024)

Forecast retirements	North East Scotland	South East Scotland	South West Scotland	Scotland
Consultants (WTE)	14	14	37	65
Percentage of workforce	22%	18%	19%	20%

3. Workforce forecast illustrated – next five years

The size of the consultant clinical radiology workforce in Scotland is determined by entrants from UK specialty training and recruitment from overseas, set against attrition from retirements and other leavers and the trend towards LTFT working. This section forecasts the size of the clinical radiology workforce in Scotland in five years' time, based upon these determinants and trends observed in recent years.

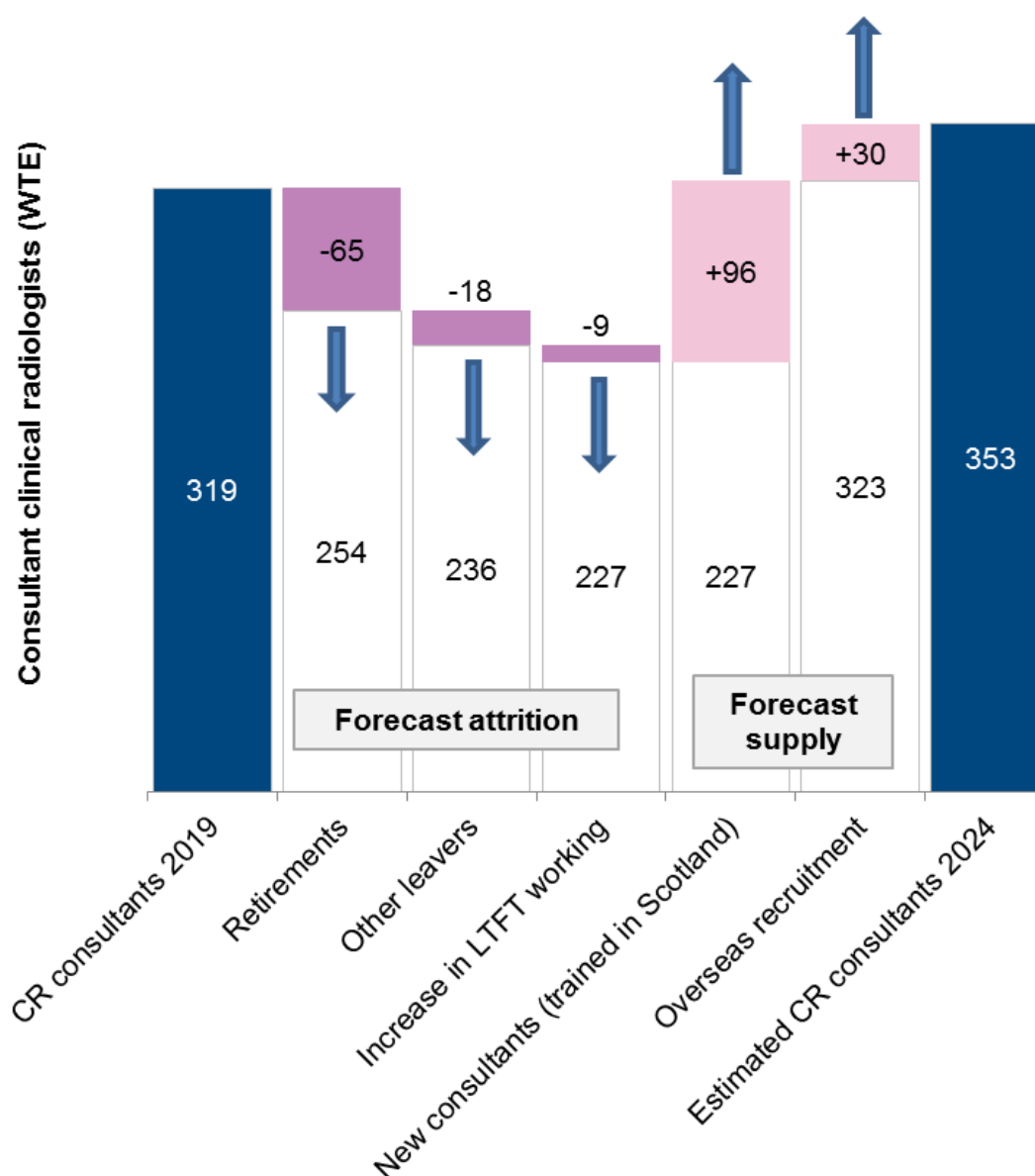
- **Specialty training in Scotland:** based on RCR training and census data, the total number of UK-trained consultant clinical radiologists who will join the workforce in Scotland in the next five years is estimated to be 96 WTE consultants. This forecast has increased from 2018, reflecting the increased number of clinical radiology trainees in Scotland over recent years.⁵
- **Overseas recruitment:** if trends from recent years continue, approximately 30 WTE consultant clinical radiologists will be recruited from overseas (or the rest of the UK) to the workforce in Scotland in the next five years.*
- **Retirements:** based on the median retirement age of 60 years, an estimated 65 WTE consultant clinical radiologists in Scotland – equivalent to 20% of the workforce – are expected to retire in the next five years.** This level of attrition will put considerable additional strain on the workforce in Scotland.
- **Other leavers:** assuming the annual attrition rate of 1% for other leavers (excluding retirees) observed over the past five years remains unchanged, attrition in the next five years is estimated to be 18 consultants (WTEs).
- **Increase in less than full-time (LTFT) working:** the workforce capacity loss due to LTFT working in Scotland has increased from 19 WTE consultant clinical radiologists in 2014 to 28 WTEs in 2019. In other words, if all consultant clinical radiologists working LTFT in 2019 were to switch to full-time working, the workforce would increase by the equivalent of 28 WTE consultant clinical radiologists. If the trend towards increased LTFT working continues in a linear fashion, the effect will equate to nine fewer WTE consultant clinical radiologists in Scotland by 2024.
- **Future shortage of specialists:** census data show that there is likely to be an increased shortage of breast radiologists in Scotland over the coming five years. For consultants specialising in breast radiology, the number expected to retire within five years is greater than the number of new consultants entering the workforce.

*Overseas recruitment refers to the recruitment of all consultant radiologists who have undertaken specialty training outside of Scotland.

**The UK median retirement age has been used for this forecast, as the dataset is larger and therefore more consistent from year to year.

Figure 1 shows that, should trends from the past five years continue over the next five years, there will be approximately 353 WTE consultant clinical radiologists in post in Scotland in 2024. This corresponds to workforce growth of 2% per year over the next five years. This compares to a 3% annual growth forecast across the UK as a whole. Set against rapidly increasing demand for diagnostic imaging and interventional radiology, this indicates that the gap between the estimated supply of consultant clinical radiologists and the estimated demand for radiology services in Scotland (see Section 4) will widen further, unless timely mitigating action is taken.

Figure 1. Estimated supply of consultant clinical radiologists (WTE) – Scotland, next five years (2019–2024)



4. Workforce demand

Demand for imaging has been growing over many years driven, by many factors including an aging population, increased screening to support early diagnosis initiatives and new clinical guidelines. Imaging is used routinely in many patient pathways and plays a vital role in diagnosing and monitoring many medical conditions, including cancer and stroke. Demand for complex imaging, which is more time consuming to report, has grown particularly rapidly. For example, computed tomography (CT) and magnetic resonance imaging (MRI) examinations carried out on NHS patients in Scotland have increased by 30% over the past five years.⁶ By comparison, growth in the consultant clinical radiology workforce has lagged behind at 11% growth over the same period.

No health board in Scotland was able to meet its reporting requirements within consultant clinical radiologists' contracted hours in 2019, indicating severe workforce shortages. Clinical directors of radiology departments at eight of the 12 health boards (67%) in Scotland felt there were insufficient consultant clinical radiologists in their departments to deliver a safe and effective level of patient care.

Two of the most commonly used methods for managing shortfalls in radiology reporting capacity are outsourcing of reporting to the independent sector, used by 11 of the 12 health boards in Scotland in 2019, and insourcing – meaning additional paid reporting by health board radiologists outside of their contracted hours – used by ten of the 12 health boards in Scotland in 2019.

Estimated costs of outsourcing and insourcing

Many of the mechanisms used by radiology departments in Scotland to manage shortfalls in reporting capacity incur direct and indirect costs. Combined outsourcing, insourcing and ad hoc locum expenditure has increased significantly in Scotland over the past five years. In 2019, estimated expenditure in Scotland totalled £14.5 million, quadruple the £3.5 million expenditure for these activities in 2014. For context, £14.5 million is equivalent to the combined salaries of approximately half of the existing consultant radiology workforce in Scotland (163 WTE consultants).^{2*} A breakdown of insourcing, outsourcing and ad hoc locum costs by Scottish region can be found in Appendix A.

**Based on point four of the 2019 NHS consultant pay scales for Scotland.².*

Outsourcing of reporting to the independent sector amounted to £6.7 million in Scotland in 2019, accounting for approximately half (46%) of the £14.5 million combined insourcing, outsourcing and ad hoc locum expenditure. There is significant variability across Scotland in terms of outsourcing costs relative to population size, as shown in Figure 2. Outsourcing expenditure in 2019 across Scotland as a whole equates to an estimated £1.23 per head of population – lower than the UK figure of £1.62. However, within Scotland, outsourcing expenditure (relative to population size) was comparatively high in the North East, at £2.47 per head of population and comparatively low in South East, at 29p per head of population. High outsourcing costs are generally indicative of workforce shortages.

Figure 2. Outsourcing expenditure for radiology reporting, per head of population – Scotland regions, 2019



Insourcing expenditure totalled almost £5 million in Scotland in 2019. There is significant variability across Scotland in terms of insourcing costs relative to the size of the consultant radiology workforce. The average insourcing expenditure in Scotland was just under £16,000 per consultant clinical radiologist (WTE), broadly comparable to the UK average of £15,000 per consultant. As shown in Figure 3, insourcing expenditure in South East Scotland was approximately £32,000 per consultant clinical radiologist (WTE), whereas expenditure in the South West was £10,000 per radiologist. Higher insourcing capacity in South East Scotland may be a reason for lower outsourcing costs in this region.

Figure 3. Insourcing expenditure per consultant clinical radiologist (WTE) – Scotland regions, 2019



Estimated shortfall of consultant clinical radiologists in Scotland in 2019

It is estimated that an additional 58 consultant clinical radiologists are required to report the volumes of imaging examinations conducted in Scotland in 2019.* This estimate takes into account the estimated time taken to report each type of imaging examination and the estimated percentage of images reported by consultant clinical radiologists.

Combining the estimated shortfall of diagnostic consultant clinical radiologists (n=58) and interventional radiologists (n=32), the total estimated shortage of consultant clinical radiologists (WTE) in Scotland in 2019 was 90. However, this estimate does not take into account the radiology workforce required to report complex imaging, which takes longer to report, so understates the true shortfall. Other data indicating the shortage of consultant clinical radiologists are:

- The number of additional consultant clinical radiologists required in Scotland to meet the European average of 12.8 radiologists per 100,000 population is 171.⁷
- The number of consultant clinical radiologists that could be funded by insourcing/outsourcing costs in Scotland in 2019 is 163.

*For methodology, see Table 10 of the UK clinical radiology workforce census 2019 report.¹

Using the average of all three shortfall estimates, the shortfall of consultant clinical radiologists in Scotland is estimated to be 141 consultant clinical radiologists (WTE). This equates to a 31% workforce shortfall. As shown in Table 4, census data indicate the shortage of consultant clinical radiologists is most severe in North East Scotland, with an estimated workforce shortfall of 43%.

Table 4. Consultant clinical radiologist workforce, supply versus demand – Scotland regions, 2019

Consultant clinical radiologists (WTE)	North East Scotland	South East Scotland	South West Scotland	Scotland
Consultant clinical radiologists in post (supply)	60	75	183	319
Estimated demand (mean of the three shortfall indicators)	105	106	246	459
Estimated shortfall	45	31	64	141
Percentage shortfall	43%	29%	26%	31%

[Due to rounding, numbers in this table may not add up precisely to the totals provided.]

Demand for radiology services in Scotland is likely to grow further over the next five years given the increased demand for diagnostic imaging, the greater complexity and diversity of imaging studies and the rising demand for interventional radiology.

The current shortfall of 141 WTE consultant radiologists in Scotland is forecast to increase in line with demand unless urgent action is taken to address the situation.

5. Workforce scenarios and potential solutions for Scotland

This section considers the impact that various scenarios could have on the estimated shortfall of 141 consultant clinical radiologists in Scotland.

As outlined in Table 5, increasing training places and incentivising consultants to delay retirement would have the most significant impact on the capacity of the workforce in five years' time. By realising all of these measures, almost all of the current radiologist workforce shortfall in Scotland could be eliminated.

Table 5. Workforce capacity scenarios for Scotland, next five years

Scenario	Estimated increase in WTE consultants over five years	Proportion of 2019 workforce shortfall met
Training		
Increase annual training places from 32 to 47*	+55	39%
Reduce training attrition from 10% to 5%	+7	5%
Recruitment		
Increase overseas recruitment by 50%	+15	11%
Retention		
Incentivise consultants to retire at 65 (increase from 60)	+45	32%
Increase staff retention – halve attrition for reasons other than retirement	+9	6%
Total	+131	93%

[Please note, trainees who start training in five years' time are forecast to finish training in approximately 11 years' time. To present the data clearly, this time lag is not demonstrated in Table 5.]

**32 is the average number of trainees starting specialty training in clinical radiology in Scotland each year between 2017 and 2019.*

In conclusion, to meet the increasing demand for radiology services, clinical radiology specialty training numbers in Scotland need to be boosted further, including additional funding for IR posts. In addition, strategies for workforce retention are vital and should include support for flexible and home working.

References

1. The Royal College of Radiologists. *Clinical radiology UK workforce census 2019 report*. London. The Royal College of Radiologists, 2020.
 2. The Scottish Government Directorate for Health Workforce, Leadership and Service Reform Health Workforce Division. NHS Pay and Conditions. *Pay and conditions of service*. Edinburgh: Scottish Government, 2019.
 3. www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2018 (last accessed 17/7/20).
 4. British Society of Interventional Radiology and The Royal College of Radiologists. *Provision of interventional radiology services, second edition*. London The Royal College of Radiologists, 2019.
 5. The Royal College of Radiologists. *Clinical radiology workforce in Scotland 2018 report*. London. The Royal College of Radiologists, 2019
 6. www.isdscotland.org/Health-topics/Finance/Costs/Detailed-tables/Radiology.asp (last accessed 17/7/20).
 7. <https://ec.europa.eu/eurostat/data/database> (last accessed 3/8/20)
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Appendix A. Regional workforce data table

In this report, health boards are grouped into the geographical regions outlined in Table 6.

Table 6. Scotland regions

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

Table 7 presents a summary of RCR 2019 clinical radiology workforce census data for Scotland.

Table 7. Consultant radiologists, Scotland regional data, 2019

	North East Scotland	South East Scotland	South West Scotland	Scotland
Number of trusts/health boards (included in census)	4	3	5	12
Clinical directors' views				
Proportion who think there are insufficient radiologists to deliver safe and effective patient care	50%	33%	85%	67%
Workforce				
Consultant clinical radiologists (headcount)	67	85	195	347
	(60 WTE)	(75 WTE)	(183 WTE)	(319 WTE)
Trainees (headcount)	21	58	79	158
SAS-grade doctors (headcount)	2	1	1	4
Total headcount (consultants, trainees and SAS)	90	144	275	509
IRs as % of WTE workforce	11% (7 WTE)	11% (8 WTE)	14% (25 WTE)	13% (40 WTE)
Locums as % of workforce	7%	5%	7%	6%
Trainees as % of workforce	24%	41%	29%	31%

	North East Scotland	South East Scotland	South West Scotland	Scotland
Workforce trends				
Percentage of WTE workforce forecast to retire within five years*	22%	18%	19%	20%
Consultant clinical radiologist annual workforce growth (average – past five years)	1%	2%	2%	2%
IR annual workforce growth (average – past five years)	-11%	0%	-2%	-4%
Vacancy rate	14%	10%	10%	10%
Percentage workforce loss due to LTFT working	10%	12%	6%	8%
Programmed activities (PAs)				
Mean PAs per week (full-time NHS consultants)	11.3	10.5	10.9	10.9
<i>of which are direct clinical care</i>	9.2	8.4	8.6	8.7
<i>of which are supporting professional activities</i>	2.1	2.1	2.3	2.2
Imaging examinations (financial year 2018–2019)				
CT examinations	119,397	138,714	394,909	653,020
MRI examinations	53,818	61,872	131,685	247,375
X-rays	476,125	661,655	1,288,505	2,426,285
Population				
Population (2019) ³	1,352,000	1,397,000	2,670,000	5,463,000
WTE radiologists per 100,000 population (excludes trainees)	4.4	5.4	6.9	5.8
WTE radiologists per 100,000 population (includes trainees) (European average is 12.8) ⁷	6.0	9.5	9.8	8.7
WTE IRs per million population (excludes trainees)	5	6	9	7

	North East Scotland	South East Scotland	South West Scotland	Scotland
Outsourcing/insourcing costs (FY 2018–2019)**				
Outsourcing to teleradiology companies	£3,337,304	£409,939	£2,965,196	£6,712,439
Additional payments to contracted radiologists (insourcing)	£785,523	£2,371,414	£1,834,634	£4,991,571
Ad hoc locums (for excess reporting)	£1,474,783	£75,000	£1,288,776	£2,838,559
Total insourcing/outsourcing costs	£5,597,610	£2,856,353	£6,088,606	£14,542,569
Outsourcing expenditure per head of population	£2.47	£0.29	£1.11	£1.23
Insourcing expenditure per WTE consultant radiologist	£13,092	£31,619	£10,025	£15,651

	North East Scotland	South East Scotland	South West Scotland	Scotland
Estimated workforce shortfall				
<i>Estimate A</i>				
IR consultant shortfall (based on six IRs per trust, excluding those with formal daytime and out- of-hours network transfer arrangements)	0	0	32	32
Consultant (diagnostic) radiologist shortfall based on volumes of imaging examinations***	12	12	35	58
WTE consultant shortfall (sum of above)	12	12	67	90
<i>Estimate B</i>				
Additional consultant radiologists required for 12.8 radiologists per 100,000 population (European average) ⁷	61	50	56	171
<i>Estimate C</i>				
Number of full-time radiologists that could be funded by outsourcing/ insourcing costs	63	32	68	163
Estimated WTE consultant clinical radiologist shortfall 2019 (average of estimates A, B and C)	45	31	64	141
Estimated percentage shortfall 2019	43%	29%	26%	31%

* Based on UK median age of retirement (60 years).

** Estimate adjusted to take account of health boards unable to supply financial data.

*** Excludes ultrasound. Calculated using 40 weeks per year, to allow for training days, annual leave and sickness. Excludes interventional radiologists.

[Due to rounding, numbers in this table may not add up precisely to the totals provided.]



The Royal College of Radiologists

The Royal College of Radiologists
63 Lincoln's Inn Fields
London WC2A 3JW

+44 (0)20 7405 1282

enquiries@rcr.ac.uk

www.rcr.ac.uk

[@RCRradiologists](https://twitter.com/RCRradiologists)

The Royal College of Radiologists. *Clinical radiology Scotland workforce census 2019 summary report*. London: The Royal College of Radiologists, 2020.

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