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A survey of the NHS reporting radiographer workforce in England

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Abstract

Introduction: At present there is no national register of the population size and scope of reporting radiographers in England. This makes operational workforce and succession planning for sustainable healthcare services in the National Health Service England (NHSE) difficult, affecting implementing NHSE policies and priorities such as 50% of X-rays reported by reporting radiographers and decreasing reporting Turnaround Times (TATs). This survey aimed to establish the workforce population employed as reporting radiographers in NHSE.

Methods: An online anonymous seven question survey was distributed on social media and at the UK Imaging and Oncology Congress. Participant criteria included NHSE radiology staff (diagnostic radiographer, reporting radiographer, radiology manager, imaging superintendent modality lead, consultant radiologist, etc.) or a student diagnostic radiographer working within an NHSE trust. The survey recorded the participant's NHSE region (North Western, North Eastern and Yorkshire, Midlands, East of England, London, South Eastern and South Western regions), Integrated Care Systems (ICS), NHSE Trust, hospital, the amount of reporting radiographers and trainees employed, the Agenda for Change (AfC) job banding and imaging modality reported (X-ray, CT, MRI, NM, PET, DEXA). The data analysis applied descriptive statistics for estimating patterns and trends in the distrubtion of data (English region, AfC banding and imaging modality).

Results: Responses were received from all seven of the NHSE regions (*n*=36/43 ICSs). The data demonstrated a larger workforce in the north of England than in the south, with employment at a range of AfC bandings from 5-8. The imaging modalities reported by radiographers in England demonstrated X-ray (*n*=34), the most reported imaging examination by region, and Nuclear Medicine (*n*=3) the least, with evidence of clinical reporting for CT (*n*=20), MRI (*n*=18), DEXA (*n*=16), Mammography (*n*=13) and fluoroscopy (*n*=12) being completed by radiographers in England.

Conclusion: The findings for England (*n*=704 reporters; *n*=142 trainees) provide an estimate based on the response rate of the current reporting radiographer workforce across the NHSE regions, and their contribution to the skills mix radiology reporting service delivery. It is hoped future surveys will provide ongoing workforce estimates for the diagnostic radiographer reporting workforce in NHSE to support workforce transformation and sustainability plans for the radiography profession and to meet government healthcare targets and priorities.

Introduction

The National Health Service England (NHSE) radiography workforce is a regulated profession with a protected designated title by law[1] and is one of fourteen allied health professions (AHPs) in England. All diagnostic radiographers within England are registered with the Health and Care Professions Council (HCPC). The HCPC figures of the diagnostic radiography workforce[2] in England were obtained from a Freedom of Information Act 2000[3] (FOIA) request, which established that 25,782 diagnostic radiographers were registered to work in England in 2023 for both NHS and private providers.[4] However, this data is not broken down to individual scope of clinical practice roles such as for example reporting.

The role of the reporting radiographer in the NHSE[5] imaging service skills mix contributes to the reporting workforce through postgraduate level training and qualification to provide definitive reports for a wide range of examinations and imaging modalities to clinicians.[6]

In recent years, NHSE, through Health Education England (HEE), has invested in the Multi-Professional Education and Training Investment Plan (METIP) under the Cancer and Diagnostics priorities[7] to fund the workforce development of reporting radiographers (within X-ray, Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Nuclear Medicine (NM), Mammography, Positron Emission Tomography (PET), Dual Energy X-ray Absorptiometry (DEXA) and Ultrasound (US) in England.[8] This initiative underpinned the 2017-2021 funding of education and training of 300 reporting radiographers to support earlier diagnosis,[9–12] boosted by additional funding of 150 reporting radiographers between 2021-2024.[10] With training of a further 500 reporting radiographers to sustain the Community Screening Hub initiative, [11] as well as training 450 reporting radiographers for the future demand in reporting.[12]

The College of Radiographers (CoR) annual workforce survey[13] sent to *n*=147 imaging sites in the UK provides information on radiographers' clinical practice roles. Although, with limited responses (*n*=57),[13] and low representation of NHSE Trusts (*n*=15),[13] it provides an incomplete picture of the workforce numbers for specific task-related roles such as reporting radiographers, which is difficult to establish in the findings. The CoR[13] 2022 survey is currently circulating, and data analysis and reports are expected imminently. A pattern reported in the 2021 and previous years' CoR[13] annual workforce reports the high vacancy rates in England of radiographer posts and turnover of staff leaving the profession. This impacts and challenges the ability of radiology departments to provide sustainable service delivery against the increased demand for imaging [14–16] and reduces the ability to release staff for training and education in advanced practice skills such as reporting. Within the AHP workforce, the trend and pattern of workforce shortages are similar in workforce reports by occupational therapists,[17,18] speech and language therapists,[18,19] operating department practitioners,[18,20] physiotherapists,[18,21] prosthetists and orthotists,[18] paramedics,[18] dieticians,[18] and podiatrists.[18] The medical profession of radiologists reporting similar issues in workforce shortages[15] to meet imaging and reporting demands.

The NHSE diagnostic reporting radiographer workforce is difficult to estimate from the HCPC[4] and COR[13] workforce datasets. As such, no national register of the population size and scope of reporting radiographers is available in England. Without accurate data, this situation makes the operational workforce[22] and succession planning[23] for sustainable healthcare services in NHSE difficult. Without a sufficient understanding of the current workforce implementing NHSE policies [24,25] and priorities[26] such as 50%[8,14,26] of X-rays reported by reporting radiographers, decreasing diagnostic imaging reporting Turnaround Times[27,28] (TATs) and improving pathways to diagnostic and cancer services [14,23,29,30] will be difficult to achieve.

This survey aimed to establish the workforce population employed as reporting radiographers in NHSE to gain a baseline of the population estimate in clinical practice to support radiographers planning workforce sustainability of reporting services.

Methods

Study design

The workforce survey was created using the digital platform 'JISC Online Survey Tool' (formerly BOS, 2023). The first page of the survey displayed the participant information details, followed by four consent questions, which required completion[31] to allow the main seven questions to be opened and completed.

The survey design applied 'branching logic', often called 'skip logic', to direct the participant to relevant follow-up questions; filtering questions helped reduce the cognitive burden and data overload the participant must look through to pick their specific answer (Figure 1).

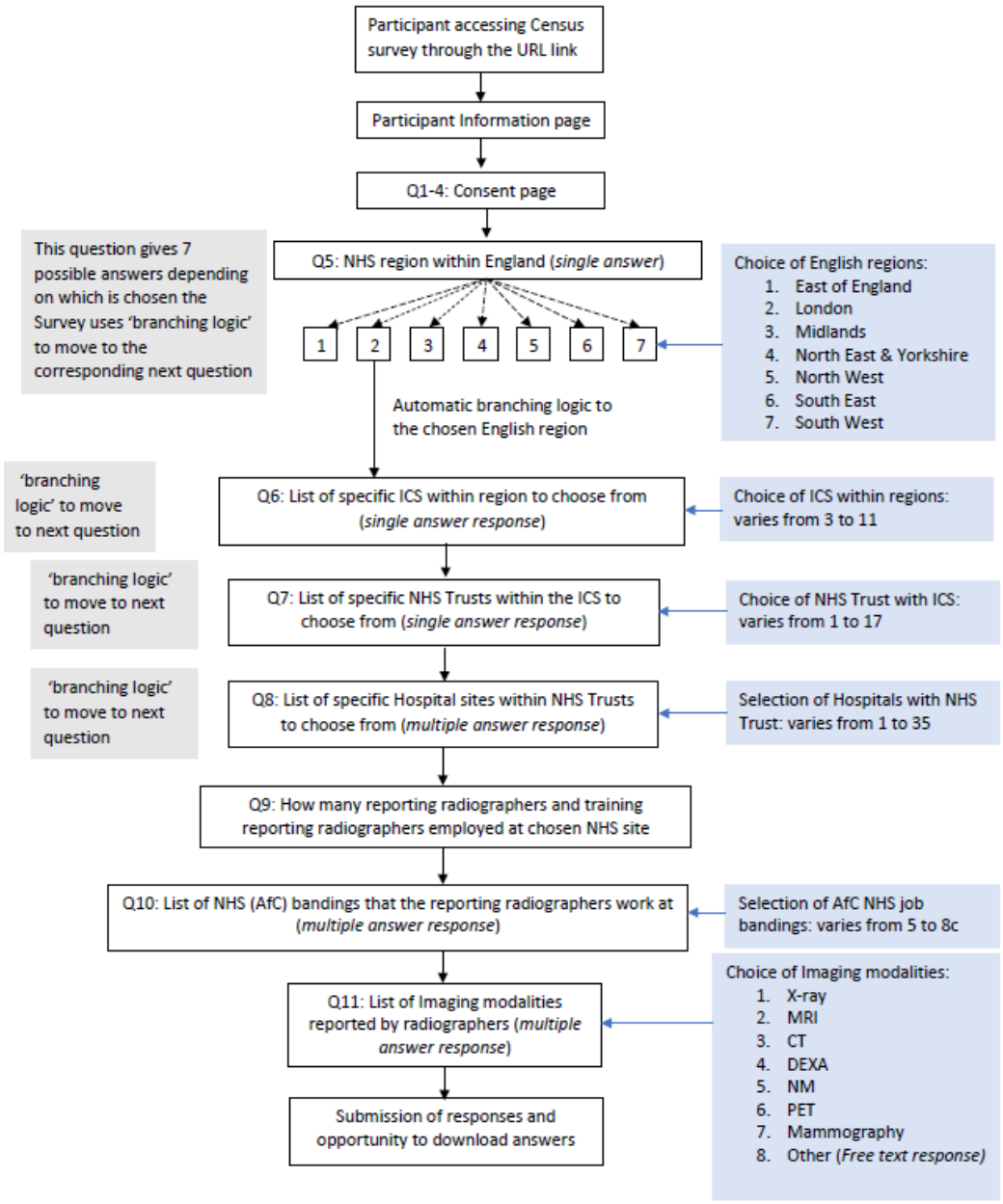

Figure 1. Survey question flow chart.

The first survey question on NHSE geographical region required a multiple-choice (single answer) question; this filtered to specific questions on which Integrated Care System (ICS) and NHSE Trust. Which then proceeded to filter to multiple-choice (multiple answers) questions for hospital sites, the amount of reporting radiographers and trainees at the employed site (numerical measurement scale), and the Agenda for Change[32] (AfC) NHSE banding grades the reporting radiographers were employed at (nominal measurement scale, and a multiple-choice, multiple answers) question. With an accompanying option of adding an extra free-text response for the imaging modalities that they reported (nominal measurement scale). All questions were mandatory to complete in one sitting; there was no option to return and continue a submission to reduce incomplete responses. Once the

survey was completed, participants could download a copy of their responses (rights to data submitted[31]) before submission. The responses were anonymous, with no participant demographic, personal data,[33] or special category personal data[34] or Internet Protocol (IP) address were recorded. A pilot version of the survey was tested for readability, order of questions, and online returns of completed data.

Participants

The sample population criteria required participants to be members of NHSE radiology staff (diagnostic radiographers, reporting radiographers, radiology managers, imaging superintendent modality leads, consultant radiologists, etc.) or student diagnostic radiographers working within an NHSE trust. Scotland, Wales, and Northern Ireland were excluded as they provide separate reporting radiographer workforce training funding by their own devolved nations' governmental health departments and governmental reporting TAT standards. As the survey attempted to explore the reporting radiographer workforce population and not a quota sampling, no sample size calculations were estimated.

The radiographers reporting scope of clinical practice under exploration was defined as any medical imaging modality (X-ray, CT, MRI, NM, PET, DEXA), with the option for free-text responses for any other reporting practice, including examinations such as fluoroscopy. For this study US was excluded as not a protected title occupation, as there is enormous variance across England in training, qualifications, workforce (including other professions outside of radiography) and clinical practice. US is traditionally seen as a scope of practice in itself outside of standard reporting radiographers' roles.

The second criterion for data collection was the geographic region; the seven regions of NHSE were surveyed (North Western, North Eastern and Yorkshire, Midlands, East of England, London, South Eastern and South Western regions), which have been party to central funding opportunities through Health Education England[23] (now merged into NHSE as part of the Workforce, Training and Education directorate) to support reporting radiographer training. NHSE[35] currently operates 215 NHS Trusts[36] incorporating acute, community, alliance, mental health trusts, and ambulance Trusts.

Ethical approval

The NHS Health Research Authority (HRA) definition table of research[37] of quantitative data in the administration of questions can be aligned to service evaluation; if no patient data (health condition, intervention, or treatment) or identifiable NHS staff personal data were included in the data collection, the study would not require formal NHS Research Ethics Committee (REC) approval. Ethical approval was gained from the sponsoring Universities' Faculty of Medicine, Health and Social Care ethics panel (ETH2223-0122).

Recruitment

Social media provides enormous opportunities to recruit participants from a wide range of locations and backgrounds. Still, collecting data and processing it brings responsibilities to

ensure the reuse of data meets the online platforms terms and conditions and the reduction of risk (private versus public data) through ethical procedures of providing participants with study information before informed consent, and only collecting anonymous responses.[38]

The survey was open between June to July 2023. Advertisement, distribution, and recruitment commenced with a physical launch in the Radiographer Research Hub at the national 'UK Imaging and Oncology Congress' in Liverpool (June 2023) and simultaneously via social media (X, formally Twitter, USA 2023; and LinkedIn, USA, 2023), with retweets by professional body officers (CoR and NHSE) and regional imaging networks. Return response rates were monitored for regional areas of low responses with targeted reminder emails sent to those NHSE Trust research and development (R&D) departments. Individual NHSE Trust R&D departments can be contacted directly as R&D email addresses are publicly available through the internet webpages of NHSE Trusts, thus not breaching confidentiality or the Data Protection Act[31] regulations. The emails requested support from the R&D departments to contact their Trust radiology departments that have not returned data to encourage participation.

Data collection

There was the prospect of duplication of responses from multiple participants at the same NHSE site, in which case standard data cleaning processes[39] occurred during the data analysis to Resolve Multiple Responses[39] (RMR) of redundant duplications to a single site coherent response and not overestimate the workforce.[39] No methods for estimating or adjusting for non-responses were included, unlike standard census methods,[39] as it may invalidate the quality, and there is no current comparator data on reporting radiographer national figures to estimate against.

Data analysis

The statistical analysis used for estimating trends and patterns in the data applied descriptive statistics (number of responses and percentages) for the categorical variables (geographic location, AfC banding and imaging modality). The findings were presented visually in tables (distribution of data), graphs and maps (quantitative responses and geospatial regional analysis).

Results

The survey received *n*=140 responses (Figure 2). In some instances, there were multiple responses from the same NHSE Trusts, which assisted quality assurances and validated the data (RMR procedures were used as detailed in the method).

The data provided workforce responses for *n*=36/43 ICS regions, from *n*=72/215[36] NHSE trusts in the NHSE provider directory[35] (Table 1). The data demonstrated higher workforce numbers in the north than in the south of England (Figure 3); this may be due to the number of responses returned or the greater concentration of universities providing reporting courses and, therefore, training opportunities in the north.

Table 1. The number of responses based upon region, ICS, and NHSE Trust (*denotes non-response by specialist site).

Region	ICS	*Mental Health / Rehab / Community NHS sites	*Ambulance NHS sites	Acute NHS Trusts (Radiology sites)	NHS Trusts responded	Responses *n* (%)
North West	Cheshire and Merseyside	3/17		14/17	8/17	15 (10.64)
	Greater Manchester	2/9	1/9	6/9	5/9	7 (4.96)
	Lancashire and South Cumbria	1/6		5/6	2/6	2 (1.42)
North East & Yorkshire	Humber and North Yorkshire			5/5	2/5	3 (2.13)
	North East and North Cumbria	2/11	1/11	8/11	5/11	9 (6.38)
	South Yorkshire	2/7		5/7	0/7	0 (0)
	West Yorkshire	4/10	1/10	5/10	3/10	3 (2.13)
Midlands	Birmingham and Solihull	2/5		3/5	0/5	0 (0)
	Black Country	3/7	1/7	3/7	2/7	5 (3.55)
	Coventry and Warwickshire	1/4		3/4	2/4	4 (2.84)
	Derby and Derbyshire	2/5		4/5	1/5	1 (0.71)
	Herefordshire and Worcestershire	1/3		2/3	1/3	1 (0.71)
	Leicester, Leicestershire and Rutland	1/2		1/2	1/2	1 (0.71)
	Lincolnshire	2/3		1/3	1/3	1 (0.71)
	Northamptonshire	1/3		2/3	0/3	0 (0)
	Nottingham and Nottinghamshire	1/3	1/3	1/3	1/3	1 (0.71)
	Shropshire, Telford and Wrekin	1/3		2/3	1/3	4 (2.84)
	Staffordshire and Stoke on Trent	2/3		1/3	1/3	1 (0.71)
East of England	Bedfordshire, Luton and Milton Keynes			2/2	2/2	8 (5.67)
	Cambridgeshire and Peterborough	2/5	1/5	3/5	0/5	0 (0)
	Hertfordshire and West Essex	2/5		3/5	1/5	1 (0.71)
	Mid and South Essex	1/2		1/2	0/2	0 (0)
	Norfolk and Waveney	2/5		3/5	1/5	8 (5.67)
	Suffolk and North East Essex	1/3		2/3	1/3	1 (0.71)
London	North Central London	4/10		6/10	2/10	2 (1.42)
	North East London	2/5		3/5	2/5	3 (2.13)
	North West London	3/8		5/8	0/8	0 (0)
	South East London	2/5	1/5	3/5	2/5	6 (4.26)
	South West London	1/7		6/7	3/7	5 (3.55)
South East	Buckinghamshire, Oxfordshire and Berkshire West	1/5	1/5	3/5	3/5	5 (3.55)
	Frimley			1/1	1/1	2 (1.42)
	Hampshire and the Isle of Wight	2/7		5/7	2/7	2 (1.42)
	Kent and Medway	2/6		4/6	4/6	14 (9.93)
	Surrey Heartlands	1/5	1/5	3/5	1/5	1 (0.71)
	Sussex	1/5		4/5	3/5	5 (3.55)
South West	Bath and North East Somerset, Swindon and Wiltshire			3/3	0/3	0 (0)
	Bristol, North Somerset and South Gloucestershire	1/3		2/3	1/3	1 (0.71)
	Cornwall and the Isles of Scilly	1/2		1/2	1/2	3 (2.13)
	Devon	1/4		3/4	3/4	3 (2.13)
	Dorset	1/4	1/4	2/4	1/4	2 (1.42)
	Gloucestershire	1/2		1/2	1/2	8 (5.67)
	Somerset			2/2	1/2	2 (1.42)
	Total	*63/215	*10/215	142/215	72/215	140 (100)

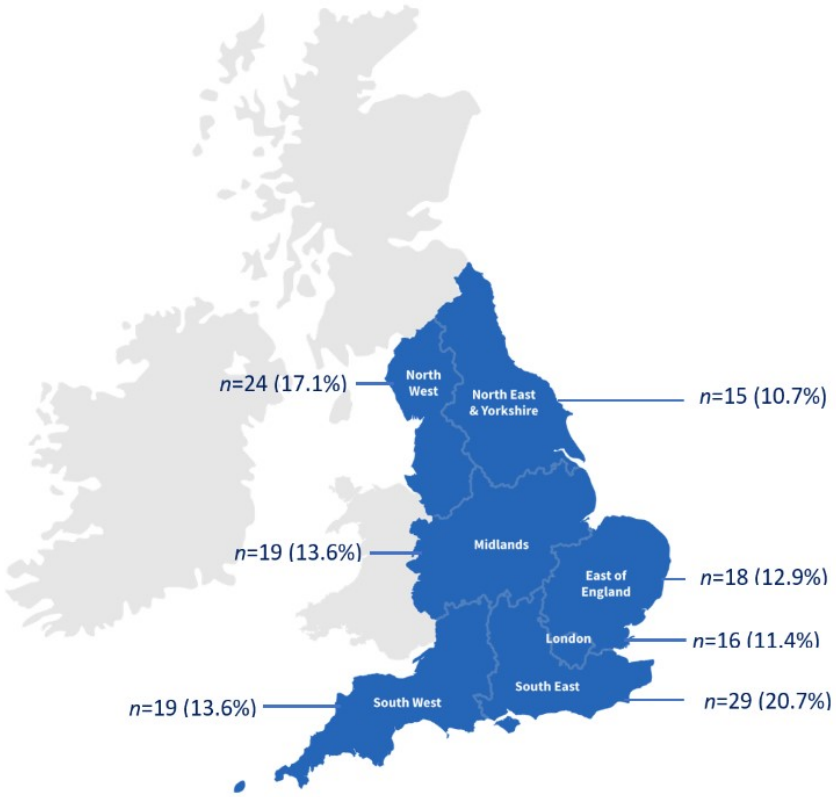

Figure 2. Number of responses (and % of total responses) defined by NHSE geographical region.

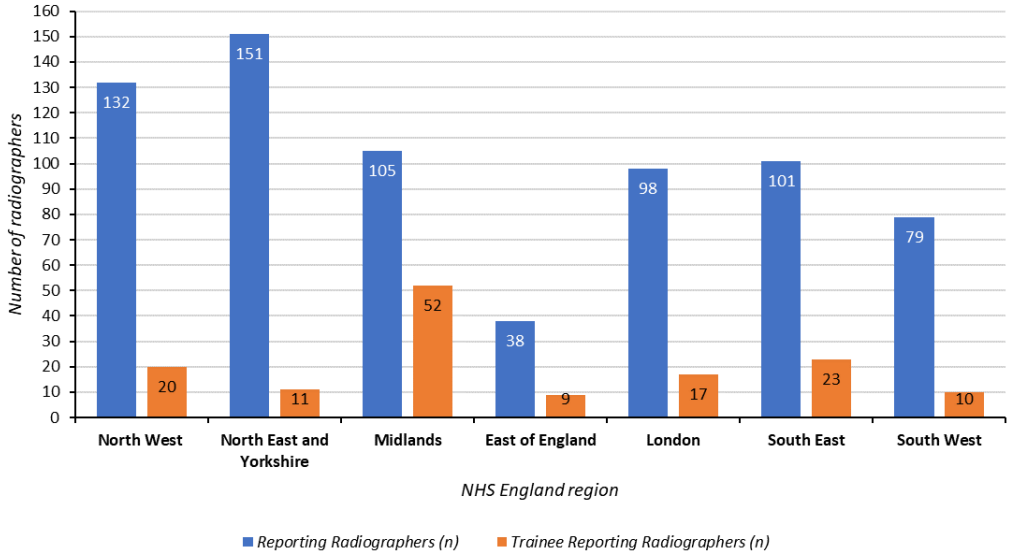

Figure 3. Workforce numbers of reporting radiographers and trainees per NHSE region accounted for from participant responses.

Of the NHSE Trusts[35] surveyed, it is recognised that these are a mixture of acute service providers, which include general district hospitals (*n*=220), specialist hospitals (*n*=49), and community hospitals (*n*=246) which might not all provide reporting radiographer service,

which impacted responses. Additionally, within the list of NHSE Trusts,[35] are specific specialist sites, including mental health (*n*=50 NHSE Trusts), community, rehabilitation, eye and dental sites, and ambulance Trusts (*n*=10 NHSE Trusts).[40] These were included in the survey as it was unknown if they had a connected service for imaging and reporting of their patient groups. There were no responses from these specialist NHSE Trusts concerning reporting radiographer services (Table 1).

The breakdown of responses from Table 1 provided a detailed picture of the workforce numbers employed at reporting radiographer roles at those NHSE Trusts (*n*=704 reporters; *n*=142 trainees; Table 2) and their AfC banding[32,41] (Table 3).

Table 2. Reporting radiographers and trainee data by NHS England region and ICS.

Region	*ICS*	*Reporting Radiographers (n)*	*Trainee Reporting Radiographers (n)*
North West	Cheshire and Merseyside	55	11
	Greater Manchester	45	7
	Lancashire and South Cumbria	32	2
North East & Yorkshire	Humber and North Yorkshire	33	1
	North East and North Cumbria	65	5
	South Yorkshire	–	–
	West Yorkshire	53	5
Midlands	Birmingham and Solihull	–	–
	Black Country	16	3
	Coventry and Warwickshire	22	8
	Derby and Derbyshire	4	7
	Herefordshire and Worcestershire	3	2
	Leicester, Leicestershire, and Rutland	14	11
	Lincolnshire	20	8
	Northamptonshire	–	–
	Nottingham and Nottinghamshire	1	6
	Shropshire, Telford, and Wrekin	8	6
	Staffordshire and Stoke on Trent	17	1
East of England	Bedfordshire, Luton, and Milton Keynes	15	5
	Cambridgeshire and Peterborough	–	–
	Hertfordshire and West Essex	2	2
	Mid and South Essex	–	–
	Norfolk and Waveney	11	0
	Suffolk and North East Essex	10	2
London	North Central London	26	1
	North East London	20	5
	North West London	–	–
	South East London	30	4
	South West London	22	7
South East	Buckinghamshire, Oxfordshire, and Berkshire West	12	1
	Frimley	4	3
	Hampshire and the Isle of Wight	9	1
	Kent and Medway	48	12
	Surrey Heartlands	8	2
	Sussex	20	4
South West	Bath and North East Somerset, Swindon, and Wiltshire	–	–
	Bristol, North Somerset, and South Gloucestershire	14	1
	Cornwall and the Isles of Scilly	5	0
	Devon	18	2
	Dorset	30	5
	Gloucestershire	4	2
	Somerset	8	0
	Total	704	142

Although the AfC bandings data (table 3) may be interpreted as implying trainees were at lower AfC bands (5-6) and assumes reporters to be at higher AfC bands (7-8) that reflect their scope of practice and job matching of tasks and roles[41] that professional bodies recommend.[6] The data cannot exclude the possibility of reporting radiographers employed at low AfC bandings (5-6) for a multitude of unknown reasons, which, without further data on local justification, cannot be known.

Table 3. Responses to AfC banding of reporting radiographers based upon NHS England region and ICS.

Region	*ICS*	*AfC Band 5*	*AfC Band 6*	*AfC Band 7*	*AfC Band 8a*	*AfC Band 8b*
North West	Cheshire and Merseyside		X	X	X	
	Greater Manchester			X	X	
	Lancashire and South Cumbria			X	X	
North East & Yorkshire	Humber and North Yorkshire		X	X	X	X
	North East and North Cumbria			X	X	
	South Yorkshire					
	West Yorkshire		X	X	X	
Midlands	Birmingham and Solihull					
	Black Country			X	X	X
	Coventry and Warwickshire			X		
	Derby and Derbyshire			X		
	Herefordshire and Worcestershire			X		
	Leicester, Leicestershire, and Rutland		X	X		
	Lincolnshire			X		
	Northamptonshire					
	Nottingham and Nottinghamshire		X	X	X	
	Shropshire, Telford, and Wrekin			X	X	X
	Staffordshire and Stoke on Trent			X		
East of England	Bedfordshire, Luton, and Milton Keynes		X	X	X	
	Cambridgeshire and Peterborough					
	Hertfordshire and West Essex		X			
	Mid and South Essex					
	Norfolk and Waveney			X	X	X
	Suffolk and North East Essex			X		
London	North Central London			X		
	North East London			X		
	North West London					
	South East London			X	X	X
	South West London	X	X	X	X	
South East	Buckinghamshire, Oxfordshire, and Berkshire West			X		
	Frimley			X		
	Hampshire and the Isle of Wight		X	X		
	Kent and Medway		X	X	X	X
	Surrey Heartlands			X		
	Sussex			X	X	
South West	Bath and North East Somerset, Swindon, and Wiltshire					
	Bristol, North Somerset and South Gloucestershire			X		
	Cornwall and the Isles of Scilly			X		
	Devon			X		
	Dorset			X	X	
	Gloucestershire		X	X		
	Somerset			X		

The results further provide an insight into the varying imaging modalities reported by radiographers in England, with X-ray (*n*=34) the most common imaging modality reported by ICS region and Nuclear Medicine (*n*=3) the least reported by radiographers (Table 4). All other modalities, from CT (*n*=20), MRI (*n*=18), DEXA (n=16), Mammography (*n*=13) to

fluoroscopy (*n*=12), were reported in the responses, apart from PET reporting. These results are limited by the fact that not all NHSE Trusts provide Nuclear Medicine or PET imaging services.

Table 4. Responses to Imaging modality reported by radiographers based upon NHS England region and ICS.

Region	*ICS*	*X-ray*	*CT*	*MRI*	*Mammo*	*DEXA*	*NM*	*Fluoro*
North West	Cheshire and Merseyside	X	X	X	X	X		X
	Greater Manchester	X	X	X	X	X		X
	Lancashire and South Cumbria	X		X	X	X	X	
North East & Yorkshire	Humber and North Yorkshire	X	X	X	X	X		X
	North East and North Cumbria	X	X	X		X		X
	South Yorkshire							
	West Yorkshire	X	X		X	X		X
Midlands	Birmingham and Solihull							
	Black Country	X	X	X	X			
	Coventry and Warwickshire	X	X	X				X
	Derby and Derbyshire	X		X	X	X		
	Herefordshire and Worcestershire	X						
	Leicester, Leicestershire, and Rutland	X	X	X				
	Lincolnshire	X	X	X		X		
	Northamptonshire							
	Nottingham and Nottinghamshire			X				
	Shropshire, Telford, and Wrekin	X						
	Staffordshire and Stoke on Trent	X		X				
East of England	Bedfordshire, Luton, and Milton Keynes	X			X			X
	Cambridgeshire and Peterborough							
	Hertfordshire and West Essex	X						
	Mid and South Essex							
	Norfolk and Waveney	X	X		X	X		X
	Suffolk and North East Essex	X						
London	North Central London	X						
	North East London	X	X	X				
	North West London							
	South East London	X	X					
	South West London	X	X	X		X		X
South East	Buckinghamshire, Oxfordshire, and Berkshire West	X	X	X				X
	Frimley	X	X					
	Hampshire and the Isle of Wight	X						
	Kent and Medway	X	X	X	X	X	X	X
	Surrey Heartlands	X				X		X
	Sussex	X	X					
South West	Bath and North East Somerset, Swindon, and Wiltshire							
	Bristol, North Somerset and South Gloucestershire	X				X		
	Cornwall and the Isles of Scilly	X	X					
	Devon	X	X	X	X	X		
	Dorset	X	X	X	X	X	X	
	Gloucestershire	X			X			
	Somerset	X				X		

Discussion

Surveys of population estimates (similar to censuses) help predict trends and variances across national regions. The data from the seven NHSE regions reflected responses from within the ICS regions and NHS Trusts that supply reporting radiographer services (Tables 1-4). The survey's findings have provided some key themes in the responses; large variances exist between the regions of workforce capacity, imaging modality reported (scope of

practice and qualification), and AfC job banding (position employed by NHSE Trusts). These findings can, therefore, be helpful when planning the current service delivery of image reporting by radiographers against the pressures of patient demand[55] and the capacity of the reporting workforce [13,15] to meet reporting TATs [28,56] and assist clinician decision-making in the delivery of safe centred care, treatment, and management. The data presents a small workforce to meet demands, reflected in current NHSE workforce modelling shortfalls. [57] Further expansion of the radiographer reporting workforce is needed to sustain the skills mix of imaging services[26] through financial investment[57] and educational support through the rollout of national training academies [42–44] and imaging academies[58] to meet NHSE regional needs and support traditional university educational models, to accelerate scaling up the reporting radiographer workforce to enable geographical equity in the distribution of reporters to meet reporting demands and reduce the inequality of development opportunities by some regions not providing all imaging modality reporting education.[50,51,59] Additionally, the potential through academics to increase advanced practice reporting training opportunities would promote job retention and satisfaction[26] amongst radiographers to reduce workforce attrition.[60]

It is recommended that future research is needed to explore the patient scope of practice (patient referral, patient age, or any anatomical or examination restrictions, and amount of reporting sessions a week[45,47–49,61] radiographers complete to gain a wide perspective of the national workforce.

It is recognised that the national population of NHSE diagnostic radiographers annually fluctuates. Workforce figures change rapidly and can be potential sources of bias and error, such as over or under-estimating subsample data (recruitment,[13] attrition,[59,62,63] retirement[13], etc.), as do trainee numbers due to several variables[59] (failing to start training, interruption to studies[64], failing assessments, qualifying but not gaining employment to report[64], qualifying but not seeking a reporting role, etc.). Qualified reporting radiographers may have left reporting positions internally or externally from their NHSE Trusts; as such, the survey was a snapshot of data at the time of data collection. Therefore, there are limitations, that includes the data will not be as updated as regular annual HCPC[2,18,65] or CoR[13] workforce reports. Therefore, the survey findings were estimates rather than counts (as with census undertaking), so they will have uncertainty-associated measures. Steps to reduce sources of error and improve integrity were described in the method (cleaning stage) that checked for and resolved multiple responses from the same NHSE Trusts to quality assure, validate, and adjust counts accordingly.[39]

It is important to consider the strengths and limitations of the survey. Many uncontrolled variables affect the results, including non-responses from acute NHSE Trusts (*n*=66) and regional level ICS (*n*=7), despite follow-up contact with specific individual NHSE Trust research and development departments for assistance in data returns. Some submitted responses may contain partial data (underestimates reporting of workforce figures), making it difficult to determine genuine workforce figures. Regional Imaging training

academies[42,43] [44] were not contacted directly. However, they might bridge across one or more ICS; they are unlikely to employ reporting radiographers to report clinically as their remit is to provide training and education roles similar to universities.

Users of the data may wish to make inferences from the sample responses to produce a national estimate of the population of reporting radiographers in England and basic demographic characteristics of geographic region, AfC banding and the subdivisions of imaging modality reported. The data may assist macro-level health systems, policymakers, and meso-level healthcare bodies and professional organisations to compare previous research on population data of reporting radiographers[45–51] to establish a picture of evolving advanced practice rollout to support key national healthcare priorities.[8,14,24–26,28–30,52–54] The data may also inform micro-level, local-level healthcare service providers and higher educational institutes as a denominator for informing the calculation of NHSE reporting radiographers at regional and national workforce training planning.

Conclusion

The survey data presented within this paper gives an insight into the current reporting by radiographers workforce within NHSE and their contribution to the skills mix radiology reporting service delivery. The results provide a perspective of how reporting radiographer services vary across NHSE regions, although the findings should be used with caution due to the amount of returns. Specifically, the low number (*n*=704 reporters; *n*=142 trainees) of reporting radiographers for England to meet specific national targets, such as 50% of X-rays[8,14,26] to be reported by radiographers (in this data only *n*=34/43 ICS regions had X-ray reporters) within reporting TATs[28] during the current unprecedented pressure of imaging demand post COVID-19[11,55,66,67] is a concern for the profession. Understanding the data will help identify areas for workforce planning strategies, target future training opportunities at regional and imaging modality levels, and ensure imaging services meet future demand in light of current challenges.

It is hoped future surveys will build on the foundations of this work in producing ongoing population estimates for the diagnostic radiographer reporting workforce in England to support workforce transformation and sustainability plans for the NHSE and the radiography profession.

Statements and Declarations

Competing Interests

The authors declare that there are no conflicts of interest.

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