Radiology Benchmarking 2017 National report

NHS Benchmarking Network
December 2017

Raising Standards through Sharing Excellence

Contents

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Introduction and background to the project

Introduction

- This report presents the findings of the 2017 Radiology benchmarking project. The data in this report reflects 2016/17 outturn data. The work has been led by the NHS Benchmarking Network, in partnership with member organisations. This year, 95 organisations have contributed data to the project. Submissions cover English Trusts, Welsh University Health Boards (UHB), a Scottish Health Board and the States of Guernsey.

- Radiology is a key diagnostic and interventional service for the NHS. Radiology supports patients across the full range of specialties in acute hospitals and makes a significant contribution in providing diagnostics to primary care and community services. The Radiology project reviews modalities, equipment and infrastructure, activity, access and waiting, reporting times, finance, staffing, productivity, quality and outcomes. Latest good practice includes advice on Radiographer led reporting, use of voice recognition technology, specialist interventions, productivity enhancements, outcomes improvement, and patient and GP customer focus initiatives.

- Findings have been validated with individual NHS Trusts and Health Boards through an extensive data validation process. Participant organisations have access and are able to model their results through the parallel Radiology benchmarking desktop toolkit. This toolkit contains hundreds of different local benchmarking comparisons and should be referred to by participants in developing both local charts and additional views of data that are not covered by this report. Participants can use this toolkit to choose a range of benchmarking denominators which include; financial size, inpatient SPELLS and admissions, outpatient attendances, A&E attendances and staffing based benchmarks. Member organisations can choose the most appropriate benchmarking denominator to reflect local circumstances.

- Bespoke dashboard reports are also available to each participant, which reflect summarised local findings. In these reports, each organisation is highlighted on charts where data was supplied, by a hashed line outlining the bar.

- We would like to express our thanks to the member organisations that took part in the project in 2017. Radiology services continue to be a priority area for members and the Radiology project will take place once more in 2018.

- For more information, please contact Stephen Day (stephen.day5@nhs.net) or Stephen Watkins (s.watkins@nhs.net).

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10 hours

median routine wait for inpatient plain film x-ray

5 weeks

median routine wait for outpatient CT scan

91%

median rate of plain film x-rays performed on same day as requested

35%

of all reports reported by Radiographers and Sonographers

£41

mean average cost per examination

7%

median rate of pay costs attributable to locum/agency staff

15%

of Trusts are ISAS accredited

ISAS
IMAGING SERVICES ACCREDITATION SCHEME

Staff vacancies

Consultant Sonographer Radiographer
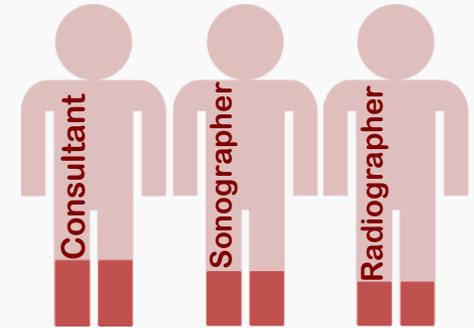
16% 15% 10%

Background

- The NHS Benchmarking Network's Radiology benchmarking project was initiated by members as part of the 2012 work programme. The project has undertaken six further cycles of benchmarking and this report summarises findings from phase seven of the work.

- A member reference group scoped the project's content and developed a benchmarking methodology against which NHS radiology providers could be compared. The project's methodology has been reviewed by the reference group each year since 2012, and refinements have been made to update definitions and also explore new areas of interest.

- The NHS Benchmarking Network has also worked with the Royal College of Radiologists and the Society of Radiographers to update the data specification and explore new areas of interest.

Terms of Reference

- To reach an agreed definition of Radiology services
- To develop a clear and agreed data specification
- To develop comparisons that benefit Radiology departments and Trust & Health Board executives
- Develop meaningful peer group based comparisons
- Support realistic expectations around understanding the balance between quality standards and achievable productivity levels
- Understand effectiveness and "what good looks like"
- Understand the constraints that services operate under e.g. the impact of multi-site and multi-location operations
- Become a source of reference for Radiology performance for acute and community providers and commissioners
- Develop quality standards / kite mark for Radiology
- Understand the implications of accreditation standards
- To identify opportunities for improvement
- To define and share good practice
- To deliver products within agreed project timescales
- To support networking across Radiology Departments in member organisations

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Project participants

- The Radiology benchmarking project has involved a substantial number of participants from across the NHS;
  - Phase 1 – 45 participant organisations
  - Phase 2 – 61 participants
  - Phase 3 – 78 participants
  - Phase 4 – 84 participants
  - Phase 5 – 82 participants
  - Phase 6 – 87 participants

- Phase 7 – 95 Participants
  - Data covers England, Wales, Scotland and Guernsey this year

- 130 Trusts / Health Boards have now contributed data over the benchmarking cycles

Channel Islands

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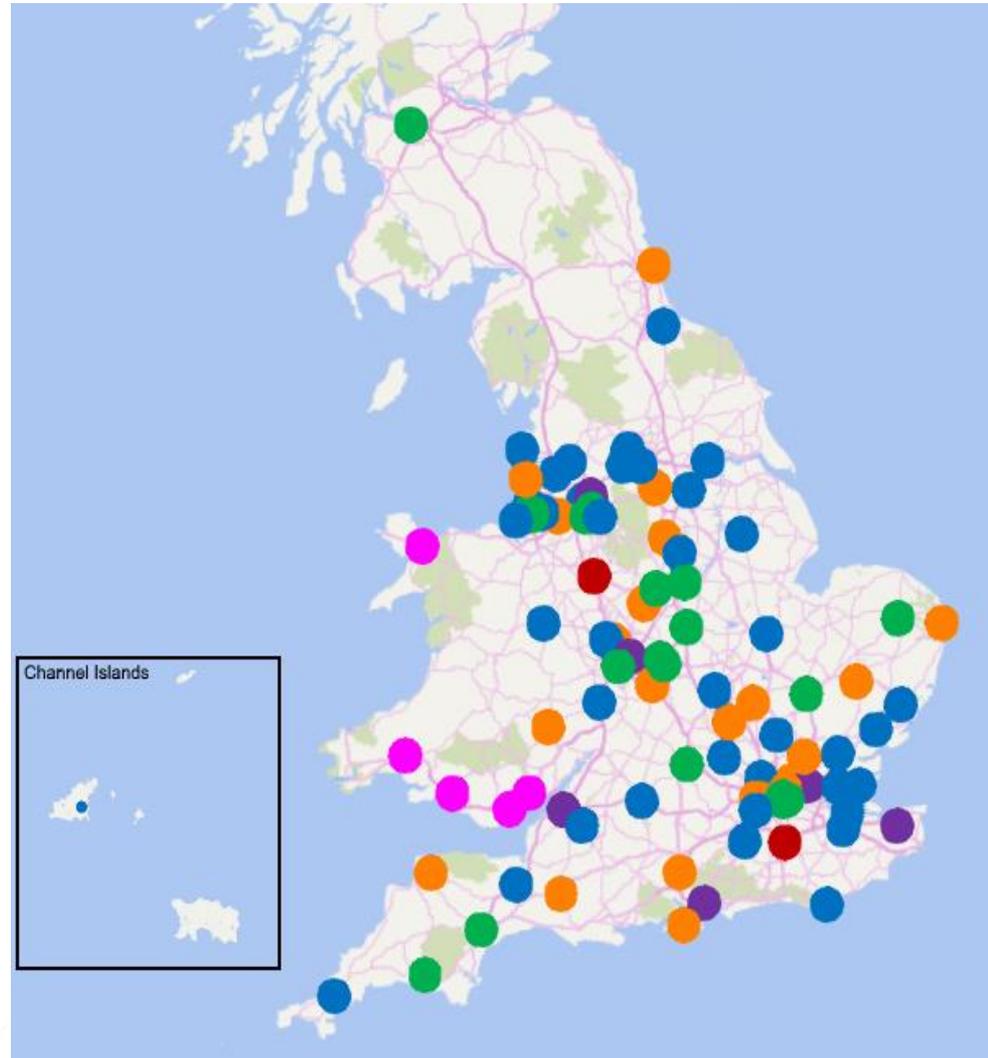
Peer group profiling

- Categorisation into defined peer groups enables exploration of how Trusts with defined characteristics compare. Peer groups use DH definitions. Relative size and formal teaching status are the two main criteria used;

    - **Teaching**
      (substantial relationship and co-funding with University Medical School and Deanery)
    - **Large non-teaching**
      (turnover £450m+)
    - **Medium non-teaching**
      (turnover (£200m - £450m)
    - **Small non-teaching**
      (turnover <£200m)
    - **UHB**
      (a specific peer group for Health Board organisations)

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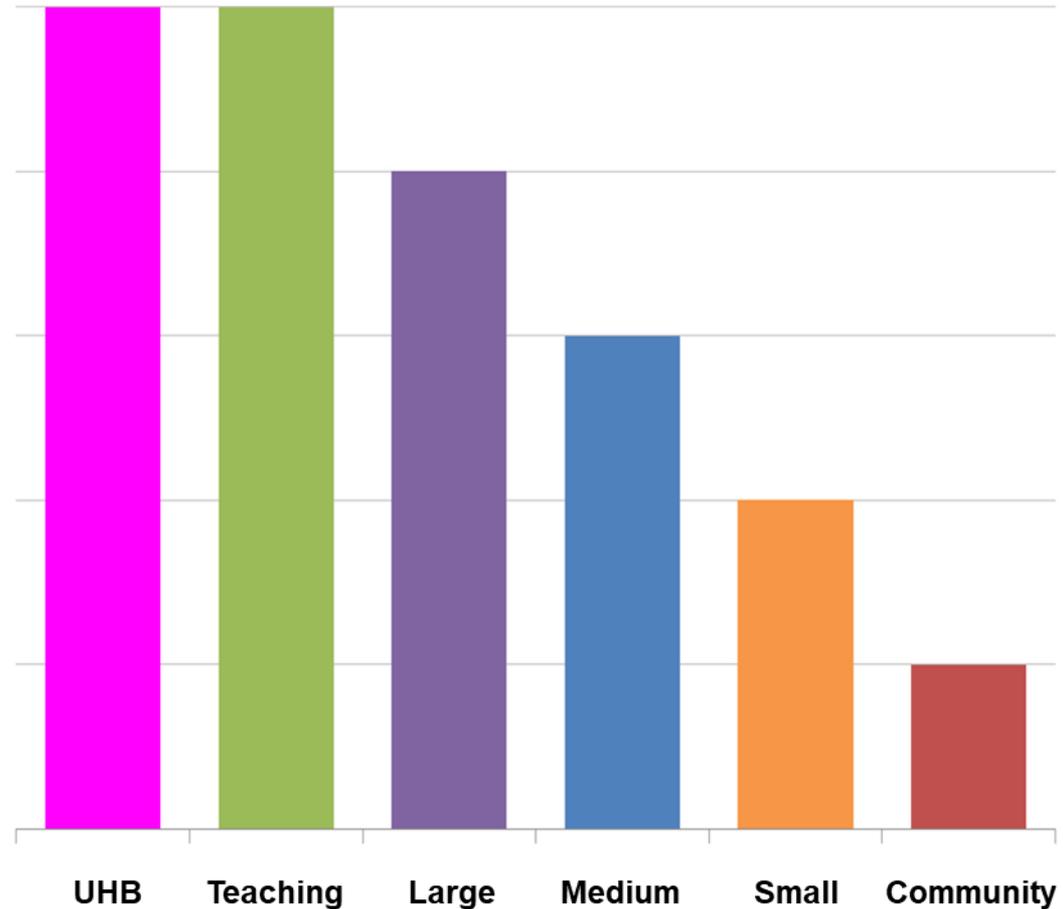
Participants by peer group (1)

Teaching	Small
Brighton and Sussex University Hospitals NHS Trust	Bedford Hospital NHS Trust
Cambridge University Hospitals NHS Foundation Trust	Barnsley Hospital NHS Foundation Trust
Chesterfield Royal Hospital NHS Foundation Trust	Hampshire Hospitals NHS Foundation Trust
Central Manchester University Hospitals NHS Foundation Trust	Isle of Wight NHS Trust
Derby Teaching Hospitals NHS Foundation Trust	James Paget University Hospitals NHS Foundation Trust
NHS Greater Glasgow & Clyde Health Board	Milton Keynes Hospital NHS Foundation Trust
Guy's and St Thomas' NHS Foundation Trust	North Middlesex University Hospital NHS Trust
Imperial College NHS Healthcare Trust	Northern Devon Healthcare Trust
Liverpool Heart and Chest NHS Foundation Trust	The Princess Alexandra Hospital NHS Trust
Plymouth Hospitals NHS Trust	Tameside and Glossop Integrated Care NHS Foundation Trust
Norfolk and Norwich University Hospital NHS Foundation Trust	Royal Brompton and Harefield NHS Foundation Trust
Nottingham University Hospitals NHS Trust	Surrey and Sussex Healthcare NHS Trust
Oxford University Hospitals NHS Foundation Trust	South Tyneside NHS Foundation Trust
Royal Devon & Exeter NHS Foundation Trust	South Warwickshire Foundation Trust
Royal Liverpool and Broadgreen University Hospital NHS Trust	Southport and Ormskirk NHS Trust
The Christie NHS Foundation Trust	The Hillingdon Hospitals NHS Foundation Trust
The Royal Orthopaedic Hospital NHS Foundation Trust	Walsall Healthcare NHS Trust
University Hospitals of North Midlands NHS Trust	Warrington and Halton Hospitals NHS Foundation Trust
University Hospitals Coventry & Warwickshire NHS Trust	West Suffolk NHS Foundation Trust
University Hospitals Leicester NHS Trust	Whittington Health NHS Trust
	Wye Valley NHS Trust
	Yeovil District Hospital NHS Foundation Trust

Large		
East Kent Hospitals University NHS Foundation Trust	Heart of England NHS Foundation Trust	Pennine Acute Hospitals NHS Trust
Gloucestershire Hospitals NHS Foundation Trust	North Bristol NHS Trust	Portsmouth Hospitals NHS Trust

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Participants by peer group (2)

Health Board	
Abertawe Bro Morgannwg University Health Board	Cardiff and Vale University Health Board
Aneurin Bevan University Health Board	Cwm Taf University Health Board
Betsi Cadwaladr University Health Board	Hywel Dda University Health Board

| Medium	
Aintree University Hospitals Foundation Trust	Northern Lincolnshire and Goole NHS Foundation Trust
Ashford and St. Peter's Hospitals NHS Foundation Trust	Peterborough & Stamford Hospitals NHS Foundation Trust
Barking, Havering, Redbridge University NHS Trust	Great Western Hospitals NHS Foundation Trust
Blackpool Teaching Hospitals NHS Foundation Trust	Royal Cornwall Hospitals NHS Trust
Bradford Teaching Hospitals NHS Foundation Trust	Royal Surrey County NHS Foundation Trust
Basildon & Thurrock University Hospital NHS Foundation Trust	Royal United Hospital NHS Foundation Trust
Buckinghamshire Healthcare NHS Trust	Salford Royal NHS Foundation Trust
Calderdale and Huddersfield NHS Foundation Trust	Sherwood Forest Hospitals NHS Foundation Trust
Colchester Hospital University NHS Trust	Shrewsbury and Telford Hospital NHS Trust
Doncaster & Bassetlaw Hospitals NHS Foundation Trust	Southend University Hospital NHS Foundation Trust
East and North Hertfordshire NHS Trust	St Helens and Knowsley NHS Trust
East Lancashire Hospitals NHS Trust	Stockport NHS Foundation Trust
East Sussex Healthcare NHS Trust	Taunton & Somerset NHS Foundation Trust
States of Guernsey Health & Social Care	The Ipswich Hospital NHS Trust
Lancashire Teaching Hospitals NHS Foundation Trust	The Royal Wolverhampton Hospital NHS Trust
Maidstone & Tunbridge Wells NHS Trust	University Hospital South Manchester NHS Foundation Trust
Medway NHS Foundation Trust	United Lincolnshire Hospitals Trust
Mid Essex Hospital Services NHS Trust	West Hertfordshire Hospitals NHS Trust
Mid Yorkshire Hospitals NHS Trust	Wirral University Teaching Hospital NHS Foundation Trust
North Tees and Hartlepool NHS Foundation Trust	Worcestershire Acute Hospitals NHS Trust
Northampton General Hospital NHS Trust	

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Participant context

Profiles of radiology within participant organisations

Trust size and position of Radiology

Trust turnover

- Participating Trusts and Health Boards come from a full range of organisation types

- Participants are acute hospital trusts and foundation trusts, UHBs and community providers.

- Teaching status and financial size are closely related as can be seen in the chart opposite which shows colour coded peer groups and participants financial turnover.

Trust/UHB Turnover (£m)

Legend:
- Teaching
- Large
- Medium
- Small
- Community
- UHB
- Mean
- Lower Quartile
- Median
- Upper Quartile
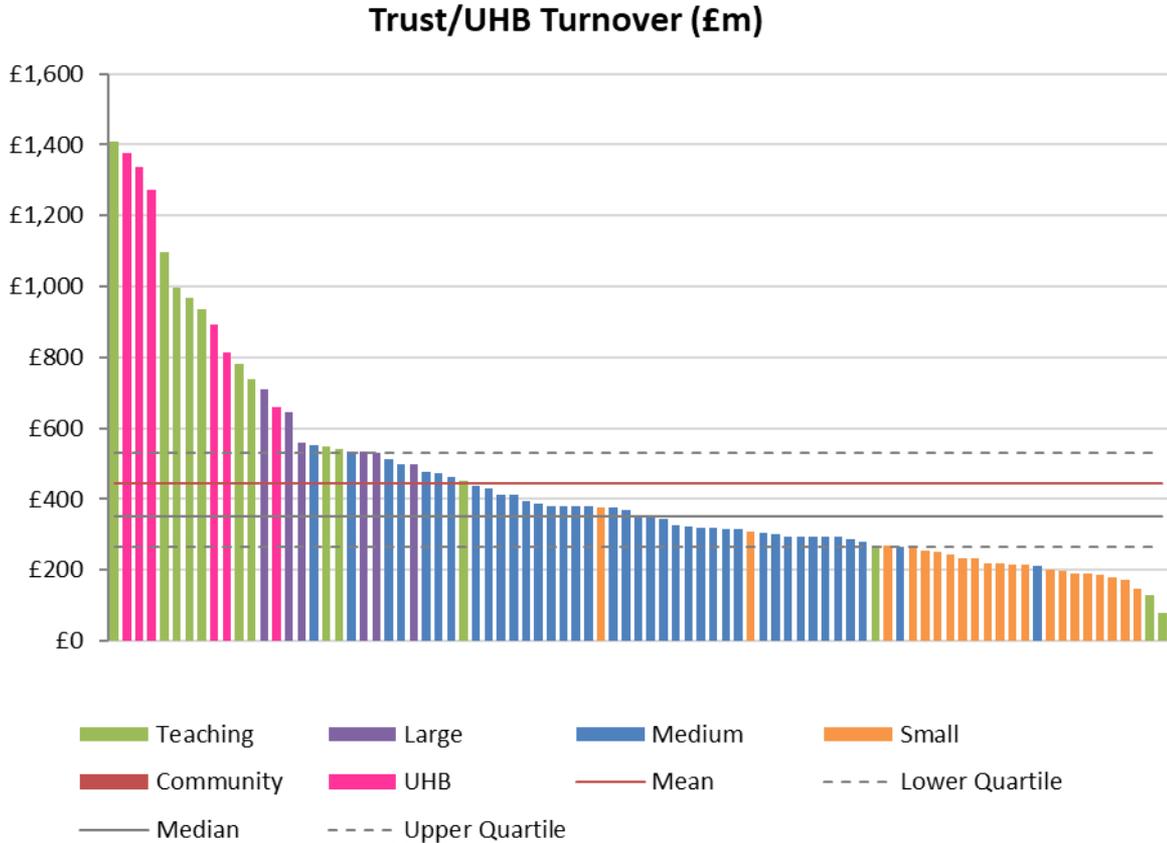
Trust size and position of Radiology

Number of beds

- The range in the size and profile of participant organisations is also reflected in the provision of beds reported by each organisation.

- Bed provision ranges from 126 to 4,951, with an average of 904 beds per organisation.

Number of beds - current census

▉ Teaching	▉ Large	▉ Medium	▉ Small
▉ Community	▉ UHB	— Mean	- - - Lower Quartile
— Median	- - - Upper Quartile		
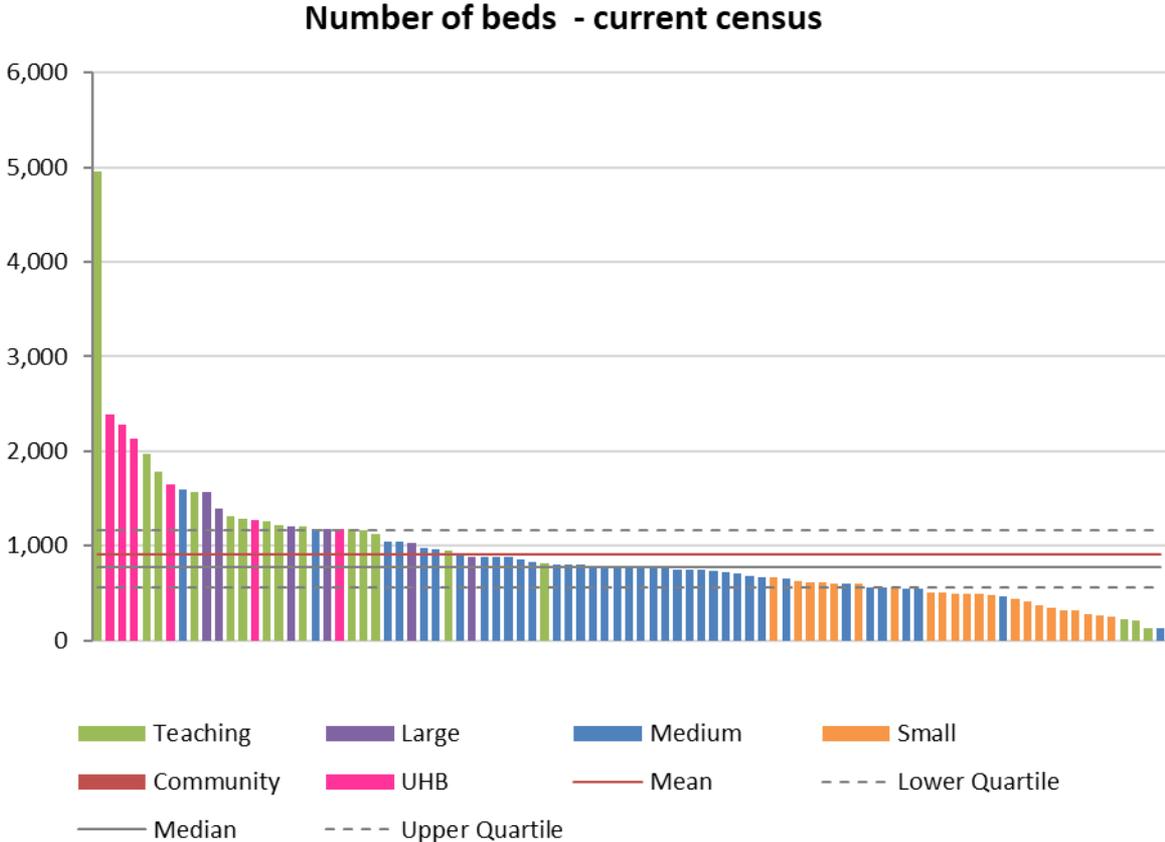
Trust size and position of Radiology

Number of outpatient appointments

- The number of outpatient appointments per organisation profiles in a similar manner to turnover, beds and SPELLS for most organisations.

- Total outpatient attendances per provider in 2016/17 are shown on this chart. Data on first to follow-up rates is also available in the Radiology toolkit.

- As reflected in green on the left hand side of the chart, teaching hospitals tend to have the highest number of outpatient attendances, with 3 providers of this type reporting over one million attendances in 2016/17.

- At the other end of the scale, 1 medium trust, four small trusts and 2 teaching provider types reported total outpatient attendances of less than 200,000.

Total Outpatient Attendances

Legend:
- Teaching
- Large
- Medium
- Small
- Community
- UHB
- Mean
- Lower Quartile
- Median
- Upper Quartile

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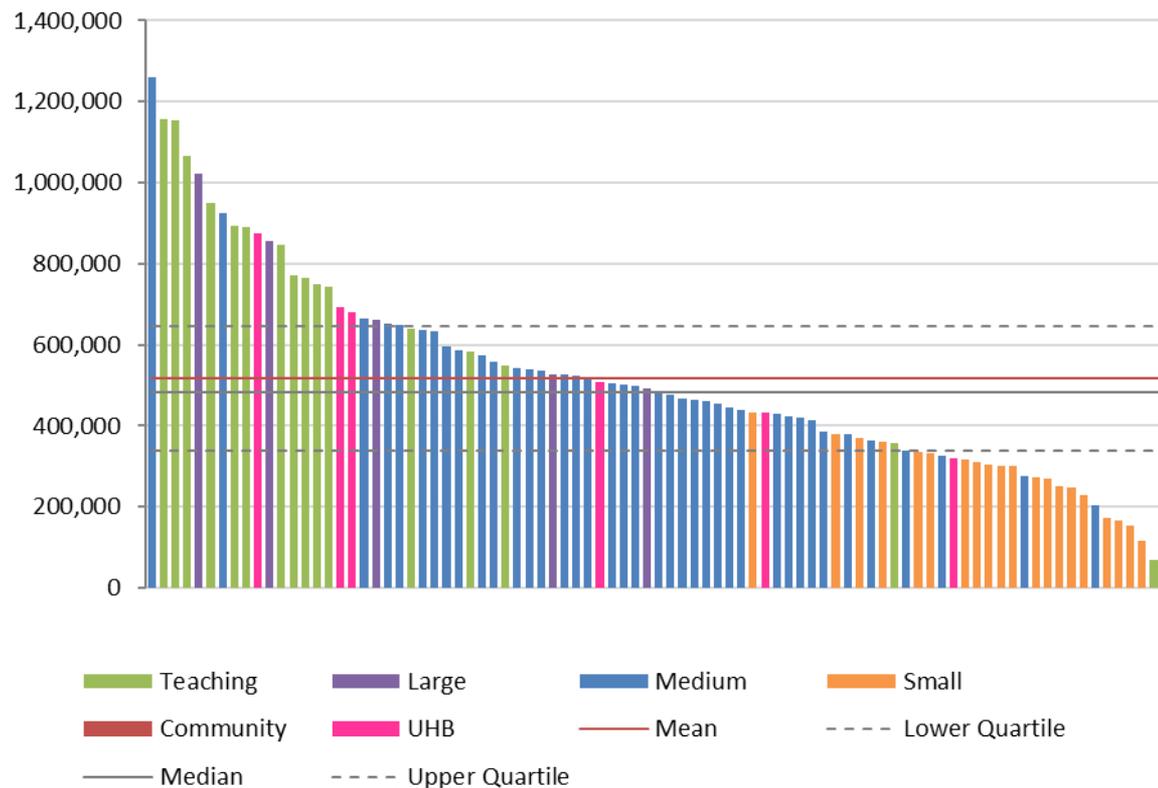
Trust size and position of Radiology

Total A&E attendances

- Most participants provide Accident and Emergency services within their Trust. Mean average attendance rates are around 132,617 per annum.

- The range amongst participants is from 18,176 attendances to 419,812 attendances.

- Participants report an average of 73,187 examinations in Radiology attributing to A&E, with one organisation reporting over 250,000 Radiology examinations in A&E in 2016/17.

- Please refer to the Radiology toolkit to explore further activity metrics.

Total A&E attendances

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
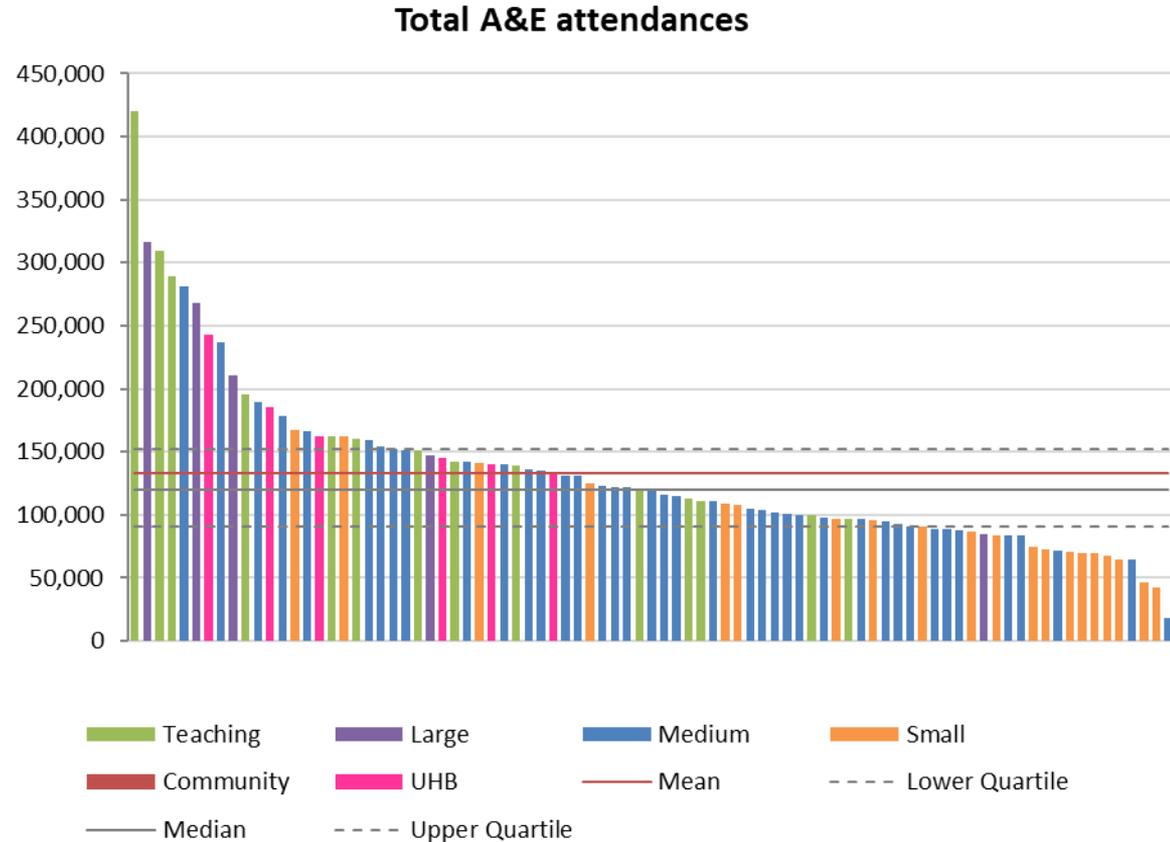
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Service model and modalities

Modalities provided

- All participants provide plain film X-ray and CT services.

- DEXA provision has increased again this year and is now delivered by 74% of providers, compared to 70% in 2015/16 and 67% the year before.

- PET service provision remains at the same level as 2015/16, at 26%.

- The lowest levels of service provision were reported for Interventional Radiology – Neurology, at 22%. This compares to 24% in 2015/16.

Modalities provided

Modality	Yes
Plain film X-Ray	100%
CT	100%
MRI	99%
Ultrasound - General	99%
Ultrasound - MSK	99%
Fluoroscopy - Other	98%
Fluoroscopy - Bariums	96%
Interventional Radiology - Other	94%
Nuclear Medicine	91%
Mammography - Symptomatic	91%
Ultrasound - Vascular	90%
Ultrasound - Obstetric	89%
Interventional Radiology - Vascular	88%
Catheter Laboratory / Interventional Cardiology	82%
DEXA	74%
Mammography - Screening	57%
Ultrasound - Screening	51%
Other	44%
PET	26%
Interventional Radiology - Neurology	22%

Legend: ■ Yes ■ No

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Sites and rooms for Radiology

Number of rooms

- The total number rooms reported by organisations ranges from 7 to 166, with both of these values reported by a teaching hospital.

- The mean number of rooms for organisations is 41.

- Participants reported that Radiology services operate from 5 sites, on average, with a mean of 9 locations of operation.

- The number of sites supported by organisations will have implications for how Radiology services are organised and resourced.

Total number of Radiology rooms in Trust / Health Board

Number of rooms	
All Trusts – Mean Number of Rooms	41
All Trusts – Lower Quartile Number of Rooms	27
All Trusts – Median Number of Rooms	37
All Trusts – Upper Quartile Number of Rooms	50
All Trusts – Minimum Number of rooms	7
All Trusts – Maximum Number of Rooms	166

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile

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Commissioning models

Participants were asked about their main commissioning model. The most common commissioning model amongst participants this year is a mixed economy arrangement. 7% of organisations are commissioned on a cost per case, compared to 11% in 2015/16 and 12% the year before. As seen in previous years, this type of arrangement is least frequently reported.

Year	Block Contract	Pbr	Cost per case	Mixed	Other
2014/15	11%	36%	12%	39%	3%
2015/16	16%	24%	11%	47%	3%
2016/17	13%	27%	7%	46%	6%

■ Block Contract ■ Pbr ■ Cost per case ■ Mixed ■ Other

Participants were also asked about the terms of their commissioning.

Two-thirds of providers are commissioned with explicit targets on waiting times and speed of access. 30% of providers reported that they are commissioned on report turnaround times, and 34% reported they are commissioned specifically on service volumes (35% last year).

Are you commissioned with explicit targets on waiting times and speed of access?

33% No / 67% Yes
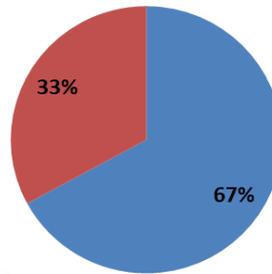
■ Yes ■ No

Are you commissioned specifically on service volumes?
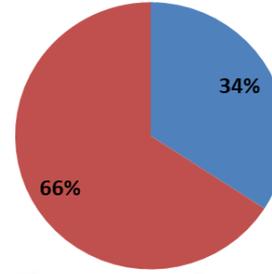
34% Yes / 66% No

■ Yes ■ No

Are you commissioned on report turnaround times?

30% Yes / 70% No
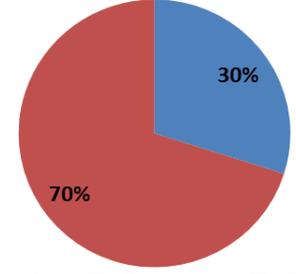
■ Yes ■ No

Equipment and capital

Scanners/Machines by Modality

- Data relating to the age and quantity of equipment has been summarised in the table below. A wide variation between participants is evident (please note that zero returns have been excluded from this metric).

- For further detail and to see the relative position of your own organisation, please refer to the NHSBN Toolkit.

| Modality	Mean average number of machines	Median number of machines	Range	Average age of machines (years)	Median age of machines (years)	Range (years)
Plain Film (Analogue, CR)	9	8	1 to 33	12	12	3 to 20
Plain Film (Digital)	10	7	4 to 122	6	5	1 to 15
CT	3	3	1 to 18	6	6	1 to 10
MRI	3	2	1 to 15	7	7	1 to 14
US	16	14	2 to 66	5	4	1 to 11
NM	2	2	1 to 14	9	9	1 to 23
DEXA	1	1	1 to 7	7	8	1 to 18
PET	1	1	1 to 2	4	4	1 to 8
Fluoroscopy	3	2	1 to 16	8	8	2 to 16
Mammography	4	3	1 to 13	6	6	1 to 17
Cath Labs	2	2	1 to 10	6	7	1 to 13

Scanners/ Machines: age profiles

- The average age of MR, PET and Mammography machines remains the same as the means reported in 2015/16.

- The average ages of CT scanners and plain film x-ray machines have risen by one year. Equipment can be observed to be aging in response to both increased design life and pressures on equipment budgets.

Modality	Average age	
	2015/16	2016/17
MR	7	7
CT	5	6
PET	4	4
PF analogue	11	12
PF digital	5	6
Mam	6	6

Equipment age (in years by) modality - Catheter Laboratory / Interventional Cardiology

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
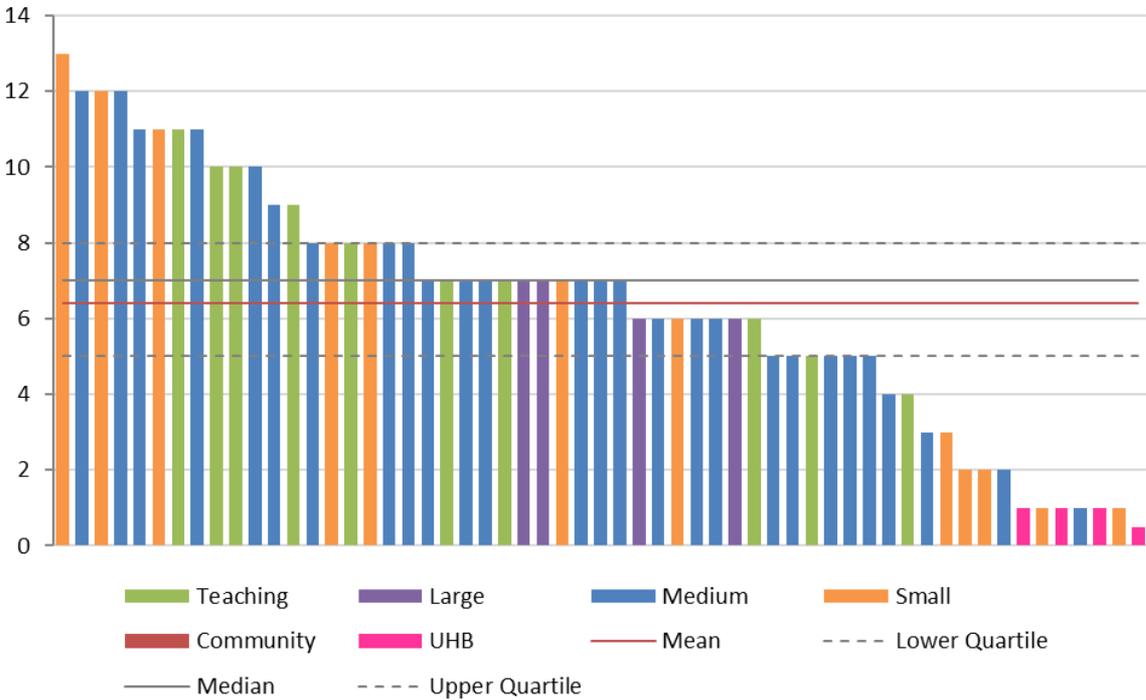
# Scanners/ Machines by modality per 100,000 outpatient attendances

- As Radiology is predominantly an ambulatory service, many charts in this report have been benchmarked per 100,000 outpatient attendances.

- On average, participants reported 14 pieces of equipment per 100,000 outpatient attendances.

- Provision ranged from 4 to 40 machines per 100,000 outpatient attendances.

- These benchmarks can be influenced by the denominators used (e.g. Trusts / HBs with low numbers of outpatient attendances will appear to have high equipment levels on this metric).

Number of scanners / machines by modality - Total Equipment per 100,000 outpatient attendances

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
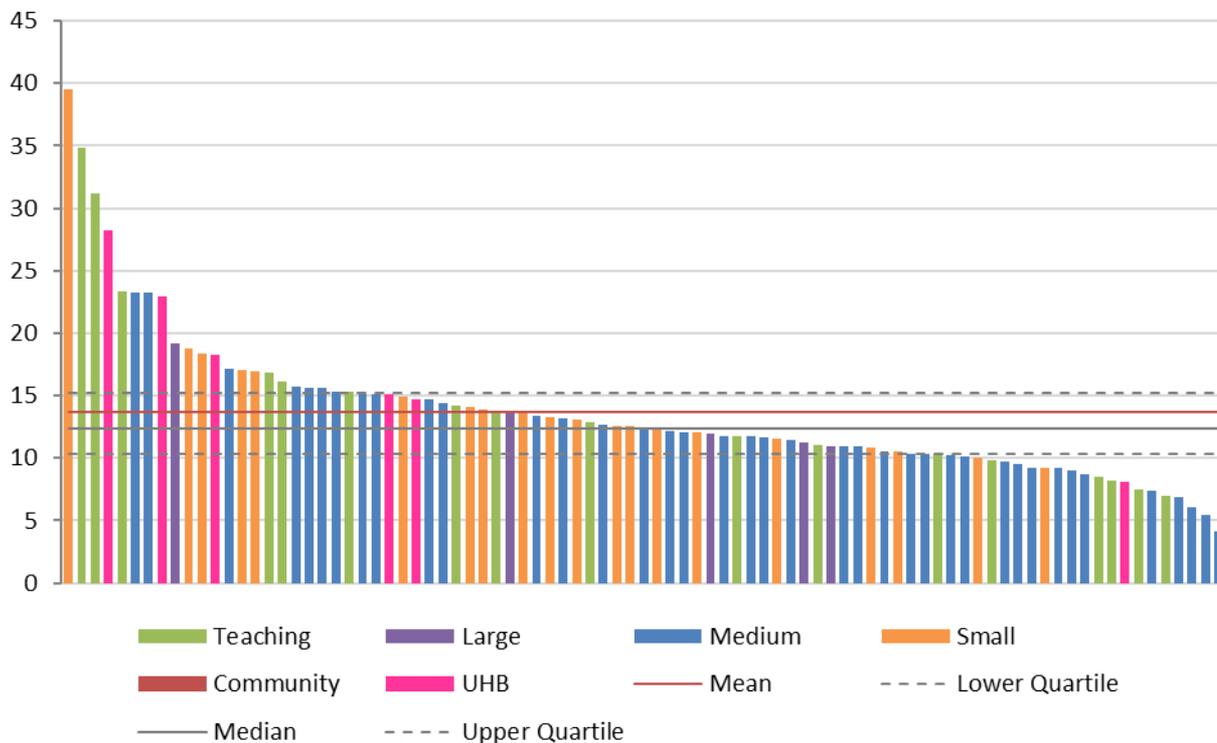
Plain Film: Analogue vs Digital

- For the second time since 2012/13, the rates of analogue versus digital equipment has changed, with the majority of participants reporting provision of digital x-ray equipment compared to 41% in 2012/13.
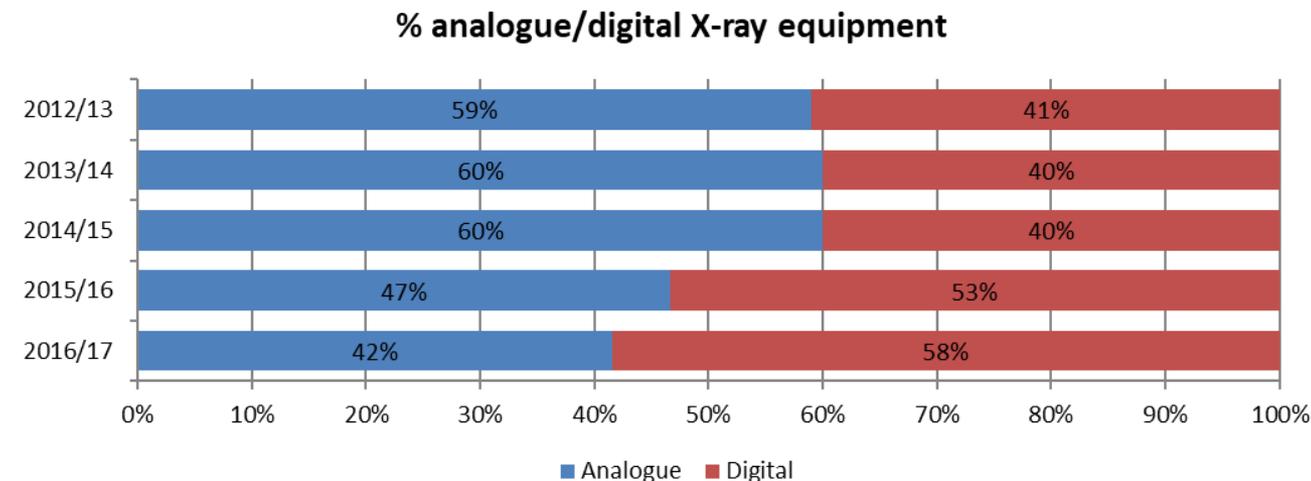
- The percentage of respondents reporting their plain film equipment to be completely digital is unchanged from last year, at 19%. The rate of fully analogue equipment has decreased from 8% in 2015/16 to 5% this year. Three quarters of providers confirmed that plain film equipment was reported to be a mix of analogue and digital.

% analogue/digital X-ray equipment

Year	Analogue	Digital
2012/13	59%	41%
2013/14	60%	40%
2014/15	60%	40%
2015/16	47%	53%
2016/17	42%	58%

■ Analogue   ■ Digital

% plain film equipment profile

Year	100% Analogue	100% Digital	Digital/Analogue Mix
2012/13		8%	92%
2013/14		15%	85%
2014/15	7%	15%	78%
2015/16	8%	19%	73%
2016/17	5%	19%	76%

■ 100% Analogue   ■ 100% Digital   ■ Digital/Analogue Mix

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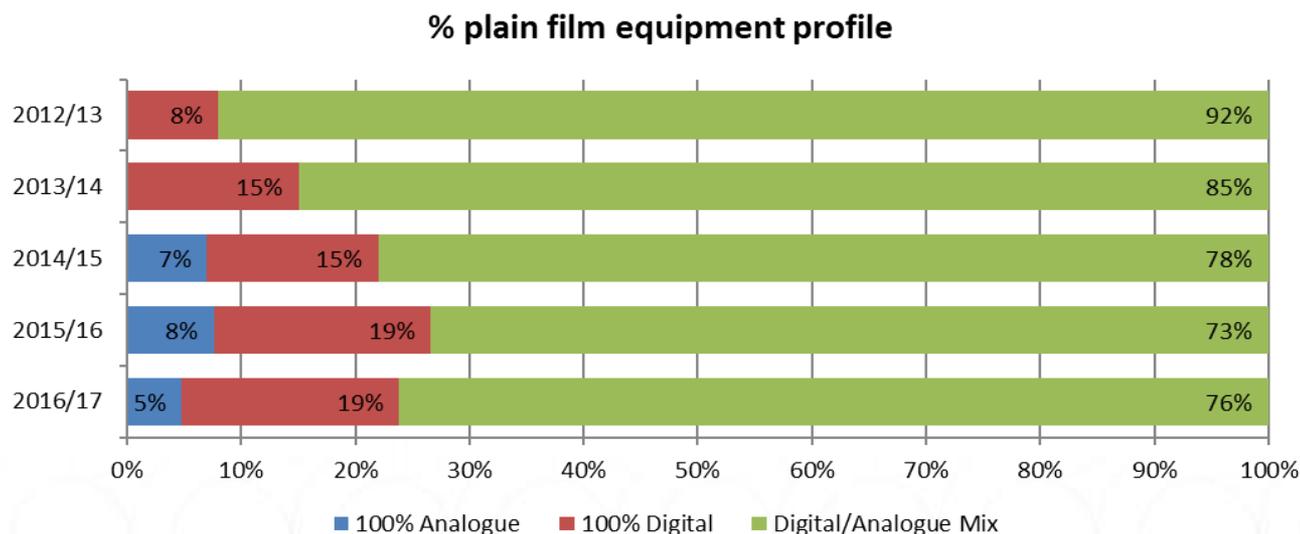
Equipment availability rates by modality

- Participants were asked about equipment utilisation rates across their organisation. The question here relates to the percentage of available hours per week that machines are in use (where 100% = 168 hours per week). This links closely to a number of factors including; the provision of an A&E service, the availability of staffing, and local shift and on-call systems.

- Please refer to the NHSBN toolkit for further detail and to see the relative position of your own organisation.

| Modality	Mean Average availability of machines	Median availability of machines	Range
Plain Film (Analogue, CR)	55%	44%	15% to 100%
Plain Film (Digital)	67%	63%	19% to 100%
CT	74%	68%	21% to 100%
MRI	54%	50%	27% to 100%
Ultrasound	40%	32%	20% to 100%
Nuclear Medicine	25%	24%	9% to 95%
DEXA	21%	22%	5% to 100%
PET	33%	27%	5% to 100%
Fluoroscopy	26%	42%	3% to 100%
Mammography	25%	24%	4% to 92%
Cath Labs	49%	33%	7% to 100%

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Equipment availability rates: Commentary

- There is a strong link between increased availability and A&E attendance, with US and plain film being the most utilised modalities for the A&E patient cohort.

- Since 2015/16 the following modalities have increased utilisation: Plain film (digital), Cath Lab, Fluoroscopy, PET, Mammography, DEXA.

- Utilisation has remained the same in: CT, MRI, Nuclear Medicine.

- Utilisation has reduced in Plain Film (analogue) and ultrasound.

Equipment availability rates 2016/17

Modality	Rate
CT	74%
Plain film(digital)	67%
Plain film(Analogue, CR)	54%
MRI	53%
Other	52%
Catheter Labs	49%
Fluoroscopy	41%
Ultrasound	39%
PET	34%
Nuclear Medicine	25%
Mammography	25%
DEXA	21%

Equipment Ownership and Funding

Chart showing equipment ownership and funding by year:

Year	Average % of scanners and machines owned by Trust	Average % of scanners and machines leased by Trust	Average % of scanners and machines used under a managed equipment service by Trust
2013/14	73%	12%	15%
2014/15	81%	11%	8%
2015/16	80%	10%	10%
2016/17	81%	8%	11%

Legend:
- ■ Average % of scanners and machines owned by Trust
- ■ Average % of scanners and machines leased by Trust
- ■ Average % of scanners and machines used under a managed equipment service by Trust

- The overall levels of equipment ownerships and funding remain at similar rates seen in the last two years. The average percentage of equipment owned by trusts remains stable at 81%, as does the percentage of scanners and machines used under a managed equipment service by the trust.

- The average rate of scanners and machines leased by providers has decreased for the fourth consecutive year, from 12% in 2013/14 to 8% in 2016/17.

Technology: PACS

- Many organisations have, or are in the process of upgrading their PACS. The market split amongst participants for 2015, 2016 and 2017 is shown below. The market share differs slightly to last year.

Year	Accenture (UK) Limited	Agfa Healthcare UK Limited	Carestream Health UK Limited	FujiFilm UK Limited	GE Medical Systems Limited	Healthcare Software Systems Limited	Insignia Medical Systems Limited	Philips Electronics UK Limited	Sectra Limited	Siemens Plc	Other
2014/15	12%	18%	11%	9%	21%	0%	14%	4%	7%	1%	3%
2015/16	8%	20%	16%	6%	20%		10%	0%	13%	3%	4%
2016/17	3%	16%	15%	9%	26%	0%	13%		8%	2%	3%

Legend:
- Accenture (UK) Limited
- Agfa Healthcare UK Limited
- Carestream Health UK Limited
- FujiFilm UK Limited
- GE Medical Systems Limited
- Healthcare Software Systems Limited
- Insignia Medical Systems Limited
- Philips Electronics UK Limited
- Sectra Limited
- SolitonIT Limited
- Siemens Plc
- Other

Technology: RIS

- The spread in the Radiology Information System (RIS) market shows less variation than the PACS market, with Healthcare Software Systems Limited providing the majority of participant's services (63%). This figure reflects levels seen in 2014/15.

- Market share will be monitored on an ongoing basis in future benchmarking reports as PACS and RIS replacement strategies emerge.

	2014/15	2015/16	2016/17
Accenture (UK) Limited	5%	6%	3%
Agfa Healthcare UK Limited	3%	4%	2%
Carestream Health UK Limited	4%	6%	3%
GE Medical Systems Limited	1%	3%	6%
Healthcare Software Systems Limited	63%	56%	63%
Insignia Medical Systems Limited		1%	1%
Philips Electronics UK Limited	0%		
SolitonIT Limited	8%	10%	9%
Siemens Plc	0%	0%	0%
Other	15%	13%	13%

Legend:
- Accenture (UK) Limited
- Agfa Healthcare UK Limited
- Carestream Health UK Limited
- FujiFilm UK Limited
- GE Medical Systems Limited
- Healthcare Software Systems Limited
- Insignia Medical Systems Limited
- Philips Electronics UK Limited
- Sectra Limited
- SolitonIT Limited
- Siemens Plc
- Other

Technology: Reporting Methods

- The use of VR in Radiology departments increased between 2014 and 2016.
  - 2014 – 61%
  - 2015 – 71%
  - 2016 – 84%

- In 2017, it was reported that 81% of all examinations were reported using voice recognition software.

- Half of respondents this year reported that 90% or more of examinations are reported through VR, and a proportion of participants confirmed that 100% of examinations are reported using VR software.

- In comparison to this, Digital Dictation software accounted for 29% of total examinations, on average.

% of total examinations reported using Voice Recognition software?

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
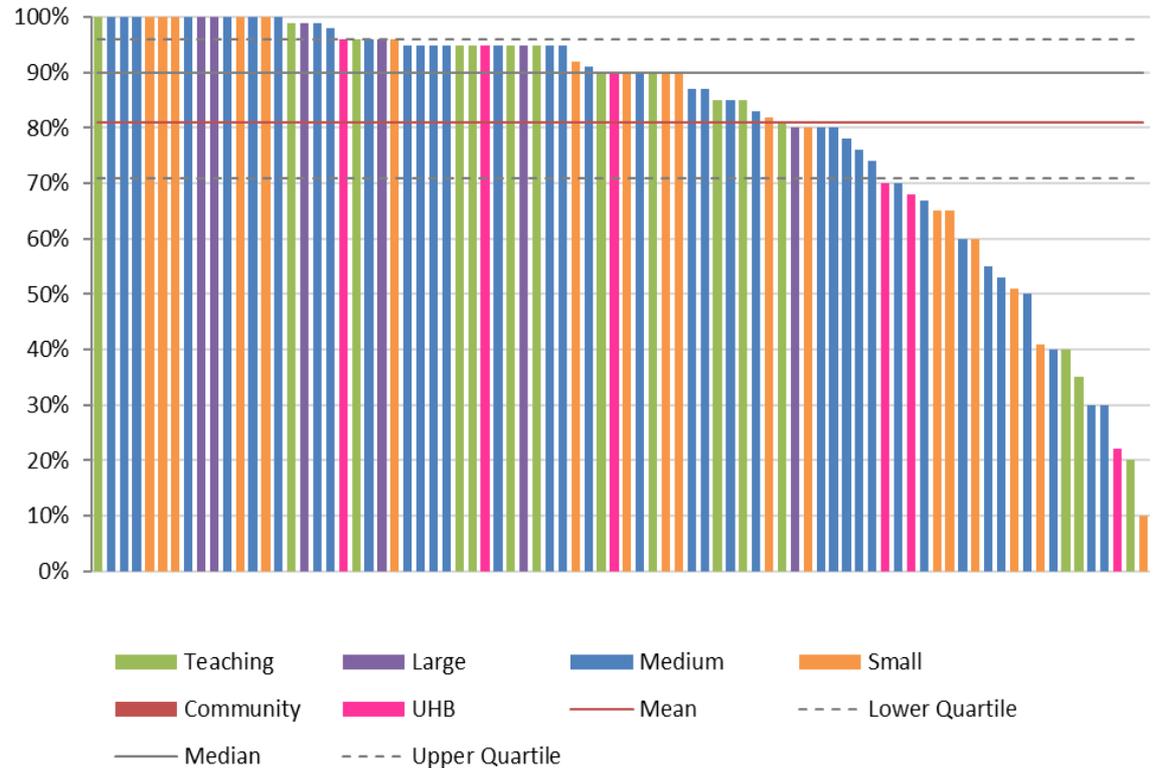
Access to Radiology Services

Changes in demand

- The below chart outlines the overall growth in Radiology examination rates. The data relates to an NHS wide level and covers 2012/13 to 2016/17. Over the last six years of the Radiology benchmarking project, a consistent in increase in demand levels has been evident.

- The largest year on year growth is seen in X-Ray (4%), CT (8%), MRI (7%) and US (7%). In 2015/16, activity levels increased overall by 5%. In 2016/17, overall levels increased by 4% from the last year.
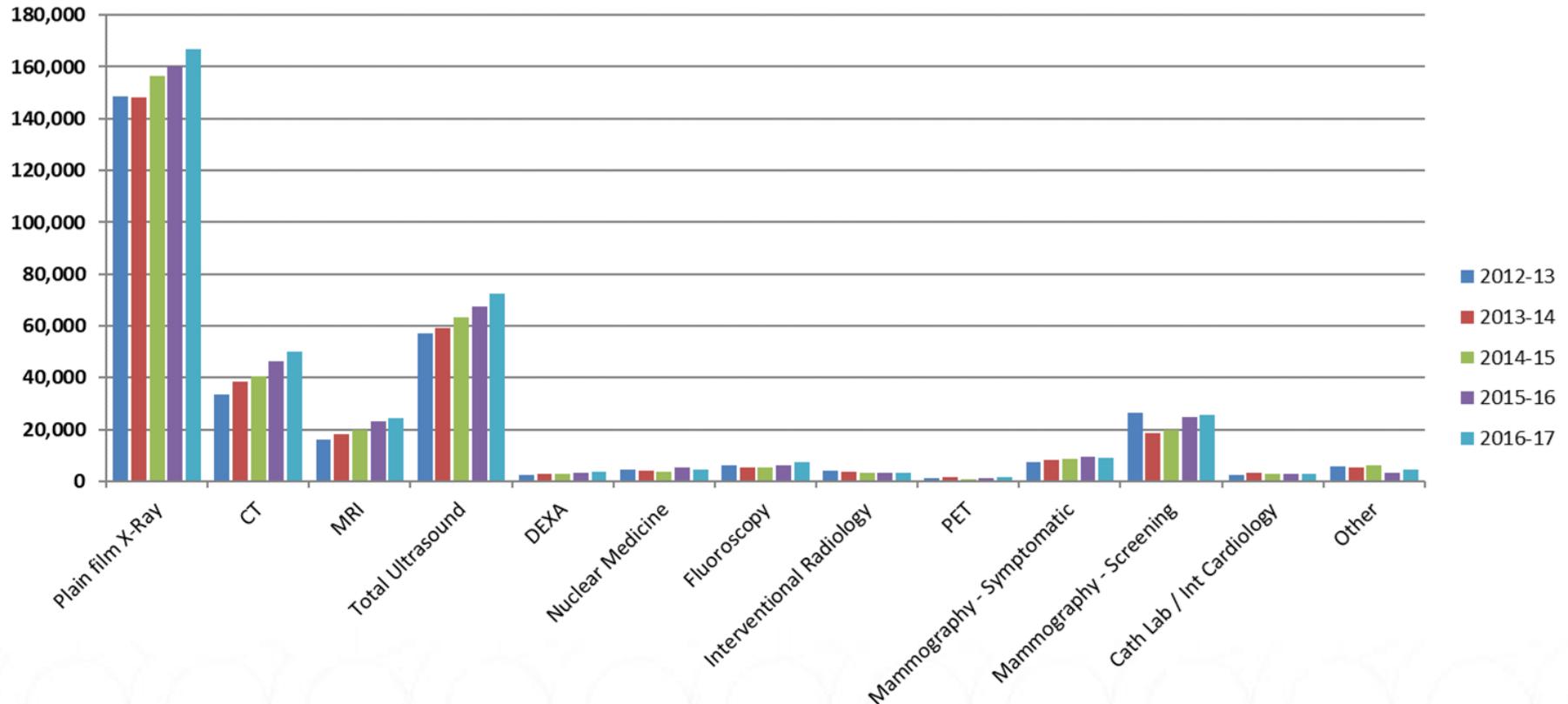
In-patient waiting times

- In-patient (IP) waiting times are categorised by priority being considered to be clinically "urgent" or "routine".

- Median waiting times for urgent inpatients have remained stable over the last 12 months for Plan film X-Ray, CT, MRI, Ultrasound and Nuclear Medicine.

- DEXA, PET and Catheter Laboratory/Interventional Cardiology urgent waits have decreased in 2016/17.

- Routine waiting times have also remained stable for the majority of modalities this year. Plain film routine waits, however, have increased slightly, and the wait for a routine PET scan has decreased from 3 days in 2015/16 to 2 days in 2016/17.

Modality	Median "urgent" wait (hours) 2016/17	Median "urgent" wait (hours) 2015/16	Median "routine" wait (days) 2016/17	Median "routine" wait (days) 2015/16
Plain Film	2	2	0.42	0.33
CT	4	4	1	1
MRI	12	12	2	2
US	6	6	2	2
NM	24	24	2	2
DEXA	0	6	1	1
PET	21	24	2	3
Fluoroscopy	9	6	2	2
Cath Labs	4	6	2	2

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Plain Film waiting times

Percentage of routine inpatients examined on same day of request

- The data for 2016/17 shows that, on average, 87% of Plain film X-Ray examinations are processed on the same day that the request is received.

- 11% of respondents confirm that 100% of inpatients are examined on the same day as the request for plain film X-Ray, whilst 14% of organisations process three quarters or less of requests on the same day.

- The median position for this metric is 91%. This is a slight deterioration on the 92% level reported in 2015/16.

- Requests not processed on the same day are most frequently explained by timing issues e.g. requests being received late in the out of hours period which may instead be scheduled for the following day.

Plain film X-Ray - Waiting times - percentage of routine inpatients examined on same day as request received

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
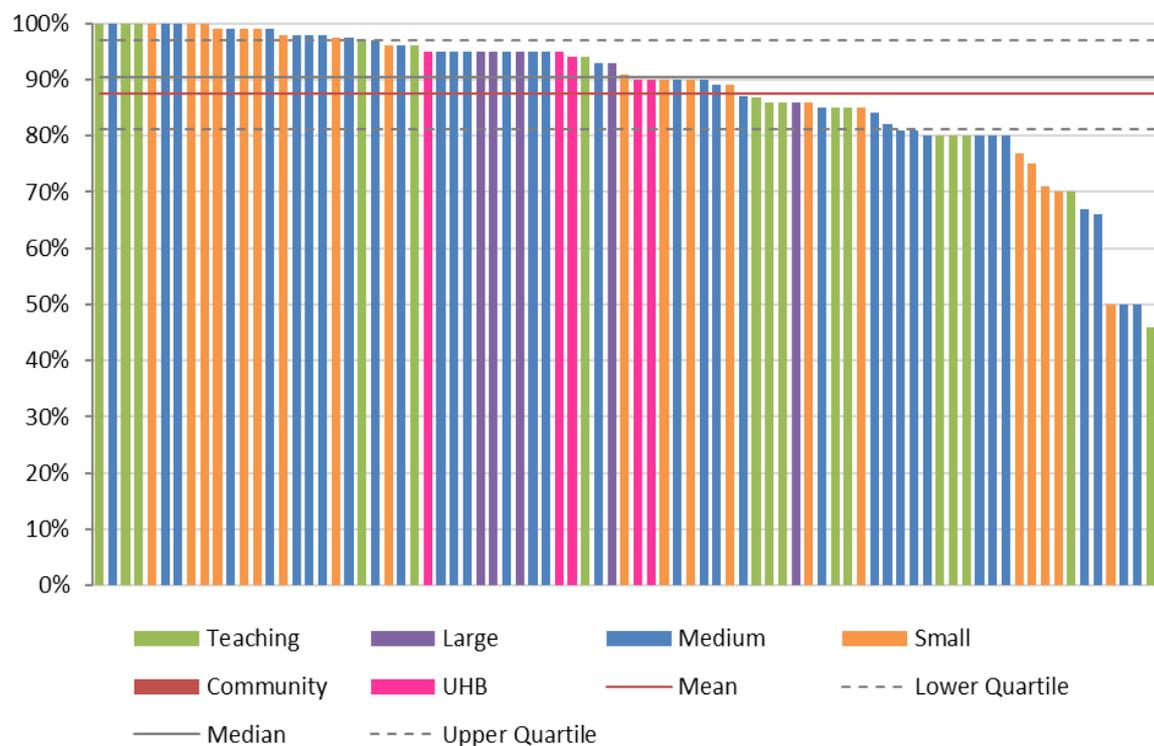
CT Waiting Times

Waiting times for routine inpatient CT scans

- The wait for an inpatient to undergo a routine CT scan is a key element of pathways for many inpatients.

- Data this year suggests a median wait of 1 day for routine inpatient CT scans, with a longer mean position of 2 days. This figure has not changed since 2016.

- Many organisations reported the ability to support a same-day request for CT routine inpatient scans, with the longest wait at 6 days.

- 9 providers confirmed average waits of over 2 days, compared to 15 providers last year. This suggests that some Trusts are still struggling to optimally support requests for routine inpatient scans.

CT - Waiting times - routine inpatients (days)
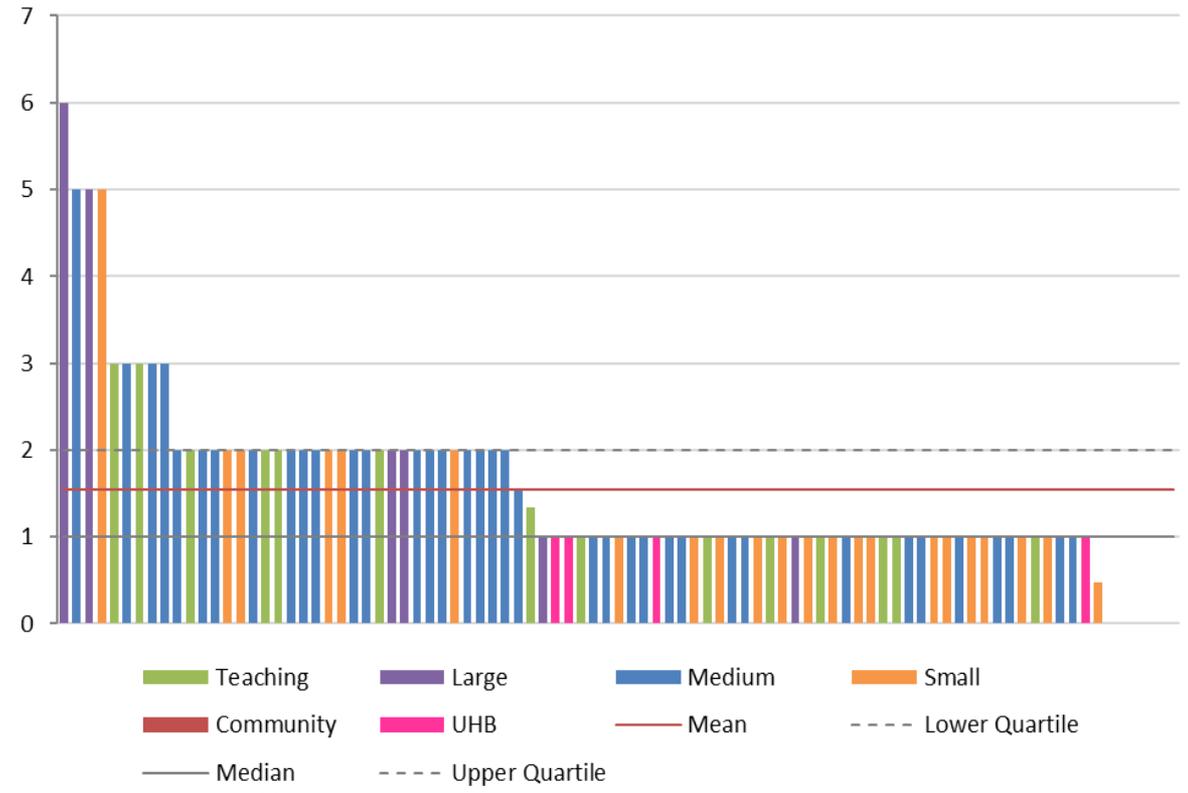
Outpatient waiting times

- Out-patient (OP) waiting times are categorised by priority and referral route. "Fast track" refers to patients considered to be clinically suggestive of cancer symptoms; "direct access" refers to GP-patient waits and "routine" captures the standard NHS diagnostic waiting time. The standard for "routine" access is 6 weeks. The below table outlines positions for 2016/17.

- For further detail and to view the relative position of your own organisation, please refer to the NHSBN Toolkit.

Modality	Median "fast track" wait (weeks)	Range (weeks)	Median "direct access" wait (weeks)	Range (weeks)	Median "routine" wait (weeks)	Range (weeks)
Plain Film	0	Same day to 5	0	Same day to 3.9	0.14	0 to 10
CT	2	1 to 6	4	0 to 11	5	2 to 11
MR	2	0 to 7	5	0 to 8	6	2 to 12
US	2	0 to 6	5	0 to 8	6	1 to 23
NM	2	0 to 4	3	0 to 23	4	1 to 23
DEXA	2	0 to 4	4	0 to 7	4	0 to 7
PET	1	0 to 2	0	0 to 4	2	0 to 6
Fluoroscopy	2	0 to 5	3	0 to 8	4	0 to 18
Mammography	N/A	N/A	1	0 to 6	2	0 to 14
Cath Labs	1	0 to 5	0	0 to 3	4	0 to 14

MRI Waiting times

Waiting times for routine outpatient MRI scans

- Data from the benchmarking project confirms that demand for MR scans has increased by over two fifths since 2012/13.

- The median wait remains at 6 weeks for routine outpatients, confirming the difficulty of achieving the 6 week waiting time target against increasing demand for this service.

- The number of participants reporting breaches of the six week wait for routine outpatient MRI scans has decreased in absolute numbers to 10 Trusts this year (12 last year).

- The range for this metric was from 2 to 12 weeks in 2016/17. compared to 1 to 16 weeks in 2015/16.

MRI - Waiting times - routine outpatients (weeks)

Ultrasound waiting times

Waiting times for routine outpatient non obstetric ultrasound

- Average waits for non obstetric ultrasound scans average 6 weeks (median 6 weeks). This has increased from 5 weeks in 2016.

- The longest wait for this type of routine outpatient scan was 23 weeks, compared to a maximum of 20 weeks in 2015/16.

- Last year, 8 respondents confirmed average waiting times above the 6 week standard, with waits at 7 weeks or longer. This year, the absolute number of participants breaching this target has increased to 15.

- Activity data shows increases of over one fifth in Ultrasound activity since 2012/13.

Ultrasound - Non Obstetric - Waiting times - routine outpatients (weeks)

Waiting list management

- The average rate of breach of the six week waiting time target is detailed below for a number of modalities. In addition, the table outlines the number of participants who declared that breaches accounted for 1% of less of waits.

- Average breaches have consistently decreased for DEXA, MRI and Non-Obstetric Ultrasound scans. The average breach this year for DEXA has fallen considerably, from 16% in 2015/16 to 2% in 2016/17.

- The number of participants declaring breaches of 1% or below has also increased compared to 2015/16.

Modality	Average % breach per participant				Number of participants declaring breaches of 1% or less			
	2013/14	2014/15	2015/16	2016/17	2013/14	2014/15	2015/16	2016/17
CT	2%	2%	3%	2%	13	12	15	13
MR	3%	4%	5%	3%	18	19	29	17
Ultrasound (Non-obs)	2%	6%	5%	3%	13	11	21	13
DEXA	1.3%	13%	16%	2%	4	2	6	5

Access: outsourcing examinations

- The mean position shows that 4% of total examinations in Radiology services were outsourced in 2016/17.

- In terms of numbers, this equates to a mean of 8,860 total examinations outsourced in 2016/17 (7,313 last year), with a range between 150 and 84,602.

- Providers in Wales have the lowest overall outsourcing rates.

Total number of outsourced examinations

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
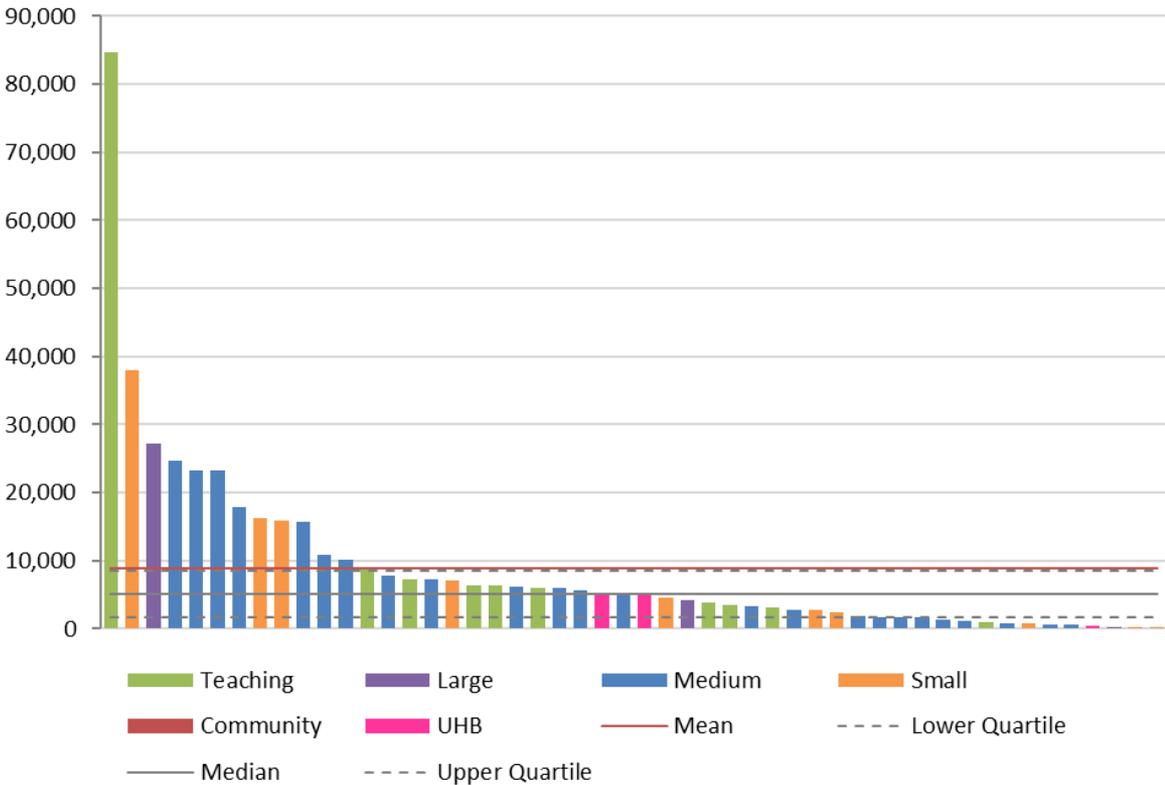
Demand management

- 51% of participants this year have developed specific demand management schemes or protocols within the radiology department. 36% of respondents confirmed that demand management initiatives had succeeded in limiting inappropriate demand or impacted on growth rates in demand for Imaging.

- The average department that used demand management schemes in 2016/17 refused 12,588 requests. This marks a notable increase on the rates reported in 2015/16, which averaged 5,600 refused requests per provider.

- Examples of successful demand management schemes include –
  - Vetting forms
  - On-going capacity and demand modelling
  - Review of internal protocols and guidelines
  - Multi-disciplinary teams
  - Collaboration with GPs

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Activity

Examination by patient type

- The split of examinations by patient type has remained proportionately consistent during the last 12 months.

- There has again been a decrease in the number of patient activity being generated from GP / Direct Access (21% this year, 21.8% in 2016).

- Out Patient activity has increased from 37.6% last year to 39.71% in 2016/17.

- Inpatient activity continues to fall year on year in proportion to ambulatory demand, and now amounts to 17% of total examinations.

- Research and private activity continue to be a low sources of activity amongst participants.

Pie chart labels: 0.1%, 2.5%, 17.0%, 19.5%, 0.2%, 21.0%, 39.7%

Legend:
- Inpatient
- Out Patient
- GP / Direct Access
- Private
- A&E
- Research
- Other

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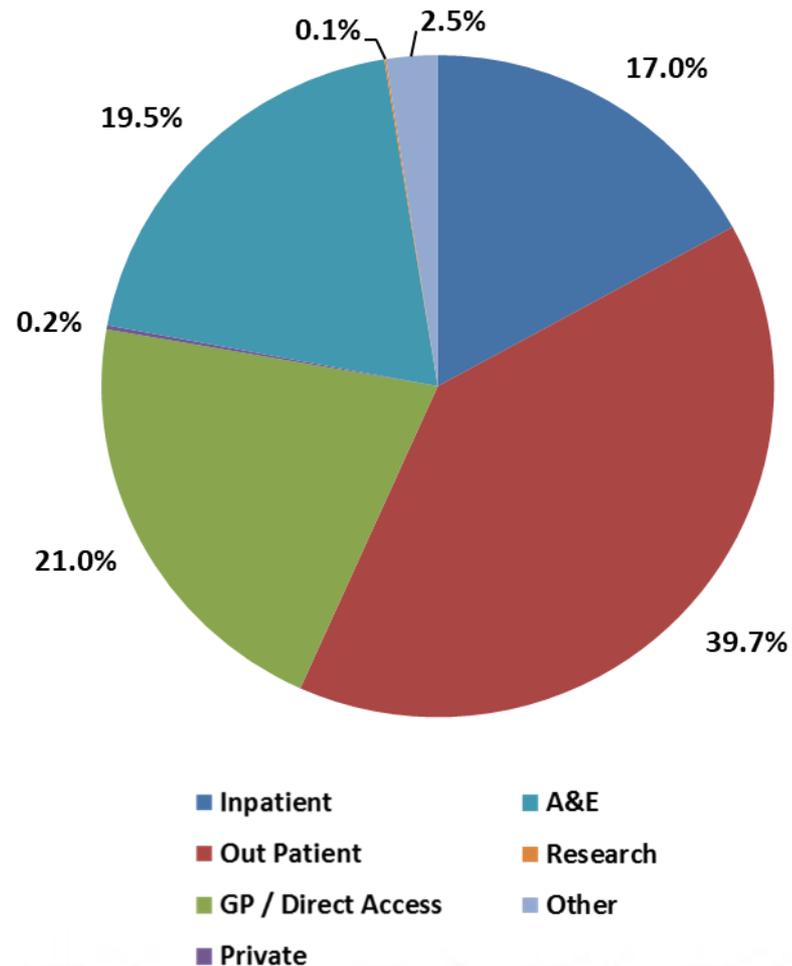
Activity by Modality

- Ongoing increases in activity levels are evident in the four main modalities; plain film, CT, MRI, and Ultrasound.
- DEXA and Interventional work also shows an increase, but from a much lower base.

Modality	Mean Average Examinations	Median	Range
Plain Film	167,291	159,716	17,571 to 627,582
CT	50,219	47,741	4,784 to 202,014
MR	24,303	21,093	4,092 to 87,443
US (total)	69,596	64,984	686 to 170,045
NM	4,630	3,722	382 to 33,998
DEXA	3,517	3,070	716 22,396
PET	1,837	1,102	324 to 6,506
Fluoroscopy (total)	5,956	5,263	64 to 26,679
Interventional (total)	3,060	1,861	1 to 17,381
Mammography (screening)	25,477	22,926	92 to 72,508
Mammography (symptomatic)	9,221	8,855	10 to 32,052
Cath Labs	2,897	1,725	17 to 12,490

For further detail and to see the relative position of your own organisation, please refer to the NHSBN Toolkit

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CT scans for A&E patients

- There is a clear and expected correlation between the number of patients attending A&E and the number of CT scans performed by an organisation. CT scan activity increases in line with A&E attendances. The overall trend can be seen on the chart opposite, although there are a few exceptions.

- Teaching providers (shown in green) show the most variation on the chart, reflecting variation in decisions to undertake CT scans. Medium sized Trusts (blue) demonstrate a strong linear relationship between A&E attendances and CT scanning rates.

- Small providers also vary in decisions to undertake CT scans within departments, and are reflected amongst the lowest levels of activity.

- UHBs demonstrate a strong linear relationship and close overall fit with NHS-wide scanning levels.

A&E Impact on Radiology
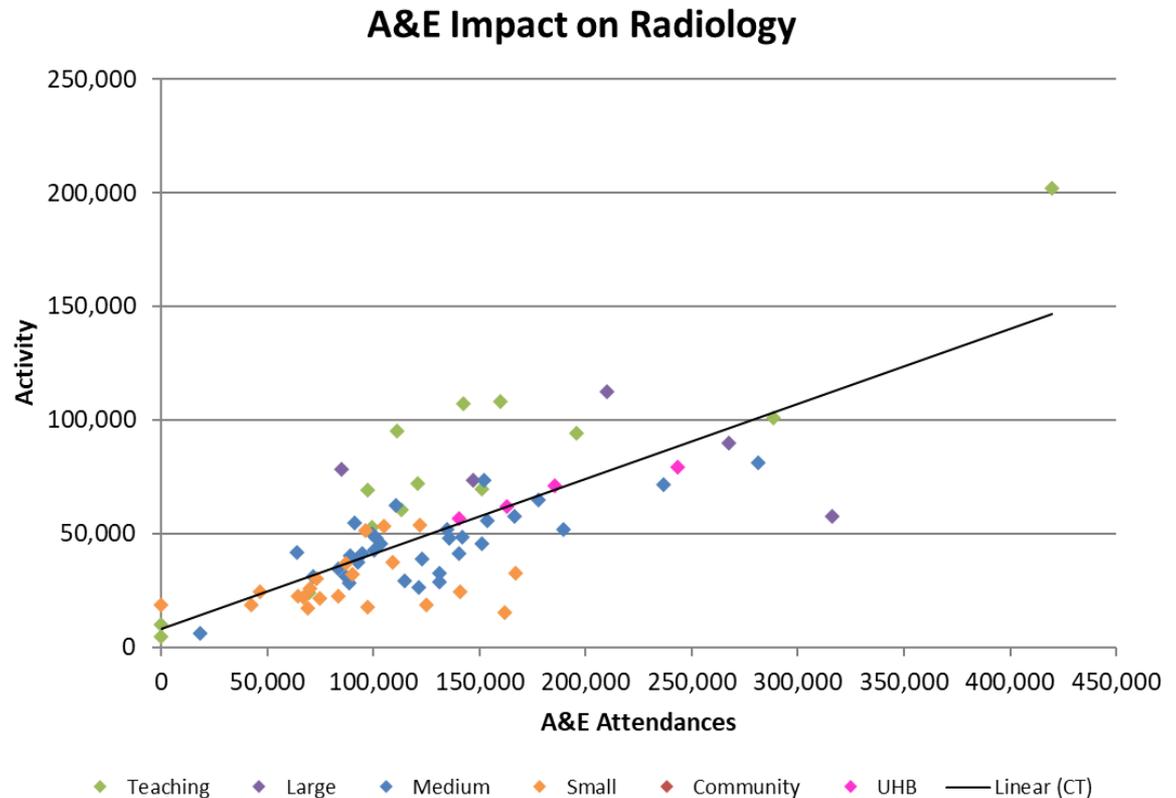
CT Scans for inpatients & outpatients

- The charts below show CT activity with inpatient (bed days) and outpatient attendances denominators. The variation shown is largely consistent with the variation illustrated in the A&E CT case study on the previous page.

- An average of 18,509 CT scans were carried out per 100,000 occupied bed days. CT activity per 100,000 outpatient attendances averaged 10,090.

- Some of the variation will be influenced by; the number of scanners in place, extent of sub-specialty provision, research activity and preference of diagnostic choice (e.g. CT Urogram over PF IVU).

Examinations by modality - CT per 100,000 occupied bed days
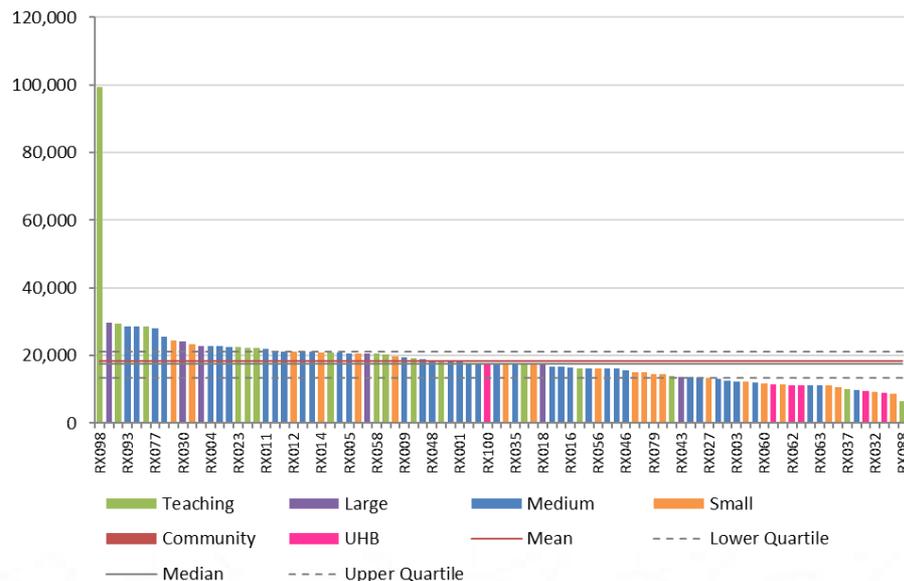
Examinations by modality - CT per 100,000 outpatient attendances
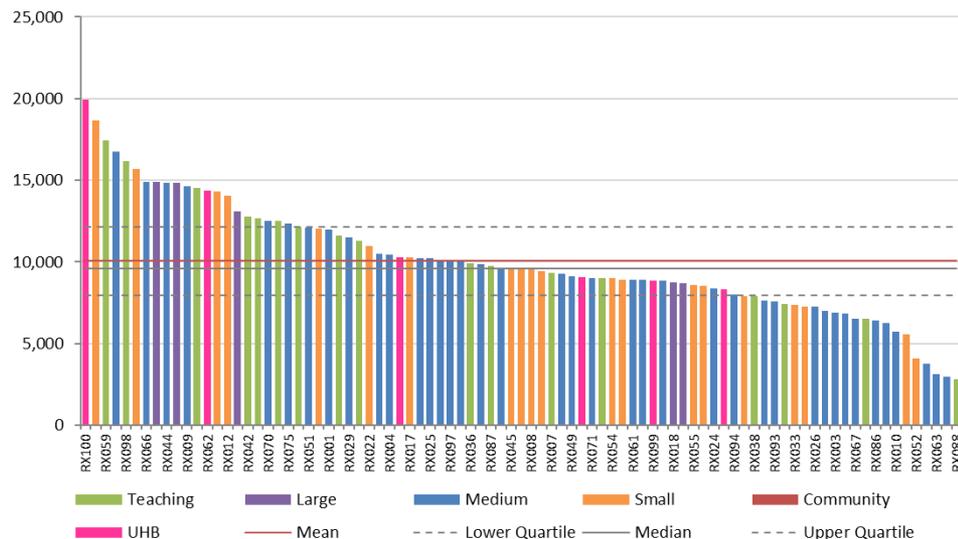
Examinations by specialty

- Demand for the 15 highest volume specialties is shown on this chart when benchmarked per 100,000 occupied bed days. The values shown are aggregated for all contributors.

- Accident and Emergency and GP (direct access) are the specialties with the highest Radiology demand, followed by Trauma, other medical specialties, and General Surgery. This is in line with the proportion of activity levels seen in 2015/16.

Examinations by specialty per 100,000 occupied bed days

NHS Benchmarking Network
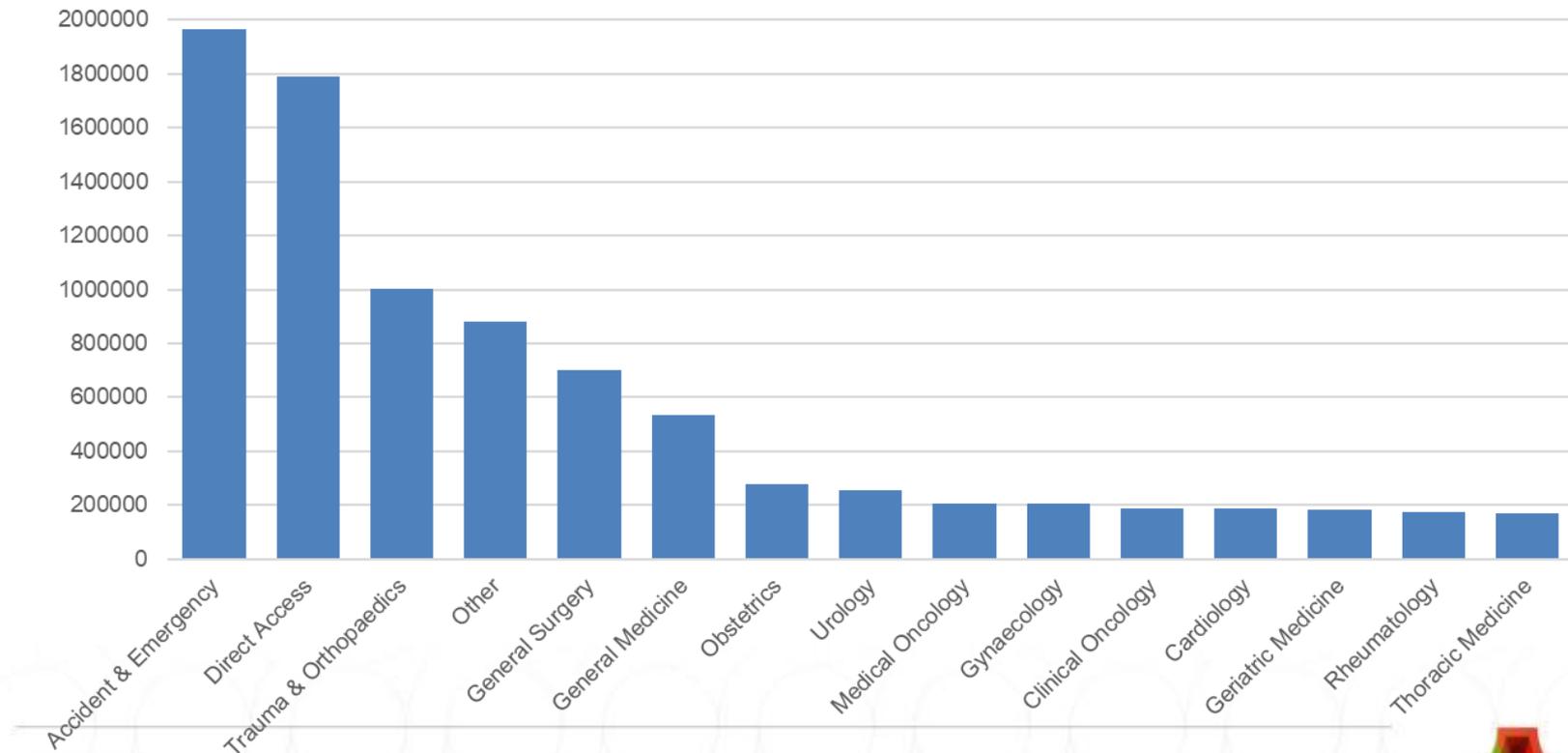
Examination growth by speciality

- Data in 2015/16 showed growth in activity levels for most modalities. This year an increase is also shown, however more modalities in 2016/17 reflect decreases in activity. Last year, a decrease was seen only in Interventional Radiology. This year, a fall in overall activity is shown for Nuclear Medicine, and Mammography (symptomatic). This may be due, in part, to differences in the participant mix in this year's benchmarking project.

- Overall growth rates across all modalities were 4% in the last 12 months, compared to a 5% growth the year before.

% Growth of activity 2015/16 to 2016/17 by modality
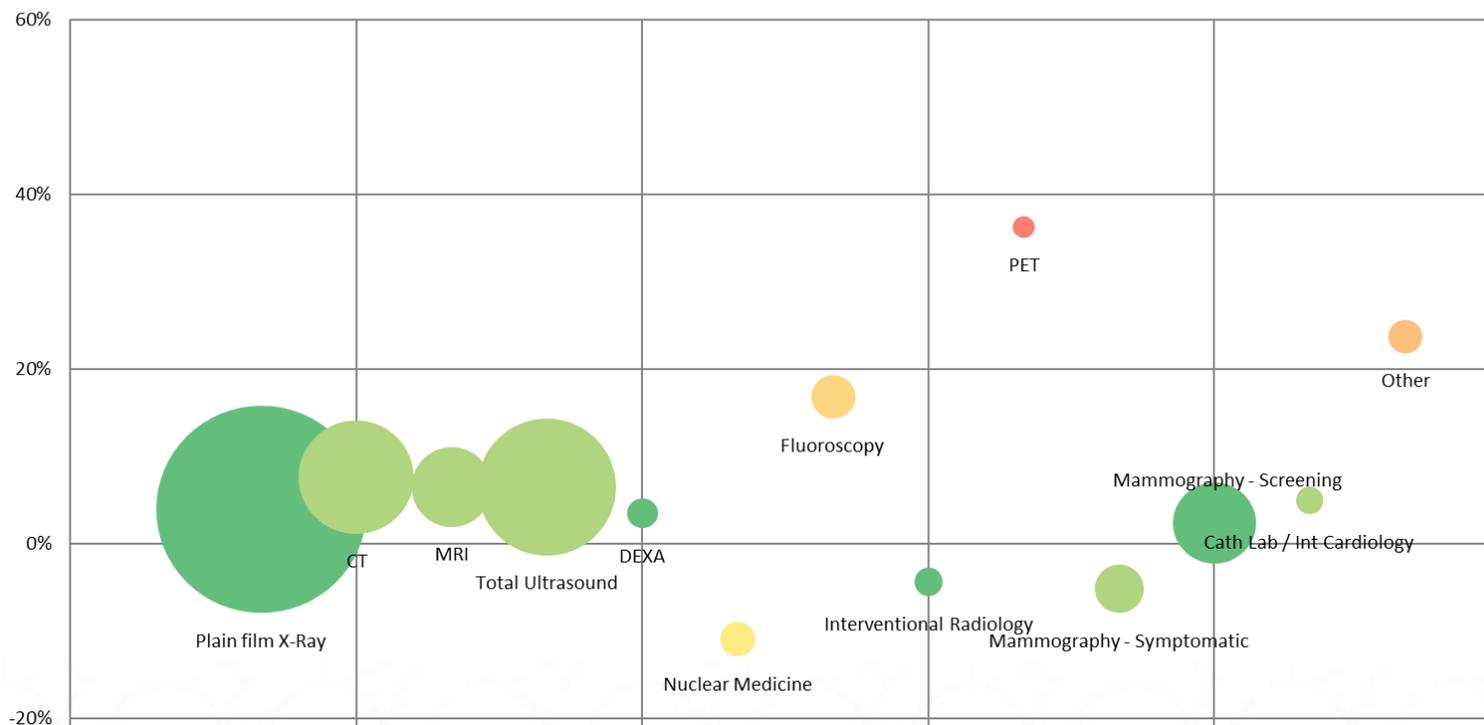
Total Examinations per WTE

- Examinations per total Radiology staff (WTE) uses the total WTE staffing reported for Radiology departments across all professional disciplines and administrative staff.

- There has been minimal change in this figure in the last three years:

  - 2016/17 – 1,713 examinations per staff WTE
  - 2015/16 – 1,719
  - 2014/15 – 1,718

- The chart demonstrates that Small and Medium providers tend to dominate the left-hand side of the chart, indicating higher levels of examinations per total workforce WTE. Teaching hospitals have lower activity when benchmarked per total Radiology staff. A range of factors will influence this, including case-mix and teaching commitments.

Examinations by modality - Total examinations per total radiology staff (inc. A&C, management)

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
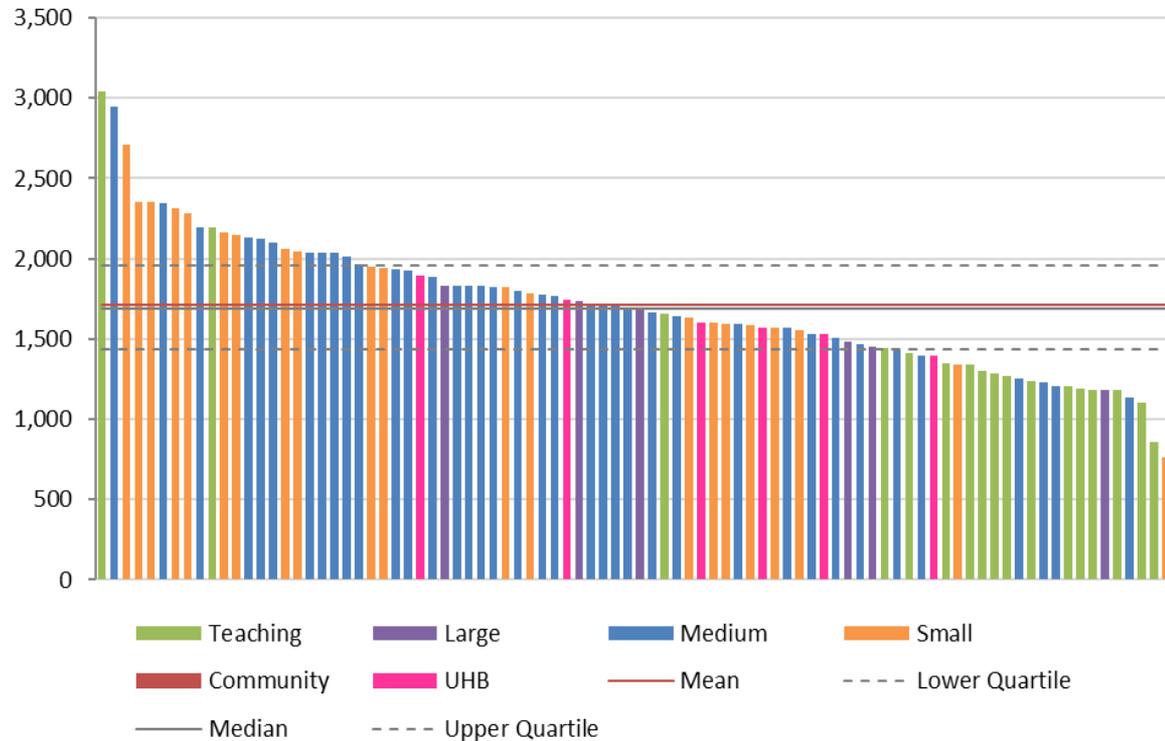
Radiographer Productivity

- Examination levels can be benchmarked per staff type as well as for total workforce. The chart opposite shows the level of total examinations benchmarked per Radiographer.

- On average, departments conduct 4,278 examinations per Radiographer.

  - 2016 – 4,228
  - 2015 – 4,278
  - 2014 – 4,205
  - 2013 – 4,387

- There have been very small changes in productivity between years, which can be explained by a number of factors, including a marginal increase in gross staffing levels alongside an increase in total examinations performed.

Examinations by modality - Total examinations per radiographer

NHS Benchmarking Network
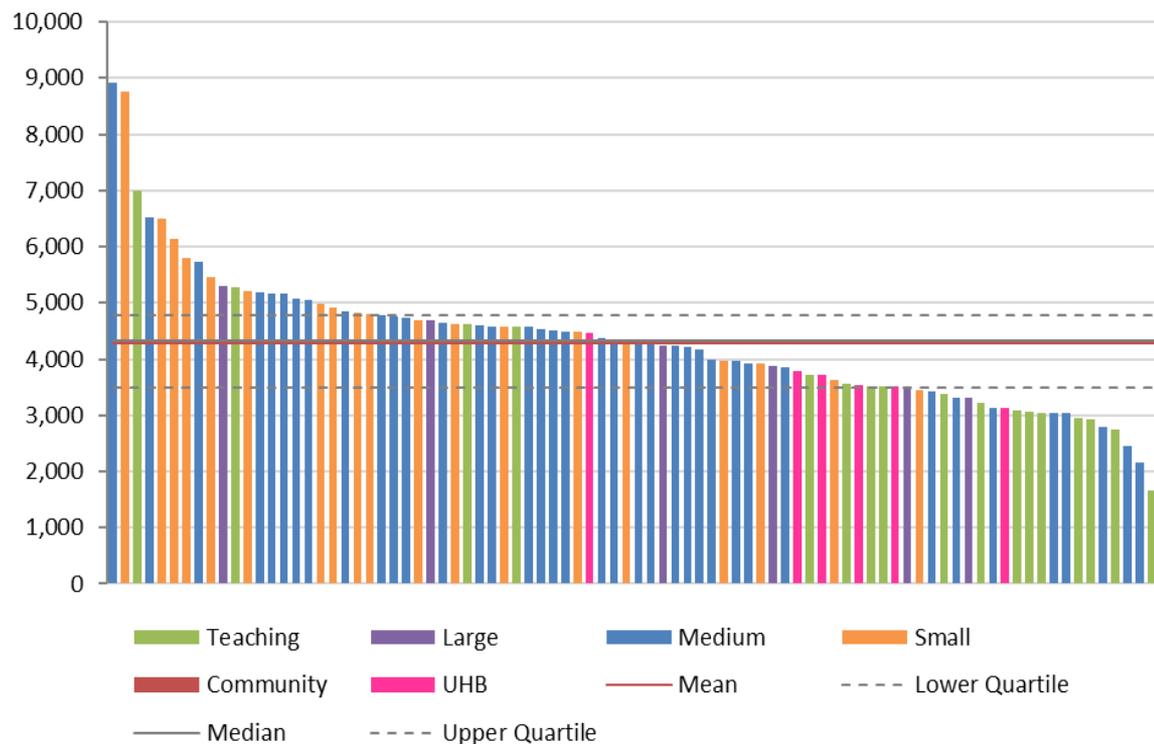
Total Examinations per consultant

- Total examinations per Consultant Radiologist reflect mean levels of 16,401 this year. Activity for this staff type has decreased for the third consecutive year:

  - 2016 – 16,570
  - 2015 – 18,671
  - 2014 – 17,307

- The highest examination rates can be seen in small and medium sized providers, where case-mix may be less complex and teaching commitments lower than in teaching hospitals.

- Overall Consultant staffing levels have increased over the life of the project, but at a consistent rate that has not impacted on the number of posts that are identified as being vacant.

Total examinations per consultant radiologist

Legend: Teaching, Large, Medium, Small, LHB, Mean, Lower Quartile, Median, Upper Quartile
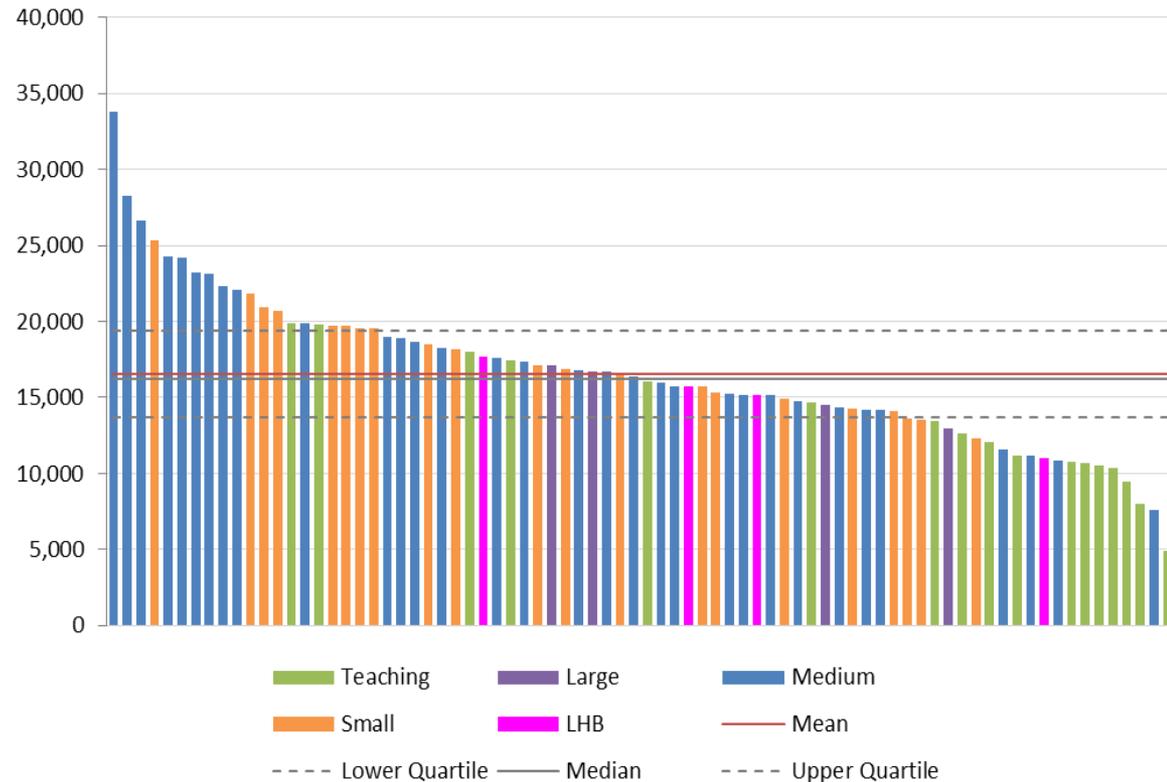
Activity: Procedures

Interventional Radiology

- The correct and consistent calculation of procedural activity continues to pose problems for the NHS. This may indicate a wider definitional compliance issue with NICIP codes across the NHS.

- Members are encouraged to download the National Interim Clinical Imaging Procedures (NICIP) tables and install these into their RIS. The NICIP tables are renewed every April and October.

- The majority of procedures are undertaken within the Interventional modality. Activity levels are most frequently seen for Teaching provider types, with Health Boards more commonly seen on the lower end of the scale for this metric.

- This year, participants reported a mean of 1,027 for total Interventional Radiology when benchmarked per 100,000 occupied bed days, a position broadly similar with the levels reported in 2015/16. Teaching providers perform the highest number of interventional procedures, and DGH providers typically have lowest capacity for interventional work.

Examinations by modality - Total Interventional Radiology per 100,000 occupied bed days
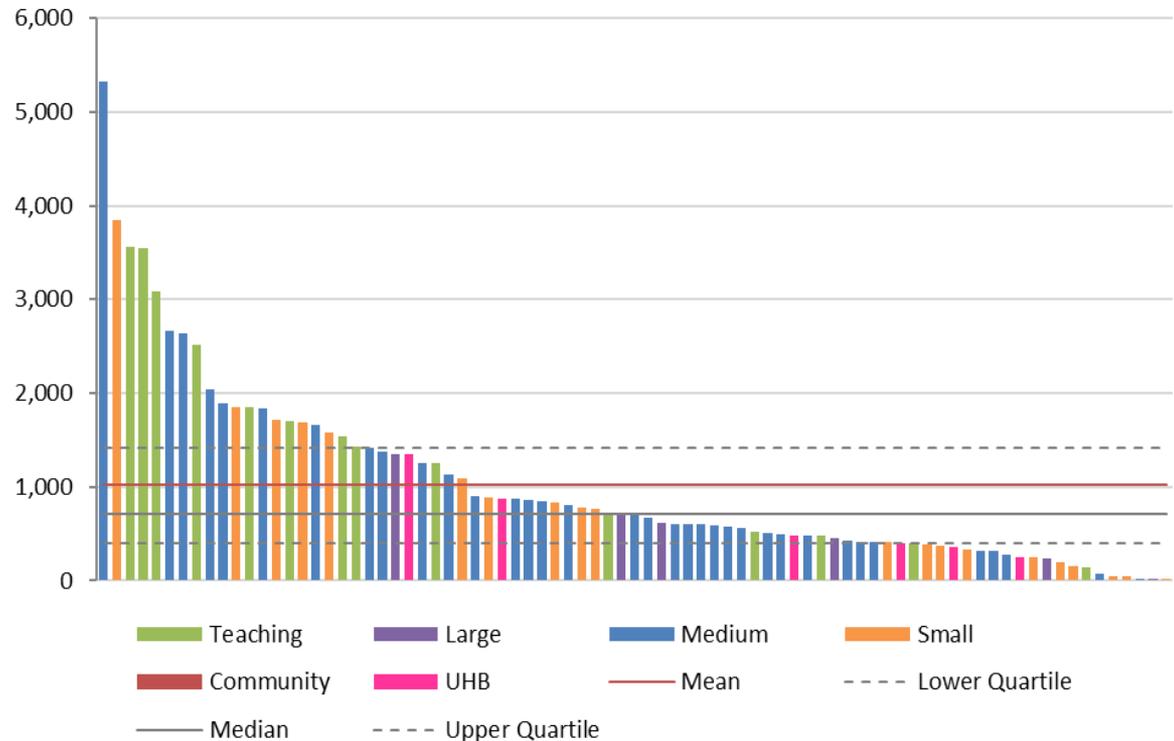
Reporting

Hours of availability for reporting for plain film X-ray

- There is variation in the weekly average hours of availability for reporting across organisations.

- Trusts report that, on average, of 69 hours are available per week for Plain film X-ray reporting, with a median figure of 50 hours.

- Of the organisations who responded to this question, 10 confirm the availability of Plain film X-ray reporting as 24/7. The majority of these respondents consisted of Medium providers.

- Small provider types generally have the lowest levels of availability for reporting.

Weekly average hours of availability by Modality for Reporting - Plain film X-Ray
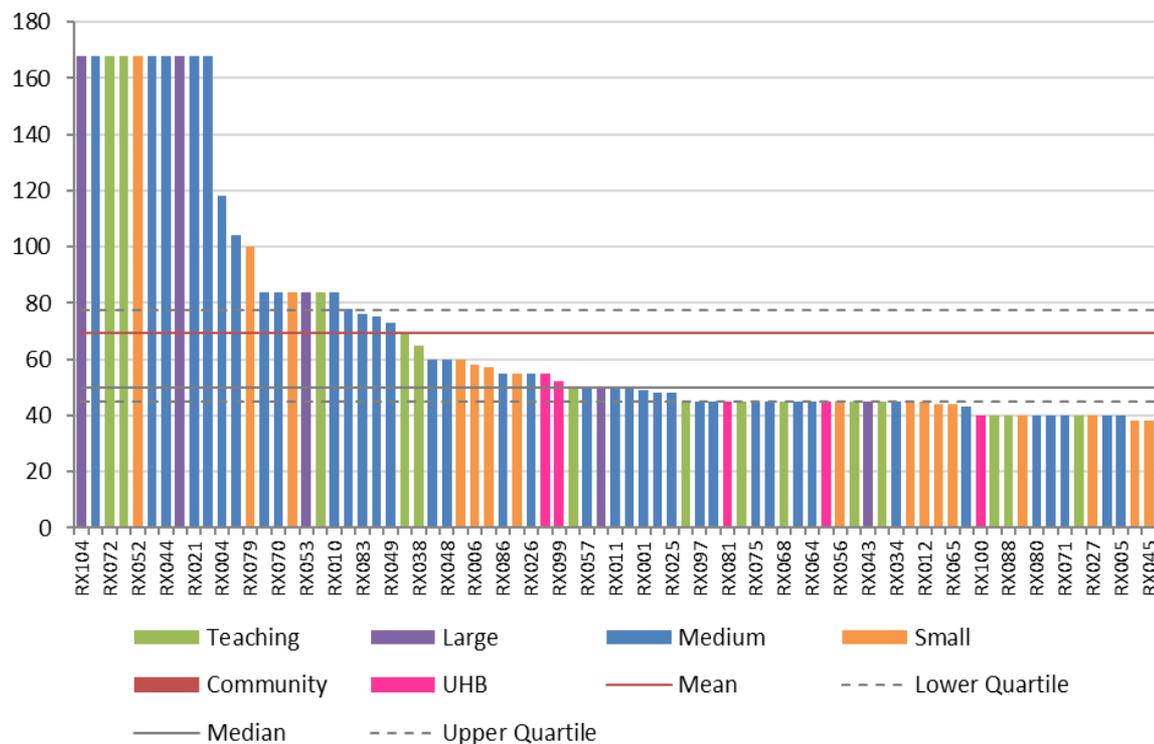
Hours of availability for reporting for CT

- CT examinations typically reflect the highest levels of reporting availability. This year, a mean of 93 hours per week was reported, with a median position of 66 hours.

- 24 organisations confirm that CT reporting is availability for the maximum of 168 hours per week.

Weekly average hours of availability by Modality for Reporting - CT

Legend: Teaching, Large, Medium, Small, LHB, Mean, Lower Quartile, Median, Upper Quartile
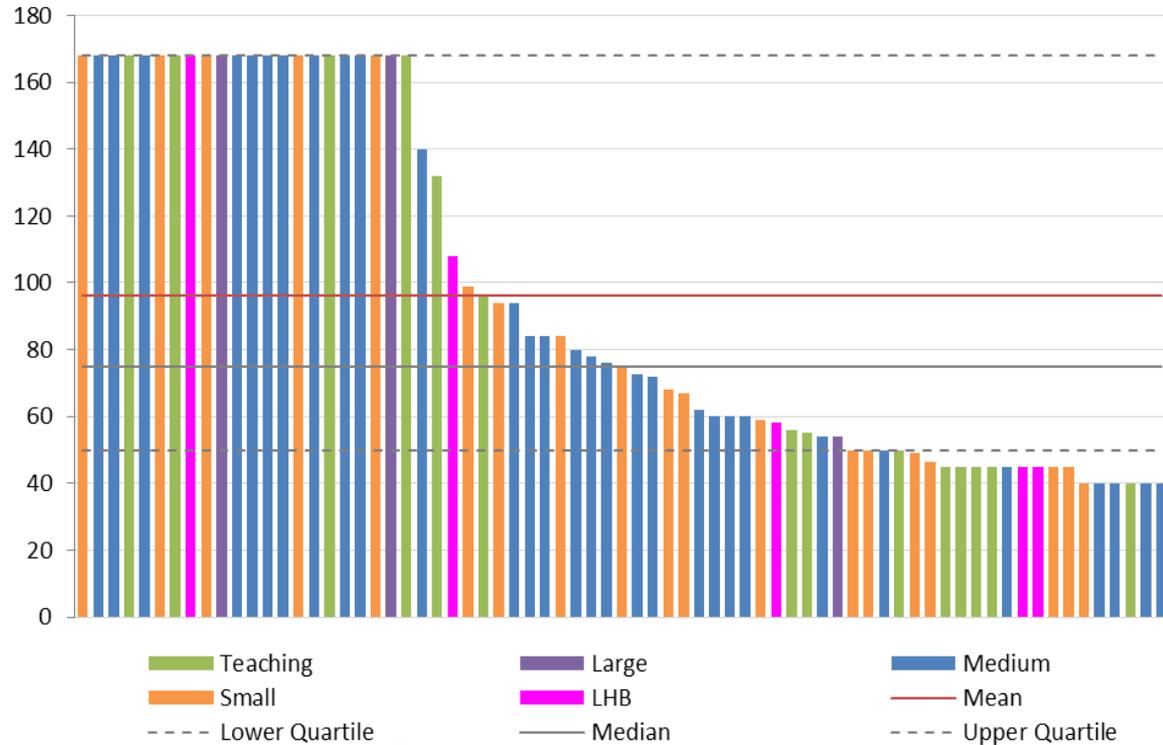
Changes in report turnaround times

- Report turnaround times by activity volume have improved for Symptomatic Mammography, PET, Catheter Laboratory/Interventional Cardiology and Other activity this year. A drop has been reported for all other modalities, which includes all the high volume modalities of Plain Film, CT, MRI, and Ultrasound.

Improvement in average reporting turnaround (days) by activity volume (2017 vs 2016)
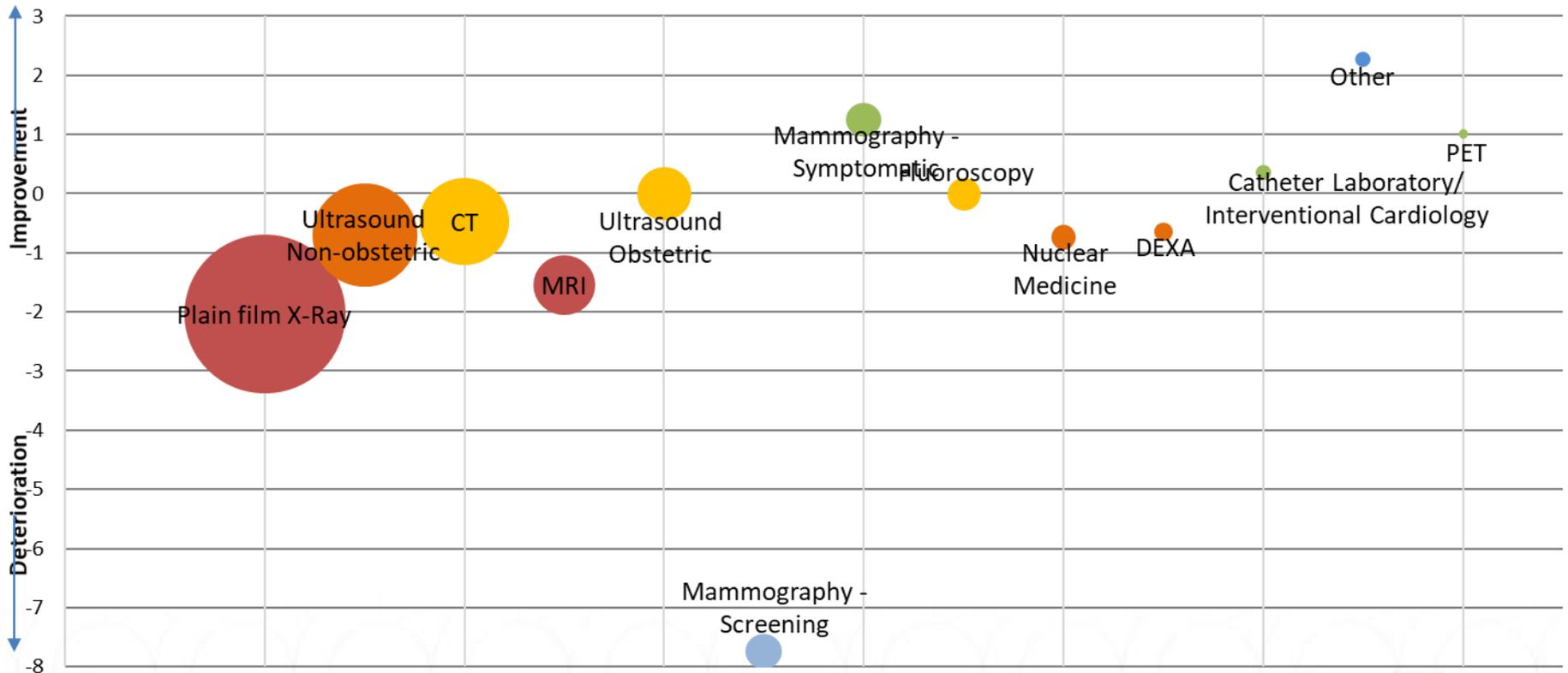
Average report turnaround times (TAT)

Modality	Average TAT (days) 2014/15	Average TAT (days) 2015/16	Average TAT (days) 2016/17	Median TAT (days) 2016/17	Range (days) 2016/17	Average Maximum TAT (days) 2016/17
Plain Film	6	5	7	5	2 to 45	67
CT	2	4	4	3	1 to 20	45
MR	6	6	8	6	1 to 46	56
US (obstetric)	0.5	1	0.7	1	Same day to 1.2	23
US (non-obstetric)	0.7	1	1	1	Same day to 20	34
NM	4	4	5	4	1 to 44	31
DEXA	5	6	7	4	1 to 41	27
PET	3	4	3	2	1 to 10	16
Fluoro (total)	3	3	3	2	1 to 22	37
Mammography (screening)	6	5	5	3	1 to 14	12
Mammography (symptomatic)	3	3	3	2	Same day to 18	24
Cath Labs	3	2	2	1	Same day to six	9

Reporting Turnaround Times Census

- This year's project benchmarked overall report turnaround times on an end of year census date to provide an illustration of the scale of variation that exists in the NHS.
- The chart opposite illustrates an 8-day mean average for plain film reporting with variation extending from same-day reporting through to a 45 day position.
- Performance on other modalities includes;
  - CT – 5 days
  - MRI – 10 days
  - Non-Obstetric Ultrasound – 3 days
  - Dexa – 7 days
  - Nuclear Medicine – 5 days
  - Fluoroscopy – 4 days
  - PET – 4 days
  - Mammography Symptomatic – 3 days
- Participants can view local performance on each of these metrics in the Radiology benchmarking toolkit.

Turnaround times on census date (in days) - Plain film X-Ray

Legend: Teaching, Large, Medium, Small, Community, UHB, RX000, Mean, Lower Quartile, Median, Upper Quartile
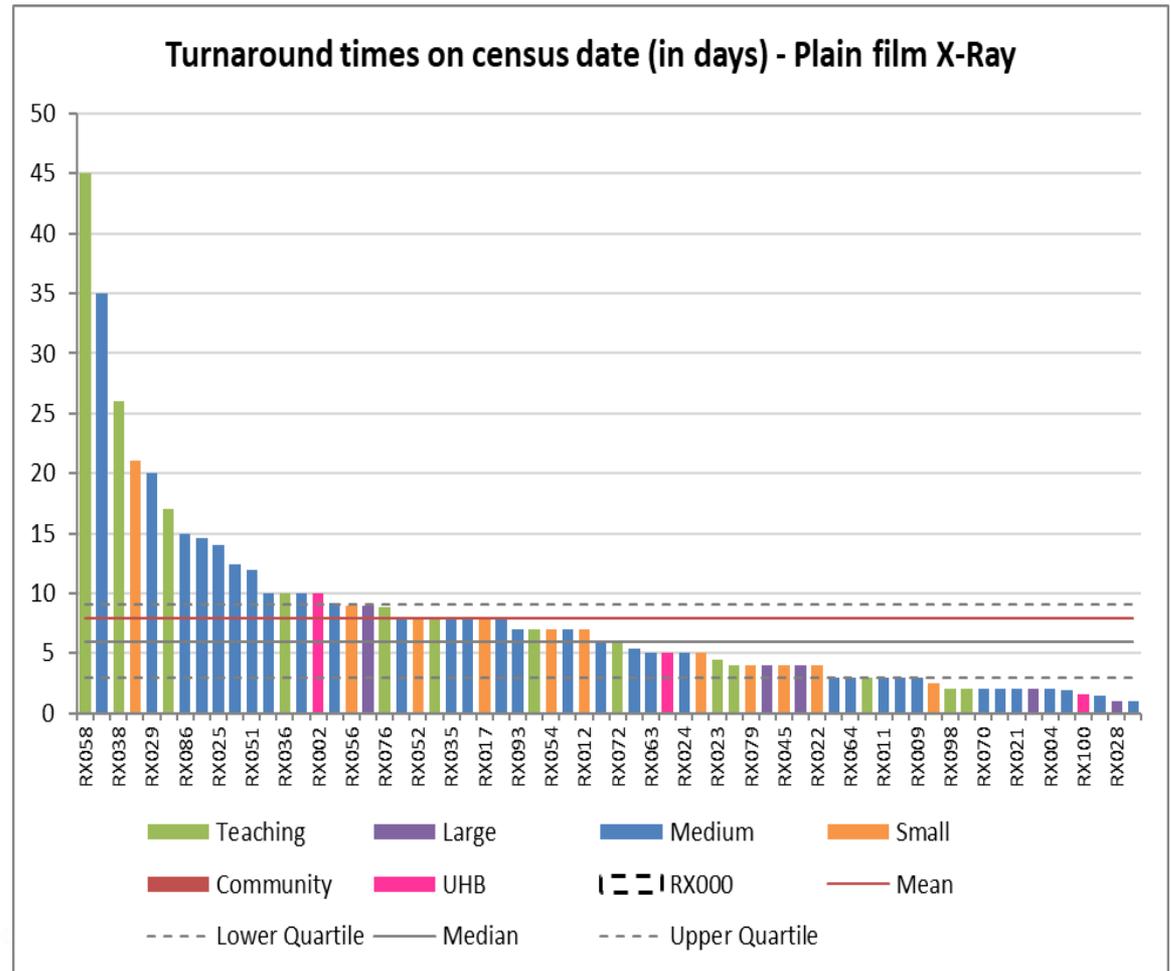
Who reports?

- The proportion of examinations auto reported or not reported has increased annually since 2014, with a level of 8% in 2014/15, 11% in 2015/16 and 10% this year.

- Last year, Consultant Radiologists reported over half of all examinations. In 2016/17, 48% of all examinations were reported by a Consultant Radiologist.

- The rate of reporting by Ultra-sonographers has increased from 13% in 2015/16 to 21% in 2016/17.

- The rate of reporting by Registrars remains steady at 7% (8% in 2015/16). Radiographer reporting has also remained stable at 14% for the last 2 years.

- The combined input of Radiographers and Sonographers gives a position for non-medical reporting of 35%.

Reporting by staff group

Staff group	Percentage
Radiologist	48%
Registrar	7%
Radiographer	14%
Ultrasonographer	21%
Auto reported / not reported	10%

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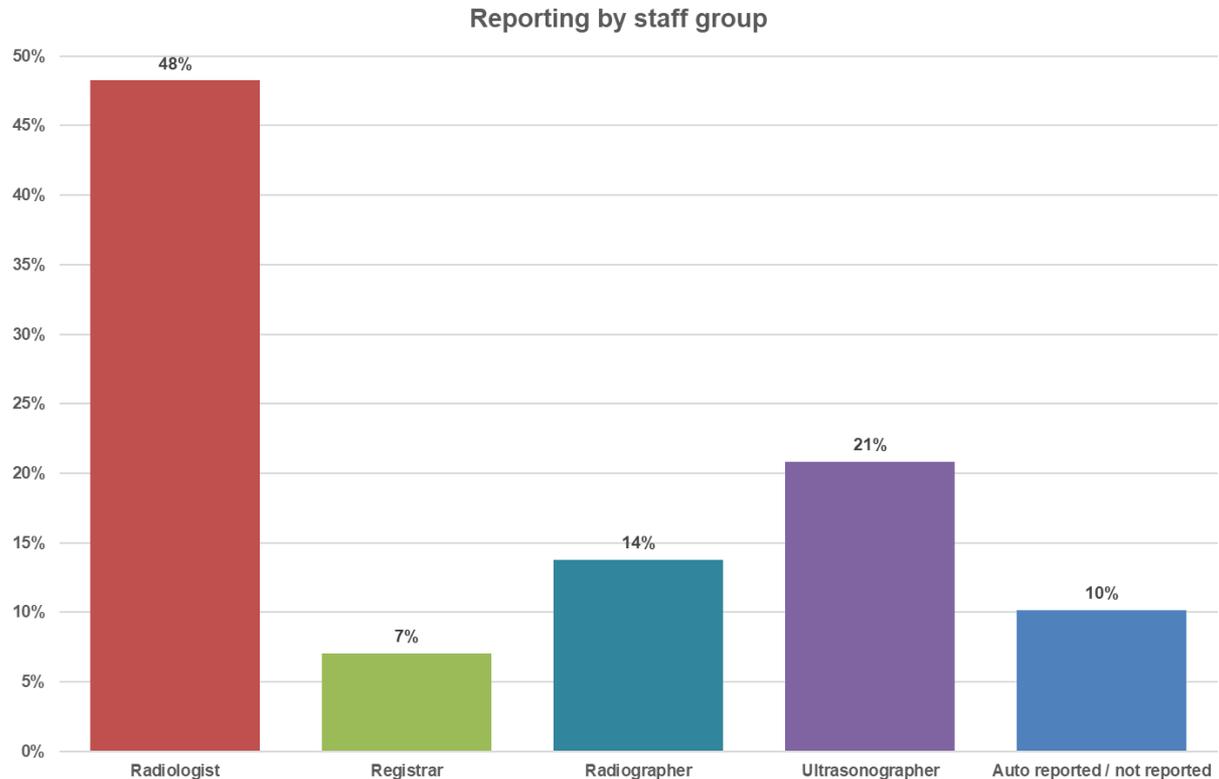
Who reports – Chest X-Rays?

- The proportion of Chest X-Ray examinations reported by Radiographers averages 25% although only 37 providers submitted data on this question.

- Mid-sized Trusts demonstrated the highest rates of Radiographer reporting of Chest X-Rays although a small number of teaching hospitals also demonstrated high volumes in this area.

Percentage of chest x-rays reported by radiographers
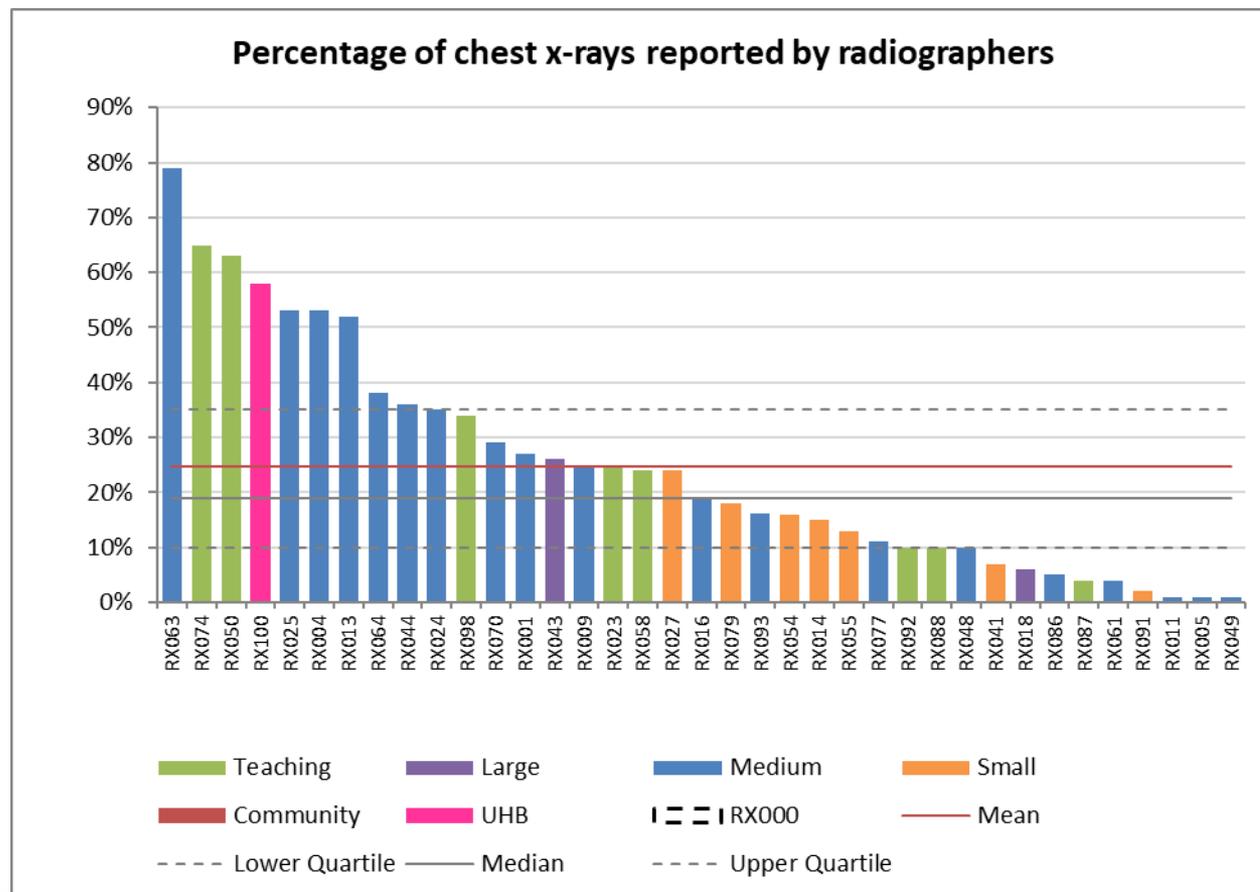
Consultant Home Reporting

- The proportion of Consultant Radiologists with access to home reporting technology is 63% where Trusts have made this technology available.

- A total of 36 providers confirmed that home reporting technology is in place. Small DGH and mid-sized providers are most likely to have provided home reporting platforms. Teaching Hospitals and Welsh Health Boards are least likely to have enabled Consultant home reporting.


Percentage of consultant workforce with home reporting capability
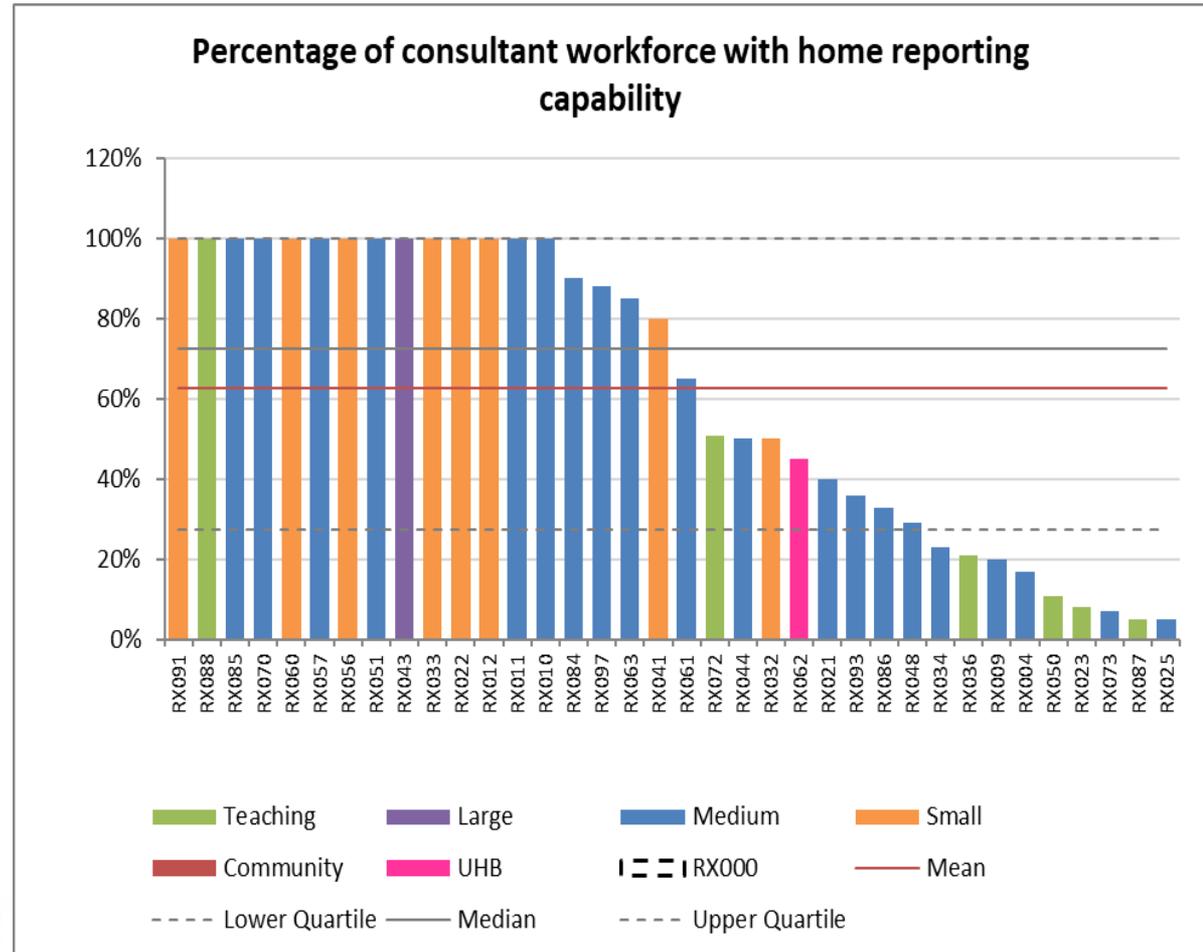
Reporting Backlogs

- Backlog is defined as reports that are more than 10 days since examination date.

- The average number of unreported examinations at 31st March 2017 has increased 2,854, from 1,246 on 31st March 2016.

- The range of unreported examinations for providers ranges from less than 20 to over 32,000 unreported examinations on the 31st March 2017.

- The CQC is currently reviewing radiology reporting across the NHS in England, after concerns were raised over the numbers of unreported examinations in Trusts.

- Participants can use the toolkit to identify areas where they are outlying in unreported examination numbers.

Total Unreported Examinations
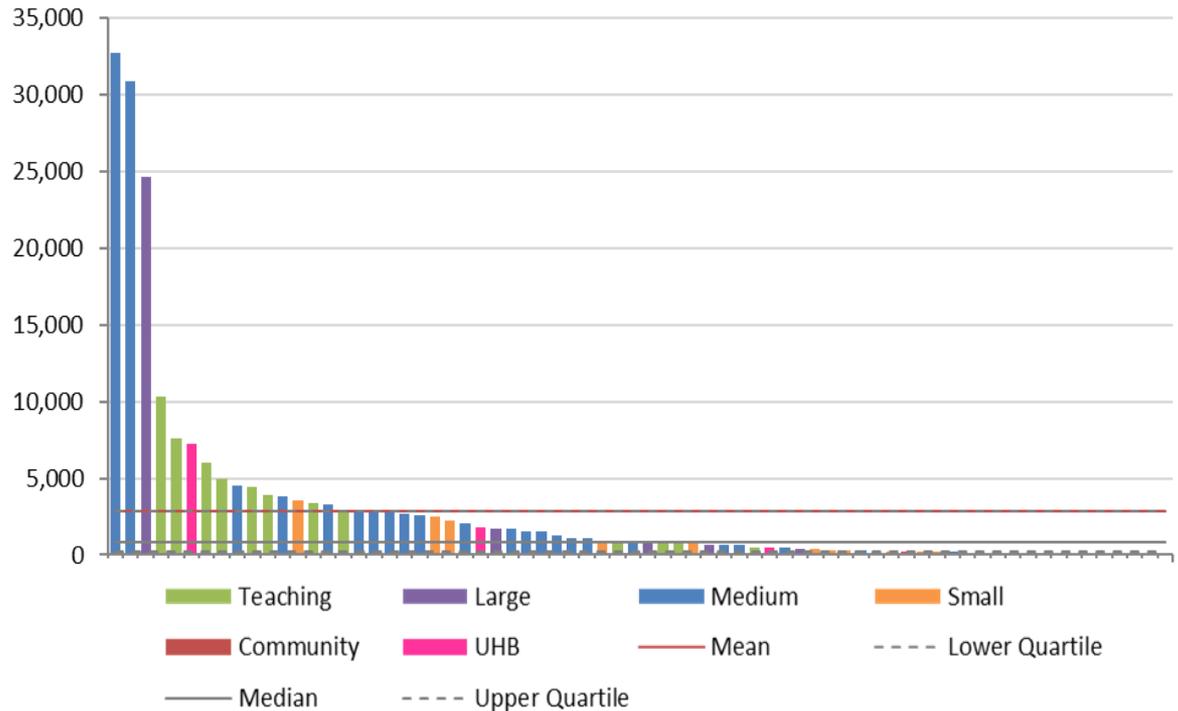
# Reporting Backlogs by modality

- Backlogs are closely linked to activity volumes. Backlog volumes continue to be dominated by Plain Film X-ray.

- In 2016, the percentage of backlogs attributable to Plain Film X-Ray notably fell from 76% to 59%. The rate has increased slightly this year, to 63%.

- The number of reporting backlogs from MRI has decreased from 18% in 2015/16 to 8% this year.

Legend:
- Plain film X-Ray
- Other
- MRI
- CT
- Fluoroscopy
- Ultrasound - Non Obstetric
- Ultrasound - Obstetric
- Mammography - Symptomatic
- Nuclear Medicine
- DEXA
- PET
- Mammography - Screening
- Catheter Laboratory / Interventional Cardiology
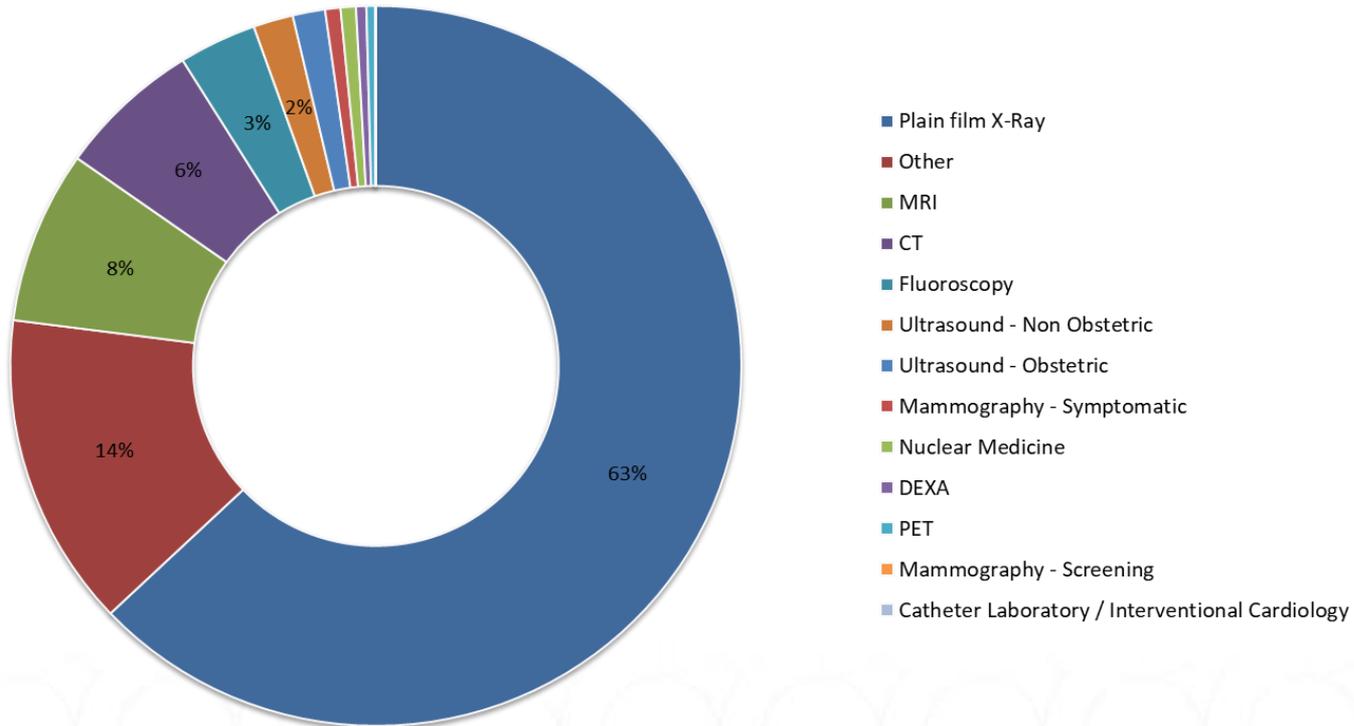
Outsourced Reporting

- In practice, participants who outsource large amounts of reporting may have specific local circumstances around accessing specific types of sub-specialty or Consultant opinion.

- The median position for participants who do outsource reporting was that around 3% of all reports were outsourced in 2015/16. The rate this year has doubled to 6%.

- Participants use outsourcing to cover both out-of-hours urgent imaging and in-hours backlog.


% of total reports outsourced - Total

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
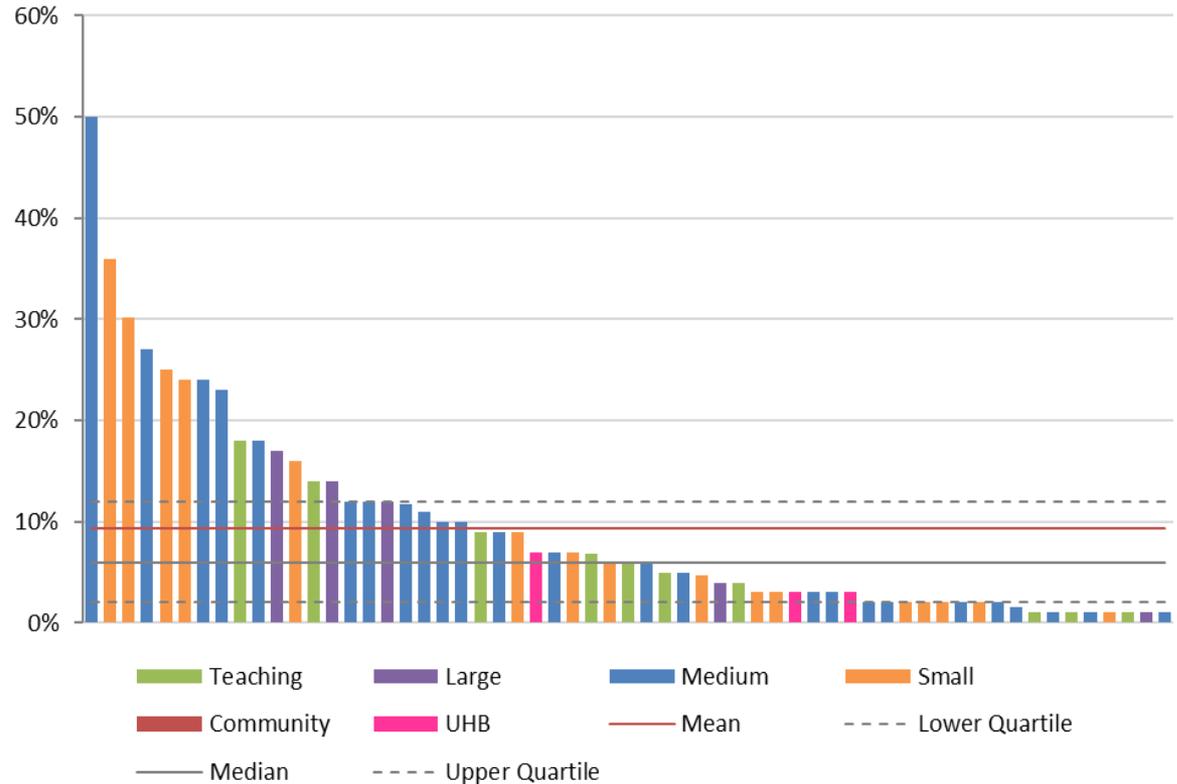
Workforce

Radiology Workforce

- Overall staffing levels in Radiology using the denominator of 100,000 Outpatient attendances (OP) are outlined on the chart opposite. This includes all clinical and non-clinical staff in Radiology departments.

- The median position reported in 2016/17 is 43 WTE Radiology staff per 100,000 OP attendances.

  - 2015/16 – 40 WTE
  - 2014/15 – 40 WTE
  - 2013/14 – 41.6 WTE

- The 2016/17 position confirms growth in the overall Radiology workforce in the last year, a position substantiated by growth rates in several individual disciplines.


Total WTEs per 100,000 outpatient attendances

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
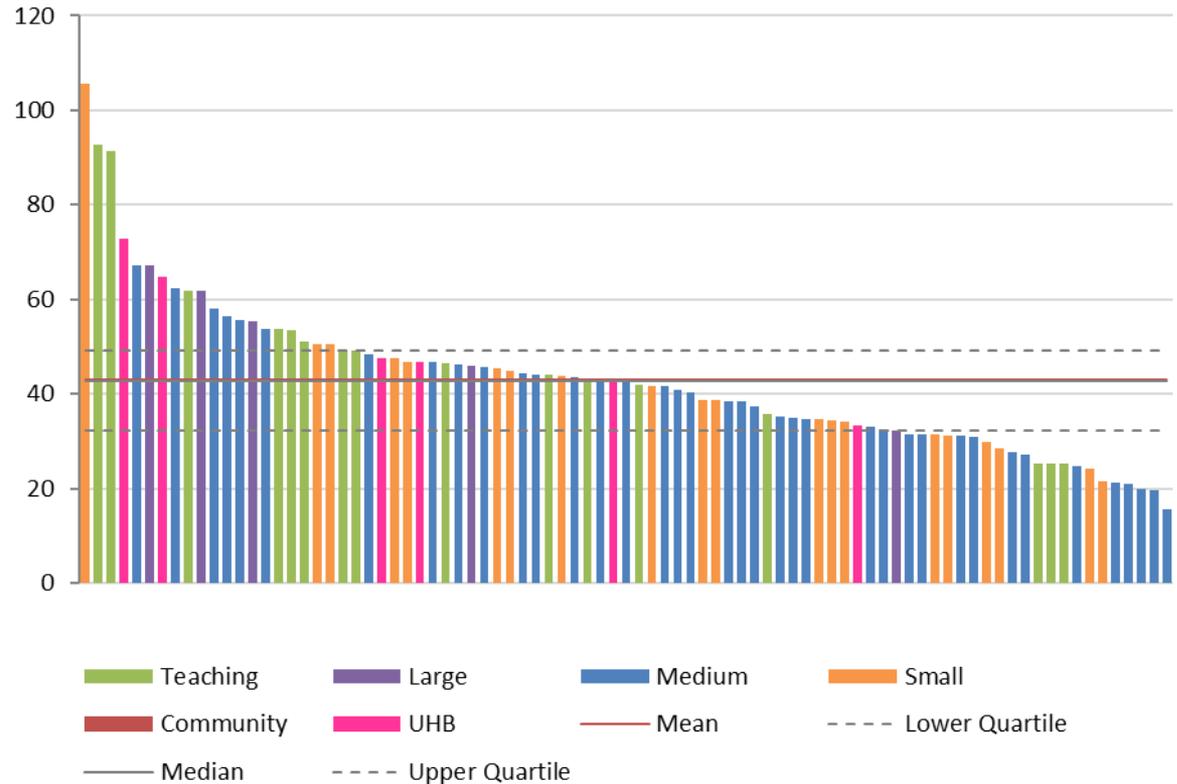
Radiographer staff levels

- The mean number of Radiographers per 100,000 occupied bed days reflects the same level as last year, at 31 WTE per organisation this year.
  - 2015/16 – 31 WTE
  - 2014/15 – 29 WTE

- The range observed is from 16 to 59 WTE per 100,000 occupied bed days in 2016/17.

Radiographer WTEs per 100,000 occupied bed days

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
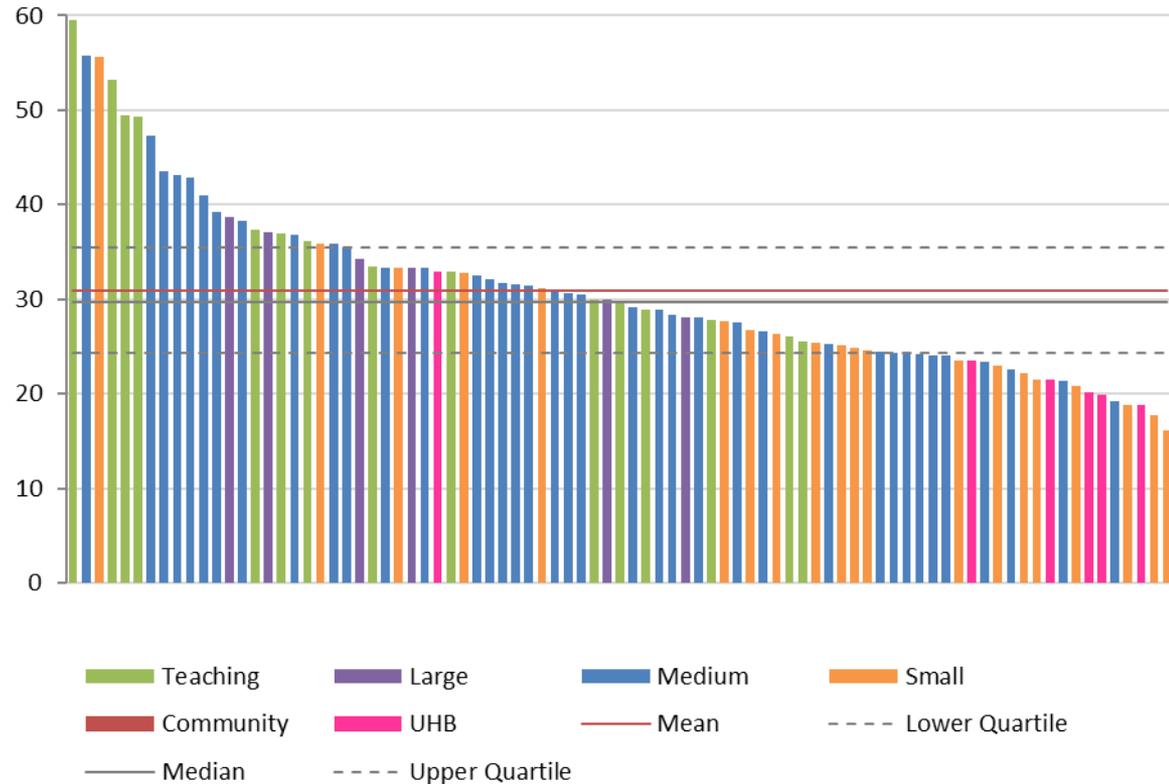
Radiology MDT staffing levels

Discipline	Mean per 100,000 outpatient attendances 2016/17	Mean per 100,000 outpatient attendances 2015/16	Mean per 100,000 A&E attendances 2016/17	Mean per 100,000 A&E attendances 2015/16	Mean per 100,000 occ. bed days 2015/16	Mean per 100,000 occupied bed days 2016/17
Consultant Radiologist	5	5	18	18	8	8
Radiographer	18	18	69	69	31	31
Sonographer	3	3	12	12	6	6
Mammographer	2	2	8	8	3	4
Nurse	2	3	11	10	4	5
PACS Team	1	1	3	3	1	1
Porters	2	3	13	13	5	5
A&C	7	7	26	28	12	12
Total Radiology	**43**	**43**	**171**	**169**	**74**	**77**

- Radiology skill-mix benchmarks can be accessed in the toolkit.

- The table above shows mean staffing levels for the main staff groups within the Radiology MDT. These have been benchmarked in terms of overall participant activity levels using a choice of denominators; per 100,000 occupied bed days, per 100,000 outpatient attendances, and per 100,000 A&E attendances. The mean positions have remained stable over the last 12 months.

Radiology Department Staff Breakdown

- Participants can use the Radiology benchmarking toolkit to test their local Radiology team skill mix.

- The radar chart on this page shows the Radiology staff skill mix over the last five years.

- There have been minimal changes in the composition of Radiology teams since 2012.

- Radiographers are the largest staffing group followed by A&C staff and Consultant Radiologists.

Radiology Staff Disciplines

— 2012/13 — 2013/14 — 2014/15 — 2015/16 — 2016/17
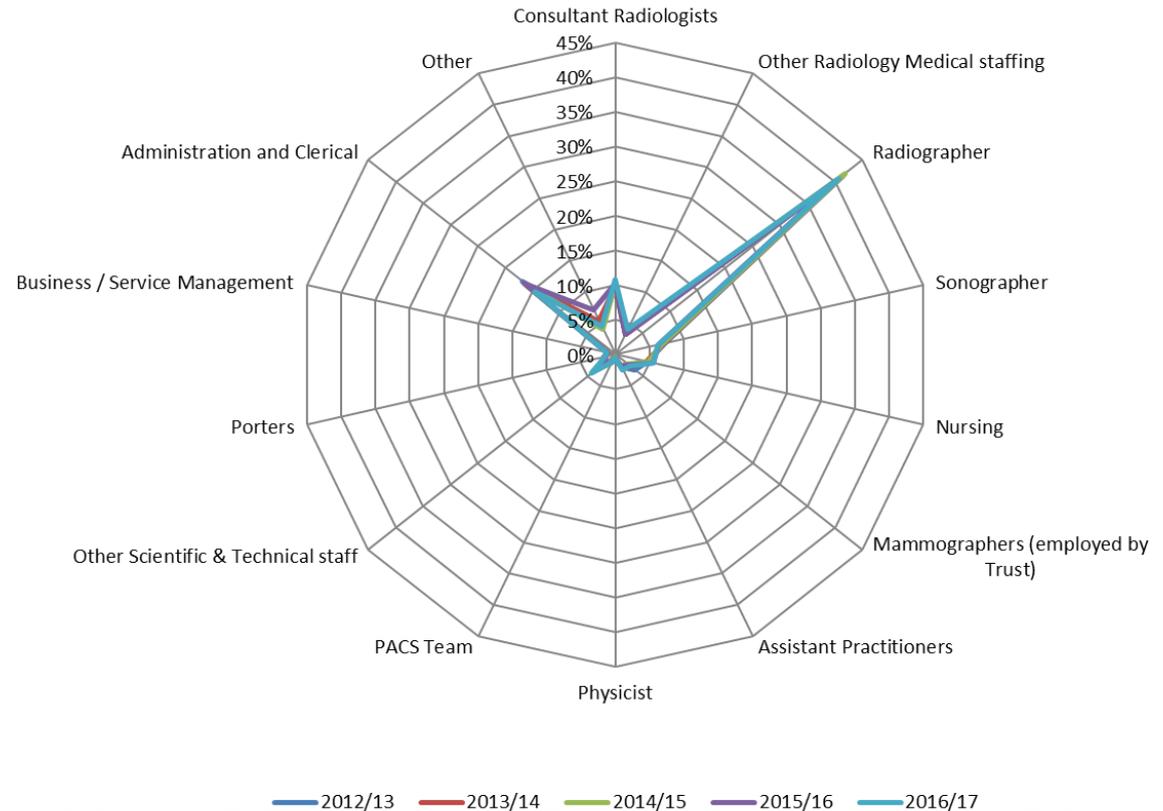
Average skill mix: Radiology teams


All staff
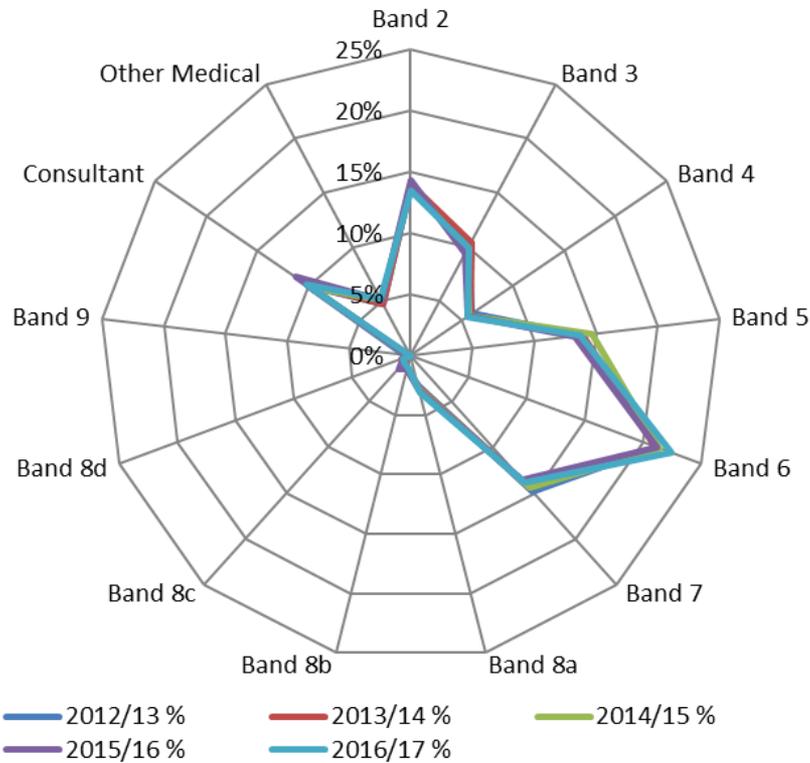
Radiographers
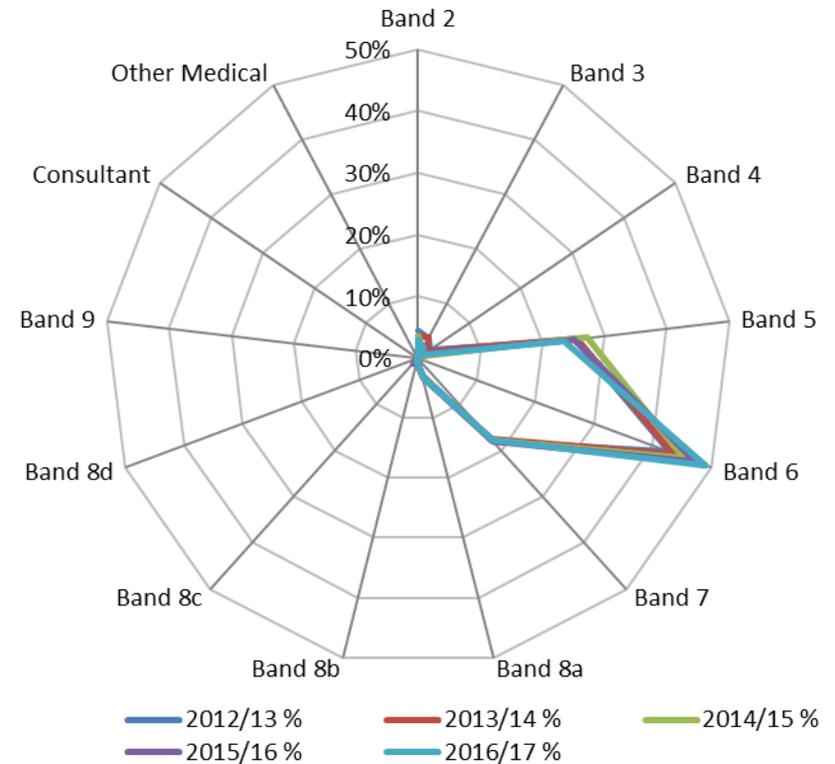
- Radiology department and Radiographer skill-mix between 2012/13 and 2016/17 show minimal change.

Vacancies

- Physicists and other Radiology medical staffing continue to be amongst the highest vacancy level rates in Radiology departments.

- Sonographer vacancies have reduced this year, after holding the 2nd highest level of vacancies in 2015/16. Levels have dropped from 22% to 15%, and are more in line with the rate seen in 2014/15 (13%).

- Consultant Radiologist vacancies have risen to 16%, from 14.6% last year.

- Radiographer vacancies have dropped to 10%, after an increase from 6% in 2014, to 9% in 2015, and 11% in 2016.


Current vacancies as a % of total establishment
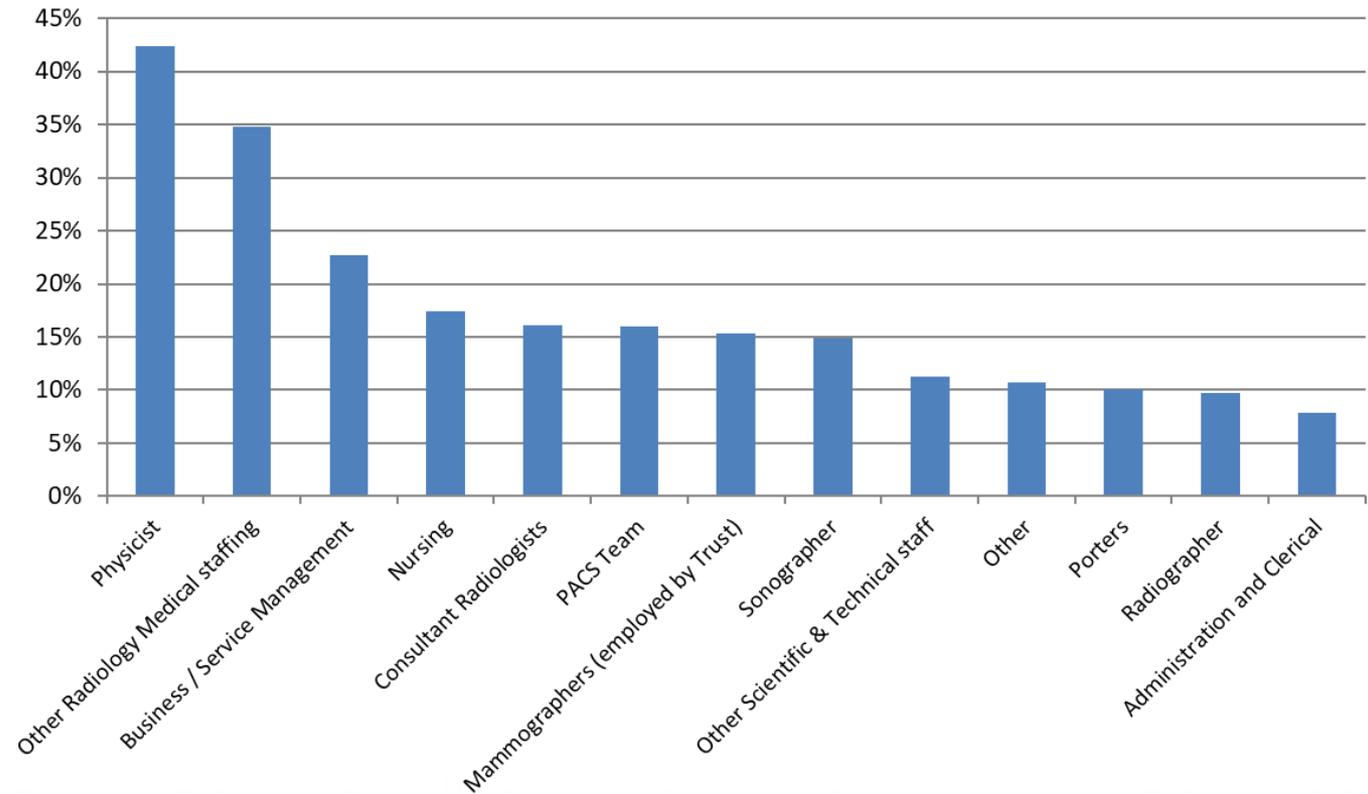
HR KPIs

- Sickness / absence levels remain identical to rates in 2015/16 at 4% this year.

- Sickness / absence rates vary for each staff type. The chart opposite shows the average rate for all WTEs in Radiology services.

- A breakdown of rates per staff type can be accessed via the NHSBN Radiology toolkit.

- Staff turnover rates have risen slightly, from 9% in 2015/16 to 11% this year.

- Radiology turnover rates are now in line with the NHS national average of 11%.


Sickness Absence Rate % - 2016/17
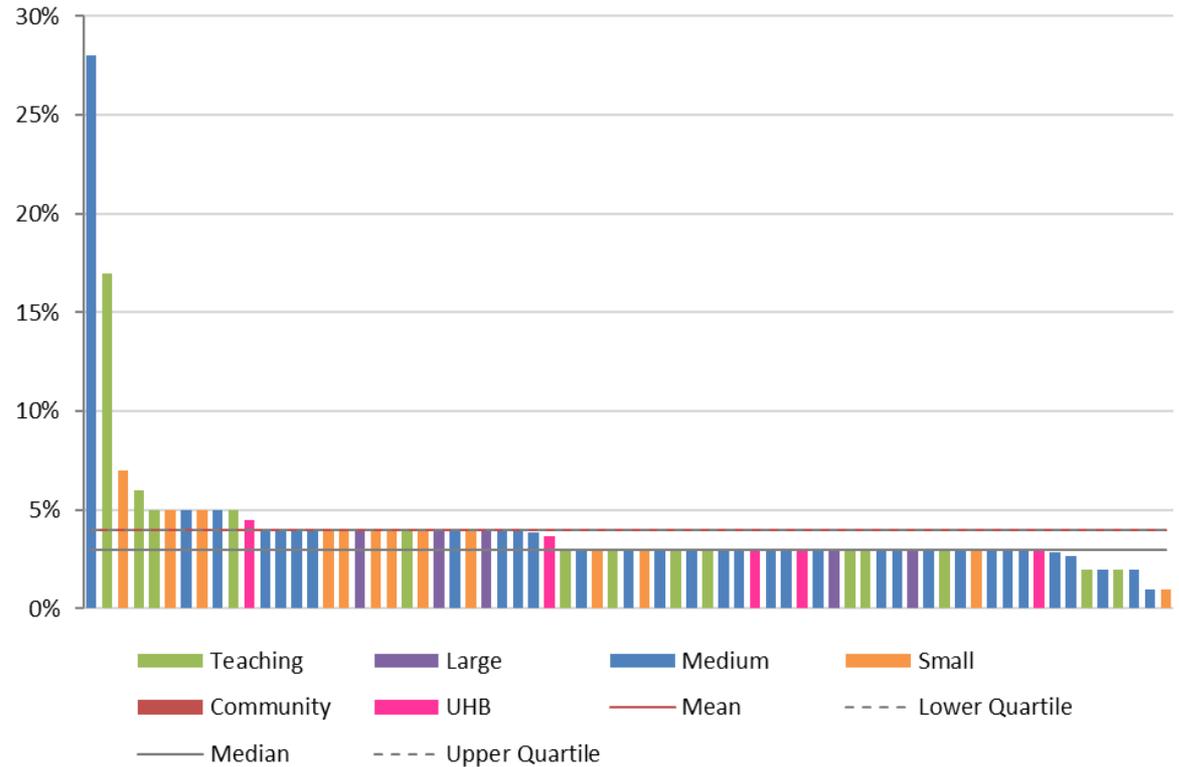
Programmed Activities used in MDT meetings

- This year, the project asked for the percentage of Consultant Programmed Activities (PAs) used on MDT meetings.

- A PA is 4 hours of work carried out within the normal working week, and 3 hours outside of the working week. The average full time Consultant will be contracted for 10 PAs per week.

- The mean percentage of Consultant Radiologist PAs used on MDT meetings this year was 10%. This is equivalent to 1 PA, or 4 hours during the working week.

- Generally, Consultant Radiologists in Teaching hospitals spend more time in MDT meetings compared to medium and small sized organisations.

Percentage of total Consultant Radiologist PAs used on MDT meetings

Legend:
- Teaching
- Large
- Medium
- Small
- Community
- UHB
- RX001
- Mean
- Lower Quartile
- Median
- Upper Quartile
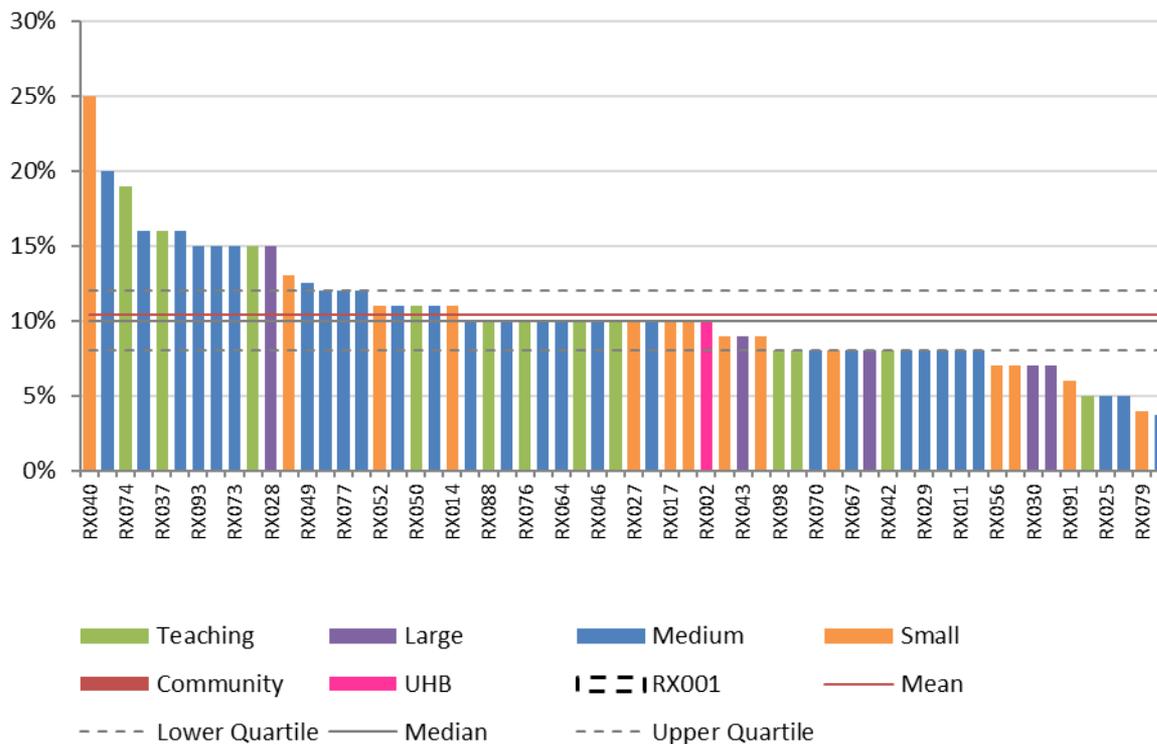
Finance

Total revenue costs

- Total revenue costs for Radiology services are benchmarked in the chart opposite per 100,000 occupied bed days.

- The mean position for 2016/17 was £5.2m per 100k occupied bed days (also £5.2m in 2015/16).

- There was a range within this, with participants reporting from £2.4m up to over £12m of revenue costs per 100,000 occupied bed days.

- This aligns largely with workforce provision, as organisations with more WTE levels tend to reflect higher revenue budgets. Teaching providers consistently demonstrate the highest investment levels per 100,000 bed days.

- Participants can test baseline funding levels against other denominators (e.g. outpatient attendances) in the Radiology toolkit. Providers with low bed numbers may find this a more helpful denominator.


Total revenue costs for Radiology per 100,000 occupied bed days

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
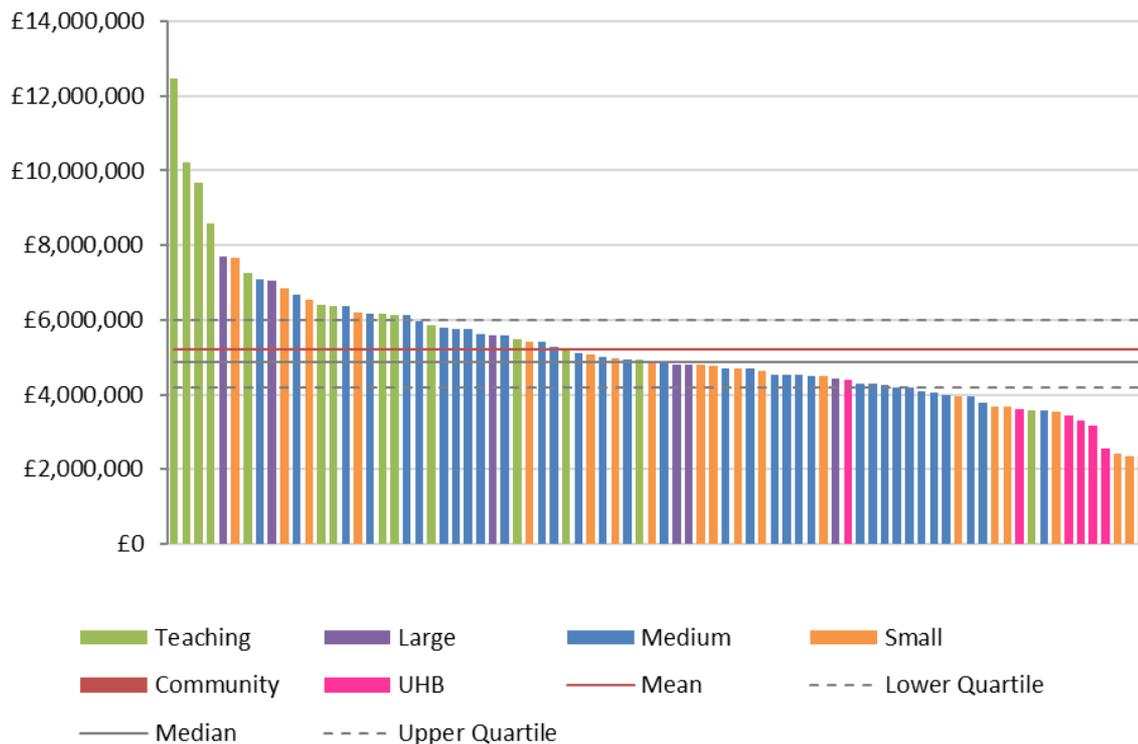
Total pay costs

- Pay costs have been benchmarked here per 100,000 occupied bed days, and average £3.9m in 2016/17.

- Pay spend has increased from 2014 to 2017, from a mean position of £3.3m in 2014/15, £3.8m in 2015/16 and now £3.9m per 100,000 occupied bed days this year.

- Teaching providers have the highest pay costs and DGH providers the lowest. Welsh Health Board providers also all demonstrate pay costs at below NHS average level.


Total pay per 100,000 occupied bed days

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
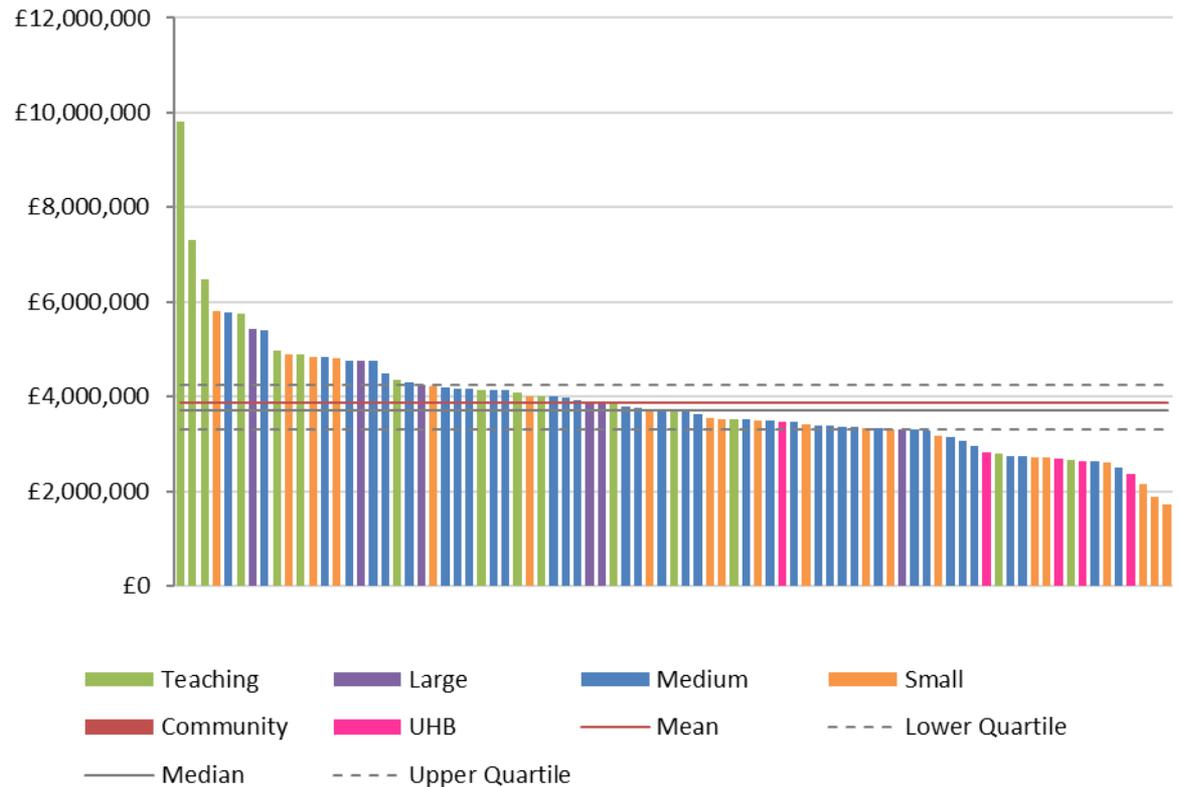
Total non-pay costs

- Average non-pay cost levels per 100,000 occupied bed days have increased incrementally from £1.2m in 2014/15, £1.4m in 2015/16 and £1.5m in 2016/17.

- The lower quartile confirms that three quarters of respondents have non-pay spends in excess of £984k per 100,000 occupied bed days.

- Teaching providers have the highest non-pay costs due to a richer case-mix and higher levels of use of intensive modalities.

Total non-pay costs per 100,000 occupied bed days

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
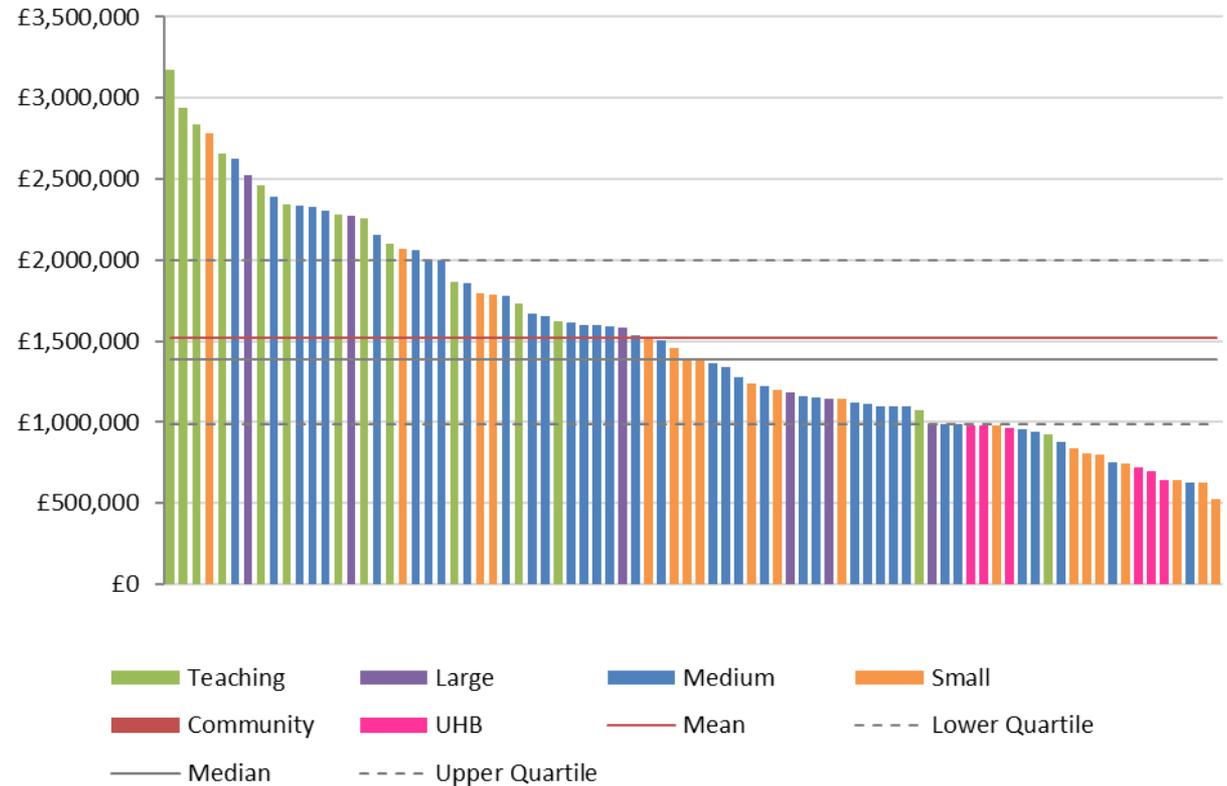
Locum and agency spend

- Spend attributed to locum and agency staff in Radiology departments remains static this year, at a mean position of 8% of all pay costs.

- Locum and agency staff use reflects local workforce challenges, with small and medium sized hospitals generally spending a higher percentage of their pay costs on locum and agency staffing.

- Locum use is highest in small and medium sized providers illustrating the challenges of recruiting in non-teaching hospitals.

% of pay costs attributable to locum/agency staff

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
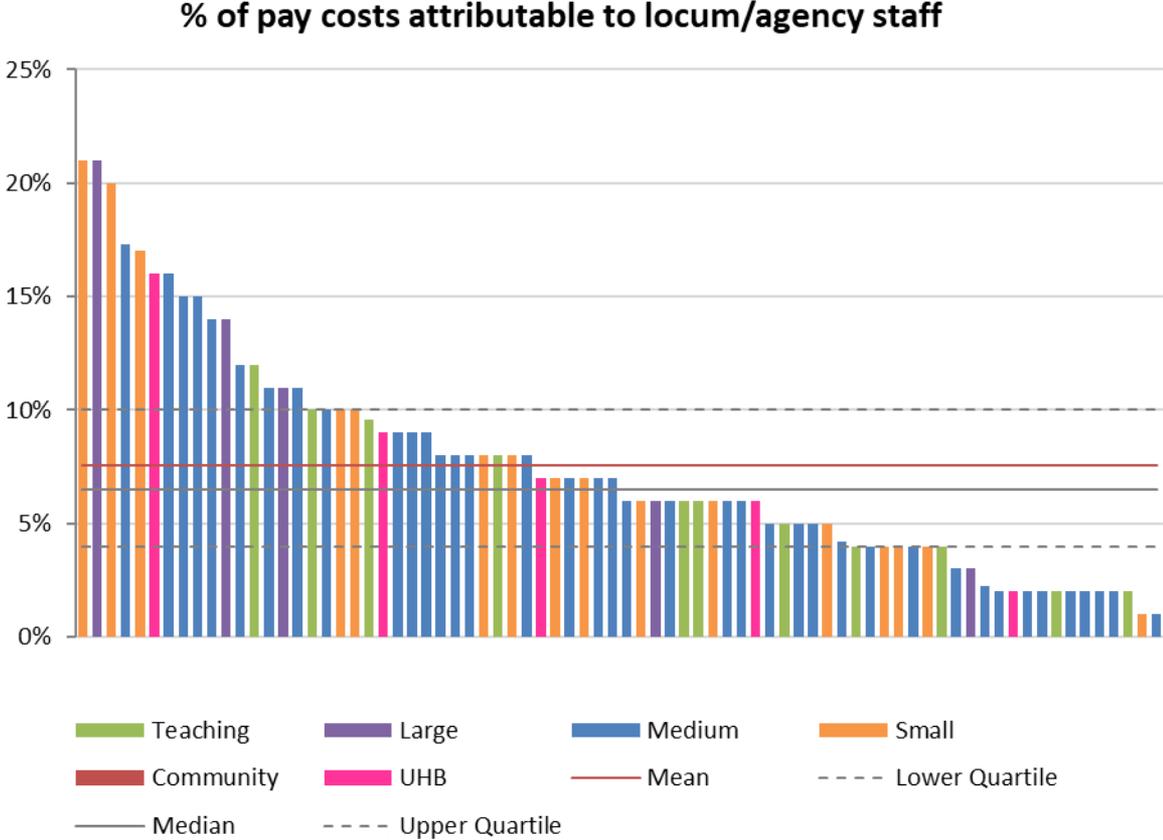
CRES/CIP % of total spend

- Radiology departments are still required to deliver challenging efficiency savings on an annual basis.

- Participants differ in their set ups of CRES/CIP targets.

- The median cost improvement programme has remained static at 4% for the last 4 years, although the maximum rate within the range has increased from 10% in 2015/16 to 16% in 2016/17.

CIP as % of total Radiology budget

Legend:
- Teaching
- Large
- Medium
- Small
- Community
- UHB
- Mean
- Lower Quartile
- Median
- Upper Quartile
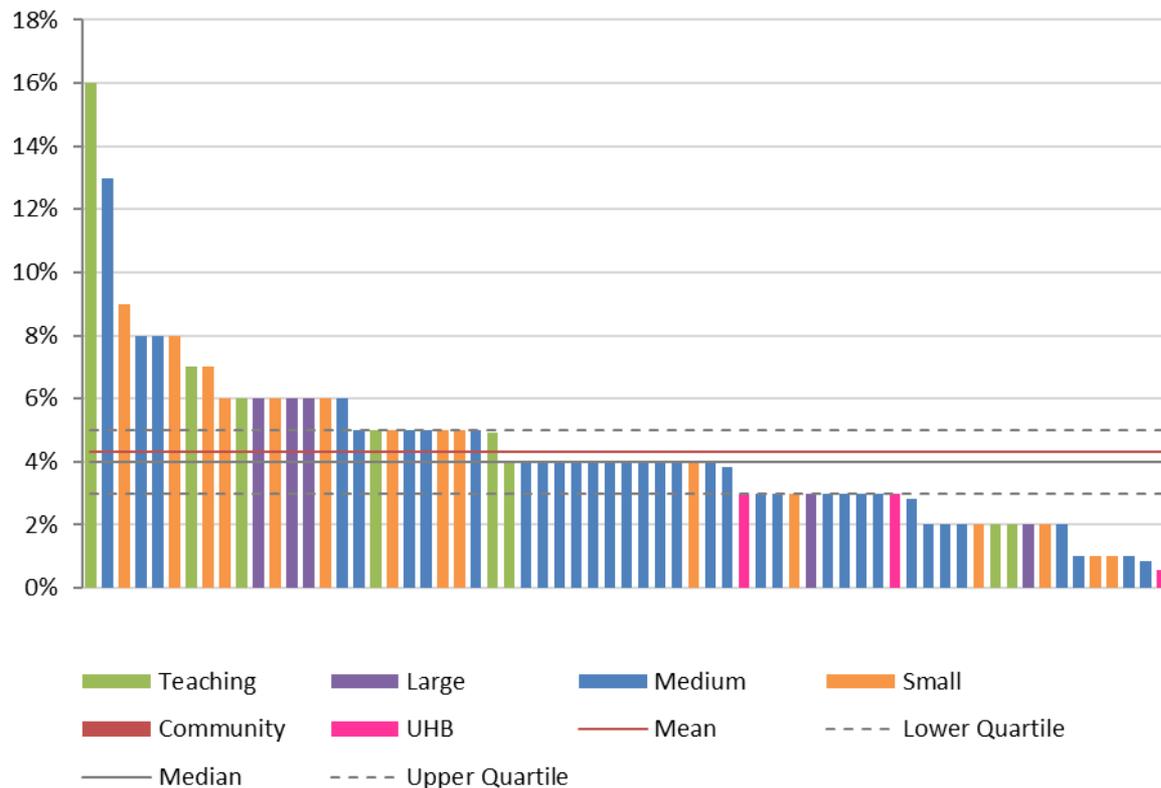
Cost per examination

- The cost per examination has been calculated at £41 this year, a reduction on the £43 reported in 2015/16.

- It is acknowledged that this is a relatively unsophisticated benchmark, however it contains the advantage of highlighting Trusts and LHBs with more complex case mix, modality mix, and higher cost bases. Teaching providers generally report higher unit costs which can be linked with their staffing profile and modality case mix.

- Reasons for the reduction in unit costs in 2016/17 are multi-factorial but will include; increases in activity levels above the corresponding changes in total expenditure, CIP achievements, and marginal adjustments due to the difference in participants and associated case-mix / choice of modalities.


Total revenue costs for Radiology per examination
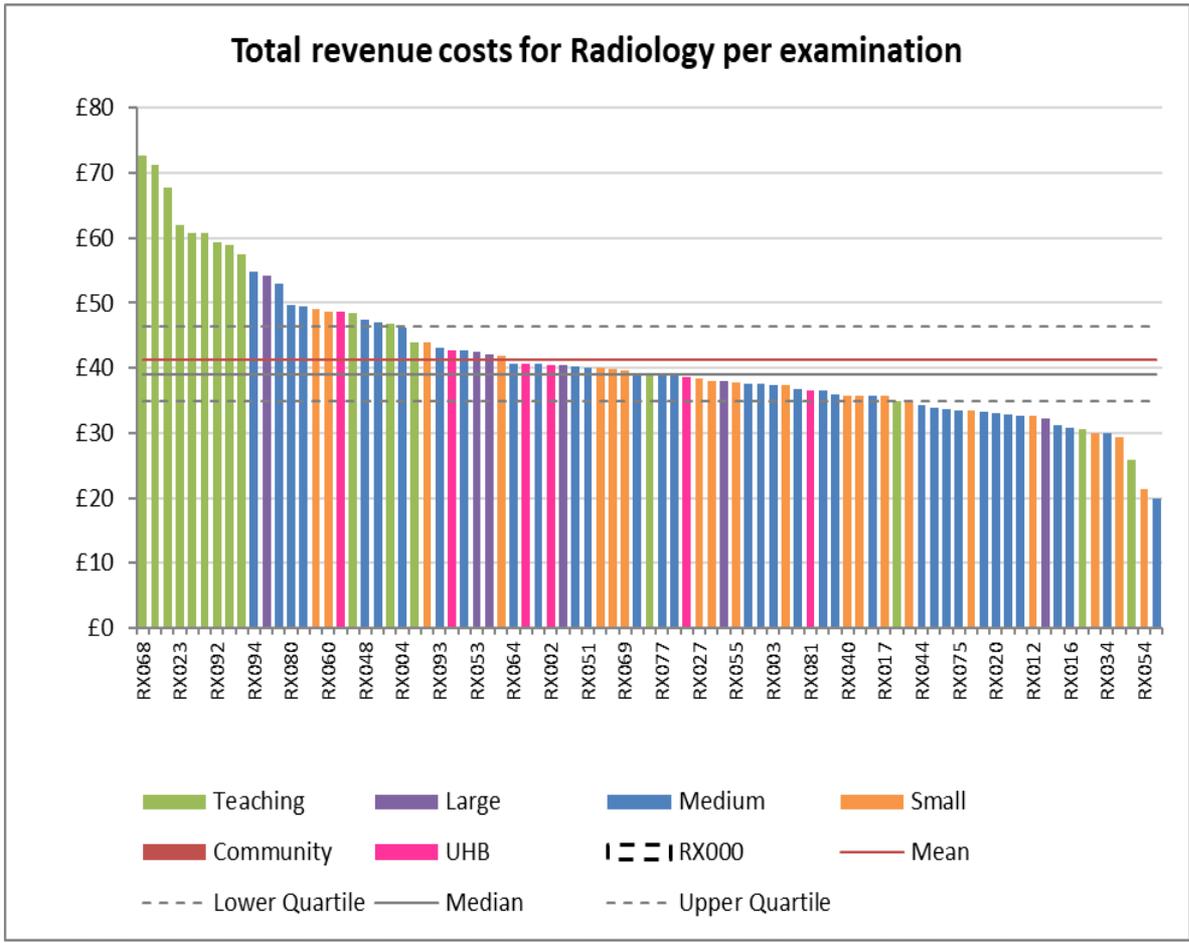
Quality

Accreditation

Is your organisation ISAS accredited?

| Year	Yes	No
2013/14	9%	91%
2014/15	14%	86%
2015/16	16%	84%
2016/17	14%	86%
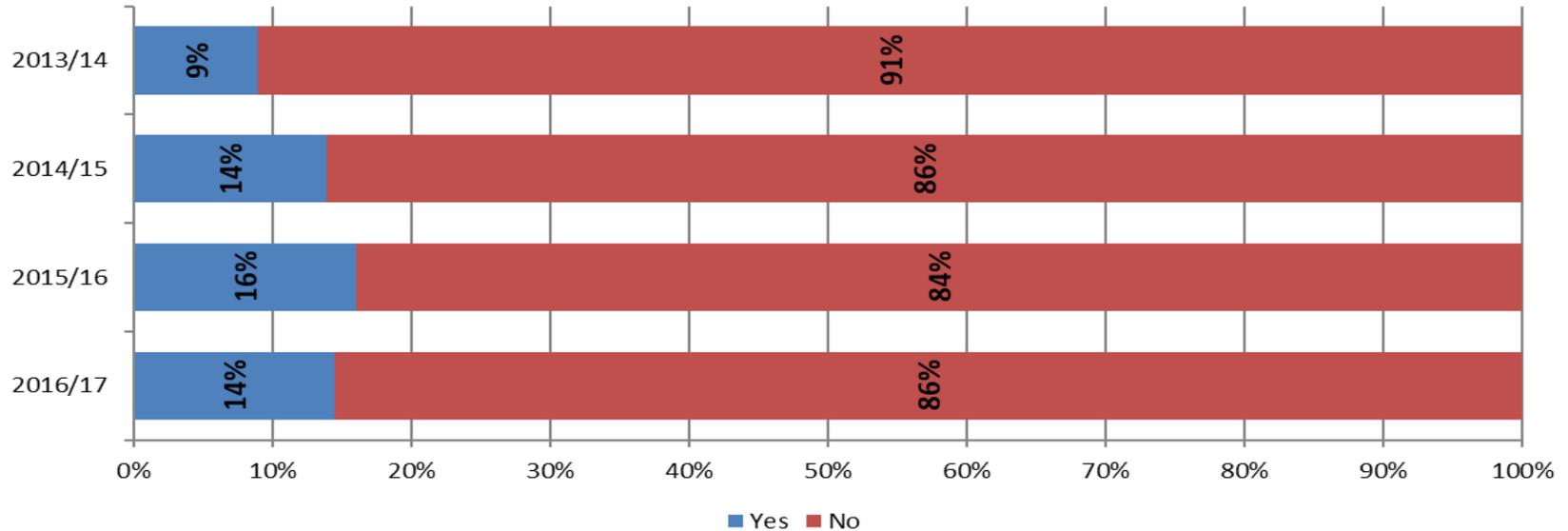
- 14% of participants in the 2016/17 Radiology benchmarking project confirm that they are accredited by the Imaging Services Accreditation Scheme (ISAS), backed by the Royal College of Radiologists and the Society and College of Radiographers.

- This figure has dropped this year, following a consistent increase from 2013/14 to 2015/16. Levels reflect those seen in 2014/15. The reason for this reduction is related to the sample of participants in this year's project. Although larger in size this year, the project involves fewer ISAS accredited providers than in previous years. Latest data from ISAS confirms 18 accredited NHS providers in England.

- Of those not currently accredited, 49% are planning to become accredited within the next 12 months. 12% reported that the process was currently underway, and 39% have no plans to become ISAS accredited.

Radiation incidents

- The average number of reportable radiation incidents per participant was 8 for 2016/17 (no benchmark), following a steady position of 6 incidents reported from 2015 to 2016.

Number of reportable radiation incidents

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile

Serious Incidents

- The mean number of serious incidents per 100,000 occupied bed days remains minimal this year, at 2 (1 in 2015/16).

- Analysis of the number of serious incidents per 100,000 occupied bed days suggests that the recording of incidents remains similar to last year.

- The range for this metric is from less than 1 incident to over 6 incidents reported per 100,000 occupied bed days in 2016/17.

SUI's reported per 100,000 occupied bed days

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
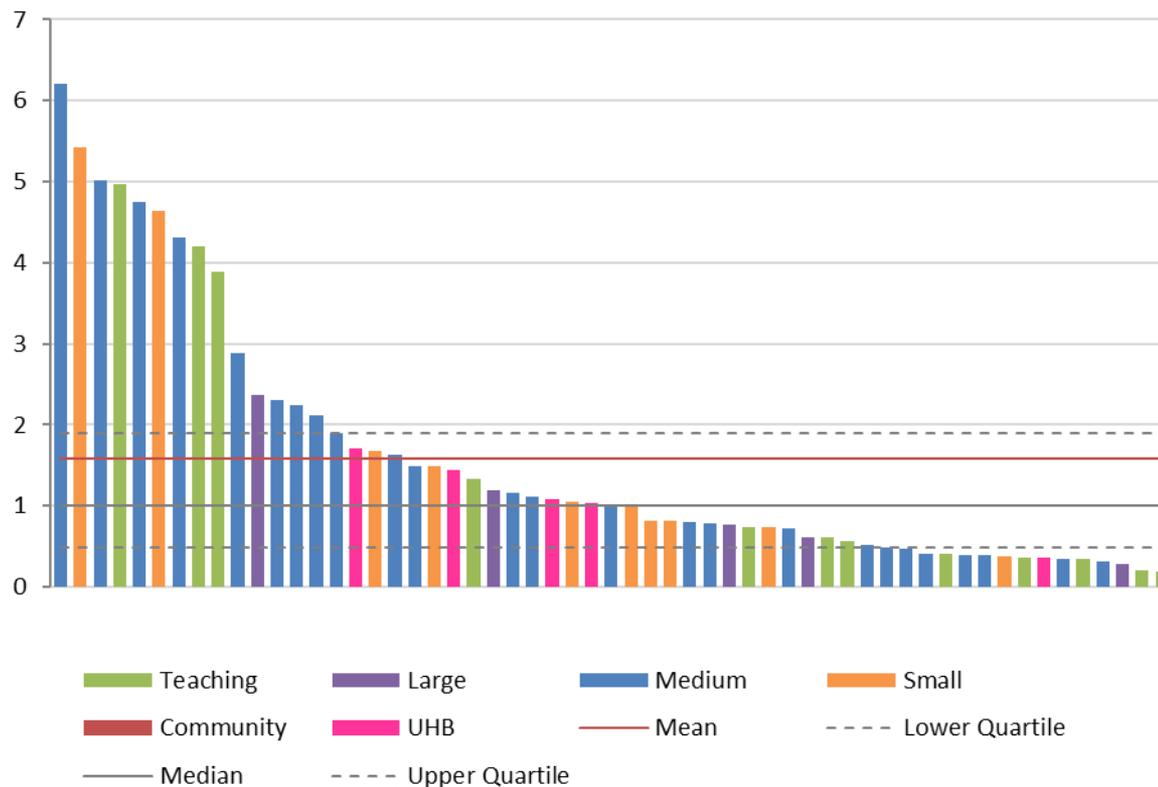
Patient Complaints

- The average position for the number of complaints recorded per 100,00 occupied bed days has increased slightly this year to 15 per 100k occupied bed days (from 11 in 2015/16).

- A mean position of 11 complaints per 100,000 occupied bed days was reported from 2013 to 2016.

- A larger variation between services is seen this year, with a range from 2 to 77 complaints raised per 100,000 occupied bed days.

- Conversely, participants this year received an average of 28 compliments per 100,000 occupied bed days, with a range from 0 to over 300.

Complaints received throughout the year per 100,000 occupied bed days

Legend: Teaching, Large, Medium, Small, Community, UHB, Mean, Lower Quartile, Median, Upper Quartile
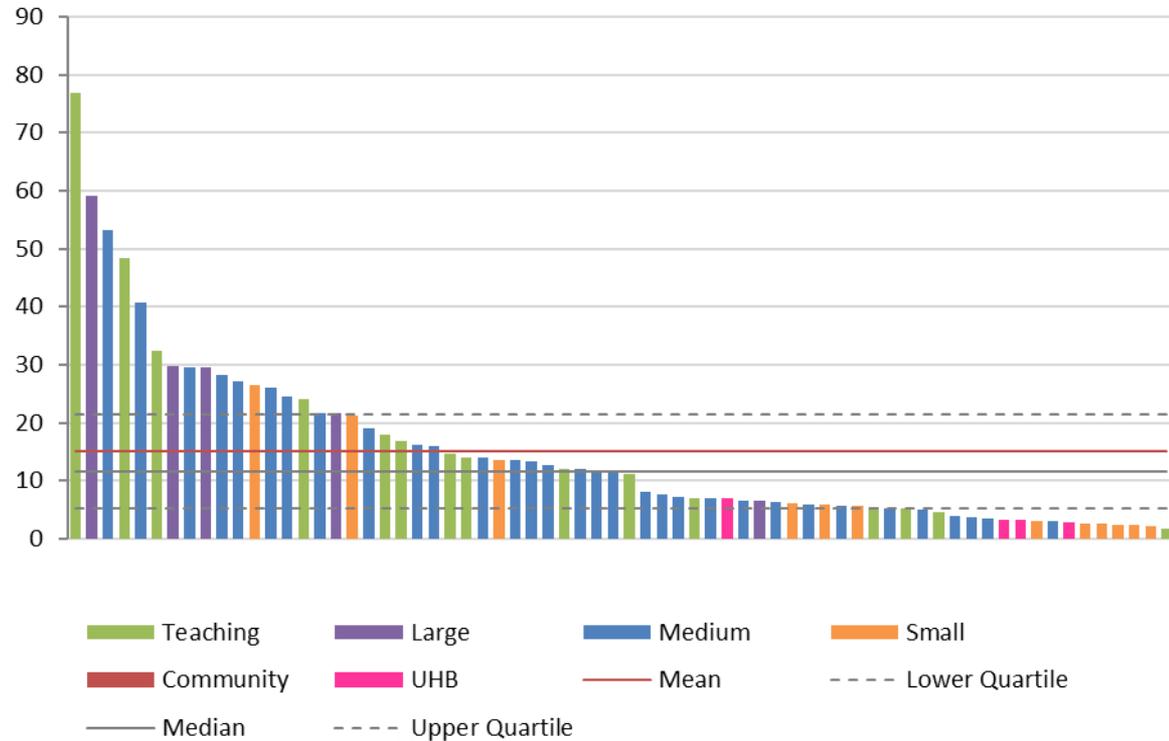
Conclusion and next steps

Conclusion

- The findings from this year's Radiology benchmarking project demonstrate that the demand for Radiology services has shown further growth this year, but at a slower rate than that seen in previous years. Overall examination growth levels across project participants is reported at 4%, a reduction on the 6%-7% levels seen in previous years.

- Radiology is increasingly becoming an ambulatory specialty with just 17% of examinations associated with inpatient care in 2016/17. The growth in demand from A&E, GP direct access, and outpatient clinics creates increasing pressure on waiting times. Overall performance on 6-week diagnostic waiting times has been broadly stable in the last year, however, many organisations demonstrate difficulty in consistently meeting the 6-week waiting time targets.

- Median equipment levels remain static at 12 per 100,000 outpatient attendances, as seen since 2013/14. Strong links have been found between equipment availability and A&E attendance, particularly for CT and plain film digital X-rays. There has been a small amount of movement observed in the past three years, suggesting that Radiology departments continue to make marginal adjustments to utilisation to meet demand. Data indicates that equipment is aging in Radiology services, with an increase in the average age of equipment in 2016/17.

- Report turnaround times have deteriorated this year, although overall productivity levels have increased. Reporting backlogs are still evident, with the majority in plain film X-ray. A marginal growth in outsourcing has been shown this year, with a quarter of organisations reporting that outsourced providers are unable to access PACS systems.

- Workforce levels have marginally increased, and providers report an increasing proportion of skill mix being made up of Radiographers (two fifths), followed by administrative staff and Consultant Radiologists. Vacancy levels remain relatively high, although overall rates have decreased since 2015/16. Consultant vacancy rates of 16% indicate the recruitment problems faced by many providers with smaller DGH providers being most exposed to shortfalls in medical workforce.

- One response to ongoing difficulties in medical recruitment has been a growth in non-medical reporting. Radiographers and Sonographers now account for 35% of all reports marking a clear MDT response to the challenge of coping with demand increases and workforce availability. Providers are also demonstrating innovation in reporting with Consultant home reporting supported in around 40% of providers.

- The Radiology benchmarking project will continue into an 8th cycle in 2018 and we look forward to working with member organisations to scope ongoing refinements to the project's data specification and content. The 2018 project will launch in April 2018 with a consultation process on content beginning in February 2018.

- If you have any questions about this report or the Radiology project in general, please contact Stephen Day (stephen.day5@nhs.net) or Stephen Watkins (s.watkins@nhs.net).

NHS
Benchmarking Network

Additional outputs

All participants have been issued with bespoke dashboard reports, outlining providers own position on a number of metrics.
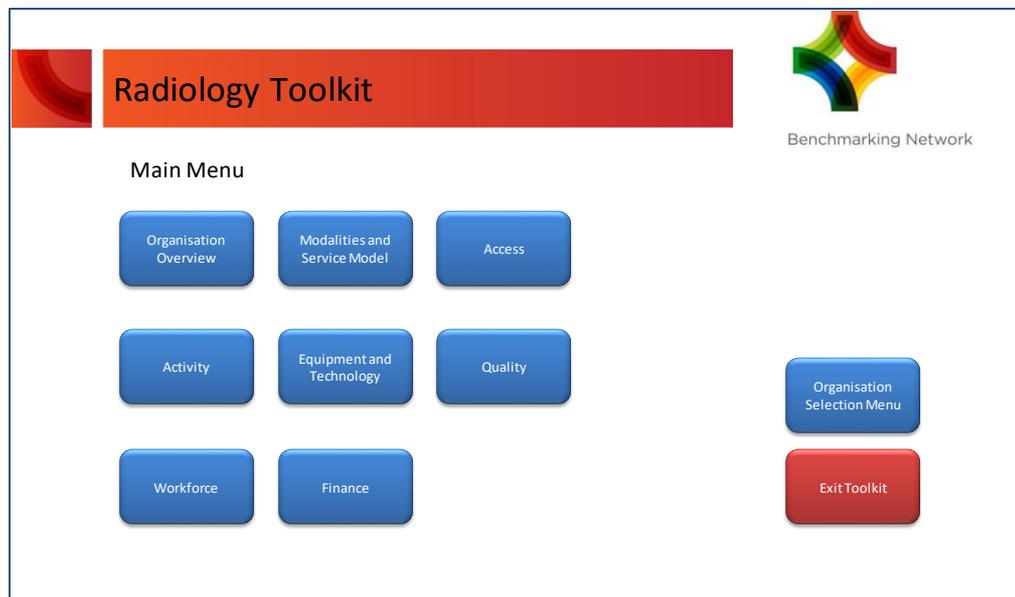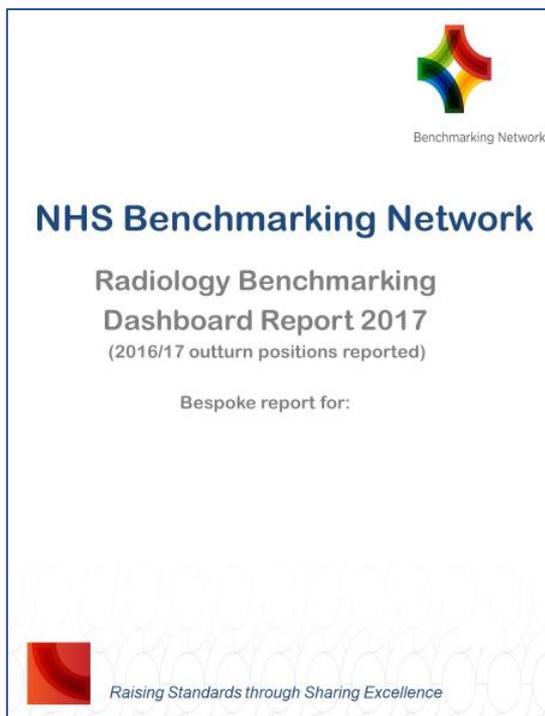
All NHS Benchmarking Network members are able to access an excel benchmarking toolkit, containing hundreds of charts with providers positions highlighted.

To gain access to these outputs, please contact e.pruce1@nhs.net.

Good practice

This year, a separate compendium containing all good practice and innovation submitted by participating Trusts and Health Boards has been produced. This compendium is available to download from the members' area of the NHS Benchmarking Network website.