NHS

Diagnostic Imaging Dataset Annual Statistical Release 2018/19

NHS England and NHS Improvement

Diagnostic Imaging Dataset

Annual Statistical Release 2018/19

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Diagnostic Imaging Dataset

Annual Statistical Release 2018/19

Contents

1 Introduction

The Diagnostic Imaging Dataset (DID) is a monthly data collection covering data on diagnostic imaging tests on NHS patients in England. It provides estimates of GP usage of direct access to key diagnostics tests for cancer, for example chest imaging, non-obstetric ultrasound and Brain MRI.

The DID was introduced to monitor progress on *Improving Outcomes: A Strategy for Cancer*[1]. This strategy set out how the Government, NHS and public can help prevent cancer, improve the quality and efficiency of cancer services and move towards achieving outcomes that rival the best. One aspect of that is to ensure that GPs have access to the right diagnostic tests to help them to diagnose or exclude cancer earlier. The DID therefore reports on imaging activity, referral source and timeliness.

These data are collated from Radiology Information Systems (RISs), which are hospital administrative systems used to manage the workflow of radiology departments, and uploaded into a database maintained by NHS Digital.

This publication finalises estimates of imaging activity in 2018/19.

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[1] Improving Outcomes: A Strategy for Cancer, first published 12 January 2011.
The cancer strategy is now part of the NHS Long Term Plan, see
https://www.longtermplan.nhs.uk/online-version/chapter-3-further-progress-on-care-quality-and-outcomes/better-care-for-major-health-conditions/cancer/.

2 Headline Messages

For all imaging activity:

- 44.8 million imaging tests were reported in England in the year to March 2019, compared with 42.7 million in the previous year, an increase of 4.8%.

- Plain Radiography (X-ray) was most common with 23.5 million procedures, followed by Diagnostic Ultrasonography (Ultrasound, 10.2 million), Computerized Axial Tomography (CT Scan, 5.67 million) and Magnetic Resonance Imaging (MRI, 3.74 million).

- The median period between the request being made and the test being performed varied from the same day for X-ray, Fluoroscopy and Medical Photography up to 21 days for MRI in 2018/19.

- Across all types of imaging, emergency admissions and inpatients have shorter waits than outpatients and referrals made under GP direct access arrangements.

- The median period from a test being performed to the report being issued varied from the same day for CT scan, Ultrasound, Fluoroscopy and Medical Photography up to 3 days for MRI in 2018/19, the same as in 2017/18.

For the key tests[2] Chest X-ray or CT, Brain MRI and Non-obstetric Ultrasound of the Abdomen and/or pelvis or Kidney/bladder:

- In 2018/19, GPs requested over a quarter (25.5%) of all tests that may have been used to diagnose or discount cancer, under direct access arrangements. This is compares to 26.4% in 2017/18.

- The test most commonly requested by GPs was Chest X-ray with 2.1 million tests (down 5.1% from 2017/18), whilst the test with the highest proportion of GP referrals was ultrasounds that may have been used to diagnose ovarian cancer, 45% of which were requested by GPs in 2018/19.

- The median period between the request being made and the test being performed varied between each of the key tests under GP direct access arrangements. This ranged from the same day for Chest X-ray to 30 days for Abdomen and/or pelvis ultrasound procedures.

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[2] Although these tests are used to diagnose cancer, many of the tests also have wider clinical uses. Within this dataset it is not possible to distinguish the different uses of these tests.

3 Annual Imaging Activity

3.1 Imaging Activity by modality

3.1.1. 44.8 million imaging tests were reported in England in the year to March 2019, compared with 42.7 million in the previous year, an increase of 4.8%[3].

3.1.2. Plain Radiography (X-ray) had the biggest share of all tests performed during the year, with 23.5 million X-rays reported in 2018/19 (up 2.4% from 2017/18). The next most common procedures were Ultrasound (10.2 million, up 6.9%), CT scans (5.67 million, up 10%) and MRI Scans (3.74 million, up 8.1%). Both PET-CT and SPECT scans had a large proportional increase (up 15% and 13% respectively). Nuclear Medicine activity rose by 1.0% and Fluoroscopy by 0.8% in 2018/19. Medical Photography reported in the dataset continued to grow (by 41%). Table 1 shows the imaging counts and growth for each modality.

3.1.3. January 2019 was the month with the most reported activity during 2018/19, at 3.96 million tests. December 2018 had the least, at under 3.4 million. Graph 1 shows this seasonal fluctuation overall and by modality. There are dips in reported imaging for most modalities in December and February, which have fewer normal weekdays, but a slight rising trend over the year for some of the imaging activities.

Further information on the tests included in these tables is given in the glossary at Section 6.3.

Monthly breakdowns of activity by modality, provider and referral source setting are given in Tables 1 - 6 (separate excel files), available from NHS England DID website.

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[3] There was little change in data completeness in this period: 100% in 2017/18 to 99.8% in 2018/19.

Table 1: Count of NHS imaging activity in England, 2012/13 to 2018/19

	X-ray	Ultrasound	CT Scan	MRI	Fluoro-scopy	Nuclear Medicine	PET-CT Scans	SPECT Scans	Medical Photography	% organisations included	Total[1]
2012/13[2]	21,174,005	7,687,850	3,346,840	2,349,160	1,018,620	437,155	71,080	11,390	6,085	93.6%	36,102,195
2013/14	21,832,985	8,140,175	3,780,405	2,614,865	1,028,735	446,365	75,255	16,350	10,530	97.8%	37,945,665
2014/15	22,576,785	8,566,470	4,199,515	2,890,310	1,018,100	439,655	89,165	21,850	16,180	99.2%	39,818,030
2015/16	22,570,870	8,916,225	4,461,650	3,084,815	1,040,560	432,755	97,990	25,900	23,945	99.6%	40,654,715
2016/17	22,913,795	9,368,335	4,815,200	3,358,515	1,052,750	423,860	132,760	35,420	31,225	99.7%	42,131,855
2017/18	22,908,795	9,507,560	5,146,475	3,464,010	1,025,330	417,460	154,270	40,015	37,550	100.0%	42,701,460
2018/19	23,467,930	10,161,965	5,665,930	3,743,995	1,034,025	421,650	177,330	45,365	52,875	99.8%	44,771,065
% Growth[3]	2.4%	6.9%	10%	8.1%	0.8%	1.0%	15%	13%	41%	-0.2%	4.8%
2018/19											
Apr	1,924,575	815,310	454,510	298,305	85,535	34,745	13,640	3,900	4,115	100.0%	3,634,640
May	2,062,605	870,970	469,680	312,595	89,975	36,975	14,890	3,710	4,645	100.0%	3,866,050
Jun	1,971,565	840,530	460,475	310,230	87,610	35,675	14,740	3,680	4,530	100.0%	3,729,040
Jul	2,002,620	867,365	478,350	319,680	88,690	36,575	14,425	3,840	4,580	100.0%	3,816,120
Aug	1,871,350	840,695	472,850	315,995	85,515	36,160	14,670	3,895	4,450	99.4%	3,645,585
Sep	1,869,890	793,200	451,620	303,110	81,335	32,855	13,400	3,565	4,110	100.0%	3,553,080
Oct	2,066,560	904,735	494,235	326,555	92,905	38,495	15,755	4,100	5,050	100.0%	3,948,395
Nov	1,977,810	885,290	482,845	320,600	90,305	36,090	14,745	3,980	4,455	100.0%	3,816,120
Dec	1,752,015	765,500	454,070	292,780	76,065	29,435	14,005	3,175	3,875	100.0%	3,390,915
Jan	2,070,550	912,130	499,635	324,475	88,200	37,325	15,925	3,960	4,655	98.2%	3,956,845
Feb	1,872,680	801,285	452,740	296,565	80,850	33,050	15,730	3,610	4,125	100.0%	3,560,635
Mar	2,025,715	864,955	494,920	323,100	87,040	34,265	15,405	3,955	4,280	100.0%	3,853,635

Notes:
1. Totals do not always equal the sum of parts due to rounding.
2. 2012/13 was the first year of the DID collection and as such some of the changes since then may be due to improved coverage of the dataset.
3. % Growth is between 2017/18 and 2018/19.

Graph 1: NHS imaging activity in England, April 2018 to March 2019
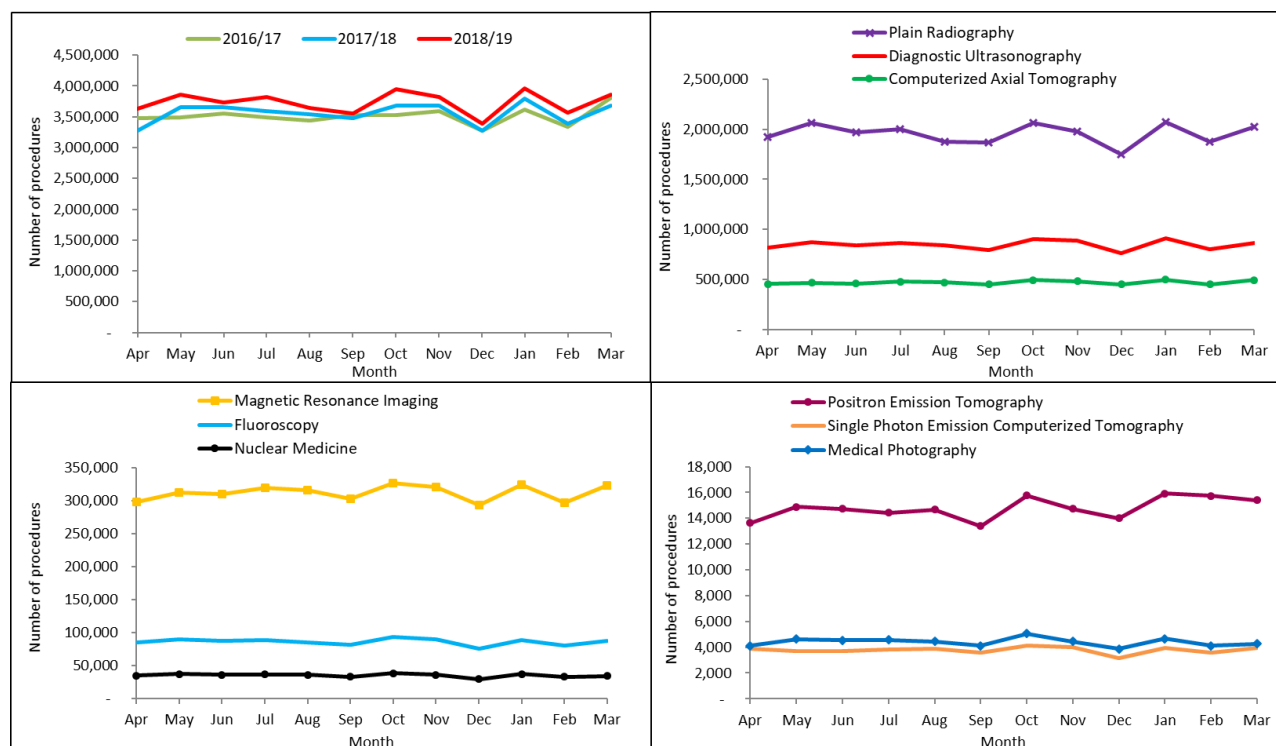
3.2 Imaging Activity by Age and Gender

3.2.1. 7.2 million more tests were performed on females than on males in 2018/19. The largest difference occurred for ultrasound procedures (4.7 million more on females) and for X-rays (2.2 million more). More than half of ultrasounds were on patients aged under 44 whilst the rate of X-rays increased markedly with age. Approximately half of the 2 million more X-rays for females than males was attributable to demographic differences, especially the higher number of older women compared to older men. Conversely there were more PET-CT scans on males than females, with the rate of Fluoroscopy and CT scanning on males also slightly higher than for females. Table 2 shows the age and gender of patients who have received diagnostic tests in 2018/19.

Table 2: NHS Imaging activity in England by gender and age, 2018/19

	X-ray	Ultrasound	CT Scan	MRI	Fluoro-scopy	Nuclear Medicine	PET-CT Scan	SPECT Scan	Medical Photography	Total[1]
Female	12,824,790	7,428,950	2,820,155	2,009,795	497,395	225,365	80,670	24,850	27,225	25,939,195
Male	10,608,415	2,713,830	2,839,995	1,730,145	536,010	196,015	96,620	20,505	25,630	18,767,165
Not known / specified[2]	34,725	19,185	5,785	4,050	620	270	45	15	20	64,715
0-14	2,066,035	454,560	59,540	156,985	55,605	16,535	530	390	2,985	2,813,165
15-44	5,299,340	5,002,385	920,510	1,106,830	174,800	60,130	17,010	8,385	9,640	12,599,030
45-59	4,836,065	1,969,760	1,152,975	1,039,960	232,365	93,360	38,055	9,095	8,695	9,380,330
60-74	5,816,130	1,625,500	1,709,105	966,090	324,570	151,530	77,670	15,750	13,000	10,699,345
75+	5,435,210	1,104,485	1,820,495	471,230	244,545	100,070	44,070	11,745	18,405	9,250,255
Not Known	15,155	5,275	3,300	2,900	2,135	25	5	0	145	28,940

Notes:
1. Totals do not always equal the sum of parts due to rounding.
2. "Not Specified" means that the patient did not want to reveal their gender. "Not known" means that the patient's gender was recorded as "Not known" or else was not reported.

4 Patient Test Times

4.1 Patient Test Times – Request to test

4.1.1. The DID collects data on four dates for each imaging event:
- Date of test request (made by a health care professional).
- Date of test request received (by the organisation providing the imaging).
- Date of test
- Date of test report Issued (by a health care professional interpreting the imaging output).

4.1.2. This publication is based on all imaging which had a Date of test between April 2018 and March 2019.

4.1.3. There were big differences in the median period between the request being made (or received) and the test being performed for the different tests. The median ranged from the same day for X-ray, Fluoroscopy and Medical Photography to 21 days for MRI scans. There was also some variability within individual tests over the course of the year, with the median for MRI varying by up to almost a week, from 19 to 25 days, see Table 3.

Table 3: Median number of days between date of test request and date of test, by modality, April 2018 to March 2019
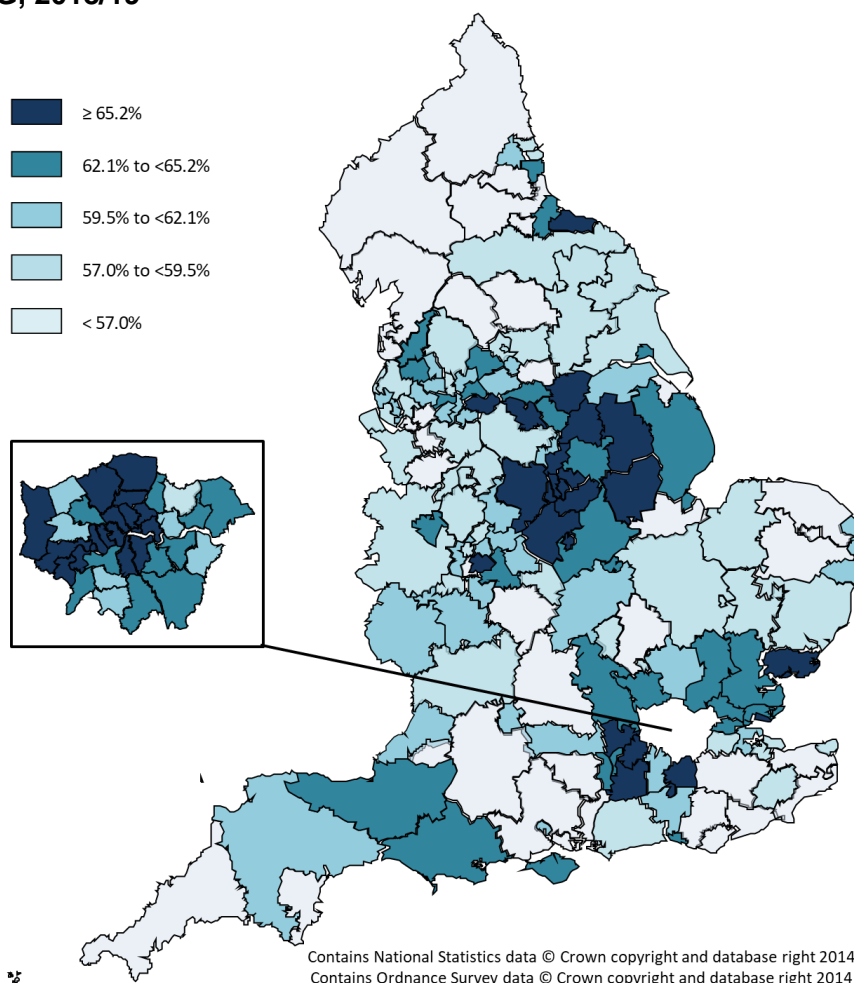
	X-ray	Ultra-sound	CT Scans	MRI	Fluoro-scopy	Nuclear Medicine	PET-CT Scans	SPECT Scans	Medical Photography
2012/13	0	13	2	23	0	15	8	14	0
2013/14	0	13	2	24	0	14	7	17	0
2014/15	0	13	2	24	0	15	8	15	0
2015/16	0	13	1	22	0	16	7	15	0
2016/17	0	13	1	22	0	16	7	17	0
2017/18	0	14	1	21	0	18	7	17	0
2018/19	0	14	1	21	0	19	8	18	0
Apr	0	15	1	23	0	19	7	19	0
May	0	14	1	21	0	18	7	16	0
Jun	0	15	1	23	0	19	7	19	0
Jul	0	14	1	21	0	18	7	16	0
Aug	0	14	1	22	0	18	7	17	0
Sep	0	15	1	21	0	18	7	16	0
Oct	0	14	1	19	0	18	7	17	0
Nov	0	14	2	20	0	19	8	17	0
Dec	0	14	1	21	0	18	9	17	0
Jan	0	15	1	25	0	23	9	23	0
Feb	0	14	1	20	0	18	8	19	0
Mar	0	14	1	21	0	19	7	19	0

Note: Median values of 0 occur where at least 50% of activity has the same day for both 'date of test request' and 'date of test'. Where 'Date of test request' was missing in 2018/19, 'Date of test request received' was used instead. Records where both dates were missing were excluded from the median calculation.

4.1.4. The median number of days between test request (or test request received) and date of test rose by one day for Nuclear Medicine, PET-CT and SPECT scans in 2018/19 compared to 2017/18. All other modalities remained the same.

4.1.5. The figures in Table 3 should not be compared to "waiting time" statistics that measure how long patients are on a waiting list for a procedure, since these figures included both planned and unplanned imaging activity. In addition, these figures exclude any cancelled or missed appointments and they count the period for individual tests not each patient appointment.

4.1.6. There was some regional variation in the proportion of imaging which occurred within seven days of the test being requested (or received) for CT Scans and within fourteen days of the test being requested (or received) for Ultrasound and MRI Scans. Maps 1-3 illustrate this for each CCG in England (with a fifth of CCGs in each band shown). The underlying data for these charts are given in Table 7a (separate Excel file).

4.1.7. Patients from Accident & Emergency departments and admitted patients have shorter waits for their test than other sources of referral. GP direct access and outpatient referrals show a longer "waiting time" distribution. This affects the median number of days from request to test for those modalities with more outpatient and GP referrals. This is illustrated in Graph 2, which shows the distribution of periods from request to test for individual procedures, by patient source setting and modality. Table 9 (separate Excel file) gives the underlying figures for these charts.

Map 1: Proportion of CT scans where date of test is up to 7 days after date of referral, for each CCG, 2018/19

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Map 2: Proportion of Ultrasounds where date of test is up to 14 days after date of request, for each CCG, 2018/19
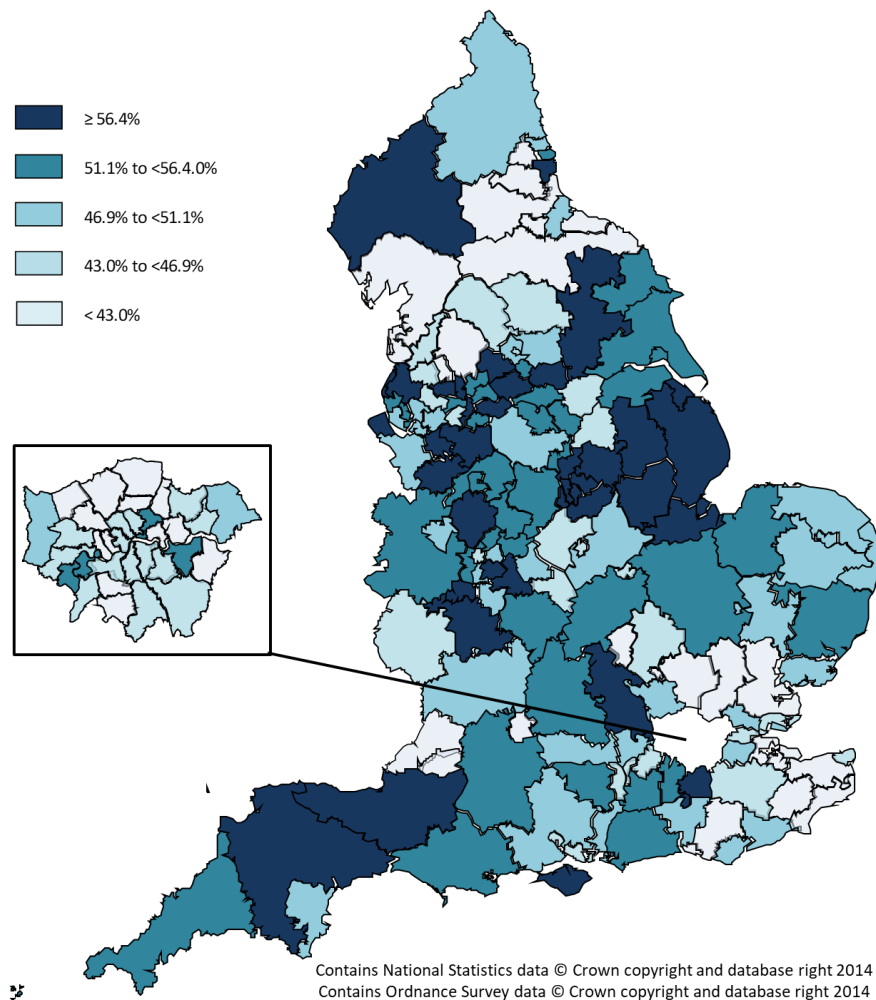
Map 3: Proportion of MRI Scans where date of test is up to 14 days after date of request, for each CCG, 2018/19

Legend (Map 2):
- ≥ 56.4%
- 51.1% to <56.4.0%
- 46.9% to <51.1%
- 43.0% to <46.9%
- < 43.0%

Legend (Map 3):
- ≥ 46.7%
- 40.6% to <46.7%
- 37.3% to <40.6%
- 33.2% to <37.3%
- < 33.2%

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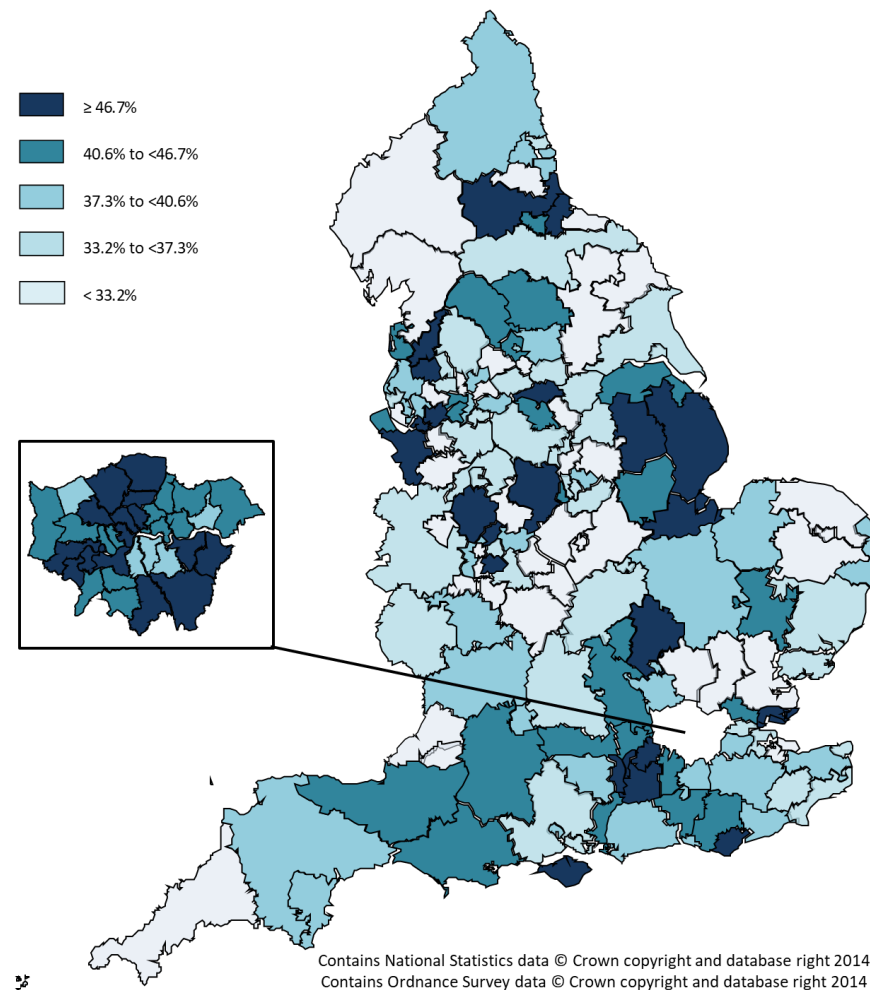
Graph 2: Imaging activity by number of days from date of test request to date of test, by modality and source of referral, 2018/19
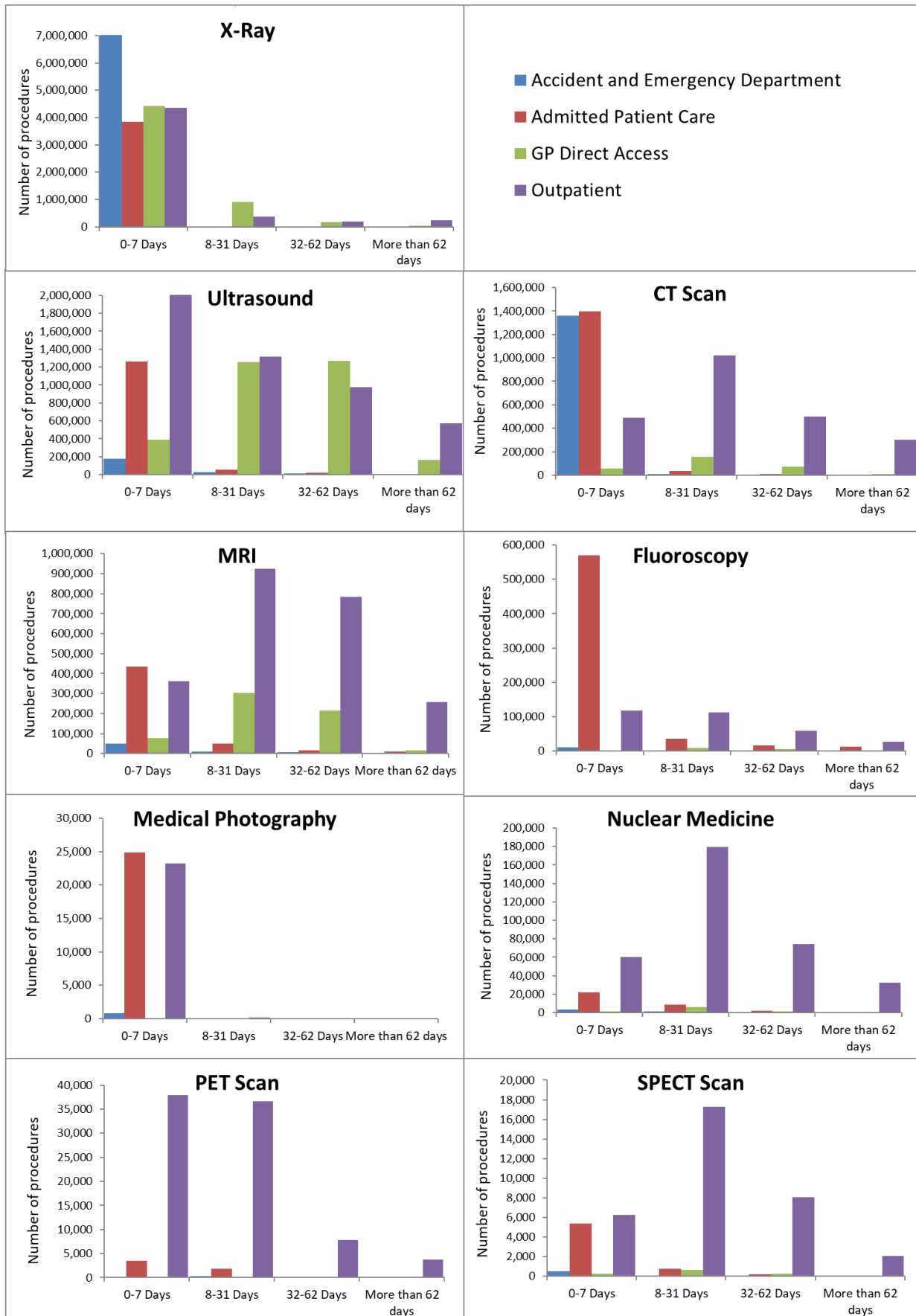
4.2 Patient Test Times – Test to report

4.2.1. There was variation between different test types in the median period for the report to be issued after the test, see Table 4. For Ultrasound, CT Scans, Fluoroscopy and Medical Photography, at least half the procedures (with a report issue date) were reported the same day as the test (that is, a median of 0). For MRI the median difference was 3 days, for PET-CT scans it was 2 days and for the other modalities the median difference was 1 day.

4.2.2. Within each modality, the elapsed period for a test report in 2018/19 was the same as the previous year and remained fairly consistent throughout the 12 months, with three modalities showing slight fluctuations of one day.

Table 4: Median number of days between date of test and date test report issued, by modality, April 2018 to March 2019

	X-ray	Ultra-sound	CT Scans	MRI	Fluoro-scopy	Nuclear Medicine	PET-CT Scans	SPECT Scans	Medical Photography
2012/13	1	0	0	2	0	2	2	1	1
2013/14	1	0	0	2	0	1	2	1	0
2014/15	1	0	0	3	0	1	2	1	0
2015/16	1	0	0	3	0	1	2	1	0
2016/17	1	0	0	3	0	1	2	1	0
2017/18	1	0	0	3	0	1	2	1	0
2018/19	1	0	0	3	0	1	2	1	0
Apr	1	0	0	3	0	1	2	1	0
May	1	0	0	3	0	1	2	1	0
Jun	1	0	0	3	0	1	2	2	0
Jul	1	0	0	3	0	1	2	2	0
Aug	1	0	0	3	0	1	2	1	0
Sep	1	0	0	3	0	1	2	2	1
Oct	1	0	0	3	0	1	1	1	0
Nov	1	0	0	3	0	1	2	2	0
Dec	1	0	0	3	0	1	2	1	0
Jan	1	0	0	3	0	1	2	1	0
Feb	1	0	0	3	0	1	2	2	0
Mar	1	0	0	3	0	1	2	2	0

4.2.3. The National Imaging Board guidance states that investigations will be seen and accurately reported within as short a time as possible and stresses the importance of reporting imaging activity in a timely manner. It suggested that Inpatient and Accident & Emergency referrals should be reported the same working day whilst all other referrals should be reported by the next working day. A tolerance of 90% for this was considered reasonable.

4.2.4. Table 5 shows the percentage of reports that were issued the same day as the test and those issued by the end of the next day separately for Admitted patient and A&E referred tests and for Outpatient and GP direct access tests, for each modality. Table 10 (separate Excel file) gives this breakdown by provider.

Table 5: Proportion of imaging reports that were issued, either the same day as the test or by the end of the following day, by modality, April 2018 to March 2019

Inpatient and A&E

	Reported by:	X-ray		Ultrasound		CT Scans		MRI		Fluoroscopy		Nuclear Medicine		PET-CT Scans		SPECT Scans		Medical Photography	
		Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day
Inpatient and A&E	**2012/13**	25%	50%	91%	94%	81%	92%	64%	81%	70%	79%	58%	76%	23%	54%	75%	84%	20%	59%
	2013/14	25%	51%	92%	96%	84%	94%	65%	81%	71%	80%	59%	78%	28%	52%	73%	84%	48%	76%
	2014/15	26%	53%	93%	96%	85%	95%	66%	82%	72%	81%	60%	78%	29%	57%	67%	87%	49%	73%
	2015/16	28%	55%	94%	96%	88%	96%	67%	83%	72%	82%	62%	77%	35%	61%	72%	85%	52%	74%
	2016/17	29%	55%	94%	96%	88%	96%	65%	80%	73%	82%	64%	77%	39%	64%	76%	85%	48%	66%
	2017/18	28%	53%	95%	97%	88%	97%	66%	80%	73%	82%	66%	79%	36%	61%	80%	88%	52%	65%
	2018/19	28%	53%	95%	97%	89%	97%	69%	83%	73%	81%	66%	79%	33%	62%	78%	87%	51%	62%
	Apr	27%	52%	95%	97%	88%	96%	68%	82%	73%	82%	65%	79%	30%	58%	79%	88%	58%	75%
	May	29%	54%	95%	97%	88%	97%	68%	83%	74%	83%	67%	81%	37%	66%	79%	88%	51%	64%
	Jun	28%	52%	95%	97%	88%	97%	69%	82%	73%	81%	67%	80%	37%	62%	81%	89%	53%	64%
	Jul	28%	54%	95%	97%	88%	96%	69%	83%	71%	80%	66%	80%	37%	67%	79%	89%	47%	59%
	Aug	29%	53%	96%	97%	89%	97%	70%	83%	71%	79%	68%	81%	39%	64%	77%	86%	48%	58%
	Sep	27%	53%	95%	97%	89%	97%	68%	83%	72%	80%	65%	80%	29%	61%	78%	86%	42%	54%
	Oct	29%	55%	96%	97%	89%	97%	67%	82%	71%	79%	65%	79%	30%	65%	76%	86%	50%	63%
	Nov	29%	54%	95%	96%	89%	96%	68%	82%	72%	80%	65%	77%	33%	61%	81%	89%	54%	64%
	Dec	29%	52%	96%	97%	90%	97%	70%	83%	74%	81%	68%	80%	34%	62%	79%	87%	50%	59%
	Jan	29%	55%	93%	96%	90%	97%	69%	83%	74%	81%	64%	78%	32%	60%	77%	86%	54%	65%
	Feb	29%	53%	96%	98%	90%	97%	68%	82%	74%	82%	63%	77%	33%	65%	75%	86%	47%	57%
	Mar	28%	51%	96%	97%	90%	97%	69%	83%	74%	82%	64%	77%	29%	59%	80%	87%	54%	62%

Outpatient and GP Direct Access

	Reported by:	X-ray		Ultrasound		CT Scans		MRI		Fluoroscopy		Nuclear Medicine		PET-CT Scans		SPECT Scans		Medical Photography	
		Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day	Same day	Next day
Outpatient and GP Direct Access	2012/13	37%	53%	84%	90%	34%	50%	20%	35%	54%	68%	23%	45%	9%	39%	23%	46%	25%	70%
	2013/14	38%	53%	87%	91%	32%	47%	19%	34%	56%	70%	25%	46%	9%	35%	22%	43%	66%	90%
	2014/15	38%	54%	88%	93%	29%	45%	18%	33%	59%	72%	26%	47%	10%	38%	20%	44%	70%	86%
	2015/16	39%	54%	89%	93%	27%	42%	17%	32%	61%	73%	29%	50%	13%	38%	23%	44%	57%	76%
	2016/17	38%	54%	90%	94%	27%	40%	17%	31%	63%	74%	30%	50%	16%	41%	24%	44%	58%	72%
	2017/18	39%	54%	91%	94%	25%	37%	16%	29%	65%	76%	31%	51%	14%	43%	23%	43%	60%	71%
	2018/19	39%	54%	92%	95%	23%	36%	15%	29%	64%	74%	30%	49%	12%	39%	24%	42%	62%	70%
	Apr	37%	53%	92%	95%	24%	35%	15%	28%	65%	76%	30%	49%	10%	36%	31%	48%	75%	86%
	May	39%	55%	92%	95%	24%	37%	17%	31%	66%	77%	32%	51%	12%	40%	25%	44%	61%	67%
	Jun	38%	52%	92%	95%	23%	36%	16%	29%	66%	77%	30%	49%	15%	42%	24%	41%	63%	72%
	Jul	38%	53%	92%	94%	23%	35%	16%	29%	63%	74%	29%	48%	10%	40%	20%	39%	60%	68%
	Aug	39%	53%	92%	95%	24%	35%	16%	29%	65%	75%	30%	48%	12%	39%	25%	42%	60%	66%
	Sep	37%	52%	92%	95%	21%	33%	14%	27%	63%	73%	29%	48%	10%	37%	23%	40%	54%	65%
	Oct	38%	53%	92%	95%	24%	38%	15%	29%	62%	73%	28%	49%	11%	41%	23%	44%	63%	72%
	Nov	38%	54%	91%	94%	23%	36%	15%	29%	62%	73%	29%	47%	11%	37%	22%	40%	63%	69%
	Dec	42%	57%	92%	95%	24%	36%	15%	29%	64%	74%	31%	50%	13%	36%	27%	44%	63%	69%
	Jan	40%	56%	92%	95%	23%	37%	15%	29%	63%	74%	29%	50%	13%	42%	23%	44%	65%	73%
	Feb	39%	54%	93%	95%	22%	35%	15%	28%	63%	74%	29%	49%	11%	35%	23%	41%	63%	71%
	Mar	38%	52%	93%	95%	22%	33%	14%	27%	64%	74%	30%	49%	11%	37%	23%	40%	64%	69%

5   Imaging Tests that could contribute to Early Diagnosis of Cancer

5.1   Definition of the tests

5.1.1. One of the main drivers for establishing the DID was to assess the use of diagnostic imaging that could contribute to the early diagnosis of cancer and, in particular, General Practitioner (GP) direct access to these tests. To enable this analysis, a subset of procedures that are often used to diagnose or discount a diagnosis of cancer has been identified:

- **Brain (MRI)**
  This may diagnose brain cancer, this includes – MRI of brain (often with contrast);

- **Kidney or bladder (Ultrasound)**
  This may diagnose kidney or bladder cancer, this includes – ultrasound of kidney, ultrasound scan of bladder or ultrasound and Doppler scan of kidney;

- **Chest and/or abdomen (CT)**
  CTs which may diagnose lung cancer, this includes – chest + abdominal CT, CT of chest (high resolution or other), CT thorax + abdomen with contrast, CT thorax with contrast or CT chest + abdomen;

- **Chest (X-ray)**
  This may diagnose lung cancer, this includes – plain chest X-ray only;

- **Abdomen and/or pelvis (Ultrasound)**
  This may diagnose ovarian cancer, this includes – ultrasonography of pelvis, ultrasonography of abdomen (upper, lower or other) or abdomen + pelvis.

5.1.2. Although these tests are used to diagnose cancer, many of them also have wider clinical uses. Within this data, it is not possible to distinguish between the different uses of these tests.

5.1.3. Brain MRI, chest X-ray, and ultrasounds of the abdomen and pelvis to diagnose Ovarian Cancer were three of the key tests outlined in *Improving Outcomes: a Strategy for Cancer*.

5.2   Imaging activity and GP referral

5.2.1. In 2018/19, 11.2 million of these tests that may have been used to diagnose or discount cancer were performed, up 1.0% from 11.1 million in 2017/18. There were sustained increases for Brain MRI and Chest and/or abdomen CT and slightly higher activity again for the ultrasound tests (Kidney or bladder and Abdomen and/or pelvis) following a reduction in 2017/18. There is some seasonal fluctuation in the number of these tests directly referred by GPs, shown in Graph 3.1.

5.2.2. The most common of these tests was Chest X-ray, with 8.3 million tests being requested through all source settings in 2018/19 (down 0.6% from 2017/18). This was also the most common test requested by GPs (2.1 million, down 5.1% from 2017/18). Next most common were tests that may have been used to diagnose ovarian cancer (abdominal or pelvic ultrasound, 1.3 million), with 45% of such tests being requested by a GP. Table 6 shows the total number of tests suitable for diagnosing cancer, with the subset of these that had a referral source of GP direct access.

Table 6: Imaging activity for groups of tests suitable for diagnosing cancer, for all patients referred and for those directly referred by a GP, April 2018 to March 2019

	Brain (MRI)		Kidney or bladder (Ultrasound)		Chest and/or abdomen (CT)		Chest (X-ray)		Abdomen and/or pelvis (Ultrasound)	
	All	GP	All	GP	All	GP	All	GP	All	GP
2012/13	472,755	31,030	220,230	67,460	388,655	32,185	7,723,410	1,991,705	1,165,345	536,930
2013/14	528,870	39,540	220,075	65,450	438,245	39,180	7,691,055	1,931,250	1,246,225	570,235
2014/15	582,905	50,090	228,525	67,035	489,195	46,620	8,149,525	2,124,255	1,300,660	598,910
2015/16	629,095	68,330	222,765	65,925	512,865	50,995	8,070,460	2,019,315	1,312,745	600,435
2016/17	686,390	76,925	233,615	66,120	539,405	58,875	8,253,330	2,167,875	1,287,095	576,845
2017/18	717,650	82,115	228,970	62,700	566,610	63,790	8,332,405	2,161,805	1,264,240	559,955
2018/19	774,845	87,320	240,255	65,745	611,620	68,105	8,280,540	2,051,840	1,312,270	586,075
Growth	8.0%	6.3%	4.9%	4.9%	7.9%	6.8%	-0.6%	-5.1%	3.8%	4.7%
2018/19										
Apr	61,790	6,905	18,845	5,315	50,045	5,745	696,320	188,585	108,725	49,250
May	64,295	7,075	20,030	5,700	51,830	6,190	693,685	176,830	113,980	51,835
Jun	63,865	7,210	19,540	5,325	51,535	5,725	641,600	155,505	109,700	48,495
Jul	64,450	7,230	20,175	5,370	51,740	5,845	643,120	145,335	112,425	50,300
Aug	64,780	7,235	19,620	5,045	49,790	5,445	625,035	140,010	108,540	48,005
Sep	62,745	7,425	19,415	5,360	46,955	4,920	626,235	140,785	103,785	46,540
Oct	68,095	8,005	22,115	6,130	52,200	5,475	701,715	170,220	116,815	52,955
Nov	66,875	8,010	21,255	6,005	51,800	5,630	701,375	170,185	113,725	51,340
Dec	60,920	7,215	18,390	4,820	47,265	5,290	683,045	148,835	97,285	42,335
Jan	67,750	6,850	22,010	6,060	54,605	5,900	810,715	217,830	114,195	50,555
Feb	61,640	6,695	18,940	5,165	49,890	5,820	715,600	197,140	102,670	45,705
Mar	67,640	7,475	19,925	5,450	53,975	6,120	742,090	200,585	110,430	48,760

Totals do not always equal the sum of parts due to rounding.
% Growth is between 2017/18 and 2018/19.

5.2.3. Of the 11.2 million tests requested in 2018/19, 25.5% were requested by GPs under direct access arrangements, compared with 26.4% in 2017/18. Graph 3.2 shows the proportion of each test requested by GPs. The lowest proportions of GP direct access were for Brain MRI and Chest and/or abdomen CT (11%), but these continued to be the tests with most growth overall.

Graph 3.1: Imaging activity for patients directly referred by a GP, April 2018 to March 2019
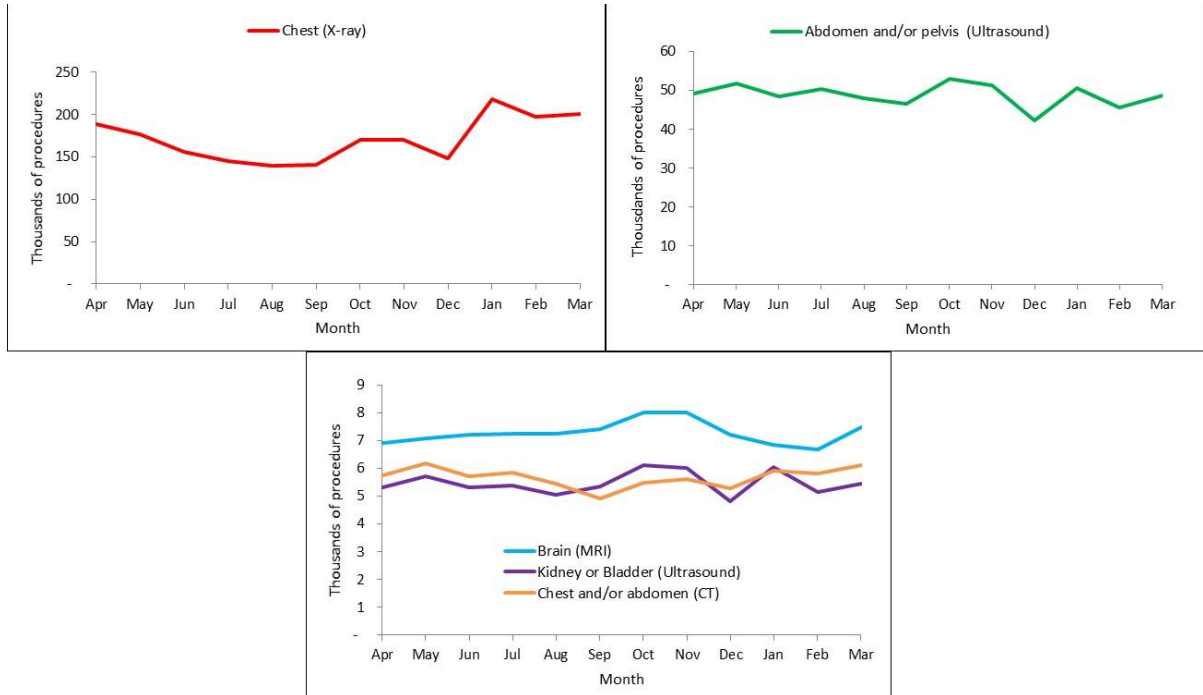
Graph 3.2: Percentage of referrals made by GPs by type of test, 2018/19
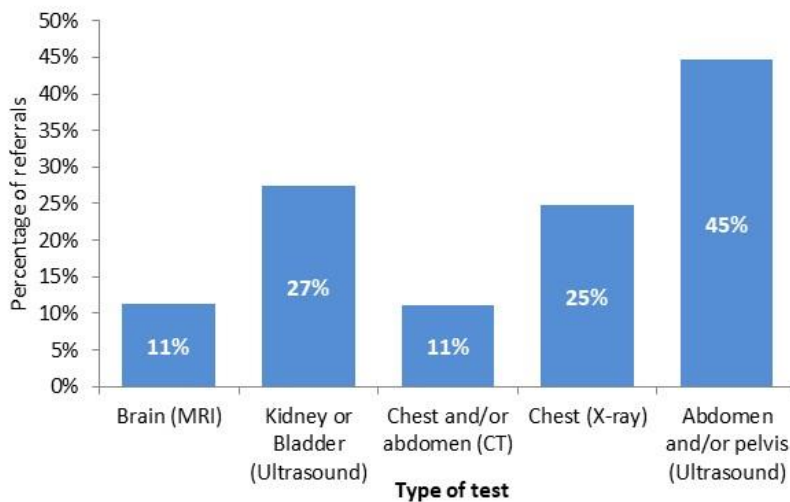
5.3 Patient test times

Patient test times – Request to test

5.3.1. For the key tests that may be used to diagnose or discount cancer, the median period from a test request being made (or received) to being performed is longer for GP direct access than for all referrals, see Table 7. The exception is Chest X-ray, where the median is zero (same day) for GP and all referrals. The main reason for this difference is that 'all referrals' includes tests on emergency admissions and inpatients, which have shorter waits.

Table 7: Median number of days between date of test request and date of test for groups of tests suitable for diagnosing cancer, overall and for GP Direct Access, April 2018 to March 2019

	Brain (MRI)		Kidney or bladder (Ultrasound)		Chest and/or abdomen (CT)		Chest (X-ray)		Abdomen and/or pelvis (Ultrasound)	
	All	GP	All	GP	All	GP	All	GP	All	GP
2012/13	21	25	13	23	13	17	0	0	14	22
2013/14	21	25	13	23	13	16	0	0	15	24
2014/15	21	26	13	24	14	17	0	0	17	26
2015/16	19	21	11	26	14	16	0	0	17	27
2016/17	19	21	12	27	14	17	0	0	17	27
2017/18	19	22	12	27	15	18	0	0	17	27
2018/19	19	22	13	28	16	18	0	0	20	30
Apr	20	25	15	31	17	20	0	0	22	32
May	20	24	14	30	15	20	0	0	21	31
Jun	20	25	15	32	17	21	0	0	21	33
Jul	18	24	13	31	16	19	0	0	20	31
Aug	19	23	14	29	17	19	0	0	20	31
Sep	18	20	14	29	17	19	0	0	20	31
Oct	16	19	13	25	15	17	0	0	19	29
Nov	17	19	12	24	15	16	0	0	19	29
Dec	18	20	11	25	16	17	0	0	18	28
Jan	22	24	13	28	17	17	0	0	21	33
Feb	18	20	12	22	15	15	0	0	18	27
Mar	18	21	13	26	16	17	0	0	20	29

Note: Median values of 0 occur where at least 50% of activity has the same day for both 'date of test request' and 'date of test'. Where 'Date of test request' was missing in 2018/19, 'Date of test request received' was used instead. Records where both dates were missing were excluded from the median calculation.

5.3.2. Abdomen and/or pelvis (Ultrasound) had an increase of three days in the median period from request to test for GP referrals and overall in 2018/19. Two other tests had an increase of one day in the median period: Kidney or Bladder (Ultrasound) and CT scan of chest and/or abdomen (overall, but not GP referred). Other medians were similar to 2017/18.

5.3.3. The median number of days between date of request and date of test has shown some fluctuation throughout 2018/19 for tests that are suitable for diagnosing cancer, as shown in Graph 4. Ultrasound procedures (Kidney or bladder and Abdomen and/or pelvis) for GP direct access have shown the largest variation across the months of 2018/19 with a range of up to 10 days, but there is no consistent seasonality except a peak in January for most tests.

Graph 4: Median number of days between date of test request and date of test for groups of tests suitable for diagnosing cancer, overall and for GP Direct Access, April 2018 to March 2019

Patient test times – Test to report

5.3.4. There is generally little difference in the time taken for a test report to be issued for GP direct access and all referrals, as shown in Table 8. However, the median period between the date of test and the date the report was issued was 3 days for GP-referred brain MRI, compared with 2 days overall, and 4 days for GP-referred chest and/or abdomen CT, compared with 3 days overall. It was also 1 day for GP-referred Chest X-ray, compared with 2 days overall.

5.3.5. The median time between test and report issued has remained the same for most modalities between 2017/18 and 2018/19. Only Chest and abdomen CT had an increase in the median (of one day) in 2018/19 compared to 2017/18, for all referrals.

5.3.6. Throughout 2018/19 there has been some fluctuation of the median test to report period but no consistent pattern over the year for any referrals.

Table 8: Median number of days between date of test and date test report issued and Percentage of records where report issued on day of test, for groups of tests suitable for diagnosing cancer, All referrals and GP Direct Access, April 2018 to March 2019

	Brain (MRI)				Kidney or bladder (Ultrasound)			
	All Median	All % Same day	GP Median	GP % Same day	All Median	All % Same day	GP Median	GP % Same day
2012/13	2	32%	3	17%	0	85%	0	80%
2013/14	2	34%	3	18%	0	89%	0	85%
2014/15	2	33%	3	18%	0	91%	0	88%
2015/16	2	35%	3	21%	0	92%	0	89%
2016/17	2	33%	3	19%	0	93%	0	89%
2017/18	2	32%	3	16%	0	94%	0	90%
2018/19	2	33%	3	17%	0	95%	0	92%
Apr	2	34%	3	17%	0	95%	0	91%
May	2	35%	2	19%	0	95%	0	92%
Jun	2	34%	3	18%	0	95%	0	91%
Jul	2	33%	3	15%	0	94%	0	91%
Aug	2	35%	3	17%	0	94%	0	92%
Sep	2	31%	3	15%	0	95%	0	93%
Oct	2	32%	2	17%	0	95%	0	92%
Nov	2	32%	2	19%	0	95%	0	92%
Dec	2	33%	3	18%	0	95%	0	92%
Jan	2	33%	2	18%	0	95%	0	91%
Feb	2	32%	3	16%	0	95%	0	93%
Mar	2	33%	3	17%	0	95%	0	92%

	Chest and/or abdomen (CT)				Chest (X-ray)				Abdomen and/or pelvis (Ultrasound)			
	All Median	All % Same day	GP Median	GP % Same day	All Median	All % Same day	GP Median	GP % Same day	All Median	All % Same day	GP Median	GP % Same day
2012/13	1	42%	2	32%	2	25%	2	29%	0	86%	0	84%
2013/14	1	40%	2	29%	2	25%	2	28%	0	89%	0	88%
2014/15	1	38%	2	27%	2	25%	2	28%	0	90%	0	89%
2015/16	1	36%	2	25%	2	26%	2	29%	0	92%	0	90%
2016/17	2	36%	3	23%	2	26%	2	27%	0	93%	0	91%
2017/18	2	34%	4	19%	2	24%	2	28%	0	94%	0	92%
2018/19	3	32%	4	19%	2	24%	1	29%	0	95%	0	93%
Apr	3	32%	4	17%	2	24%	2	27%	0	95%	0	93%
May	2	33%	4	19%	2	26%	1	31%	0	95%	0	93%
Jun	3	32%	4	20%	2	25%	2	29%	0	95%	0	93%
Jul	3	32%	4	17%	2	24%	2	29%	0	94%	0	92%
Aug	3	32%	5	18%	2	25%	2	28%	0	94%	0	92%
Sep	3	31%	4	16%	2	24%	1	28%	0	95%	0	93%
Oct	2	34%	3	20%	2	24%	1	29%	0	94%	0	92%
Nov	2	33%	3	20%	2	24%	1	29%	0	94%	0	92%
Dec	2	34%	3	20%	2	25%	1	32%	0	95%	0	93%
Jan	2	32%	3	19%	2	25%	2	29%	0	95%	0	93%
Feb	3	32%	3	20%	2	24%	2	29%	0	95%	0	93%
Mar	3	32%	4	19%	3	23%	2	27%	0	95%	0	93%

Patient test times – Variation by provider

5.3.7. The median period between the date the test request was made (or received) and the date of test varies by provider as well as by referral source and modality, see Graph 5.1 for Chest X-ray, Ultrasound of the abdomen and/or pelvis in females and Brain MRI. For chest X-ray, there is little variation by provider in the median period from request to test, with the median for A&E and admitted patients universally up to a day and that for GP referrals and outpatients generally up to a week. The median from request to test was also generally up to one day for Ultrasound of female abdomen/pelvis and Brain MRI for A&E and admitted patients. However, there was much more variation in the median from request to test for GP direct access and for outpatients for these tests, with providers differing in their median request to test period by several weeks.

Graph 5.1 Variation by provider of median period from date of test request to date of test for procedures suitable for diagnosing cancer, by referral source, 2018/19
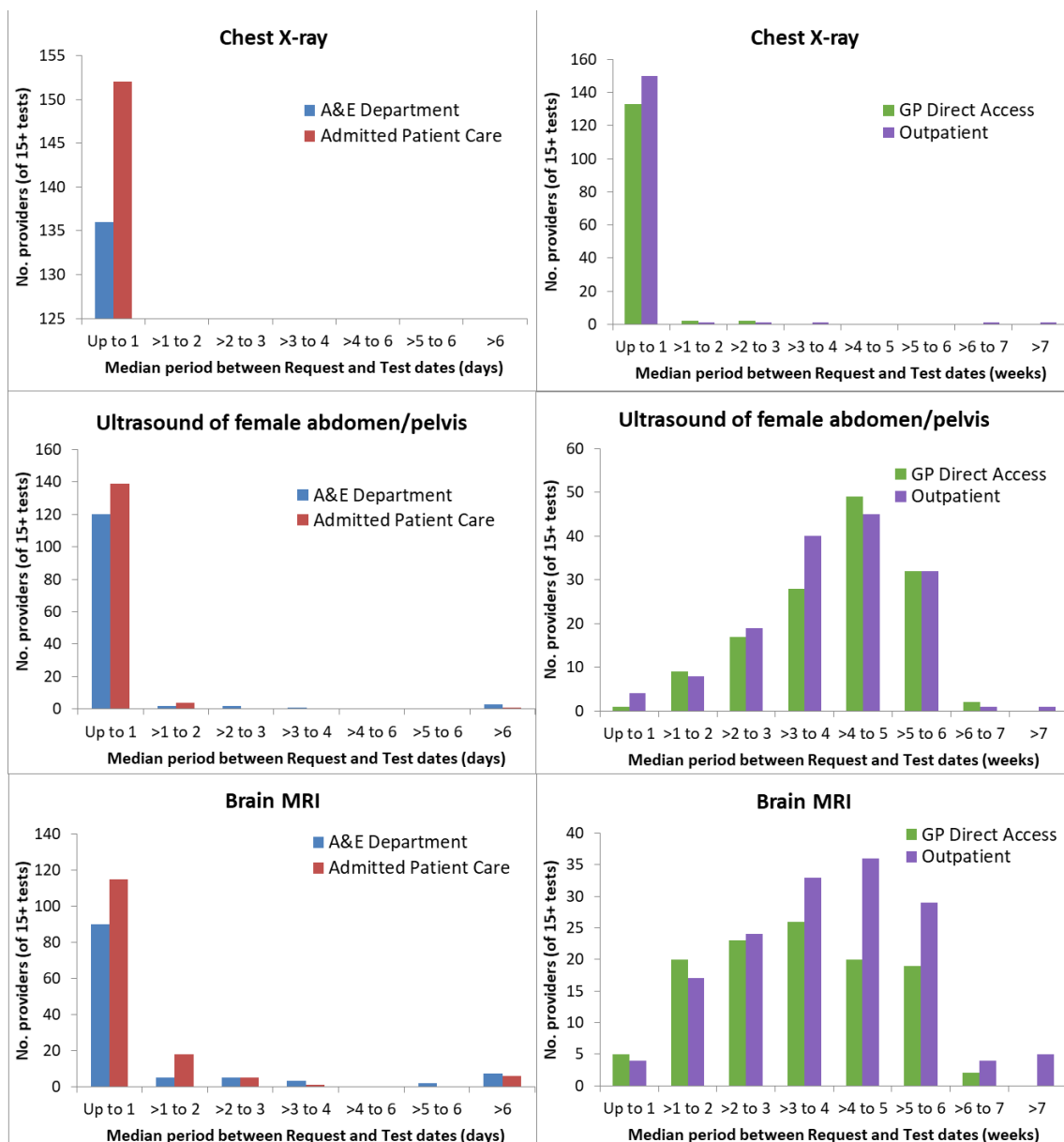
Note: Median period from 'date of test request' or, where missing, 'date of test request received' to 'date of test'.

5.3.8. The median period between the test and report dates also varies by provider for Chest X-ray and Brain MRI, see Graph 5.2. Only Chest X-ray shows much variation by provider for A&E and admitted patients, but Brain MRI also shows variation in the provider medians for GP direct access and outpatient referrals of over a week. The median reporting period for Ultrasound of the abdomen and/or pelvis in females is up to a day for almost all providers for all referral sources. No significant correlation was observed between the median request to test period and the median test to report period at provider level, neither were the provider means for either period related to the volume of imaging tests performed for these three diagnostics.

Graph 5.2 Variation by provider of median period from date of test to date test report issued for procedures suitable for diagnosing cancer, by referral source, 2018/19
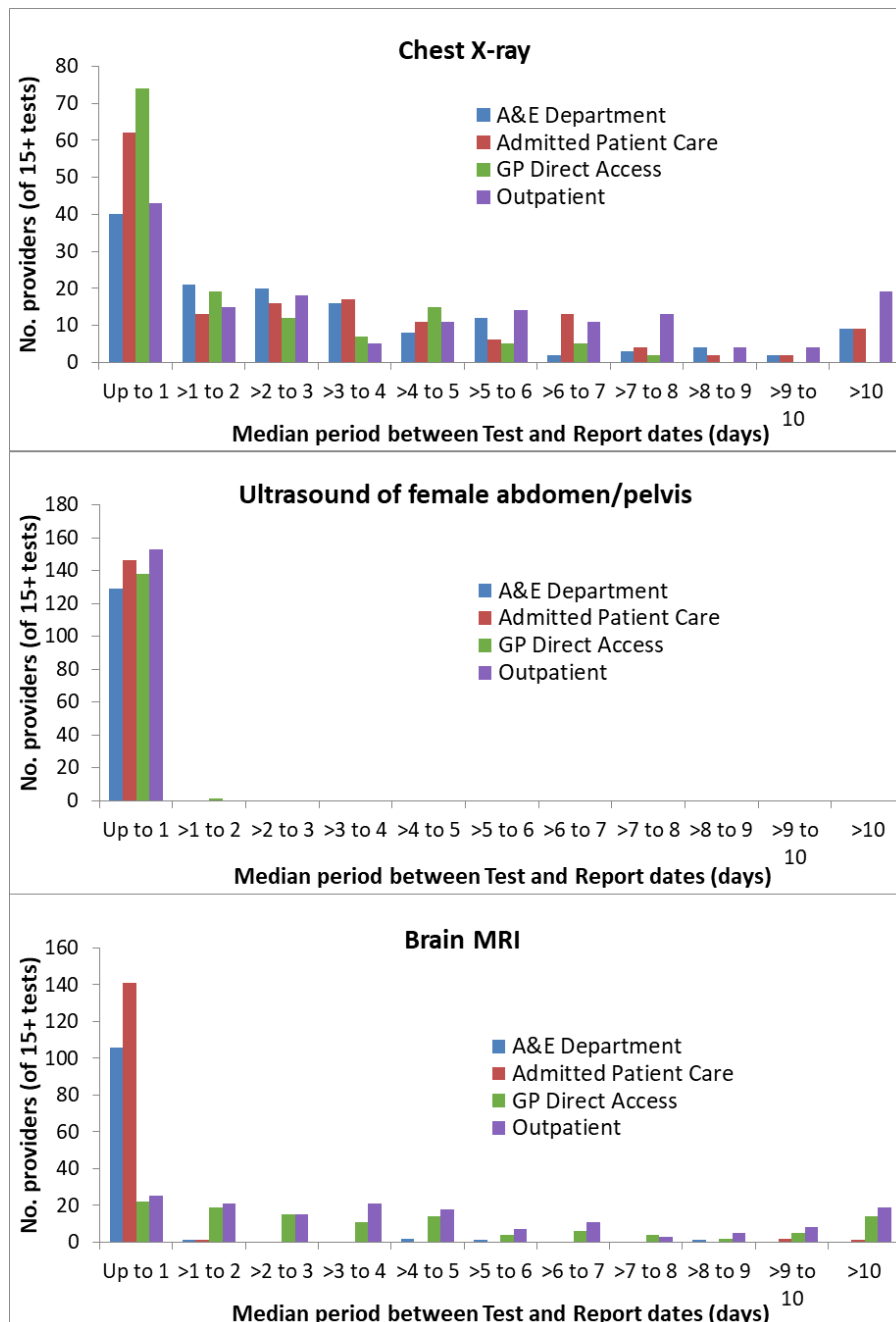
6 Annex

6.1 Data Quality Statement

6.1.1. Although data from Radiology Information Systems (RISs) were not originally intended for statistical purposes and have some inconsistencies, they do provide a rich resource with great potential for wider analysis. This data collection aligns with the code of practice for official statistics in making better use of administrative data and evaluating existing data sources to limit the burden on respondents.

6.1.2. There are a number of validations built into the DID upload system, verifying that the data provided by organisations makes sense. Whilst validations and other checks have been made to ensure that the data are complete and accurately reflect activity, data issues may affect activity for some providers.

6.1.3. Final data for each month are extracted from the DID data warehouse around the 28th of the sixth month after the period. In 2018/19, data for the following providers were missing in the published report due to non-submission:

- The Rotherham NHS Foundation Trust (RFR) did not submit any data for August 2018 due to missing the deadline, resulting in a shortfall of 12-15,000 exams.
- Mid Cheshire Hospitals NHS Foundation Trust (RBT) did not submit any data for January 2019, due to a local system failure, resulting in a shortfall of 15-18,000 exams.
- Central Surrey Health (NTV) did not submit any data for January 2019, resulting in a shortfall of up to 2,000 exams.
- Manchester Surgical Services Ltd (NN5) did not submit any data for January 2019, but only performs a few dozen NHS exams per month.

6.1.4. Data coverage and quality has continued to improve in 2018/19, with 99.8% providers having data for each month. However, within this, some data submissions may be incomplete. Known problems are:
- Barts Health NHS Trust (R1H) submitted over 18,000 duplicate imaging records in April 2018, attributed to both their Whipps Cross and Royal London Trust sites.
- Croydon Health Services NHS Trust (RJ6) submitted most report dates as the same as the test date in May to August 2018. Report dates were identified appropriately from November 2018 to January 2019 and largely omitted for the other months.
- EpsoMedical Group (NVM) provided a small amount of diagnostic ultrasound and plain radiography in 2018-19, but only submitted a few test records (excluded from publication).
- Great Western Hospitals NHS Foundation Trust (RN3) had a shortfall of over 63,000 records from April to July 2018, due to an error in their extract.
- Imperial College Healthcare NHS Trust (RYJ) omitted report dates in August 2018.
- Isle of Wight NHS Trust (R1F) had a shortfall of 2-3,000 exams in April 2018, due to a submission processing error.

- Lewisham and Greenwich NHS Trust (RJ2) duplicated an ultrasound NICIP code against most of their activity for January 2019 (around 17,000 exams), resulting in the activity being mapped to the wrong modality. Revised data were provided too late for the final publication.
- Poole Hospital NHS Foundation Trust (RD3) submitted the correct NICIP but the wrong SNOMED-CT codes in April 2018, so much of the activity is mapped to the wrong modality.
- Royal Brompton and Harefield NHS Foundation Trust (RT3) submitted most report dates as the same as the test date in May 2018.
- South Tyneside NHS Foundation Trust (RE9) mislabelled inpatient and GP direct access activity in April and May 2018, so it appears as 'Other' patient source setting.
- The Clatterbridge Cancer Centre NHS Foundation Trust (REN) had a shortfall in activity (especially CT scans) from April to October 2018, due to inadvertently excluding activity where the Service report issue date was unknown.
- University College London Hospitals NHS Foundation Trust (RRV) had a shortfall in their submissions for Nuclear Medicine, PET CT and SPECT in July 2018, of around 330, 240 and 30 exams respectively.
- University College London Hospitals NHS Foundation Trust (RRV) submitted most report dates as the same as the test date in April to August 2018. Report dates were omitted in September 2018 then identified appropriately from October 2018 onwards.
- University Hospitals of Derby and Burton NHS Foundation Trust (RTG), later Burton Hospitals NHS Foundation Trust (RJF), confirmed that some of their GP direct access activity erroneously appears as 'Other' patient source setting.
- University Hospitals of Morecambe Bay NHS Foundation Trust (RTX) omitted most report dates in May 2018.
- Whittington Health NHS Trust (RKE) has not submitted test report issued dates for any of their activity in 2018/19.

6.1.5. The Technical Report gives more information on data completeness and quality in Section 4.

6.1.6. Reported times from test request to test should not be compared to diagnostic test waiting time statistics, as these are collected using different definitions. Unlike these statistics, the DM01 diagnostic test waiting times statistics exclude records where, for example:
- The patient is waiting for a planned (or surveillance) diagnostic test/procedure, that is a procedure or series of procedures as part of a treatment plan which is required for clinical reasons to be carried out at a specific interval or repeated at a specific frequency, such as 6-month check cystoscopy;
- The patient is currently admitted to a hospital bed and is waiting for a diagnostic test/procedure as part of their inpatient treatment.

6.1.7. For the data published here, 91.2% of tests had a date of test request included (compared with 91.3% in 2017/19) and, of those that didn't, many had a date of test request received instead. In 2018/19, for the first time, this

latter date was used where date of test request was missing, increasing to 96.7% the proportion of cases included in tables showing the request to test period. In addition, 93.5% of tests had a date of test report issue included (up from 91.6% in 2017/19).

6.1.8. Some patient records have no known commissioner as this is derived from patient registered GP practice which is not a mandatory field. In 2018/19, where this was missing, CCG was derived from Lower Super Output Area (LSOA) based on patient postcode instead. Data shortfalls by provider also affect their commissioner data.

6.1.9. Details of coverage, completeness, comparability with other data sources and a discussion on the types of data quality issues encountered are provided in the Technical Report which is available on the [NHS England Statistics website](#).

6.2 Revisions

6.2.1. In the provisional publications, several Trusts did not provide data on time and their figures were shown as blank. Most of these subsequently submitted data, with the exceptions listed above. Further revisions will only be made in exceptional circumstances, see the Technical Report.

6.3 Glossary

Computerised Axial Tomography (CT Scan)
Computed tomography (CT), sometimes called CAT scan, uses special X-ray equipment to obtain image data from different angles around the body, then uses computer processing of the information to show a cross-section of body tissues and organs. In the DID this means all codes mentioning CAT or computed tomography except those also mentioning PET.

Diagnostic Ultrasonography (Ultrasound)
The use of ultrasonic waves for diagnostic or therapeutic purposes, specifically to image an internal body structure, monitor a developing foetus or generate localised deep heat to the tissues. In the DID this means any code relating to ultrasound.

Fluoroscopy
Fluoroscopy is an imaging technique commonly used by physicians to obtain real-time images of the internal structures of a patient through the use of a fluoroscope. In its simplest form, a fluoroscope consists of an X-ray source and fluorescent screen between which a patient is placed. In the DID this is a collection of codes mentioning fluoroscopy or using fluoroscopic guidance, Barium enema or swallow. Interventional procedures are classified under imaging modalities which provide guidance. Almost all interventional procedures are under fluoroscopy procedure. A very small number of interventional procedures are under CT or MRI procedures.

Magnetic Resonance Imaging (MRI)
Magnetic resonance imaging (MRI) is a method of producing extremely detailed pictures of body tissues and organs without the need for X-rays. The electromagnetic

energy that is released when exposing a patient to radio waves in a strong magnetic field is measured and analysed by a computer, which forms two- or three-dimensional images that may be viewed on a TV monitor. In the DID this means all codes mentioning MRI.

Plain Radiography (X-ray)

A Radiograph is an image produced on a radiosensitive surface, such as a detector, by radiation other than visible light, especially by X-rays passed through an object or by photographing a fluoroscopic image. In the DID this means any code referring to radiography or X-ray.

Medical Photography

A Photograph is an image recorded on sensitised material by energy from the light spectrum, which is then processed to create a print that can be viewed clearly. Medical Photography is used in order to document a variety of different medical conditions and their treatment.

Nuclear Medicine

Nuclear medicine (NM) is a branch of medicine and medical imaging that uses unsealed radioactive substances in diagnosis and therapy. These substances consist of radionuclides, or pharmaceuticals that have been labelled with radionuclides (radiopharmaceuticals). In diagnosis, radioactive substances are administered to patients and the radiation emitted is measured.

Nuclear medicine imaging tests differ from most other imaging modalities in that the tests primarily show the physiological function of the system being investigated, as opposed to the anatomy. It has both diagnostic and therapeutic uses, such as planning cancer treatments and evaluating how well a patient has responded to a treatment. It can be used with other diagnostic methods, including CT scans and MRI, where the images are superimposed to produce complex cross-sectional, three-dimensional scans.

Position Emission Tomography – Computer Tomography (PET-CT Scans)

Position Emission Tomography - Computed Tomography (PET-CT Scan) is an imaging technique used in the diagnosis and treatment of cancer which combines PET with CT. PET uses gamma-type cameras to produce crude three-dimensional images highlighting radionuclide concentration in the body. CT allows precise localisation of the radionuclide concentration. PET-CT scans can be used to show how far a cancer has spread and can determine if a patient is responding positively to a treatment. In the DID this means all codes mentioning PET, whether or not they also mention CT.

Single Photon Emission Computerised Tomography (SPECT scans)

Single Photon Emission Computerised Tomography (SPECT scans) is an imaging method that allows for analysis of internal organs. Gamma photon-emitting radionuclides are administered to a patient prior to being exposed to gamma cameras that rotate around a patient to produce cross-sectional slices that can then be reformatted into a true three-dimensional image of the patient.

Median
The median is the preferred measure of the average time between pairs of dates within records as it is less susceptible to extreme values than the mean. The median number of days between pairs of dates is calculated by ordering the values obtained by subtracting the dates for each record and selecting the middle value when all records are ranked by these numbers of days.

Modality
The broad procedure or method used for examination, for example MRI. This may include procedures assisted by the method, e.g. biopsy or injection. In the DID the modality of the examination is derived from SNOMED CT (Systematised Nomenclature of Medicine – Clinical Terms) or NICIP (National Interim Clinical Imaging Procedure) codes.

Patient source setting
This is a categorisation of the department or organisation making the referral for the imaging activity. It includes categories for admitted patient care, outpatients, GP Direct Access, A&E and health care providers other than the organisation providing the imaging activity.

6.4 Contact Us

6.4.1. Feedback
We welcome feedback on this publication. Please contact us at england.did@nhs.net.

6.4.2. iView
NHS Digital allow health sector colleagues to access DID information through their web-based reporting tool, iView. Registered users may access anonymised data at an aggregate level in a consistent and flexible format:

- **Access Information** – choose from a variety of data areas.
- **Build Reports** – select data to suit your needs.
- **Generate Charts** – customise report tables and graphs.
- **Export Data** – copy to Excel and manipulate data your way.
- **Save Reports** – store your favourite views for future use.

For more information, please visit the iView website iView website. If you would like to register to use iView for DID, please email enquiries@nhsdigital.nhs.uk (subject: DID iView Access).

6.4.3. Websites
NHS Digital collects the DID on behalf of NHS England. Further information about the dataset can be found on NHS Digital DID website.

Those who submit data to DID do so via a secure submission portal. Further information about submissions can be found on the submission website.

The DID Additional Tables and Technical Report can be found on NHS England DID website.

6.4.4. **Additional Information**

For press enquiries contact the NHS England and NHS Improvement Media team on 0113 825 0958 or 0113 825 0959. Email enquiries should be directed to nhsengland.media@nhs.net

The Government Statistical Service (GSS) statistician responsible for producing these data is:

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