Diagnostic Imaging Dataset Annual Statistical Release 2019/20

NHS England and NHS Improvement

Diagnostic Imaging Dataset

Annual Statistical Release 2019/20

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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 2019/20.

[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:

- 44.9 million imaging tests were reported in England in the year to March 2019, compared with 44.8 million in the previous year, an increase of 0.3%.

- Plain Radiography (X-ray) was most common with 23.2 million procedures, followed by Diagnostic Ultrasonography (Ultrasound, 10.3 million), Computerized Axial Tomography (CT Scan, 6.0 million) and Magnetic Resonance Imaging (MRI, 3.8 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 2019/20.

- 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 2019/20, the same as in 2018/19.

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 2019/20, GPs requested over a quarter (25.6%) of all tests that may have been used to diagnose or discount cancer, under direct access arrangements. This is compares to 25.5% in 2018/19.

- The test most commonly requested by GPs was Chest X-ray with 2.1 million tests (up 1.4% from 2018/19), 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 2019/20.

- 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.

[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. 44.9 million imaging tests were reported in England in the year to March 2020, compared with 44.8 million in the previous year, an increase of 0.3%[3].

3.1.2. Plain Radiography (X-ray) had the biggest share of all tests performed during the year, with 23.2 million X-rays reported in 2019/20 (down 1.4% from 2018/19). The next most common procedures were Ultrasound (10.3 million, up 1.0%), CT scans (6.0 million, up 5.2%) and MRI Scans (3.8 million, up 1.8%). Both PET-CT scans and Medical Photography had a large proportional increase in 2019/20 (up 12.6% and 9.0% respectively), whilst Nuclear Medicine and Fluoroscopy activity decreased (by 6.0% by 3.1% respectively). SPECT scans were little changed (down 0.6%). Table 1 shows the imaging counts and growth for each modality.

3.1.3. July 2019 was the month with the most reported activity during 2019/20, at 4.04 million tests. March 2020 had the least, at under 3.0 million, as it was impacted by the COVID-19 pandemic and the national lockdown from mid-March. 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, as well as March.

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.

[3] There was little change in data completeness in this period: 99.8% in 2018/19 to 99.9% in 2019/20.

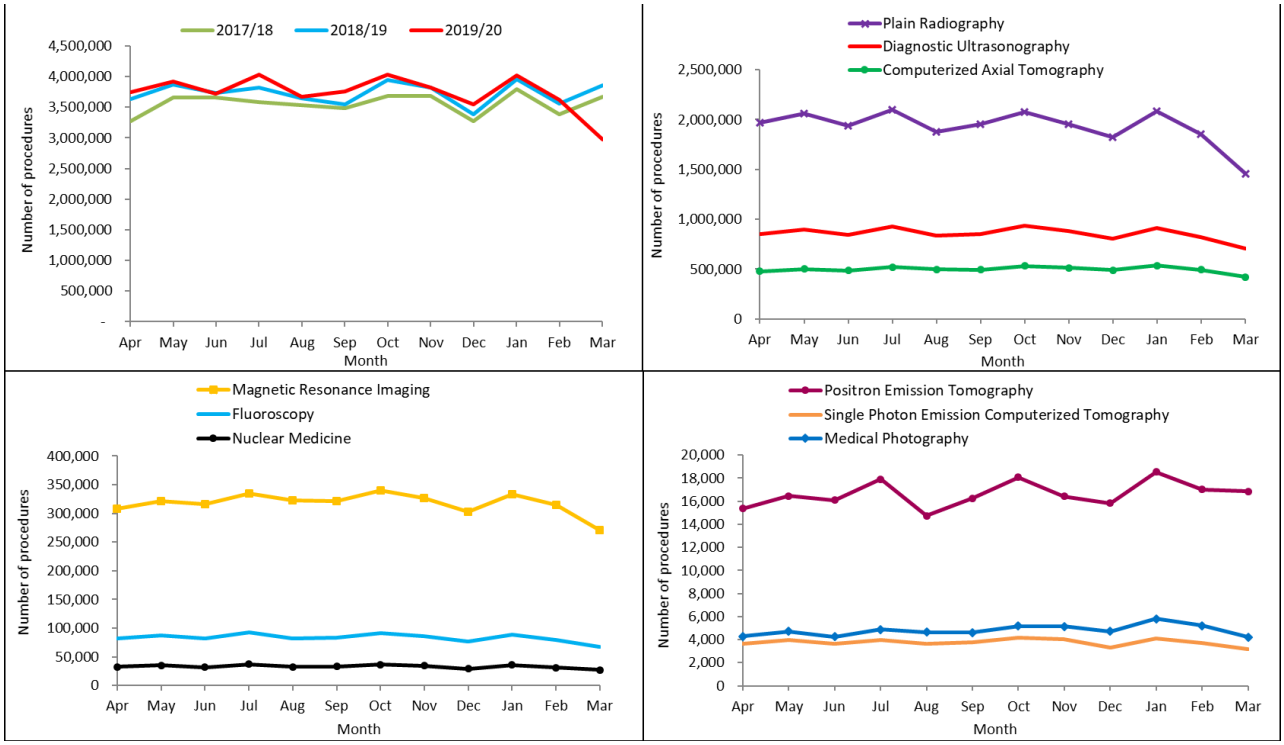
Table 1: Count of NHS imaging activity in England, 2012/13 to 2019/20

	X-ray	Ultrasound	CT Scan	MRI	Fluoro-scopy	Nuclear Medicine	PET-CT Scans	SPECT Scans	Medical Photography	% organisations included	Total[1]
2012/13[2,3]	21,195,275	7,807,695	3,474,970	2,352,090	1,061,980	439,470	71,485	19,205	6,090	93.6%	36,428,260
2013/14[3]	21,845,725	8,176,945	3,825,130	2,617,110	1,051,370	444,830	75,650	21,370	10,525	97.8%	38,068,660
2014/15[3]	22,637,935	8,596,590	4,210,630	2,898,465	1,023,720	436,505	89,245	27,690	16,180	99.2%	39,936,960
2015/16[3]	22,572,915	8,919,015	4,461,975	3,085,065	1,043,980	428,400	97,990	32,080	23,945	99.6%	40,665,365
2016/17[3]	22,908,620	9,351,480	4,815,890	3,358,485	1,057,115	427,145	132,745	36,075	31,225	99.7%	42,118,780
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%	42,701,465
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
2019/20	23,150,820	10,261,890	5,959,860	3,811,415	1,001,770	396,350	199,585	45,110	57,650	99.9%	44,884,450
% Growth[4]	-1.4%	1.0%	5.2%	1.8%	-3.1%	-6.0%	12.6%	-0.6%	9.0%	0.1%	0.3%
2019/20											
Apr	1,966,375	851,880	479,215	308,065	82,460	32,640	15,360	3,645	4,290	100.0%	3,743,925
May	2,061,470	893,990	501,830	321,470	87,890	34,840	16,455	3,955	4,725	100.0%	3,926,620
Jun	1,939,400	840,450	487,155	315,900	82,130	31,915	16,090	3,615	4,240	100.0%	3,720,895
Jul	2,097,065	929,670	520,455	334,875	92,305	36,850	17,920	3,995	4,865	100.0%	4,038,000
Aug	1,876,200	837,095	498,085	322,280	82,025	32,810	14,730	3,650	4,650	100.0%	3,671,525
Sep	1,954,545	850,900	494,945	320,855	83,505	33,140	16,255	3,750	4,620	100.0%	3,762,510
Oct	2,074,175	931,905	529,910	340,420	91,715	36,405	18,090	4,180	5,190	100.0%	4,031,990
Nov	1,957,445	884,810	510,815	326,245	86,680	34,245	16,430	4,015	5,150	100.0%	3,825,830
Dec	1,824,435	803,060	489,750	303,340	76,915	29,185	15,830	3,330	4,700	100.0%	3,550,545
Jan	2,084,590	913,220	534,605	333,005	88,825	35,835	18,545	4,110	5,805	100.0%	4,018,545
Feb	1,857,100	820,455	493,035	314,410	79,835	31,405	17,015	3,695	5,205	98.8%	3,622,155
Mar	1,458,015	704,450	420,070	270,555	67,485	27,085	16,860	3,175	4,210	100.0%	2,971,905

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. The activity summary from 2012/13 to 2016/17 has been revised in this report to include activity not mapped to a modality at the time and some submissions made too late to incorporate, see Section 6.2.
4. % Growth is between 2018/19 and 2019/20.

Graph 1: NHS imaging activity in England, April 2019 to March 2020



3.2 Imaging Activity by Age and Gender

3.2.1. 7.4 million more tests were performed on females than on males in 2019/20. The largest difference occurred for Ultrasound procedures (4.8 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 on males also slightly higher than for females. Table 2 shows the age and gender of patients who have received diagnostic tests in 2019/20.

Table 2: NHS Imaging activity in England by gender and age, 2019/20

	X-ray	Ultrasound	CT Scan	MRI	Fluoro-scopy	Nuclear Medicine	PET-CT Scan	SPECT Scan	Medical Photography	Total[1]
Female	12,621,170	7,499,200	2,954,780	2,047,290	475,635	212,810	91,335	25,325	29,280	25,956,825
Male	10,374,585	2,661,320	2,959,660	1,744,705	521,445	181,785	108,180	19,715	28,335	18,599,730
Not known / specified[2]	155,065	101,370	45,420	19,415	4,690	1,760	70	75	35	327,900
0 -14	1,934,370	428,110	56,180	151,710	50,150	13,965	570	310	3,530	2,638,895
15 - 44	5,141,500	5,081,660	951,570	1,116,150	166,335	58,280	18,585	8,600	10,800	12,553,480
45 - 59	4,735,720	1,961,650	1,190,455	1,047,215	222,815	87,300	42,570	9,110	9,170	9,306,005
60 - 74	5,745,240	1,623,390	1,793,500	986,925	313,620	139,715	86,870	15,360	13,965	10,718,585
75+	5,497,105	1,116,220	1,954,620	498,575	243,445	95,435	50,545	11,685	19,950	9,487,580
Not known	96,885	50,860	13,535	10,845	5,410	1,655	445	45	230	179,910

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 2019 and March 2020.

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 24 days, see Table 3.

Table 3: Median number of days between date of test request and date of test, by modality, April 2019 to March 2020

	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
2019/20	0	14	1	21	0	19	8	17	0
Apr	0	16	1	22	0	19	8	16	0
May	0	15	1	22	0	20	8	16	0
Jun	0	15	1	21	0	20	8	18	0
Jul	0	14	1	21	0	20	8	17	0
Aug	0	14	1	22	0	20	9	18	0
Sep	0	14	1	20	0	19	9	17	0
Oct	0	14	1	19	0	18	8	16	0
Nov	0	14	1	21	0	19	9	17	0
Dec	0	14	1	21	0	18	9	17	0
Jan	0	15	1	24	0	23	9	22	0
Feb	0	14	1	20	0	19	8	16	0
Mar	0	13	1	20	0	17	7	17	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 2019/20, 'Date of test request received' was used instead. Records where both dates were missing were excluded from the median calculation.

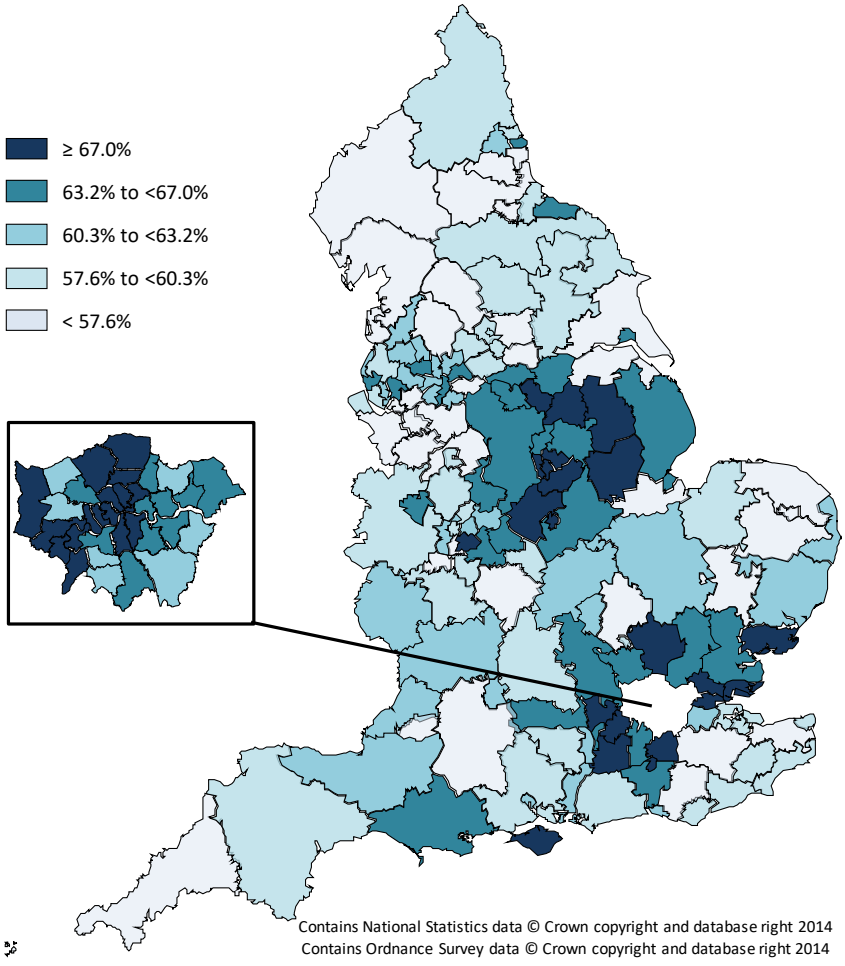
4.1.4. The median number of days between test request (or test request received) and date of test decreased by one day for SPECT scans in 2019/20 compared to 2018/19. All other modalities remained the same.

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.

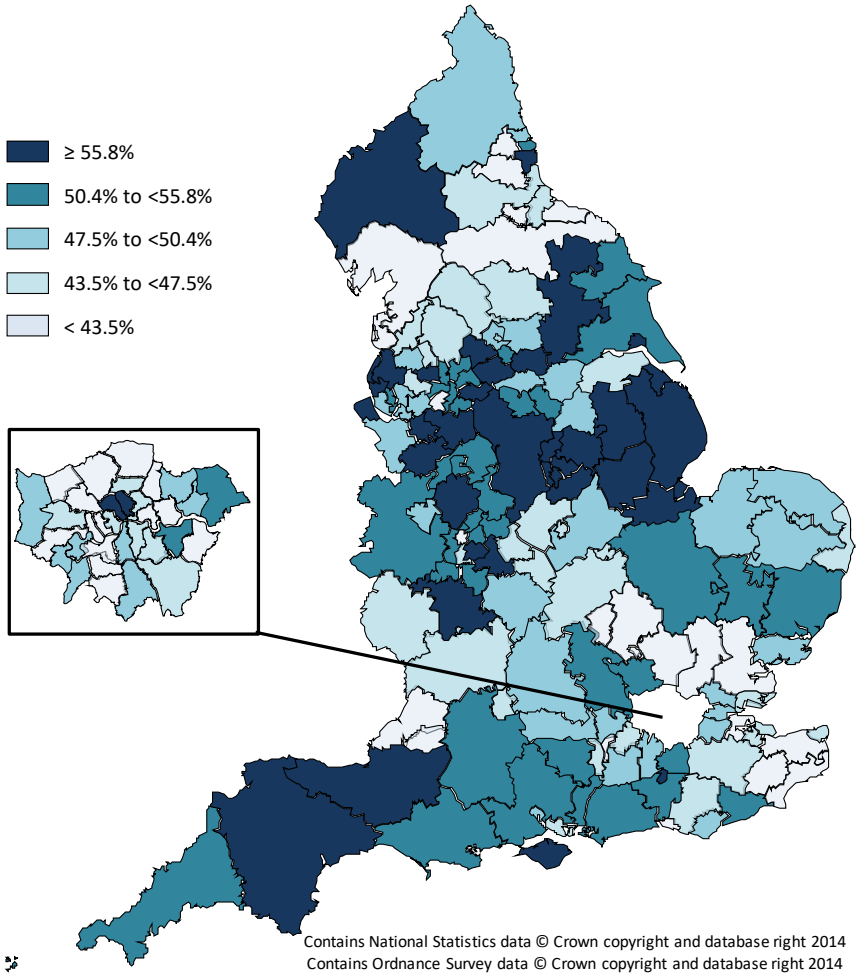
4.1.6. There was some regional variation in the proportion of imaging which occurred within seven days of the test being requested (or received) for CT Scans and within fourteen days of the test being requested (or received) for Ultrasound and MRI Scans. Maps 1-3 illustrate this for each CCG in England (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.

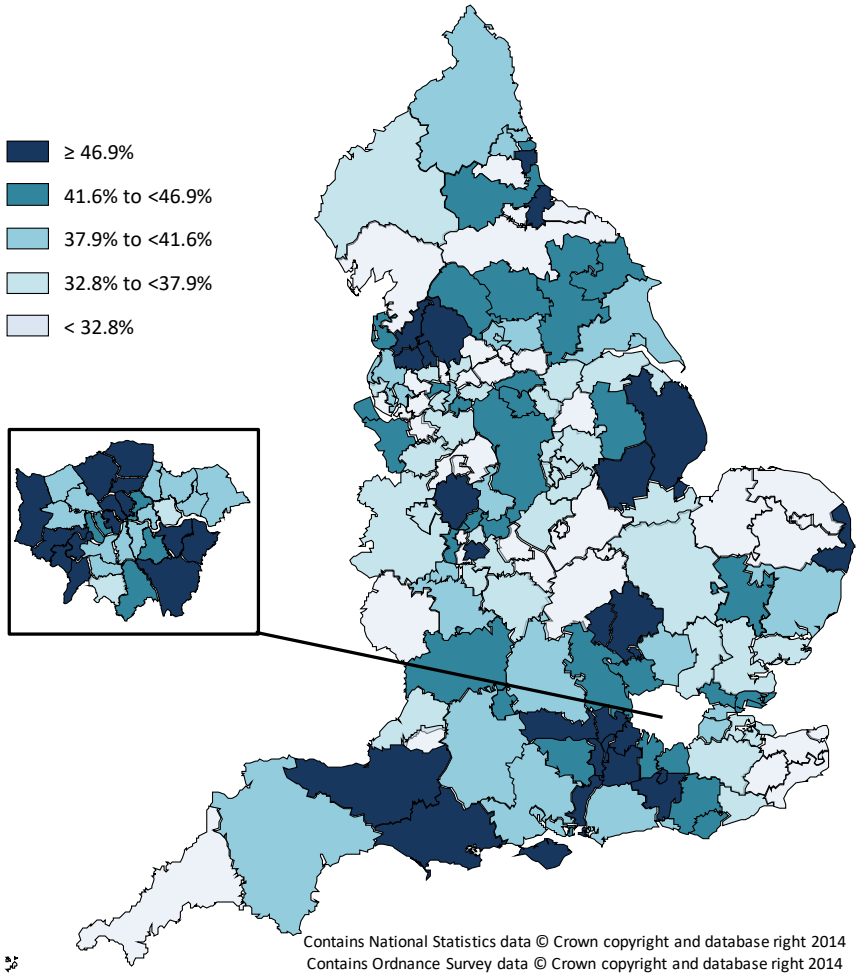
Map 1: Proportion of CT scans where date of test is up to 7 days after date of referral, for each CCG, 2019/20



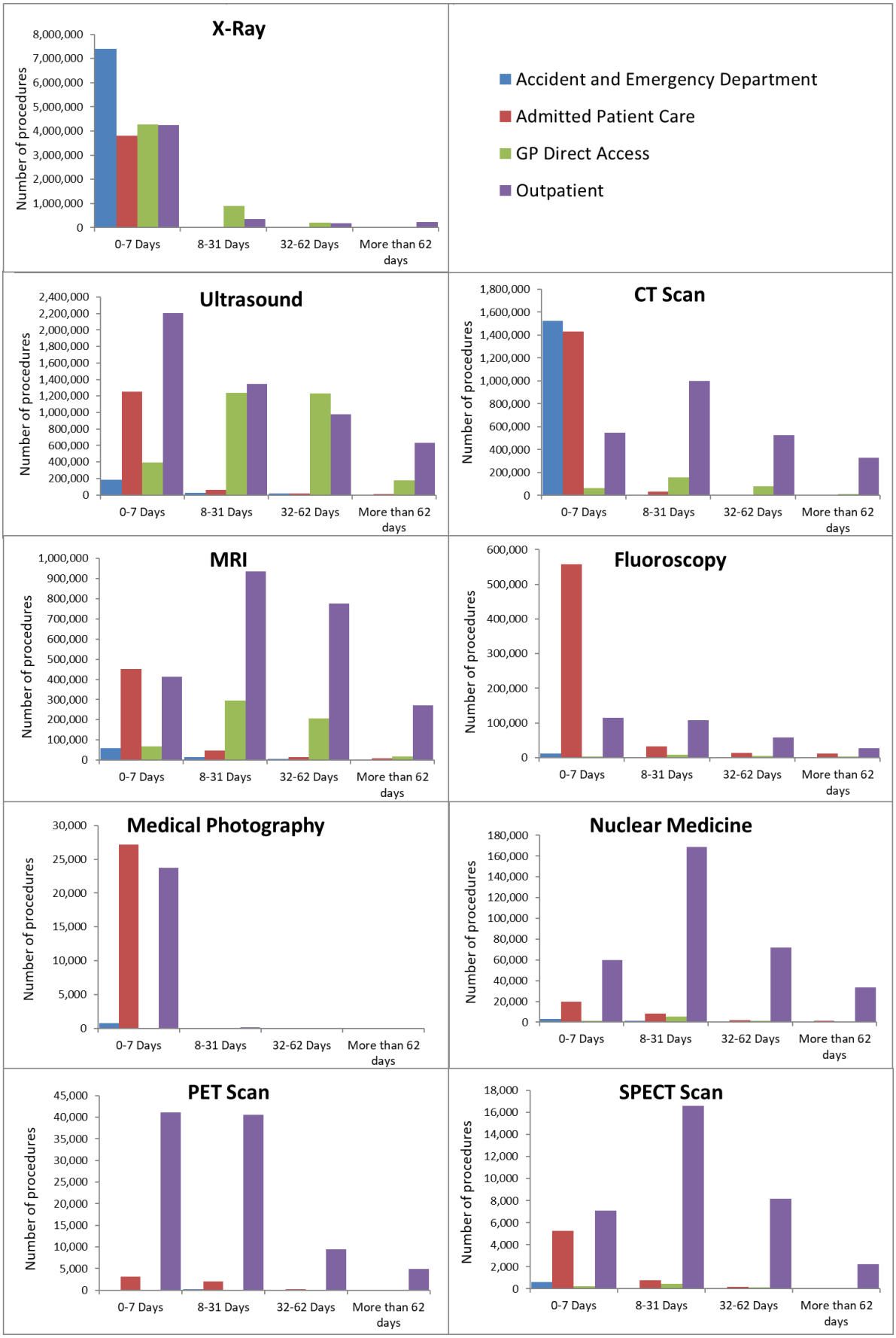
Map 2: Proportion of Ultrasounds where date of test is up to 14 days after date of request, for each CCG, 2019/20



Map 3: Proportion of MRI Scans where date of test is up to 14 days after date of request, for each CCG, 2019/20



Graph 2: Imaging activity by number of days from date of test request to date of test, by modality and source of referral, 2019/20



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 2019/20 was the same as the previous year and remained fairly consistent throughout the 12 months, with two 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 2019 to March 2020

	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
2019/20	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	1	0
Aug	1	0	0	4	0	1	2	1.5	0
Sep	1	0	0	3	0	1	2	1	0
Oct	1	0	0	3	0	1	2	1	0
Nov	1	0	0	3	0	1	2	2	0
Dec	1	0	0	3	0	1	2	2	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 2019 to March 2020

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%
	2019/20	28%	53%	96%	98%	90%	97%	70%	83%	75%	82%	65%	79%	28%	58%	80%	88%	52%	62%
	Apr	28%	52%	96%	98%	90%	97%	69%	83%	74%	83%	66%	80%	35%	63%	80%	89%	41%	51%
	May	28%	52%	96%	97%	90%	97%	69%	83%	73%	81%	65%	78%	32%	59%	81%	88%	53%	65%
	Jun	27%	51%	96%	97%	90%	97%	68%	83%	74%	81%	63%	77%	34%	55%	83%	88%	52%	64%
	Jul	28%	53%	97%	98%	90%	97%	70%	84%	74%	82%	64%	79%	25%	59%	79%	89%	45%	57%
	Aug	27%	50%	96%	98%	90%	97%	69%	82%	75%	83%	66%	80%	27%	55%	80%	89%	53%	61%
	Sep	27%	51%	96%	98%	90%	97%	69%	83%	73%	82%	65%	78%	20%	53%	80%	88%	51%	62%
	Oct	29%	53%	96%	97%	90%	97%	70%	84%	74%	82%	67%	81%	23%	50%	81%	89%	57%	68%
	Nov	29%	52%	96%	97%	90%	97%	69%	83%	74%	81%	64%	79%	29%	64%	82%	88%	51%	62%
	Dec	27%	51%	96%	97%	90%	97%	70%	83%	75%	82%	68%	81%	28%	55%	77%	85%	55%	61%
	Jan	28%	52%	96%	98%	90%	97%	70%	84%	76%	83%	65%	79%	26%	58%	80%	89%	55%	64%
	Feb	28%	52%	96%	98%	90%	97%	69%	83%	77%	84%	64%	79%	31%	62%	80%	86%	53%	65%
	Mar	36%	64%	96%	98%	91%	98%	73%	86%	75%	82%	65%	80%	26%	58%	77%	85%	55%	65%

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%
	2019/20	38%	53%	93%	95%	21%	33%	14%	28%	63%	74%	30%	50%	11%	37%	23%	43%	62%	71%
	Apr	37%	53%	93%	95%	21%	32%	14%	27%	63%	74%	29%	49%	11%	35%	24%	44%	63%	72%
	May	38%	52%	93%	95%	21%	32%	14%	27%	64%	74%	31%	50%	12%	37%	25%	43%	60%	73%
	Jun	37%	51%	93%	95%	20%	31%	14%	28%	63%	73%	29%	48%	10%	35%	22%	41%	58%	74%
	Jul	37%	52%	93%	96%	21%	33%	15%	28%	63%	74%	30%	51%	13%	39%	25%	47%	61%	68%
	Aug	37%	51%	93%	96%	19%	29%	13%	25%	65%	75%	30%	49%	12%	38%	24%	43%	64%	70%
	Sep	38%	53%	93%	95%	20%	32%	14%	27%	62%	73%	29%	49%	10%	37%	23%	44%	62%	71%
	Oct	38%	54%	92%	95%	21%	33%	14%	28%	62%	73%	29%	49%	11%	38%	23%	44%	62%	69%
	Nov	39%	54%	93%	95%	21%	33%	14%	27%	62%	73%	28%	48%	11%	38%	21%	40%	59%	71%
	Dec	40%	55%	93%	96%	21%	34%	14%	28%	65%	74%	31%	51%	11%	36%	24%	44%	65%	75%
	Jan	39%	55%	93%	96%	22%	35%	14%	29%	63%	74%	30%	50%	10%	35%	22%	43%	65%	73%
	Feb	38%	54%	93%	96%	20%	33%	13%	27%	63%	74%	29%	49%	10%	37%	21%	39%	65%	76%
	Mar	43%	58%	94%	96%	24%	39%	15%	30%	66%	76%	32%	52%	12%	40%	20%	39%	60%	68%

5 Imaging Tests that could contribute to Early Diagnosis of Cancer

5.1 Definition of the tests

1.1.1. 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.

1.1.2. 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.

1.1.3. 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

5.2.2. In 2019/20, 11.3 million of these tests that may have been used to diagnose or discount cancer were performed, up 0.9% from 11.2 million in 2018/19. There were sustained increases for Brain MRI and Chest and/or abdomen CT and slightly higher activity again for Chest X-ray. The ultrasound tests (Kidney or bladder and Abdomen and/or pelvis) showed a slight reduction in 2019/20, most of which can be attributed to lower activity in March 2020 reflecting the COVID-19 pandemic effect. The seasonal fluctuation in the number of these tests directly referred by GPs is shown in Graph 3.1.

5.2.3. The most common of these tests was Chest X-ray, with 8.3 million tests being requested through all source settings in 2019/20 (up 0.8% from 2018/19). This was also the most common test requested by GPs (2.1 million, up 1.4% from 2018/19). 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.

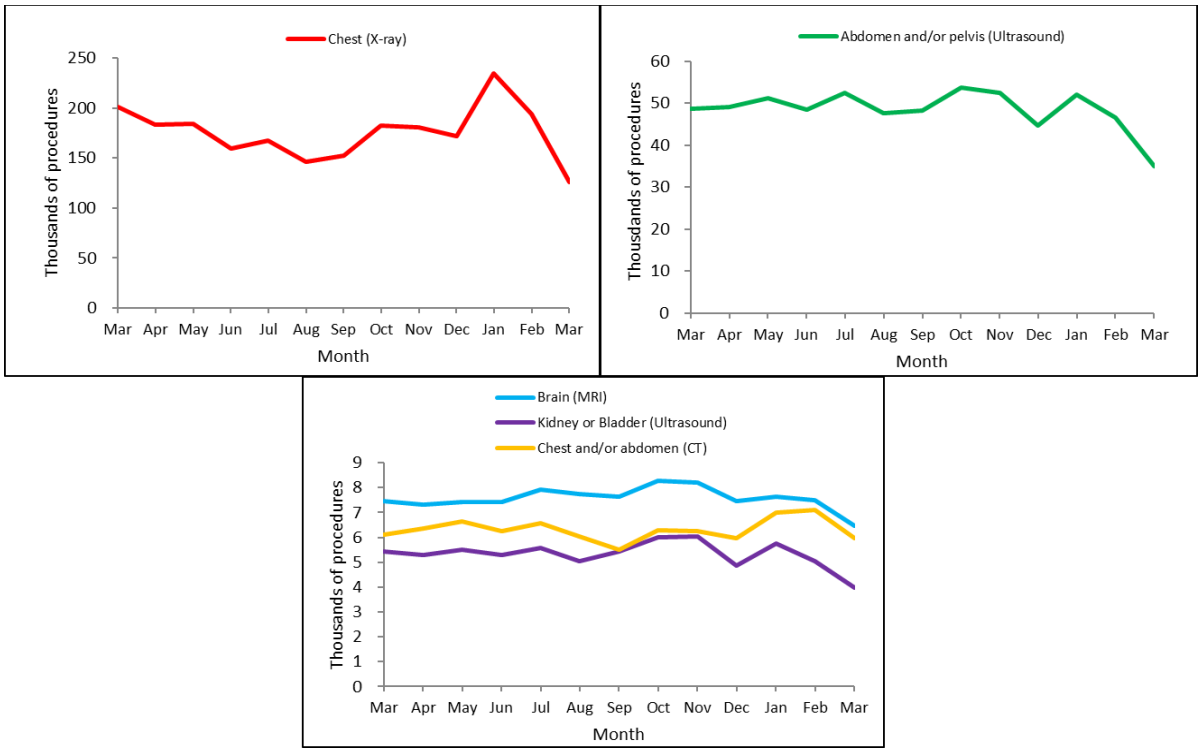
Table 6: Imaging activity for groups of tests suitable for diagnosing cancer, for all patients referred and for those directly referred by a GP, April 2019 to March 2020

	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	472,820	31,035	220,270	67,455	388,640	32,210	7,728,945	1,993,455	1,165,540	536,945
2013/14	529,285	39,540	220,045	65,390	438,190	39,180	7,694,255	1,931,255	1,246,130	570,170
2014/15	584,755	50,150	228,810	67,060	490,140	46,680	8,170,075	2,128,450	1,303,945	600,390
2015/16	629,050	68,325	222,740	65,920	512,825	50,995	8,070,205	2,019,280	1,312,635	600,365
2016/17	686,365	76,925	233,440	65,990	539,405	58,875	8,253,310	2,167,875	1,286,845	576,665
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
2019/20	802,490	90,970	237,355	63,870	638,905	75,910	8,347,800	2,079,920	1,290,100	581,370
Growth	3.6%	4.2%	-1.2%	-2.9%	4.5%	11.5%	0.8%	1.4%	-1.7%	-0.8%
2019/20										
Apr	64,955	7,315	19,840	5,290	52,635	6,365	710,970	183,035	108,345	49,075
May	67,655	7,430	20,475	5,520	54,605	6,630	713,380	184,110	113,415	51,180
Jun	65,610	7,410	19,310	5,295	52,535	6,240	659,520	159,220	108,325	48,450
Jul	70,270	7,915	21,385	5,585	55,325	6,575	685,235	167,685	116,280	52,415
Aug	68,020	7,730	19,515	5,040	52,030	6,050	636,530	145,790	105,940	47,600
Sep	67,320	7,640	19,970	5,435	51,100	5,490	648,325	152,115	107,395	48,190
Oct	71,755	8,280	22,015	6,005	55,895	6,280	730,000	182,325	118,065	53,730
Nov	69,410	8,195	21,190	6,040	54,120	6,235	724,745	180,335	113,930	52,490
Dec	63,585	7,445	18,445	4,870	51,155	5,980	735,490	171,600	99,295	44,715
Jan	71,230	7,635	21,390	5,760	58,320	7,010	811,400	234,165	116,035	51,940
Feb	66,335	7,505	18,880	5,035	54,305	7,105	698,540	193,695	103,445	46,630
Mar	56,340	6,475	14,940	3,985	46,890	5,960	593,660	125,840	79,630	34,950

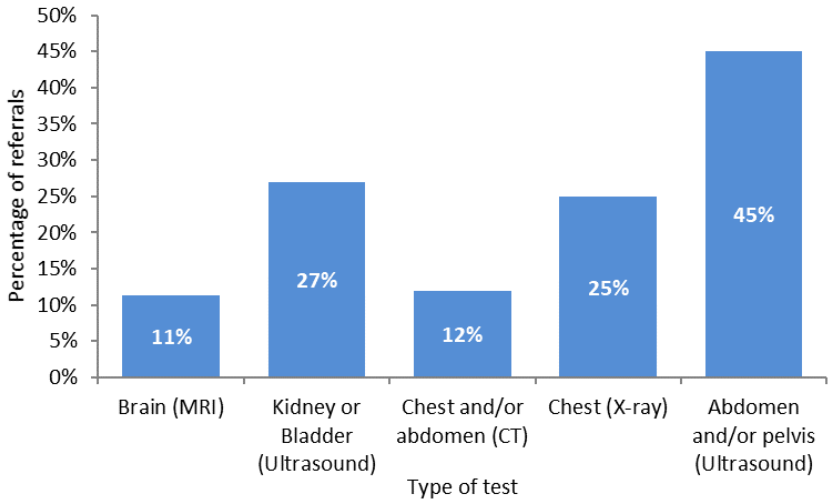
1. Totals do not always equal the sum of parts due to rounding.
2. The activity summary from 2012/13 to 2016/17 has been revised in this report to include activity not mapped to a modality at the time and some submissions made too late to incorporate, see Section 6.2.
3. % Growth is between 2018/19 and 2019/20.

5.2.4. Of the 11.3 million tests requested in 2019/20, 25.6% were requested by GPs under direct access arrangements, compared with 25.5% in 2018/19. Graph 3.2 shows the proportion of each test requested by GPs. The lowest proportions of GP direct access were for Brain MRI (11%) and Chest and/or abdomen CT (12%), which continued to be the tests with most growth for GP direct access.

Graph 3.1: Imaging activity for patients directly referred by a GP, April 2019 to March 2020



Graph 3.2: Percentage of referrals made by GPs by type of test, 2019/20



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 2019 to March 2020

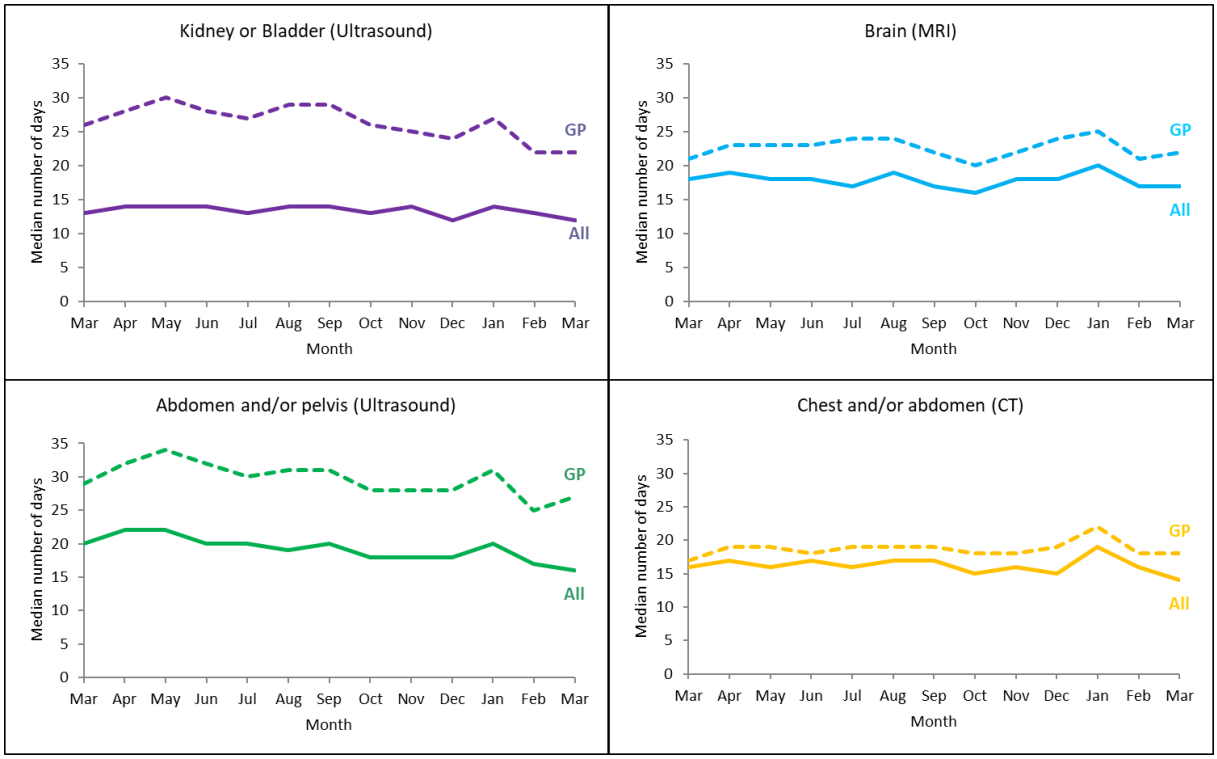
	Brain (MRI)		Kidney or bladder (Ultrasound)		Chest and/or abdomen (CT)		Chest (X-ray)		Abdomen and/or pelvis (Ultrasound)	
	All	GP	All	GP	All	GP	All	GP	All	GP
2012/13	21	25	13	23	13	17	0	0	14	22
2013/14	21	25	13	23	13	16	0	0	15	24
2014/15	21	26	13	24	14	17	0	0	17	26
2015/16	19	21	11	26	14	16	0	0	17	27
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
2019/20	18	23	13	27	16	19	0	0	19	30
Apr	19	23	14	28	17	19	0	0	22	32
May	18	23	14	30	16	19	0	0	22	34
Jun	18	23	14	28	17	18	0	0	20	32
Jul	17	24	13	27	16	19	0	0	20	30
Aug	19	24	14	29	17	19	0	0	19	31
Sep	17	22	14	29	17	19	0	0	20	31
Oct	16	20	13	26	15	18	0	0	18	28
Nov	18	22	14	25	16	18	0	0	18	28
Dec	18	24	12	24	15	19	0	0	18	28
Jan	20	25	14	27	19	22	0	0	20	31
Feb	17	21	13	22	16	18	0	0	17	25
Mar	17	22	12	22	14	18	0	1	16	27

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 2019/20, '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) and Brain MRI had a decrease of one days in the median period from request to test for referrals overall in 2019/20. Two tests had an increase of one day in the median period for GP referrals: Brain (MRI) and CT scan of chest and/or abdomen. However, most medians were similar to 2018/19.

5.3.3. The median number of days between date of request and date of test has shown some fluctuation throughout 2019/20 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 2019/20 with a range of up to 8 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 2019 to March 2020



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.

5.3.5. The median time between test and report issued has remained the same for most modalities between 2018/19 and 2019/20. Only Chest X-ray reverted to a median of 2 days in 2019/20 for all referrals, following the reduction to one day in 2018/19.

5.3.6. Throughout 2019/20 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 2019 to March 2020

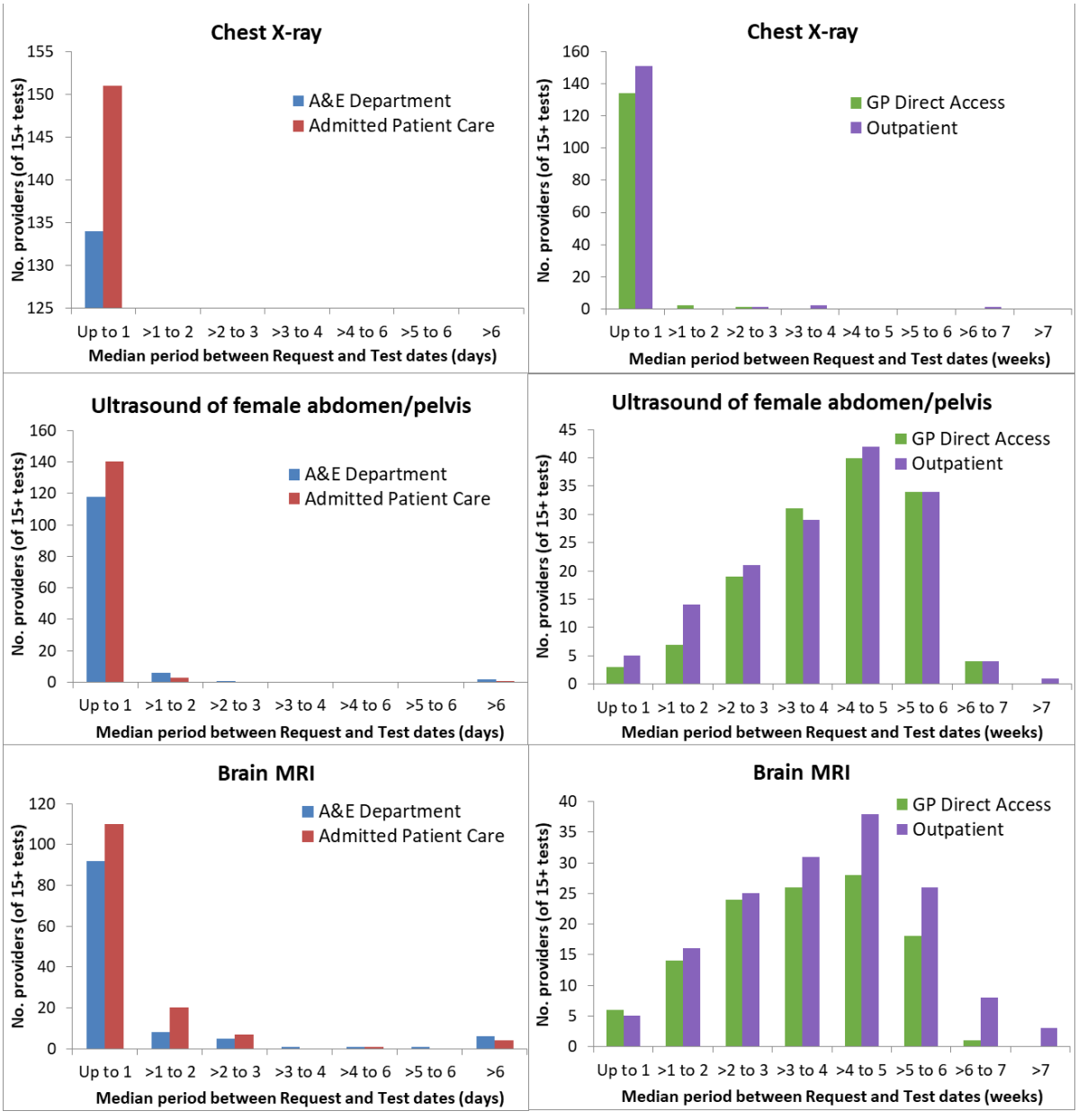
	Brain (MRI)				Kidney or bladder (Ultrasound)			
	All Median	All % Same day	GP Median	GP % Same day	All Median	All % Same day	GP Median	GP % Same day
2012/13	2	32%	3	17%	0	85%	0	80%
2013/14	2	34%	3	18%	0	89%	0	85%
2014/15	2	33%	3	18%	0	91%	0	88%
2015/16	2	35%	3	21%	0	92%	0	89%
2016/17	2	33%	3	19%	0	93%	0	89%
2017/18	2	32%	3	16%	0	94%	0	90%
2018/19	2	33%	3	17%	0	95%	0	92%
2019/20	2	33%	3	17%	0	95%	0	92%
Apr	2	32%	3	16%	0	95%	0	91%
May	2	33%	3	15%	0	95%	0	92%
Jun	2	32%	3	16%	0	95%	0	91%
Jul	2	34%	3	16%	0	95%	0	92%
Aug	3	32%	4	14%	0	96%	0	93%
Sep	2	33%	3	17%	0	95%	0	92%
Oct	2	34%	3	17%	0	95%	0	92%
Nov	2	33%	3	17%	0	96%	0	94%
Dec	2	33%	3	18%	0	95%	0	92%
Jan	2	34%	3	18%	0	95%	0	92%
Feb	2	32%	3	16%	0	95%	0	92%
Mar	2	34%	2	18%	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%
2019/20	3	30%	4	16%	2	24%	2	28%	0	95%	0	94%
Apr	3	30%	5	18%	3	23%	2	25%	0	95%	0	93%
May	4	30%	5	17%	2	24%	2	27%	0	95%	0	93%
Jun	3	29%	5	15%	3	22%	2	26%	0	95%	0	93%
Jul	3	30%	5	17%	3	23%	2	27%	0	95%	0	93%
Aug	5	28%	6	13%	3	22%	2	26%	0	96%	0	94%
Sep	4	29%	5	15%	3	22%	2	28%	0	95%	0	94%
Oct	3	30%	4	16%	2	23%	2	28%	0	95%	0	94%
Nov	3	31%	4	15%	2	23%	2	29%	0	95%	0	94%
Dec	3	32%	4	16%	3	23%	2	30%	0	95%	0	94%
Jan	3	31%	4	17%	3	23%	2	28%	0	95%	0	94%
Feb	3	29%	4	16%	2	23%	2	28%	0	96%	0	94%
Mar	2	33%	3	19%	1	33%	1	35%	0	96%	0	94%

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.

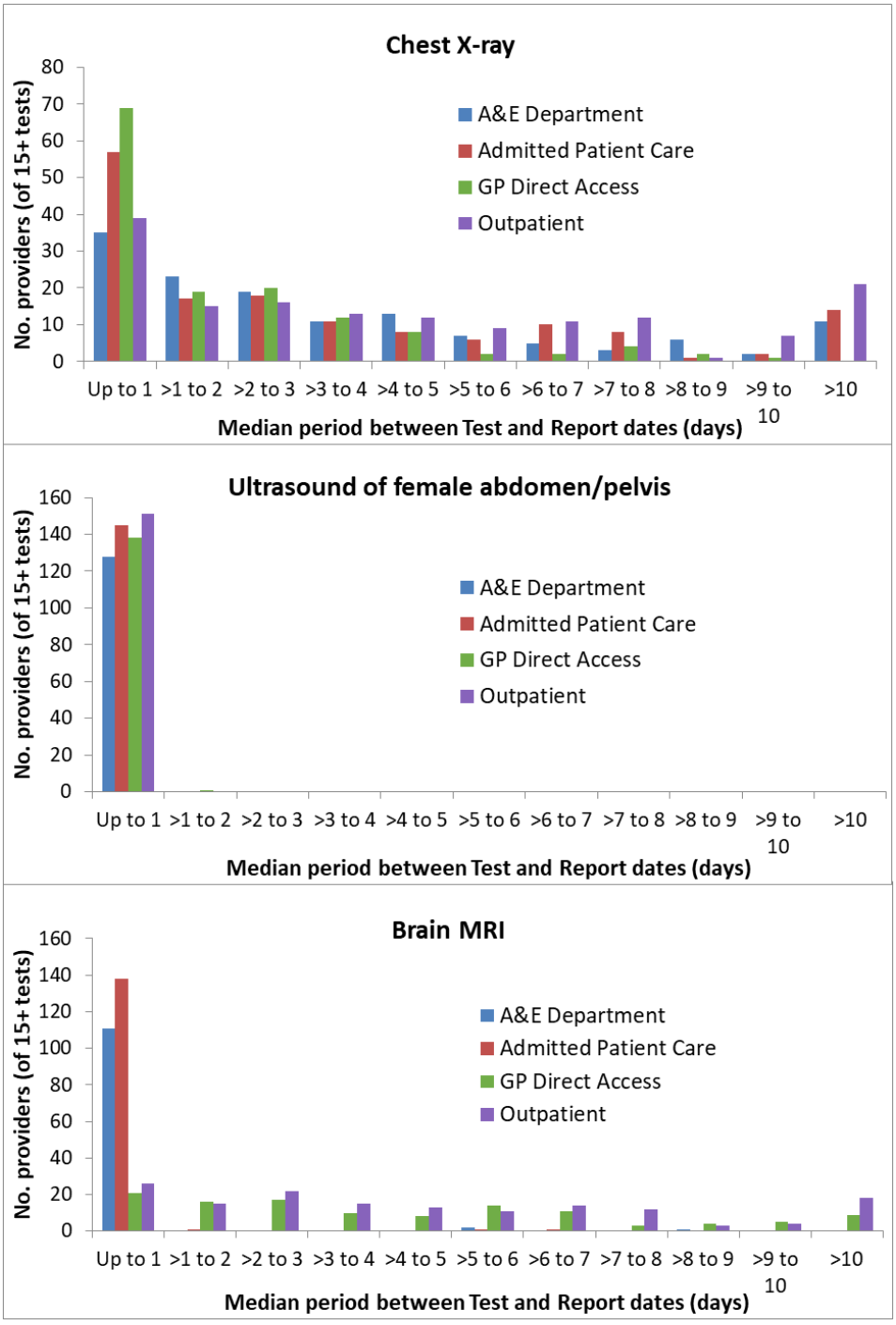
Graph 5.1 Variation by provider of median period from date of test request to date of test for procedures suitable for diagnosing cancer, by referral source, 2019/20



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. Of these, 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, 2019/20



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 2019/20, data for the following providers were missing in the published report due to non-submission:

- Mid Cheshire Hospitals NHS Foundation Trust (RBT) did not submit any data for February 2020, resulting in a shortfall of 17-19,000 exams.
- Royal Brompton & Harefield NHS Foundation Trust (RT3) did not submit any data for February 2020, resulting in a shortfall of 8-9,000 exams.

6.1.4. Data coverage and quality has continued to improve in 2019/20, with 99.9% providers having data for each month. However, within this, some data submissions may be incomplete. Known problems are:

- Dorset County Hospital NHS Foundation Trust (RBD) submitted no Service report issued dates during 2019/20.
- Great Ormond Street Hospital for Children NHS Foundation Trust (RP4) confirmed that some of their Outpatient activity erroneously appears as 'Other' patient source setting.
- Homerton University Hospital NHS Foundation Trust (RQX) submitted 49,000 imaging records with ‘Other’ patient source setting from September 2019 to March 2020 that should have been ‘GP Direct Access’, due to a script error.
- St George's University Hospitals NHS Foundation Trust (RJ7) underreported MRI and Fluoroscopy activity for some months due to omission of some sites and the exclusion of interventional procedures.
- The Rotherham NHS Foundation Trust (RFR) submitted no Test request dates or Test request issued dates during 2019/20.
- University Hospitals of Derby and Burton NHS Foundation Trust (RTG) mislabelled patient source setting for 20,000 records in February to March 2020 as ‘Other Health Care Provider’ in place of ‘Accident and Emergency department’ and some ‘Other’.
- Whittington Health NHS Trust (RKE) submitted no Test request dates or Test report issued dates during 2019/20.

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, 92.0% of tests had a date of test request included (compared with 91.2% in 2018/19) and, of those that didn't, many had a date of test request received instead. This latter date is used where date of test request was missing, increasing to 96.8% the proportion of cases included in tables showing the request to test period. In addition, 93.8% of tests had a date of test report issue included (up from 93.5% in 2018/19).

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 2019/20, 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 DID website.

6.2 Revisions

6.2.1. The activity summary from 2012/13 to 2016/17 has been revised in this report (Tables 1 and 6). Recent improvements to the modality mapping enabled activity not mapped to a modality at the time to be appropriately attributed to a modality, as well as a clearer split between Nuclear Medicine and SPECT. In addition, some submissions have been captured that were made too late to incorporate at the time. A few records have been lost in the revision process due to archive errors (see Technical Report for details), i.e. where data was overwritten, but their impact is much smaller than those gained.

6.2.2. The net effect of revisions to Table 1 is a gain of approximately 359,000 exams in 2012/13, 123,000 in 2013/14, 119,000 in 2014/15 and 11,000 in 2015/16. There was a net reduction of 13,000 in 2016/17, because data for provider sites outside England were excluded throughout the revised tables and an unusually large amount of activity was attributed to site code 89997 in 2015/16 and 2016/17[4]. The median Request to Test and Test to Report periods were largely unaffected, so other tables are not revised. Data from

[4] Site code 89997 is 'Organisation code non-UK provider where no org code has been issued or site code of treatment not applicable'. Most of these cases were submitted by Barking, Havering and Redbridge University Hospitals NHS Trust (RF4), who had some problems with their submissions at that time so this looks like an error in allocation.

2017/18 to 2018/19 did not need revising as all activity was correctly mapped to a modality at the time.

6.2.3. Previous publications have not been revised, so the detailed breakdowns in those may differ from these activity totals. However, the provisional figures published for 2019/20 are now replaced by these final figures. 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

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