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Improving regional diagnostics in the NHS

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This report is the independent opinion of the authors

Introduction

This research aims to provide an evidence base to facilitate discussions on the provision of diagnostics through the NHS in England. This research will strengthen Philips' position as a healthcare thought leader and advocate for improved access to diagnostics.

Background to this report

Diagnostics are a critical component of successful healthcare systems. Radiology, pathology, and procedural diagnostic services facilitate screening, diagnosis, planning of treatments and monitoring of response to treatments. Early and comprehensive diagnostic testing identifies diseases earlier and speeds up access to appropriate therapies. As diagnostic tests have become more accurate, better tolerated and safer, demand has grown.

Even before the Covid-19 pandemic, the capacity to meet demand and deliver on NHS waiting times standards had generally been deteriorating.[1] Despite an initial dip in demand for diagnostics associated with lockdowns at the start of the pandemic, a backlog of disease diagnosis and treatment is now placing unprecedented demands on NHS services. A recent report by the National Audit Office (NAO) from December 2021 estimated that there were between 240,000 and 740,000 'missing' urgent GP referrals for suspected cancer during the pandemic.[2] Currently NHS waiting lists for elective care stand at 6.1 million people, the highest on record.[3]

The NAO estimated that if 50% of the 'missing' referrals for elective care return to the NHS and activity grows in line with pre-pandemic plans, the elective care waiting list will reach 12 million by March 2025.[2] As a result, new approaches for dealing with increasing demand are required. Concern has also grown that the harm caused by increased waiting lists and delays to treatment may not fall equally.

Research has shown that patients living in the most socioeconomically deprived parts of England are often waiting longer for treatment since the pandemic than those in more affluent areas.[4] In their recent 'Levelling Up the United Kingdom' report, the UK government identified addressing inequalities in health and wellbeing as a core component of addressing wider societal inequalities.[5]

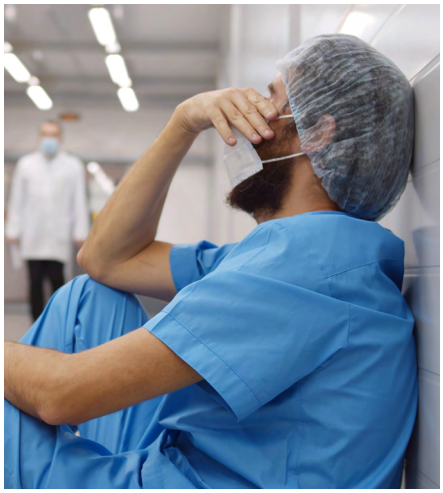
Radical changes to the provision of diagnostics flagged in the NHS Long Term Plan in 2019 have been supported by several reports since that time.[6,7] These reports called for an expansion in diagnostic capacity by moving several diagnostic services away from hospitals and into community-based diagnostic centres. This approach was also supported by Philips' November 2020 report on Reducing Healthcare Inequalities and Enhancing the NHS.[8]

In October 2021, the government pledged £350m to set up 40 new community diagnostic centres (CDCs) across England as 'one-stop-shops for checks, scans and tests'.[9] The government highlighted that these centres will help to achieve:

- **Earlier diagnosis of diseases through easier, faster, and more direct access to diagnostic tests**
- **Reductions in hospital visits to reduce the risk of Covid-19 transmission**
- **Reductions in waiting times for patients by diverting non-emergency diagnostics away from hospitals**
- **Reductions in carbon emissions and air pollution by providing multiple tests at one visit**

This initial wave of 40 CDCs is set to expand to 160 centres by 2025 with the ambition to provide an additional 17 million diagnostic tests during that period. This represents a 25% increase in testing capacity compared to before the pandemic, while also improving local access to diagnostics.[10]

More evidence is required to guide the rollout of CDCs in areas where there is high demand for diagnostic services, and where certain communities would benefit from dedicated hubs. This report aims to review diagnostic demand and capacity in several areas of interest to ensure community diagnostics has a significant impact on patient outcomes.

Key questions addressed

There are several key questions that this report attempts to address. Broadly, in the context of diagnostics, these were:

1. What are the major regional diagnostics challenges facing the NHS?
2. How do we enhance the NHS and ultimately help it thrive?

Specific questions addressed in this report were:

1. What is the current diagnostics capacity in the highlighted regions of England?
2. What are the current diagnostics backlogs in these regions?
3. What are the key barriers to improving diagnostics capacity in these regions?
4. How can we make diagnostics more resilient in these regions?
5. What is the evidence to support the establishment of CDCs in these regions?

Report structure

This report focusses on the delivery of regional diagnostic services through the NHS, how they have been impacted by the pandemic and the prognosis for them in the months and years to come. This initial report includes findings from analyses of seven Integrated Care Systems in London / South East, the East of England and the South West, as indicated below.

London / South East

- North East London Integrated Care System
- Frimley Health and Care Integrated Care System

East of England

- Cambridgeshire and Peterborough Integrated Care System
- Norfolk and Waveney Integrated Care System

South West of England

- Bristol, North Somerset and South Gloucestershire Integrated Care System
- Somerset Integrated Care System
- Integrated Care System for Devon

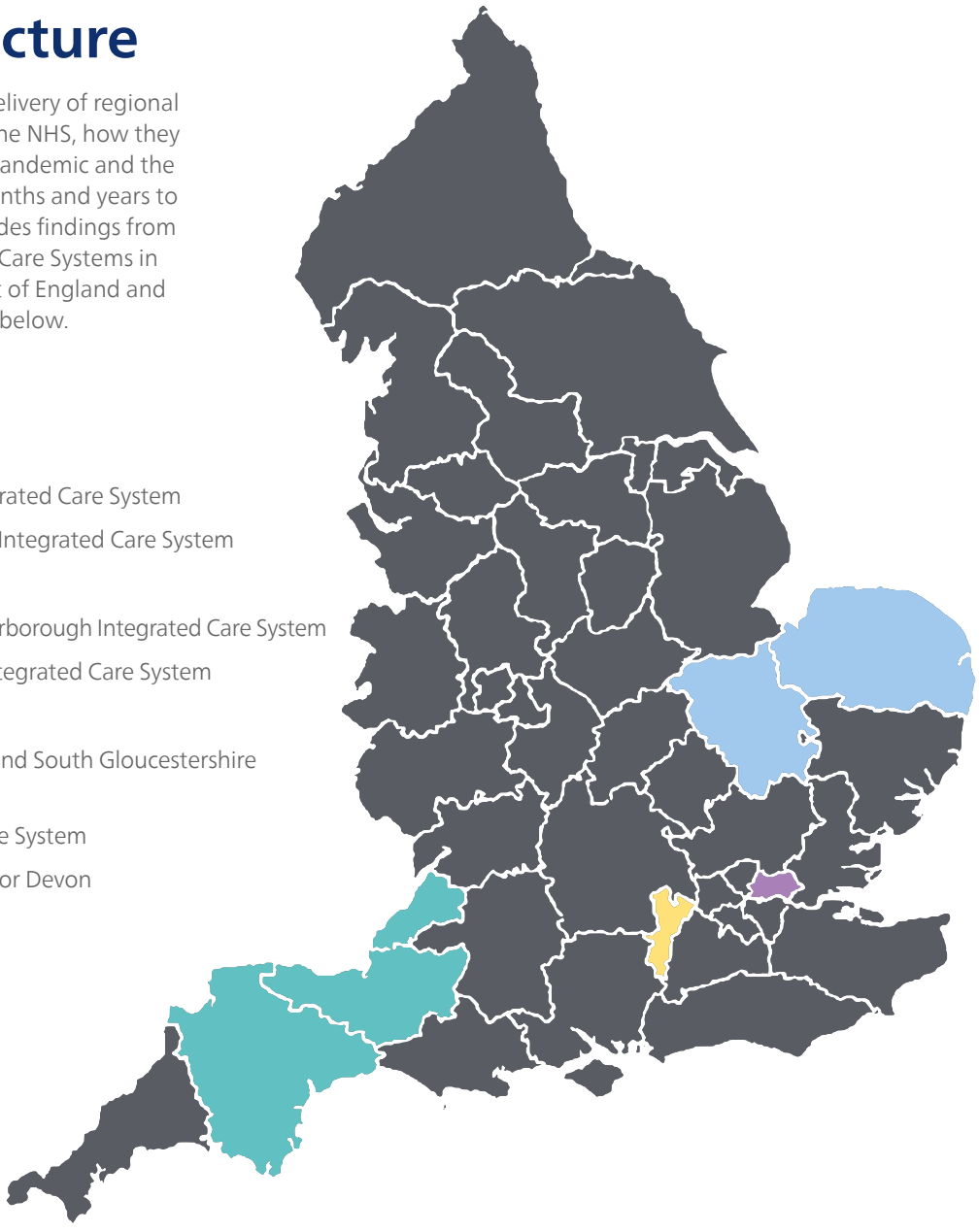


Figure 1 – Map showing the approximate boundaries of current Integrated Care Systems in England. The four regions examined in this report are highlighted.

The report commences with an introduction to some key terms, concepts and methods discussed. Relevant findings from a national and regional level are then described in detail. Based on available evidence, key barriers and facilitators to improving regional diagnostics are introduced, along with important regional considerations relevant to building resilience into reforms to diagnostics in the UK.

What are Integrated Care Systems?

Integrated care systems (ICSs) bring together health and care organisations to deliver joined up services in their area or 'system'. The NHS Long Term Plan and the Government's Health and Care Bill place ICSs at the heart of the NHS from 2022, with these new entities taking on the commissioning responsibility that currently sits within Clinical Commissioning Groups (CCGs).[11] ICSs aim to remove barriers between providers to improve health, tackle inequalities in patient outcomes, experience and access; enhance productivity and support broader social and economic development in their area.

Currently, the NHS in England is transitioning from 44 Sustainability and Transformation Partnerships (STP) towards the introduction of 42 Integrated Care Systems, each covering a population of 1 to 3 million people. Many ICSs have formed according to existing STP footprints, while others have formed through the merging of STPs or the large scale redrawing of STP boundaries.[12] The approximate boundaries of the current 42 ICSs are shown in Figure 1. At the time of writing, ICSs across England are at different stages of maturity, with some areas already operating as ICSs while others are developing collaboration agreements between providers and partners and appointing their senior leadership teams. Amidst this evolution, the report draws on publicly available information about the intended configuration of ICSs and as such may be subject to change.

How do patients currently access diagnostics in the NHS?

An independent review of diagnostic services undertaken by Professor Sir Mike Richards in 2020 highlighted that diagnostic pathways in the NHS have remained largely unchanged for several decades.[6] Emergency and elective diagnostics are mostly provided through approximately 150 NHS trusts and foundation trusts that deliver these services through radiology, pathology and other departments located within hospital sites. Emergency diagnostics are generally provided following an emergency attendance to a hospital for an acute condition. Access to elective diagnostics typically requires a patient to obtain a GP referral to a hospital consultant, resulting in a wait for several weeks for a clinic visit, followed by a further wait for the requested tests. Results are then provided to patients via the hospital clinic (often requiring another clinic appointment), with results then forwarded back to the patient's GP.

The pandemic has been a catalyst for overdue changes to diagnostic pathways that had been highlighted in the NHS Long Term Plan.[11] A key component in the proposed transformation of diagnostic services in the NHS is transitioning many elective diagnostic tests from hospitals to community settings.

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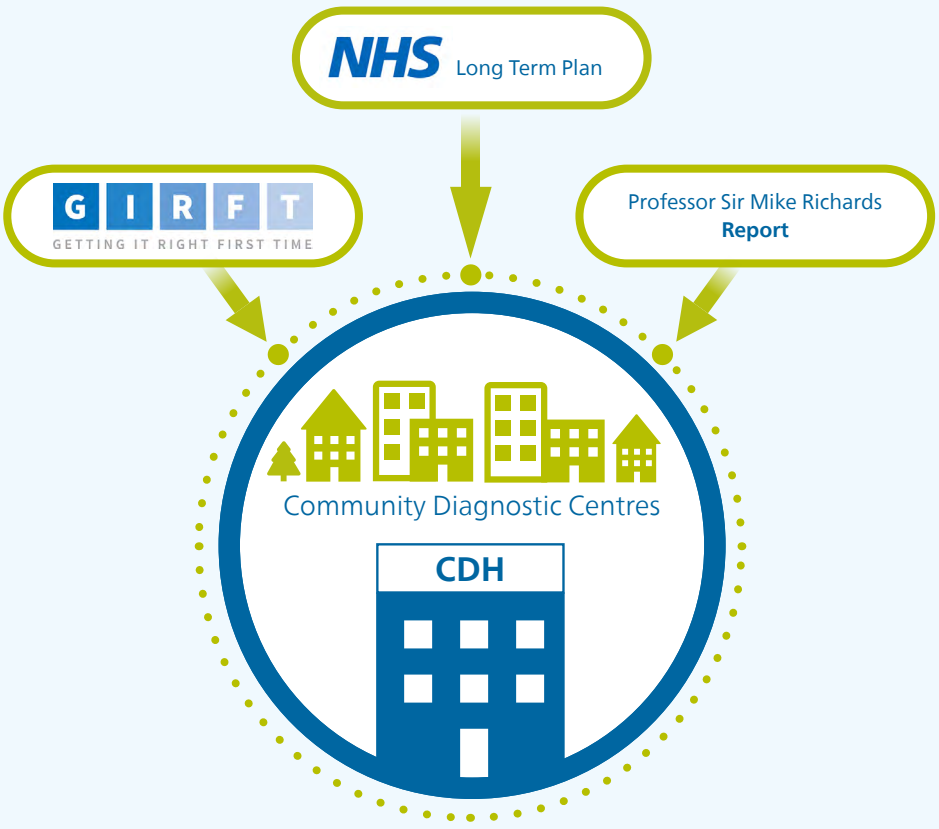


Figure 2

The state of the NHS in England in November 2021

National overview of diagnostic activity

To contextualise the regional analyses described in subsequent sections of this report, these initial findings provide a national overview of current waiting lists for five diagnostics tests: CT, MRI, echocardiography, GI endoscopy and non-obstetric ultrasound. Figure 3 shows temporal trends in diagnostic test activity, waiting list size and the proportion of patients waiting 6 weeks or more to receive these five diagnostic tests across England.

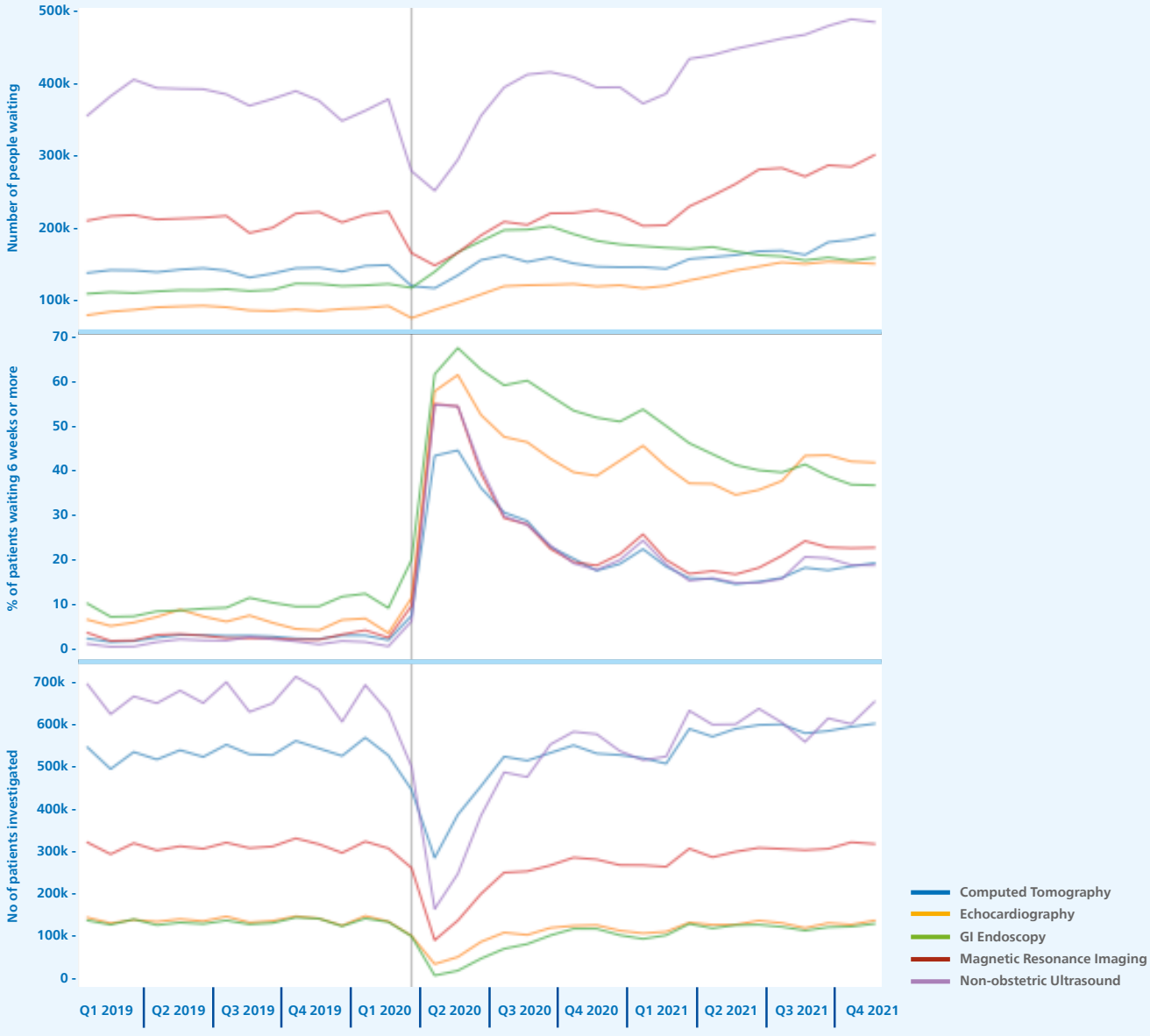


Figure 3 Summary activity for each major diagnostic modality from January 2019 to November 2021 in England

A steep decrease in activity is seen in April 2020, corresponding to the first month after the introduction of Covid-19 lockdown measures in England. Over the following six months, activity slowly increases before stabilising in the Summer of 2021. In March and April 2020, the decrease in diagnostic activity is paradoxically associated with a decrease in waiting lists, suggesting a reduction in the number of referrals for investigation being made that exceeds the reduction in diagnostic activity. After the initial decrease in waiting lists, the number of people waiting for these investigations increases steadily to a maximum of 1,414,889 when this report was produced.

April 2020 to June 2020 saw large increases in the percentage of patients waiting 6 weeks or more for an investigation across all modalities, resulting from a large decrease in the number of diagnostic tests performed during the same period. This has not yet returned to pre-pandemic levels. Before the pandemic, fewer than 5% of patients waited six weeks or more for a CT, MRI or ultrasound scan. Since the start of 2021, this value has stabilised at around 20% of patients now waiting 6 weeks or more. In contrast, before the pandemic, between 5 and 10% of patients waited six weeks or more for an echocardiogram or a gastrointestinal endoscopy. Since the start of 2021, around 40% of patients have waited six weeks or more for these investigations.

Compared to the equivalent month in 2019, since the pandemic all modalities have experienced significant and persistent reductions in activity. In 2021, only CT scans have consistently exceeded 2019 rates of activity with all other modalities stabilising at activity of around 10% below 2019 levels.

National overview of cancer activity

Key metrics used by the NHS to measure performance in investigating and treating cancer – the proportion of patients with suspected cancer seen within two weeks of referral, treatment of suspected cancer within one month of this decision to treat, and treatment for suspected cancer within two months (62 days) of referral – have been examined at a national level in this section.

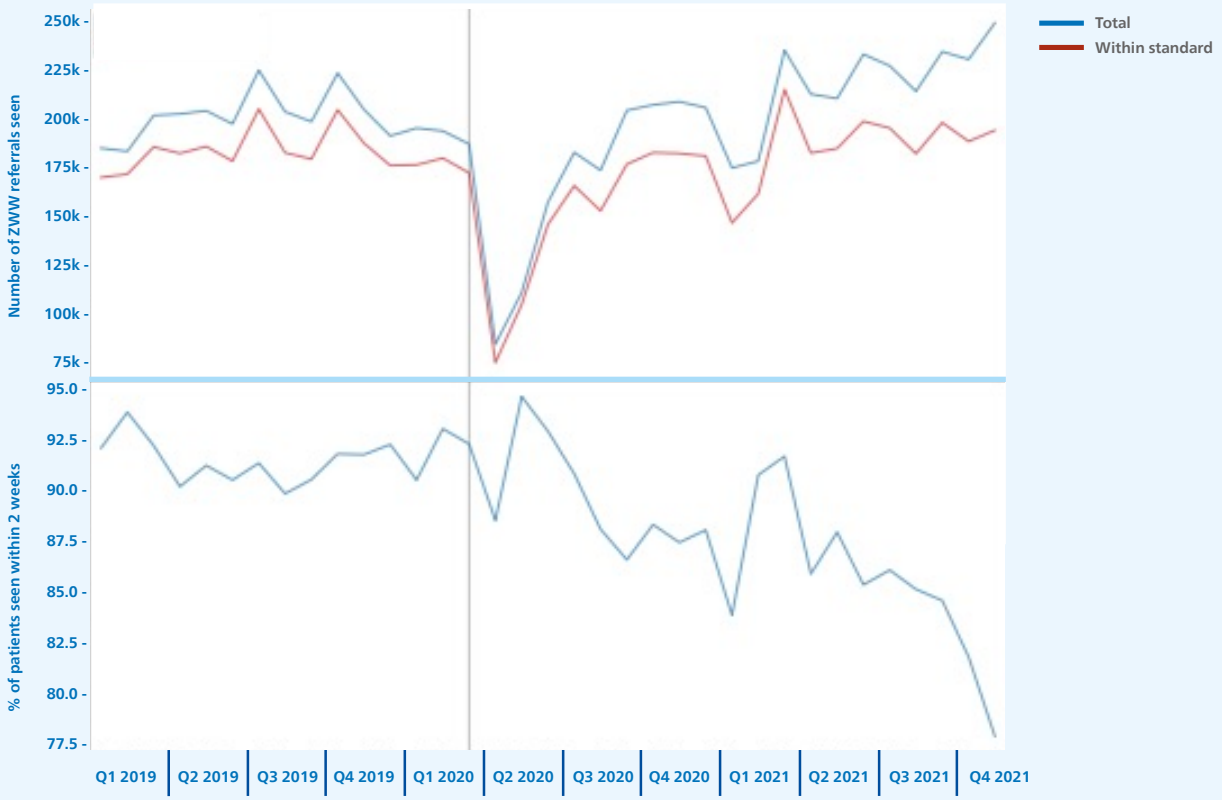


Figure 4 National number of 2WW referrals seen from January 2019 to November 2021 and the percentage of these patients seen within the two-week target.

Figure 4 shows that the number of patients seen following referral for suspected cancer (2WW referrals) has exceeded pre-pandemic levels since June 2021 at a national level. Despite this, patients seen within two-weeks of referral has reduced significantly. Prior to the pandemic, more than 88% of 2WW referrals were seen within two weeks. In November 2021, less than 78% of referrals for suspected cancer were seen within the two-week target. This falls well below the operational cancer waiting times standard of 93% published by the NHS in 2020-21.[14] This indicates that while the overall capacity of 2WW services has increased in recent months, this has not been sufficient to meet demand.

A similar pattern is seen in the treatment of patients with new cancer diagnoses within the one-month target, as shown in Figure 5. Although the number of patients being treated for suspected cancer per month has returned to pre-pandemic levels, the proportion of these treatments being undertaken within one month of diagnosis has reduced from over 95% in most months, to less than 93% in November 2021. The operational standard for this metric is 96%.[14] The proportion of patients seen and treated within two months of referral for suspected cancer has also reduced significantly from over 73% before the pandemic to less than 68% in November 2021, as shown in Figure 6. This compares poorly against an 85% operational standard for treatment within 62-days of referral.[14]

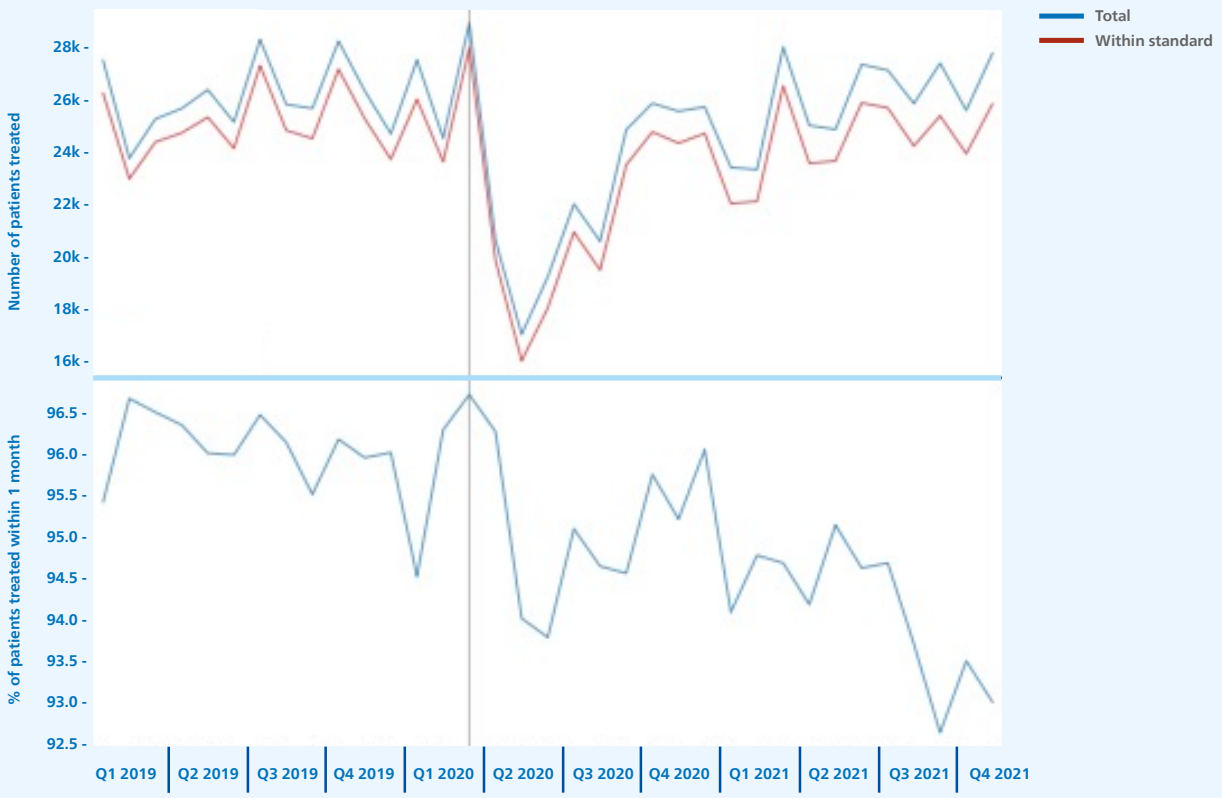


Figure 5 National number of cancer diagnoses treated from January 2019 to November 2021 and the percentage of these patients treated within the one-month target

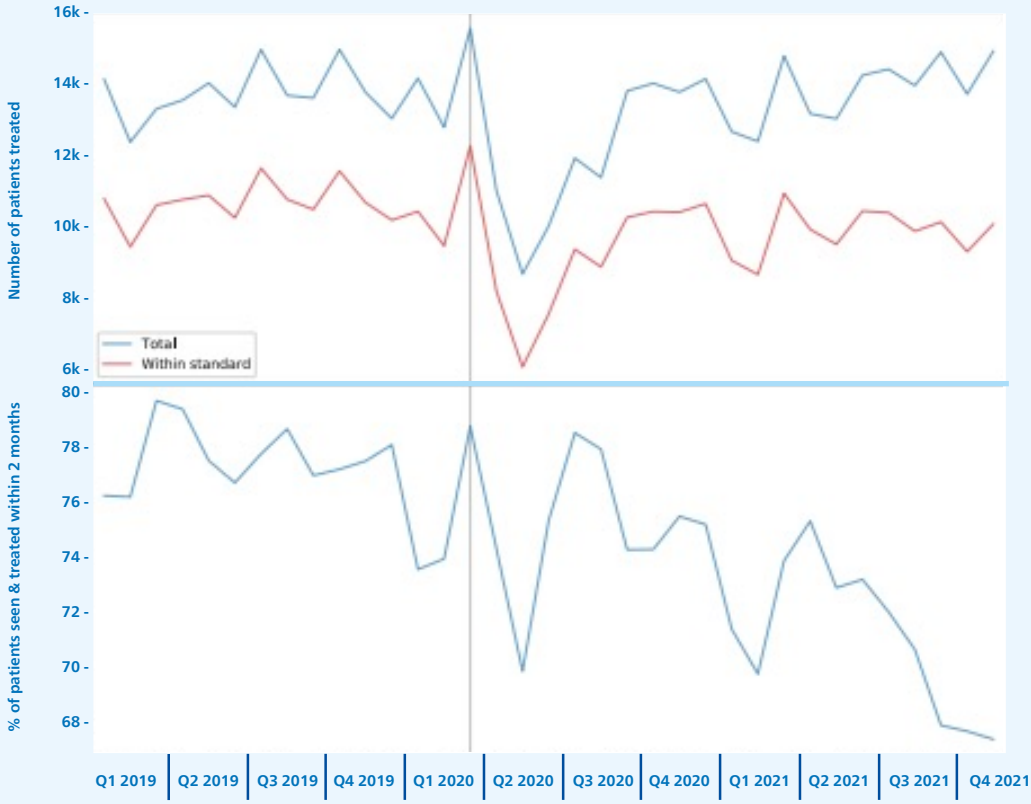


Figure 6 National number of patients seen and treated from January 2019 to November 2021 and the percentage of these patients seen and treated within the two-month target

National overview of referral activity

Patients referred for non-emergency consultant-led treatment are on referral to treatment (RTT) pathways. The RTT waiting time includes the first outpatient consultation, diagnostic tests and for inpatient and day case treatment (i.e. the entire patient journey from initial RTT to the start of treatment). A lack of appropriate and timely access to diagnostic testing is one factor that can contribute to delays in RTT time.

Treatment following a RTT should commence within 18 weeks, according to NHS standards. The NHS Constitution sets out that more than 92% of patients on incomplete RTT pathways should have been waiting no more than 18 weeks from the day the appointment is booked through the NHS e-Referral Service, or when the hospital or service receives the referral letter. The waiting time ends if a clinician decides no treatment is necessary, or if the patient decides not to be treated, or when the treatment begins.

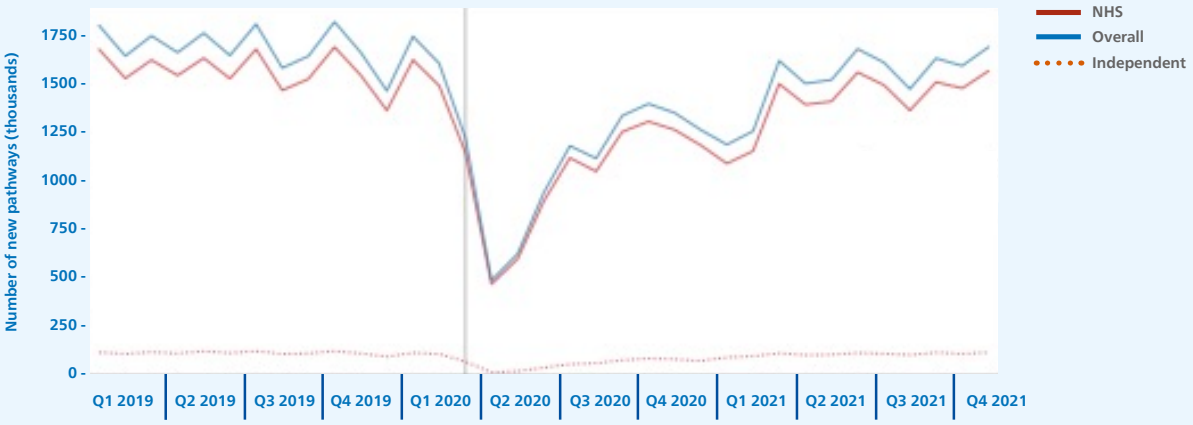


Figure 7 National number of new referrals made each month from January 2019 to November 2021.

Figure 7 shows the number of new referrals received each month from January 2019 to November 2021. There was a significant reduction in the number of referrals from over 1,500,000 per month prior to the pandemic to a low of around 500,000 in April 2020. By November 2021 the monthly number of referrals for non-emergency treatment had returned to pre-pandemic levels.

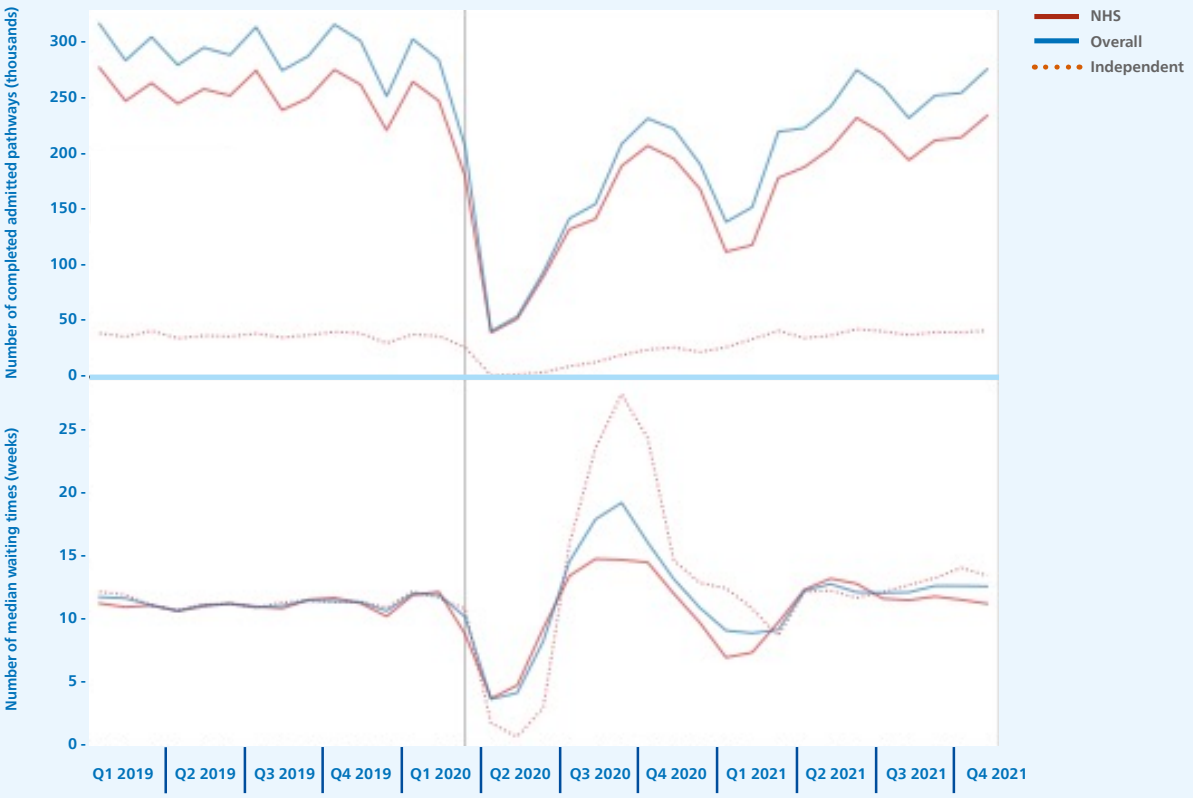


Figure 8 National number of patient pathways completed with admission each month from January 2019 to November 2021

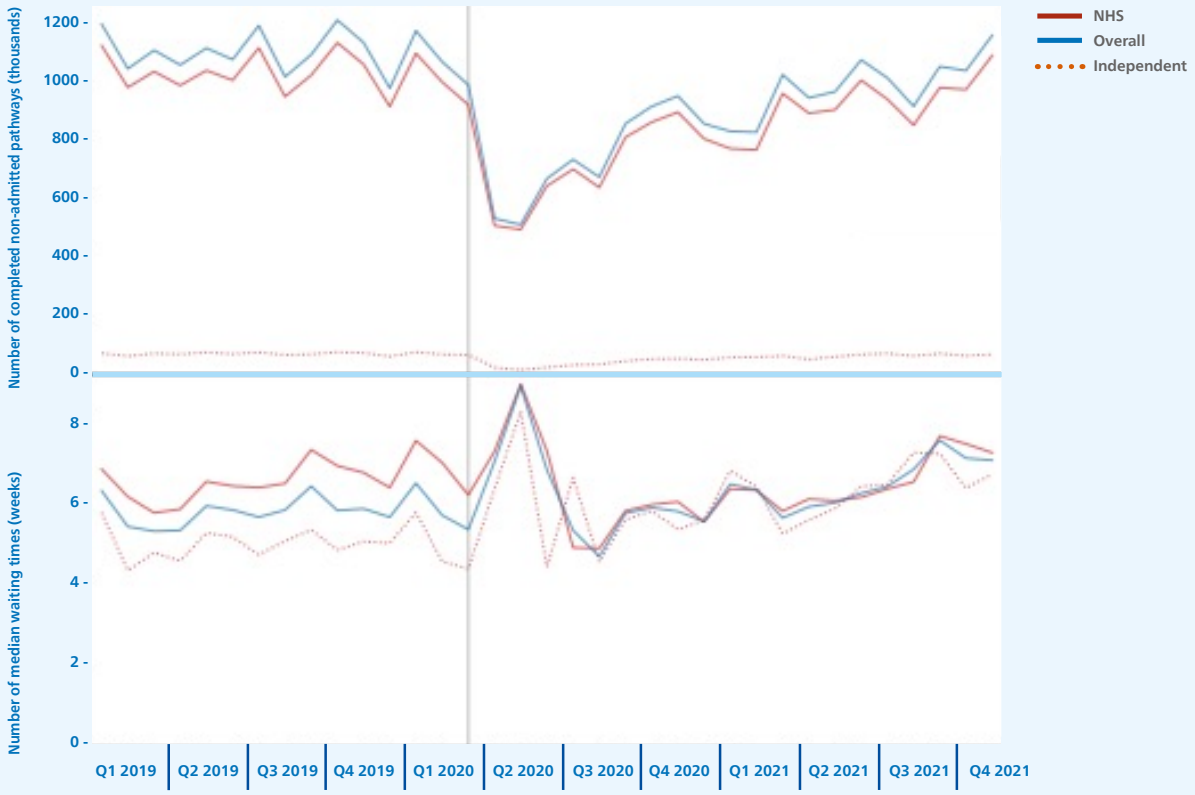


Figure 9 National number of patient pathways completed without admission for treatment each month from January 2019 to November 2021

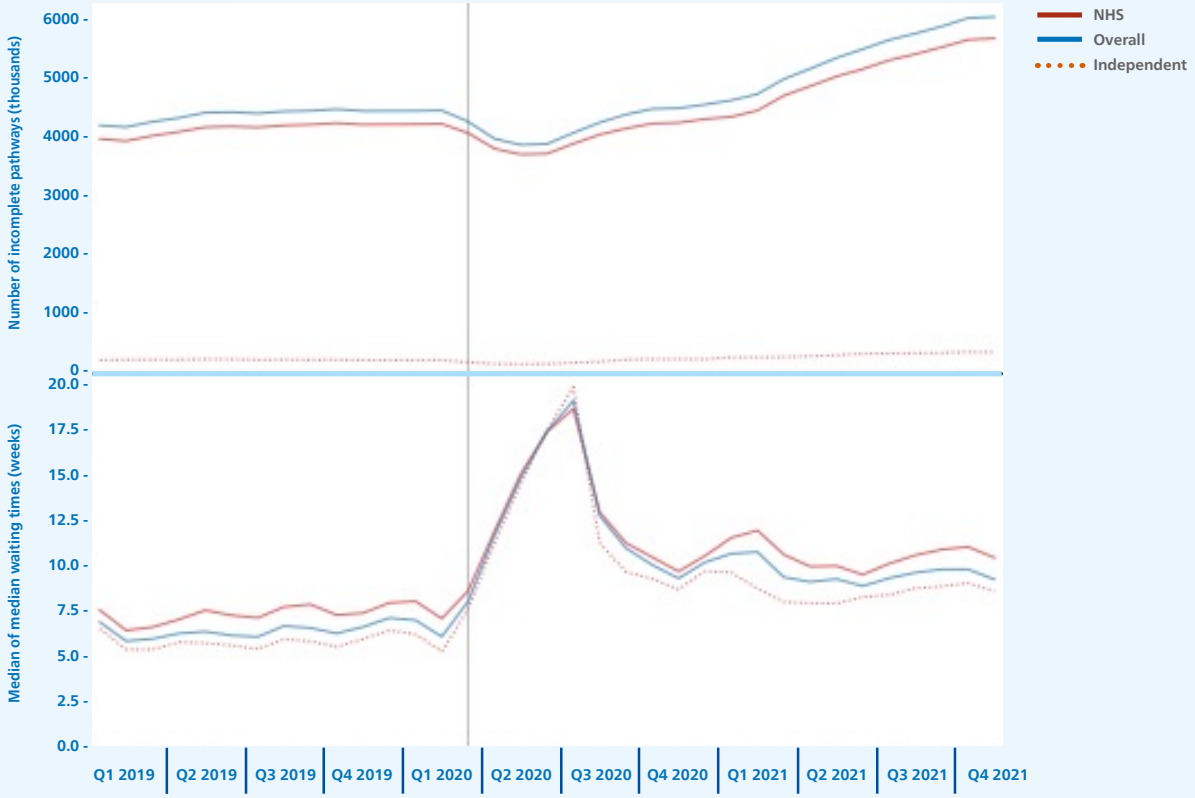


Figure 10 National number of incomplete pathways each month from January 2019 to November 2021

This research investigated trends in completed admitted pathways (patients who received treatment as an admitted patient in hospital), completed non-admitted pathways and incomplete pathways, from January 2019 to November 2021. We included NHS and independent providers. Figure 8 shows the national number of patient pathways completed with and admission for treatment. There was a significant reduction from more than 250,000 completed admitted pathways prior to the pandemic to a nadir of around 50,000 per month in April 2019. By November 2021, the monthly number of completed admitted pathways was approaching pre-pandemic levels, although the median waiting time for patients completing these pathways has stabilised at around 13 weeks, compared with 11 weeks prior to the pandemic. Of note, there was a 30% reduction in completion of admitted pathways from around 200,000 per month to 140,000 per month during the winter of 2020-2021, highlighting concerns with system resilience in maintaining standards in these pathways during periods of increased Covid activity.

The number of completed, non-admitted pathways reduced from a peak of approximately 1,200,000 per month before the pandemic to a low of around 500,000 in May 2019. These pathways had returned to pre-pandemic rates of completion by November 2021. Non-admitted pathways were more resilient to winter Covid pressures than admitted pathways.

The number of incomplete pathways has increased from around 4,200,000 per month prior to the pandemic to approximately 6,000,000 by November 2021. This number was rising throughout 2021, corresponding to a reduction in completion of admitted and non-admitted pathways and a return of new referrals to pre-pandemic levels.

Community Diagnostic Centre Locations

On the 1st October 2021, the Department of Health and Social Care announced the locations of 40 new community diagnostic centres across England.

The aims of the CDC roll out are listed in the government announcement and are as follows:

- **Earlier diagnoses for patients through easier, faster, and more direct access to the full range of diagnostic tests needed to understand patients' symptoms including breathlessness, cancer, ophthalmology.**
- **A reduction in hospital visits which will help to reduce the risk of COVID-19 transmission.**
- **A reduction in waits by diverting patients away from hospitals, allowing them to treat urgent patients, while the community diagnostic centres focus on tackling the backlog.**
- **A contribution to the NHS's net zero ambitions by providing multiple tests at one visit, reducing the number of patient journeys and helping to cut carbon emissions and air pollution.**

After the initial release, some locations were updated, while others remain unclear in their location or state of operation. The goal was for these sites to be up and running by March 2022, with many able to provide services before this date. Of the 59 sites listed in the government announcement, it was possible to identify the locations of 56, with three unknown sites being located in Somerset. The proposed locations of the CDCs as of December 2021 are shown in Table 1 and are mapped in Figure 11.

For the report, information regarding the proposed locations of CDCs was obtained from a range of sources including local and national press releases and websites, local newspapers and Twitter. In many cases, the nature of the services offered at a site was unclear, and for those sites located on hospital premises, the extent to which proposed activity in the CDC will differ from existing diagnostic activity was largely unknown.

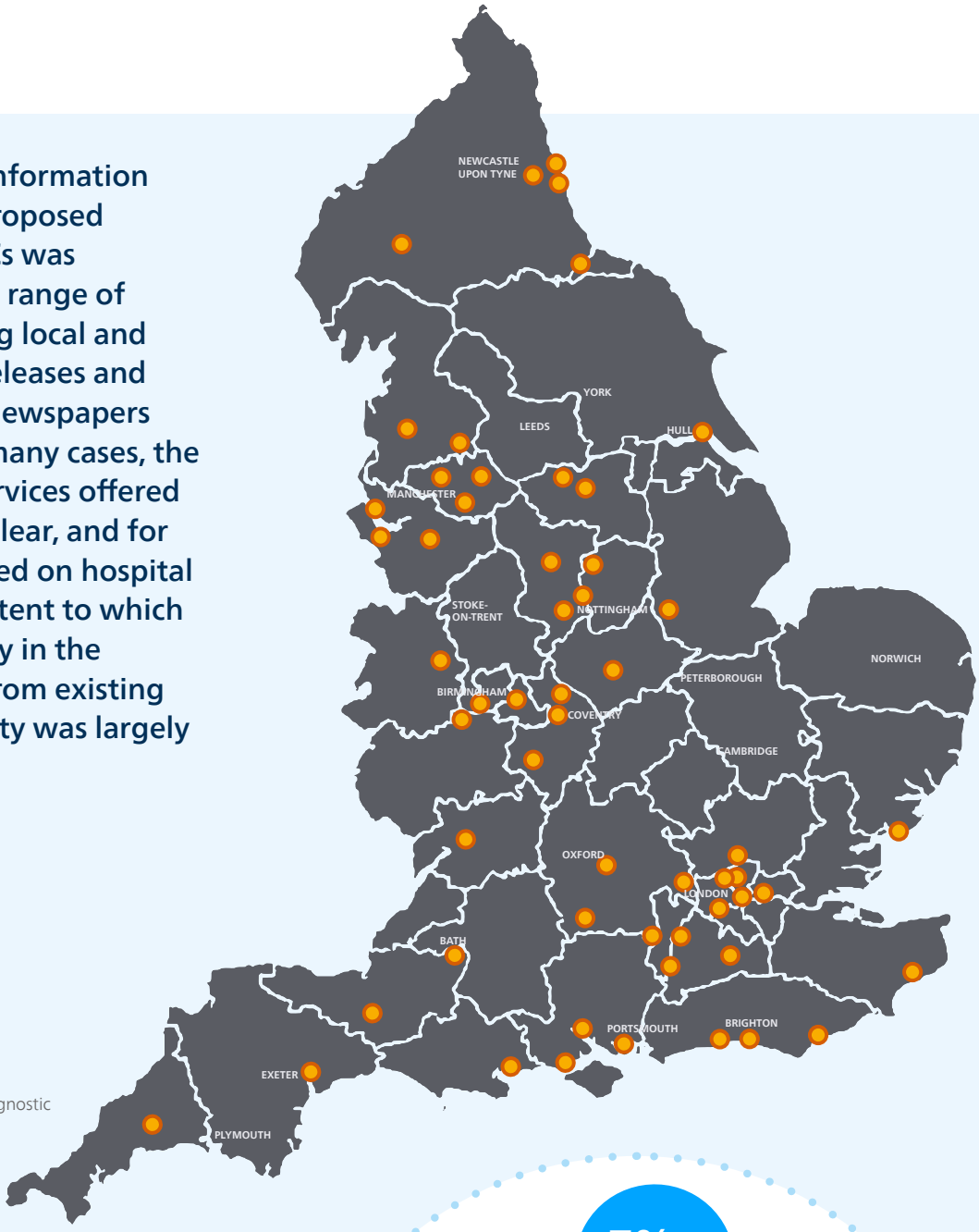
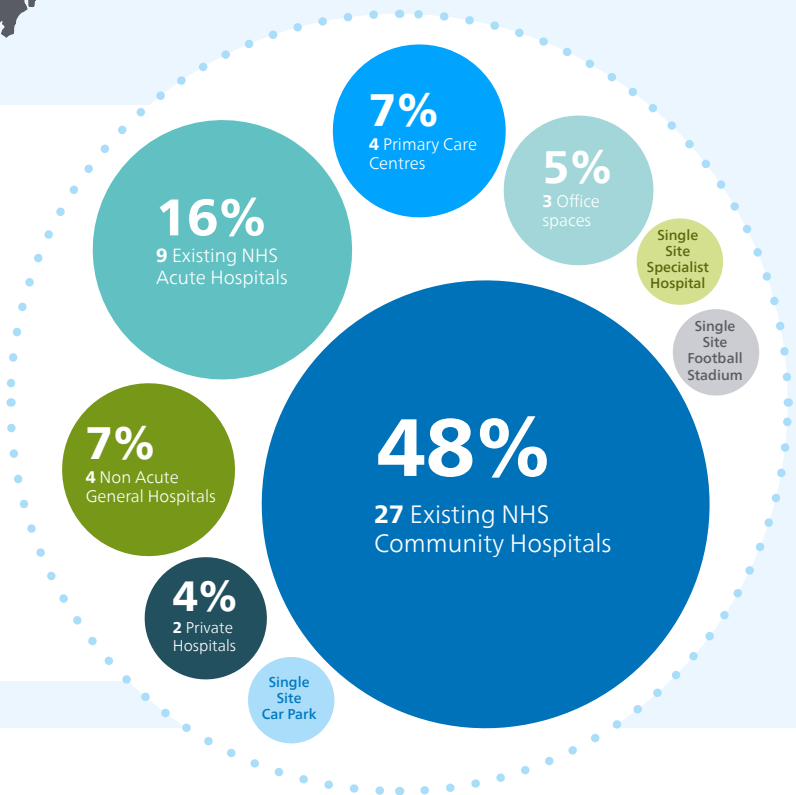


Figure 11 - The locations of the proposed Community Diagnostic Centres across England.

Of the 56 sites whose location was known, 27 (48%) were in existing NHS community hospitals and a further nine (16%) were in existing NHS acute hospital sites, with a further four (7%) located in non-acute general hospitals, four (7%) in primary care centres and a single site in a specialist hospital. A range of non-NHS sites have also been proposed, including four (7%) sites in retail premises, three (5%) in office units, two (4%) in existing private hospitals and single sites in a football stadium and inner-city car park. As shown in Figure 11, few of the proposed CDCs are located within East Anglia, North Yorkshire and Cumbria.



Region	Location	Community Diagnostic Centre	Category
East of England	Clacton	Clacton & District Hospital	Community Hospital
	New QEII Hospital (Herts & West Essex)	New QEII Hopsital Welwyn Garden City	General Hospital (no A&E)
East Midlands	Leicester	Leicester General Hospital	General Hospital (no A&E)
	Joined Up Derbyshire	Florence Nightingale Community Hospital	Community Hospital
		Ilkeston Community Hospital	Community Hospital
		Whitworth Hospital	Community Hospital
	Kings Mill	King's Mill Hospital, Mansfield	Acute Hospital
	Grantham	Grantham & District Hospital	Acute Hospital
London	Finchley Memorial Hospital	Finchley Memorial Hospital	Community Hospital
	Queen Mary's Hospital (South Wesr	Queen Mary's Hospital	Community Hospital
	Mile End Hospital	Mile End Hospital	Community Hospital
	Barking Community Hopsital	Barking Community Hospital	Community Hospital
	Wood Green, London	The Mall, Wood Green Shopping Centre	Retail Unit
North East	Tees Valley	Lawson Street Health Centre	Primary Care Centre
	Blaydon	Blaydon Urgent Treatment Centre	UTC as part of Acute Trust
	Central ICP (Cumbria & North East)	South Tyneside District Hospital	Acute Hospital
	North Tyneside	North Tyneside General Hospital	General Hospital (no A&E)
North West	Penrith	Penrith Hospital	Community Hospital
	Cheshire & Merseyside	Victoria Infirmary Northwich	Community Hospital
		Liverpool Women's Hospital	General Hospital (no A&E)
		Ellesmore Port	Community Hospital
	Lancashire Soiuth Cumbria	Rossendale Primary Health Care Centre	Primary Care Centre
		Preston Healthport	Community Hospital
	Manchester & Trafford	Withington Hospital	Community Hospital
	Northern Care Alliance - Oldham	Royal Oldham Hospital	Acute Hospital
	Bolton	Bolton NHS FT	Acute Hospital
South East	Buckinghamshire Oxford & Bershire West	West Berskshire Community Hospital	Community Hospital
		Amersham Hospital	Community Hospital
		Oxford Business Park Gemini One	Offices
	Frimley	Frimley Park Hospital	Acute Hospital
	St Mary's Community Hospital (Portsmouth)	St May's Portsmouth	Community Hospital
	HIOW Southampton & SW Hampshire	Royal South Hants Hospital	Community Hospital
		Lymington New Forest Hospital	Community Hospital
	Surrey Heartlands	Milford Community Hospital	Community Hospital
		Woking Community Hospital	Community Hospital
		East Surrey	Acute Hospital
	Buckland Community Hospital	Buckland Hospital	Community Hospital
	Sussex Health	Falmer Community Stadium	Football Stadium
		Shorelands Hospital	Community Hospital
		Bexhill Hospital	Community Hospital
South West	CDH Poole Dorset Health Village	Beales Poole	Retail Unit
	CIOS Bodmin (Cornwall/Isles of Scilly)	Bodmin Community Hospital	Community Hospital
	Devon Exeter Nightingale	NHS Nightingale Exeter	Retail Unit
	BSW BaNES Locality	Sulis Hospital	Private Hospital
	Gloucestershire Quayside	Commercial Offices	Offices
	Somerset	Rutherford's Diagnostics	Private Hospital
		Somerset Community	Unknown
		Somerset West	Unknown
		Somerset Opthamology	Unknown
West Midlands	Kidderminster Treatment Centre	Kidderminster Hospital & Treatment Centre	General Hospital (no A&E)
	Coventry & Warwickshire	Warwickshire North (George Eliot Hospital)	Acute Hospital
		Coventry City (Whitefriars)	Car park
		South Warwickshire (Stratford Hospital)	Community Hospital
	Washwood Heath (Birmingham & Solihull)	Washwood Heath Urgent Care Centre	Primary Care Centre
	Telford	Hollinswood House	Offices
	Corbett	Corbett Hospital	Community Hospital
Yorkshire & Humber	Montagu Hospital (South Yorshire)	Montagu Hospital, Mexborough	Community Hospital
	Barnsley Glassworks	Barnsley Glassworks Shopping Centre	Retail Unit
	Humber Coast & Vale	Hull University Hospital	Acute Hospital

Table 1 - The proposed names and locations of Community Diagnostics Centres along with the current activity of each site.

CDC locations and socio-economic deprivation

It is not possible to determine the demographic characteristics of patients that will use a particular CDC in advance of implementation. The 30 nearest Lower Layer Super Output Areas (LSOA) to each CDC were identified, representing a population of around 50,000 residents. For each LSOA, the 2019 Index of Multiple Deprivation ranking and quintile were obtained from the Office for National Statistics.

To understand the characteristics of a typical LSOA within the 30-LSOA locality of each CDC, the median deprivation rank was identified and compared to national LSOA-level deprivation rankings. Figure 12 shows the centiles of deprivation for the locality of each CDC.

Three CDCs; Hull University Hospital, Washwood Heath Urgent Care Centre and Liverpool Women's Hospital are located in particularly socioeconomically deprived areas and a typical LSOA in their locality would be amongst the 5% of most deprived LSOAs in the country. Conversely, many of the CDCs located in the South East are in less deprived locations, with the CDC in Amersham hospital located in a particularly affluent area where a typical LSOA in its locality is amongst the 8th percentile of least deprived LSOAs nationally.

The distribution of socioeconomic deprivation in the three most and three least socioeconomically deprived CDC localities is shown in Figure 13.

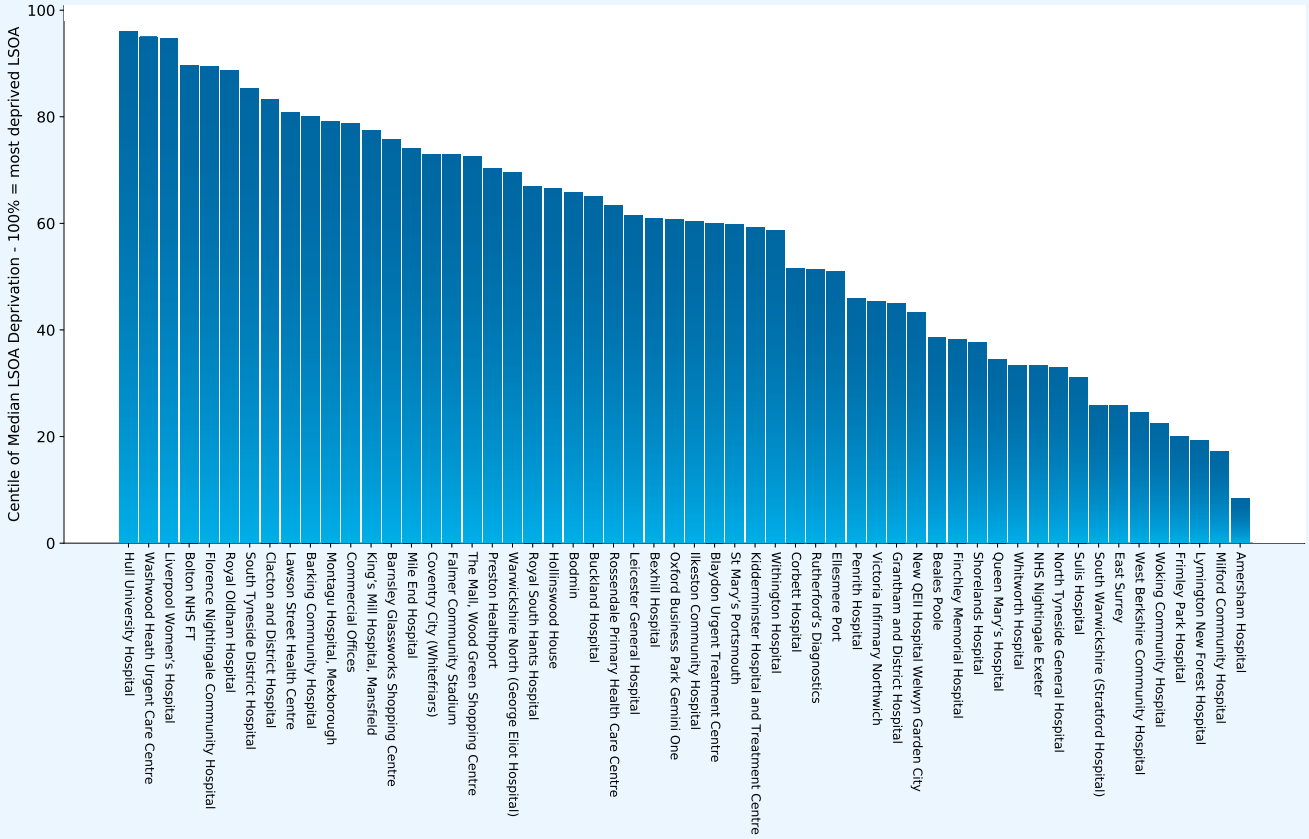


Figure 12 - The deprivation centile of a typical LSOA in the locality of each proposed CDC.

Despite this variation between sites, there is evidence that generally sites are located in proximity to relatively more socioeconomically deprived areas. Across all 56 CDCs where locations were known, 26% of LSOAs in the locality of a CDC are located in the most deprived 20% of LSOAs ($\chi 2$, $p < 0.001$), and only 15% of LSOAs are in the least deprived quintile. The extent to which this finding is the result of a conscious decision is unknown. The finding of apparent concentration of investment in more deprived localities is encouraging.

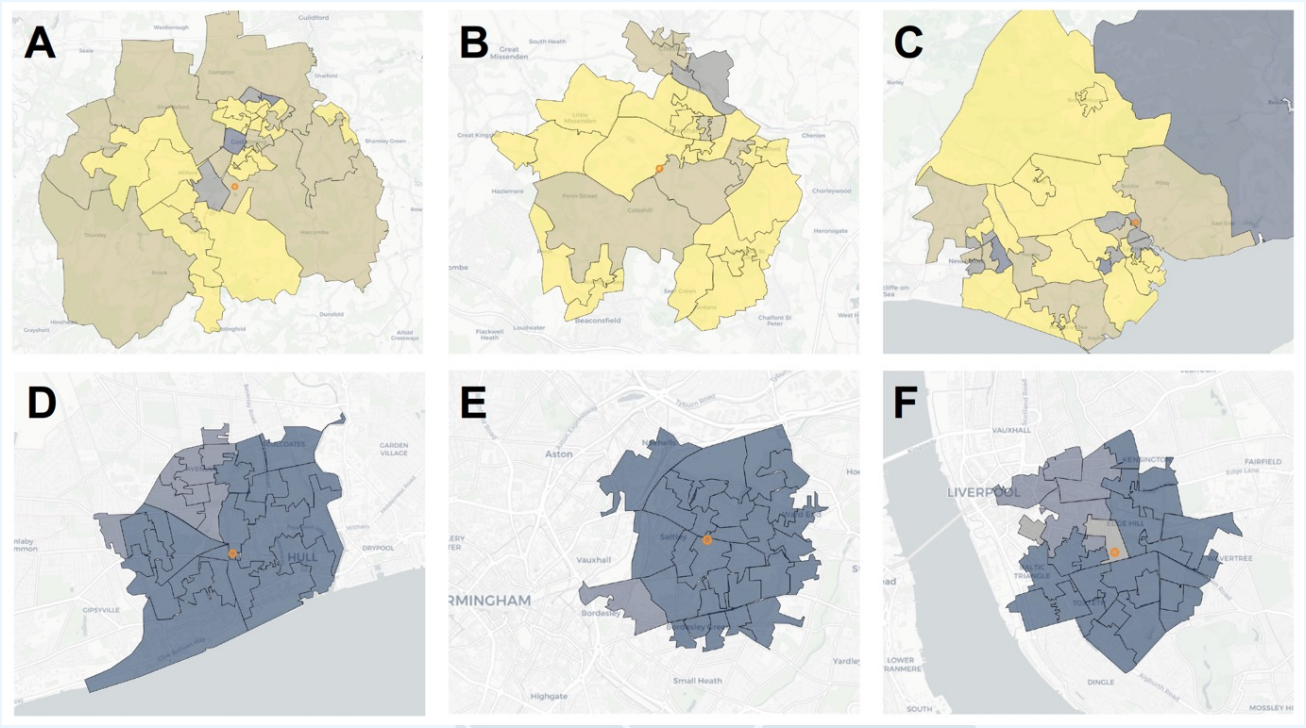
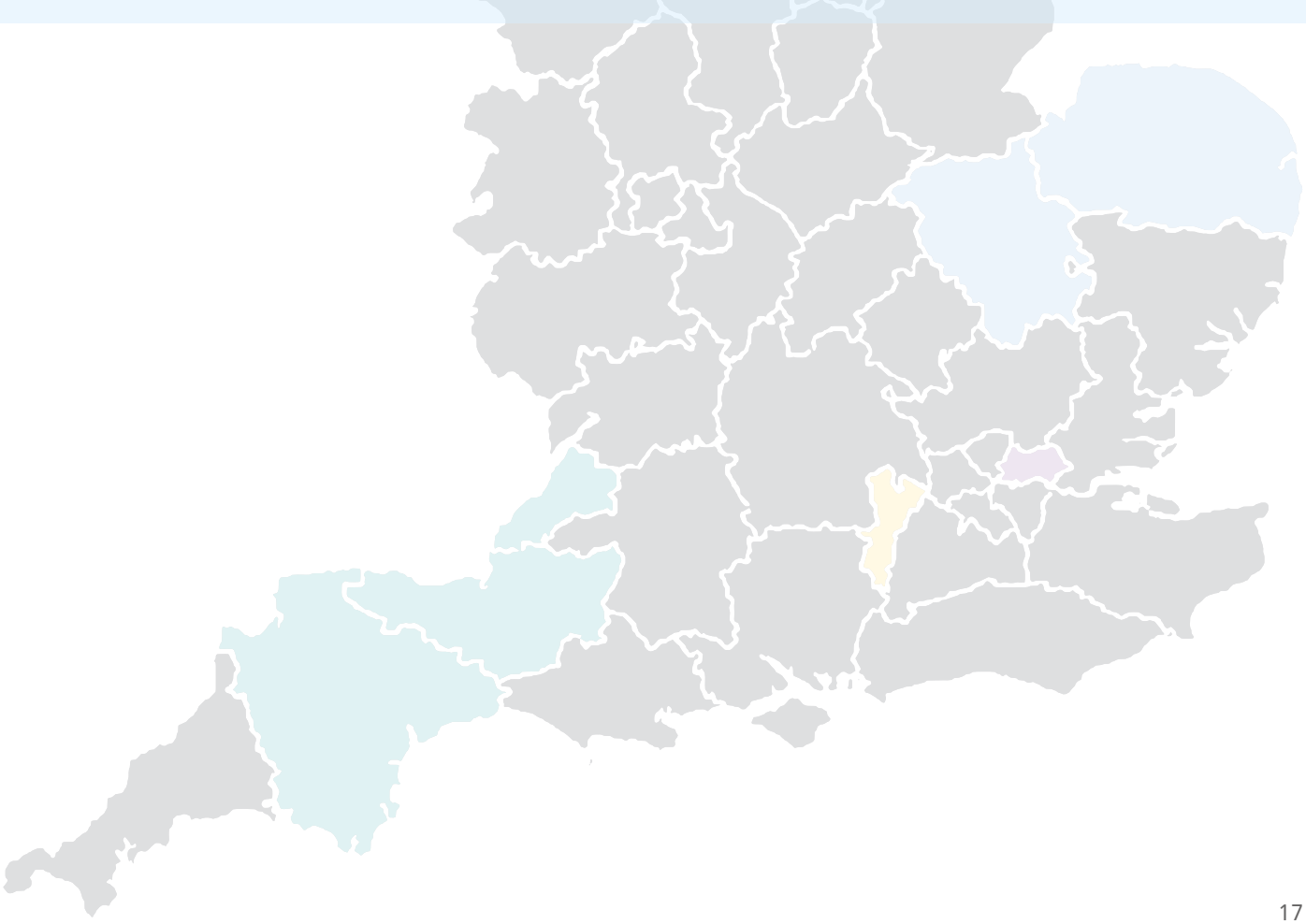


Figure 13 - The deprivation quintiles of the 30 closest LSOAs to the three diagnostic centres with the least (top) and most (bottom) deprived local populations. A: Amersham Hospital, B: Lymington New Forest Hospital, C: Milford Community Hospital, D: Hull University Hospital, E: Washwood Heath Urgent Care Centre, F: Liverpool Women's Hospital. Dark blue areas are in the most deprived quintile and yellow areas are in the least deprived quintile. Orange circles show the location of the CDC.



Workforce and equipment

International comparisons on diagnostic equipment provision

The latest data from the OECD shows the UK still has a significantly lower number of CT and MRI scanners per million people than comparable nations6, as indicated in Figure 14 and Figure 15. Data from international comparisons shows that, in many countries, a large proportion of CT and MRI scanners are located in ambulatory care providers, rather than having a majority of scanners based in hospitals, as is the case in the UK.

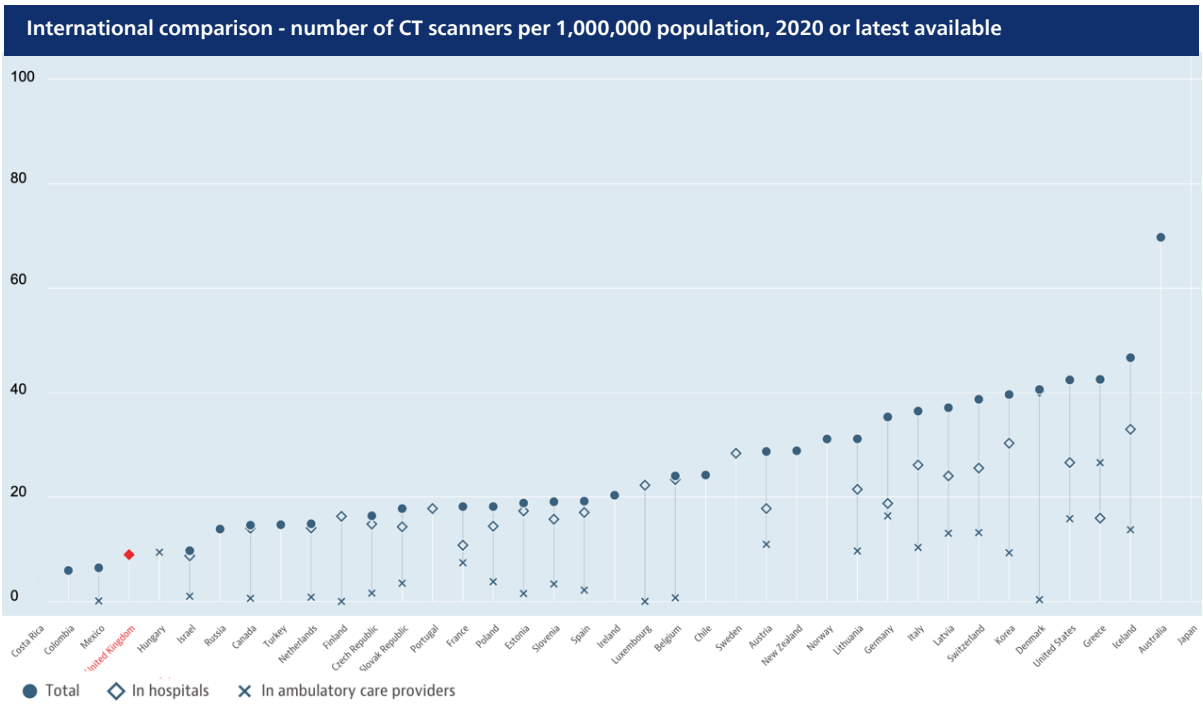


Figure 14 - International comparison of number of CT scanners per one million population, based on OECD health data from 2020, or latest available. Figures show the total number of scanners, and those based in hospitals and ambulatory care settings, where relevant or and where data is available

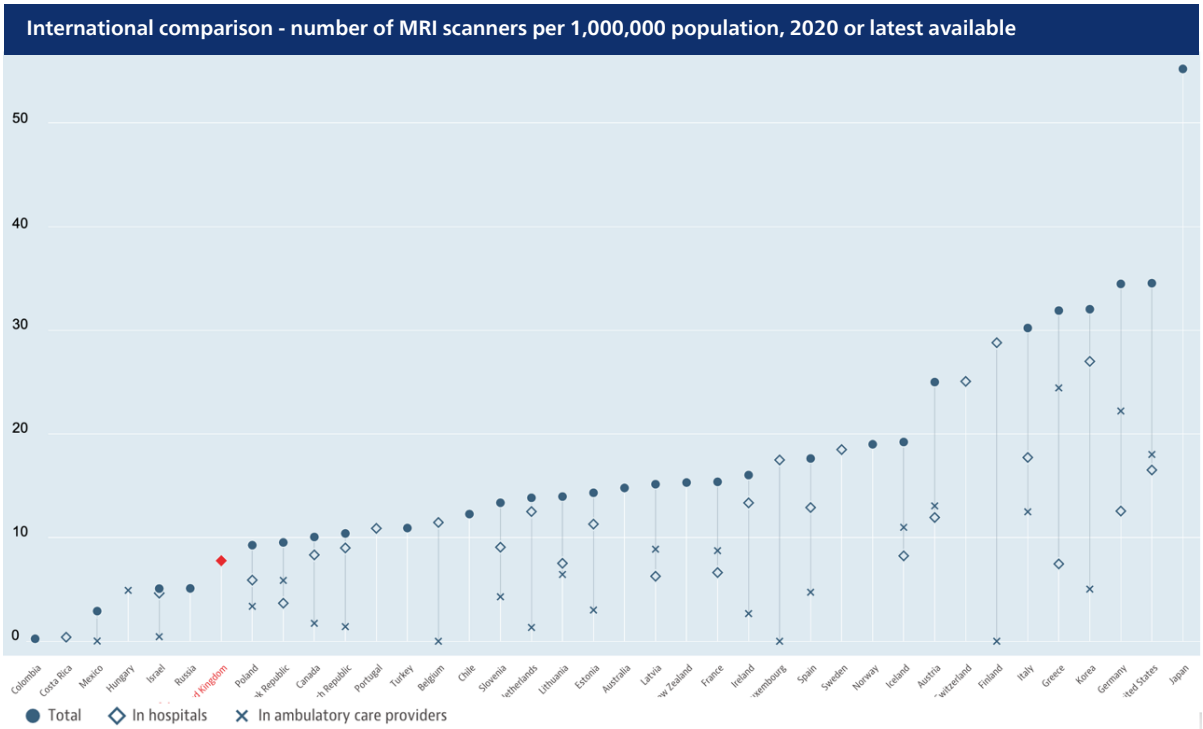


Figure 15 - International comparison of number of MRI scanners per one million population, based on OECD health data from 2020, or latest available. Figures show the total number of scanners, and those based in hospitals and ambulatory care settings, where relevant or and where data is available.

Regional diagnostics workforce

A key consideration associated with increasing diagnostic capacity is the availability of staff to perform and report on additional tests. Critical staff in the delivery of diagnostic testing include radiologists, radiographers, nurses, biomedical engineers and support staff. Even before the Covid-19 pandemic there was a significant shortfall in radiologists and radiographers in England. According to the Royal College of Radiologists, in 2020, the UK had an average of 8.6 clinical radiology consultants per 100,000 population, compared with a European average of 12.8. This was even lower in some regions of the UK, including the East of England and South West, as shown in Figure 16. Clearly, increasing the numbers of radiology and other diagnostic staff should be a key priority to ensure that increased diagnostic capacity can be delivered.

Clinical radiology consultants per 100,000 population in England, 2020

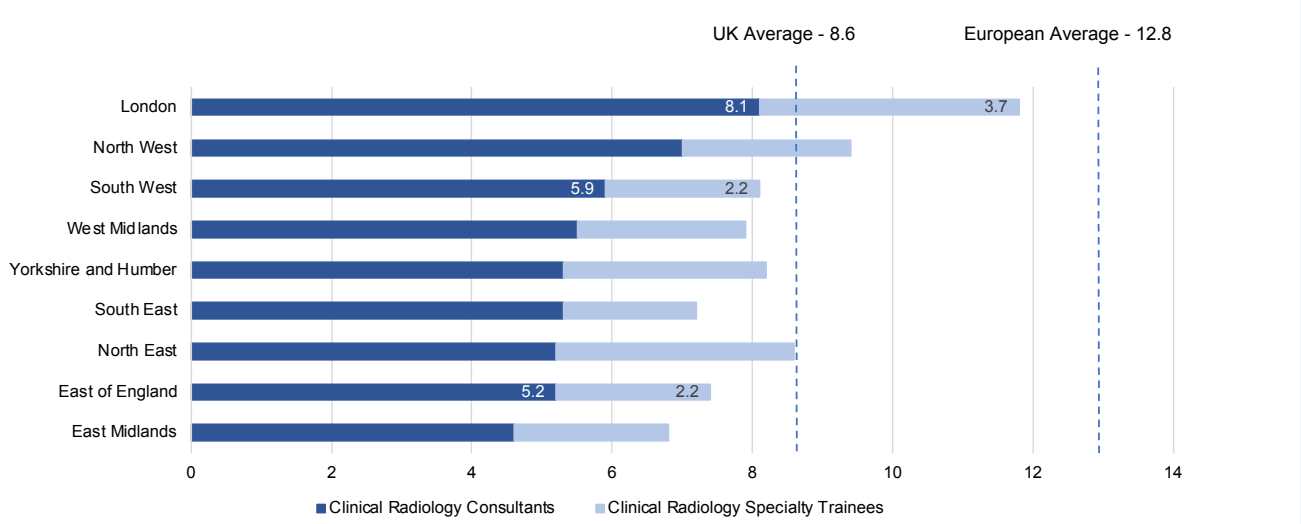


Figure 16 - England regional variation in number of clinical radiology consultants per 100,000 population. Data Source: Clinical Radiology UK Workforce Census 2020 Report, Royal College pf Radiologists, https://www.rcr.ac.uk/system/files/publication/field_publication_files/clinical-radiology-uk-workforce-census-2020-report.pdf.

Regional diagnostics workforce

Building resilience into diagnostic services should be a focus of diagnostic system reform. Building additional capacity into systems is required to ensure that diagnostics are available at times of peak demand. Diagnostic networks and hub-based technologies are also able to mitigate risk across sites and capitalise on staff availability, improving resilience in regional diagnostics. Moving diagnostic services out of acute hospitals also reduces some of the risks associated with hospital settings, including transmission of infectious diseases and overcrowding during peak demand.

Digital technologies can facilitate remote working and reporting of diagnostic tests by radiologists. Through the Covid-19 pandemic this provides additional system resilience by reducing virus transmission between staff and allowing radiologists to continue to work while isolating. Data from the Clinical Radiology UK Workforce Census 2020 Report provides some insights into the home-reporting capabilities and highlights discrepancies between regions in England.

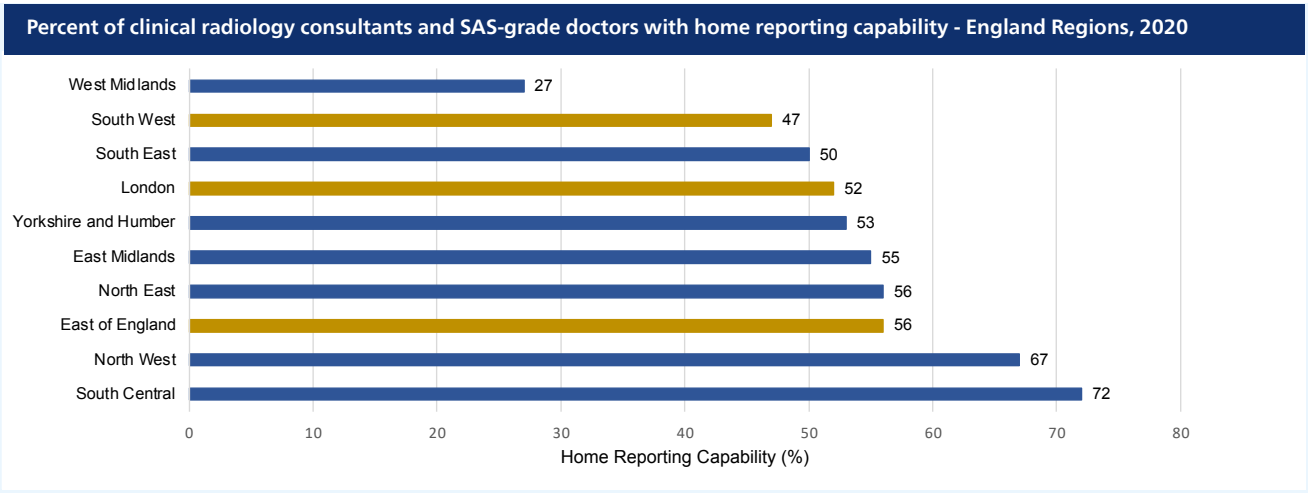
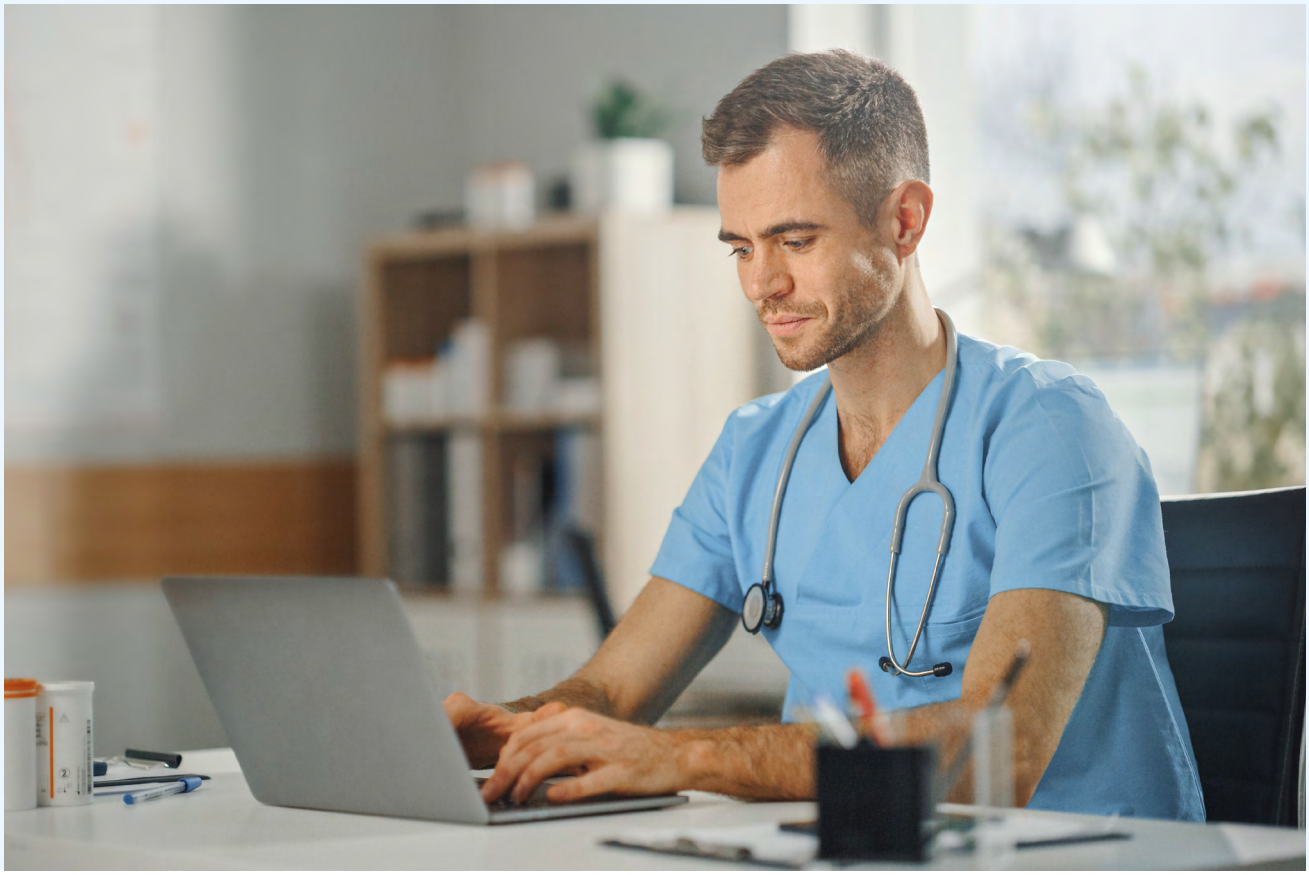


Figure 17 - Radiology home-reporting capabilities in regions in English regions. Data Source: Clinical Radiology UK Workforce Census 2020 Report, Royal College pf Radiologists, https://www.rcr.ac.uk/system/files/publication/field_publication_files/clinical-radiology-uk-workforce-census-2020-report.pdf.



Summary of findings:

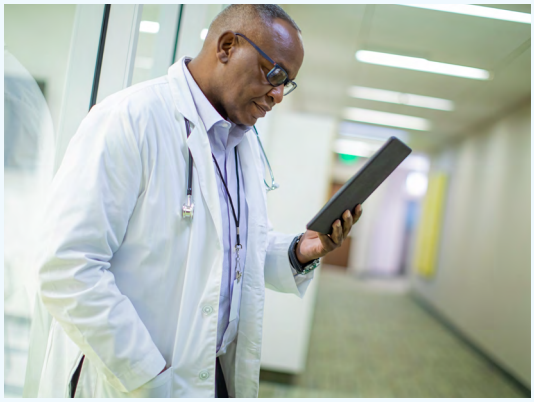
- Prior to the pandemic, the NHS in England was already facing significant challenges in the provision of timely diagnostic, cancer and planned services. The pandemic has greatly exacerbated these difficulties.
- The NHS has shown promising signs of recovery in recent months and resilience in its ability to provide care during the worst of the pandemic.
- The most recent data available for this report from November 2021 suggests stabilisation of activity in some pathways at levels above those before the pandemic (e.g. waiting times for planned care and diagnostic tests).
- The care pathways examined in this report are in a state of flux, with changing demand for care and capacity to provide it.
- Regions differ in the challenges they face, and a 'one-size fits all' approach is unlikely to be effective.
- Of the 40 proposed CDCs announced to date, most are located on existing NHS sites, rather than in locations not currently used for healthcare provision. This may partly reflect caution on the part of commissioners to develop new models of care alongside creating new clinical locations.

National recommendations

Government – through policy and funding:

- Invest at scale and over a prolonged period to return the NHS to pre-pandemic levels of performance across all pathways, maximising existing commitments in the government backlog recovery plan.
- Expansion of community diagnostic services should be directly connected to a proposed expansion of surgical hubs (or "Community Treatment Centres") for minor invasive procedures to address ever growing waiting lists for planned procedures.
- Ensure that investment in infrastructure and equipment is backed up by efforts to train, recruit and retain the workforce required to provide services. In the near term, efforts to retain existing staff are vital to prevent to loss of the experienced professionals required to guide local services through the implementation of proposed changes.

NHS England – through guidance:



- Adopt a data-driven approach to identifying bottlenecks across the entire clinical diagnostics pathway at a local level. Capitalise on regional and local diagnostic and performance data to target resources to where they are needed most urgently.
- Expand diagnostic capacity to minimise the impact of diagnostic delays on reaching national NHS targets for cancer and non-emergency treatment.
- Expand access to diagnostics and system resilience through an expansion of community diagnostics pathways, bringing services closer to patients' homes, particularly in less well served areas. Deliver improvements in reporting efficiency for diagnostics by expanding use of regional reporting hubs.

ICS Level – through regional coordination:

- Involve local managers and decision makers to ensure local challenges are tackled, so that Community Diagnostic Centres (CDCs) are opened where they are needed most. Encourage cross sector collaboration within ICS footprints, for example by engaging with newly created Levelling Up Directors on health provision.
- Monitor performance at an organisational level to ensure that no local areas are left behind and care providers learn from one another as they recover from the impact of the pandemic.
- As further CDCs are announced, priority should be placed on identifying locations outside of existing NHS sites to bring diagnostic services closer to communities of patients that are currently underserved.
- The views of patients and the general public should be solicited and incorporated when identifying future CDC sites. This should occur alongside greater transparency and ease of access to local clinical performance data so residents can compare waiting times in their locality to other areas.

Regional case studies
East of England case study

Geographic summary

The East of England case study consists of two adjacent Integrated Care System (ICSs) - Cambridgeshire and Peterborough ICS and Norfolk and Waveney ICS. Collectively, they provide care to 1,929,386 residents, of whom 424,056 (22.0%) are aged 65 or more, compared to around 19% of the total population of England. Urban areas within the region have particularly low proportions of those aged 65 years and over, as shown in Figure 22, while high proportions are noted in coastal areas. 56.9% of residents live in urban areas.

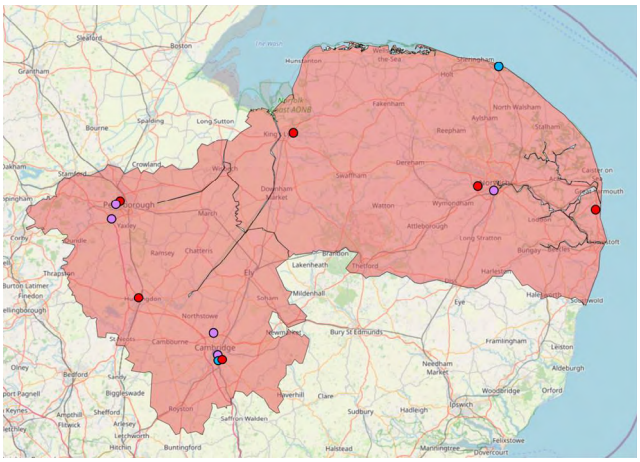


Figure 21 The locations of acute diagnostic sites (red), non-acute NHS diagnostic sites (blue) and private sector diagnostic sites for NHS patients (purple) in the case study area. © OpenStreetMap contributors.

The region is less socioeconomically deprived than elsewhere in England, with only 6.2% of residents living in areas in the most deprived decile nationally. Figure 23 shows the distribution of socioeconomic deprivation across the region, indicating significant differences between the east and west of the case study area. The area in the west of the case study is affluent, aside from foci of deprivation in parts of Cambridge and particularly in Wisbech, Kings Lynn and Peterborough. The eastern part of the case study area is characterised by extensive rural socioeconomic deprivation aside from a ring of affluence encircling Norwich which itself features urban deprivation.

The median female life expectancy of LSOAs in the area is 84.3 years, compared to 83.2 years nationally. The inequality between the highest and lowest life expectancy within the area is 22 years (98.4 years in an area north of Huntingdon and 76.4 years in an area of King's Lynn). Figure 25 shows the distribution of female life expectancy in Middle Layer Super Output Areas (MSOA).

The median male life expectancy of LSOAs in the case study area is 80.6 years, compared to 79.7 years nationally. The inequality between the highest and lowest life expectancy within the area is 13.3 years (85.6 years in an area South West of Cambridge and 72.3 years in an area of Great Yarmouth). Figure 24 shows the distribution of male life expectancy in MSOAs.

The locations of existing acute NHS, non-acute NHS and independent provider diagnostics sites in the Cambridgeshire and Peterborough ICS and Norfolk and Waveney ICS regions are shown in Figure 21. The list of 40 planned community diagnostic centres published by the Department of Health and Social Care on the 1st October 2021 did not include any CDCs within these areas. In the East of England, there were only CDC sites announced, one in Clacton, and another in Welwyn Garden City, which lie beyond the Southern and Western boundaries of the ICSs included in this case study.

Figure 23 illustrates the distribution of deprivation in these two ICS regions, with relatively higher levels of deprivation in the Eastern and coastal regions and around the urban areas of Peterborough, Kings Lynn, Norwich, Great Yarmouth and Lowestoft. These areas are also associated with a lower life expectancy at birth, as shown in Figure 24 and Figure 25.

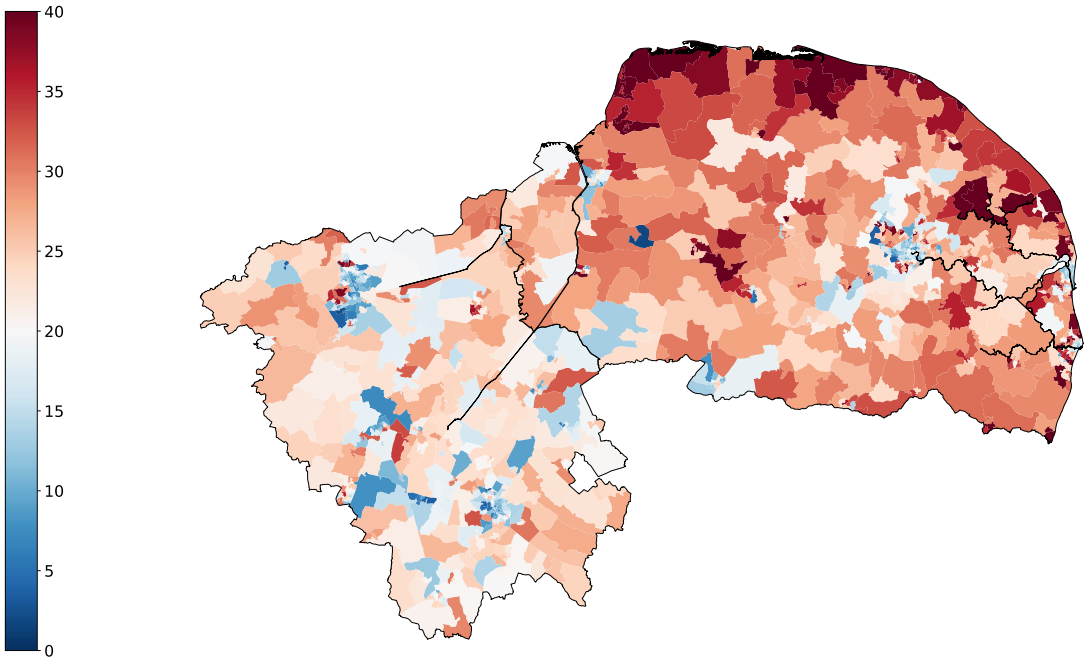


Figure 22 The percentage of residents aged 65 years and over in each LSOA within the case study area

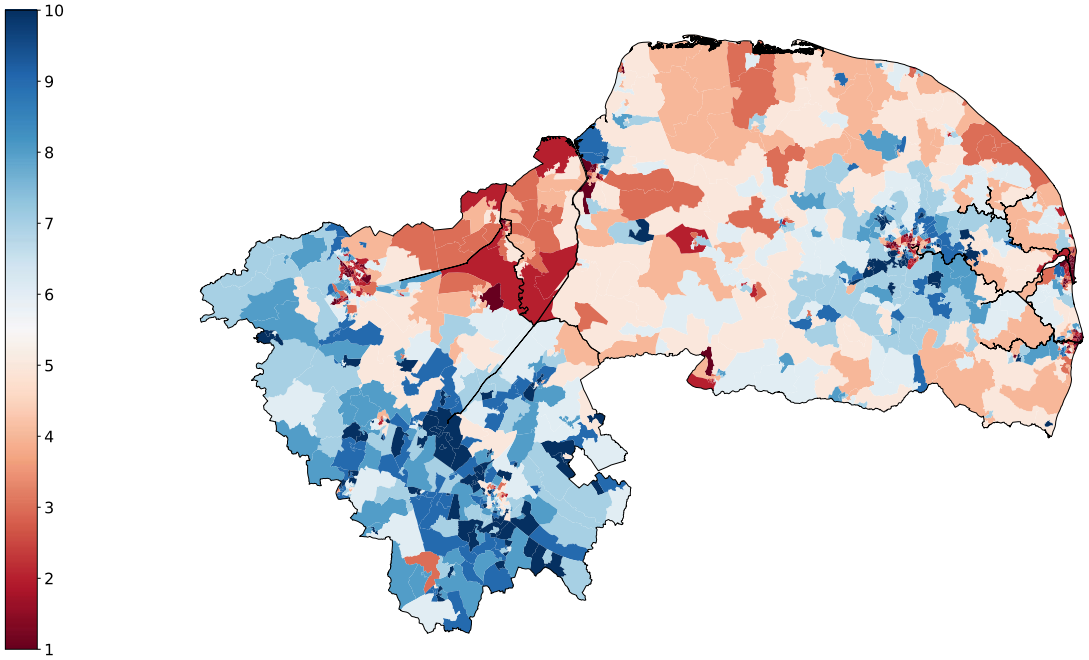


Figure 23 The Index of Multiple Deprivation decile of LSOAs contained within the case study area. Dark blue indicates the least deprived deciles and dark red indicates the most deprived deciles.

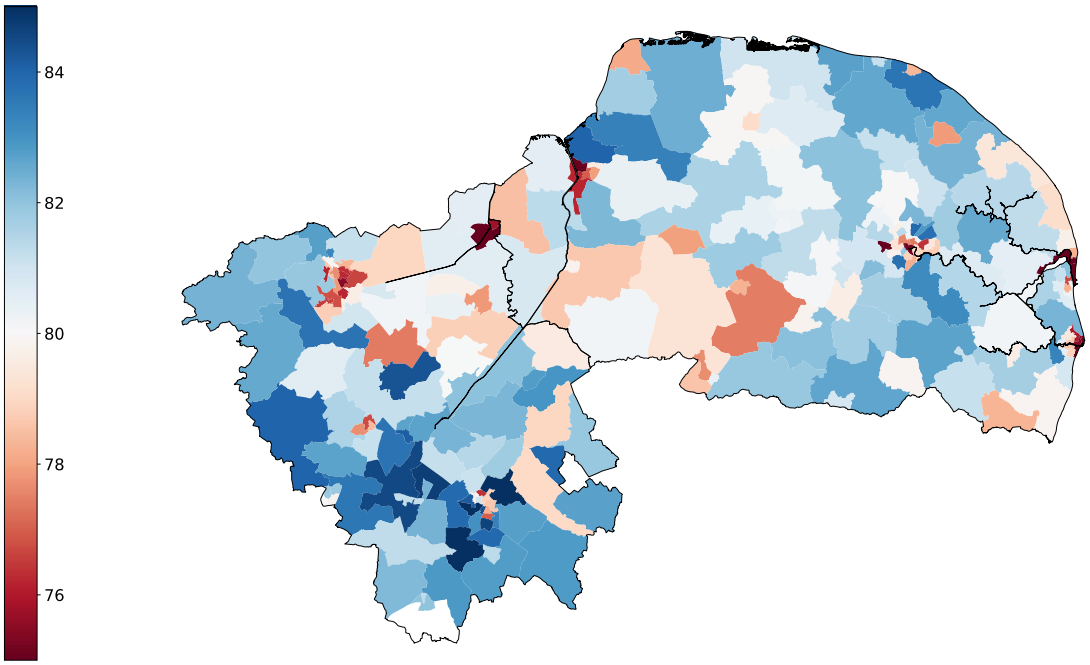


Figure 24 The life expectancy at birth (years) of male residents of the case study area as of 2019

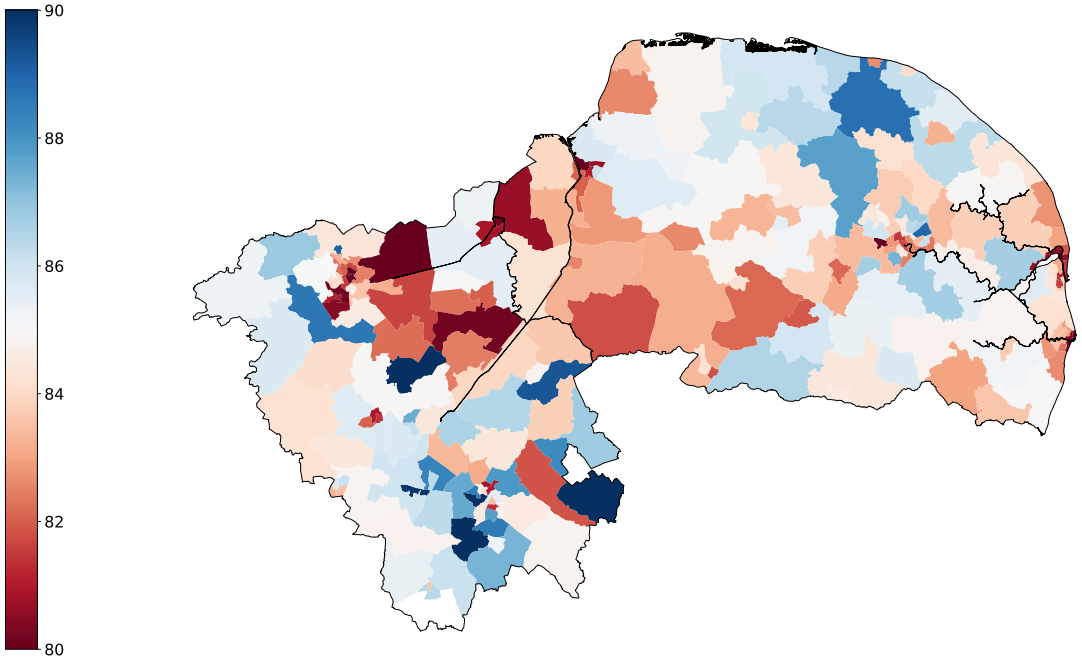


Figure 25 The life expectancy at birth (years) of female residents of the case study area as of 2019

Diagnostics activity

Diagnostics activity for the Cambridgeshire and Peterborough ICS and Norfolk and Waveney ICS regions from January 2019 to November 2021 are illustrated and discussed in this section.

Figure 26 and Figure 27 show that prior to the pandemic, patients receiving care in these East of England ICSs rarely waited six weeks or more for their diagnostic test. Since the pandemic, disruption to diagnostic activity is seen across all modalities. Compared to the pre-pandemic period, patients waiting for a diagnostic test has increased by over 50% from 30,000 to 45,000.

Since the pandemic, over 40% of patients in these ICSs have been waiting 6 weeks or more for CT scans, compared with less than 20% nationally. This is despite CT scans being performed more frequently in 2021 than in 2019. For all months in 2021, over 60% of patients waited 6 weeks or more for echocardiography, compared with approximately 40% at a national level and less than 5% in these ICSs prior to the pandemic. The proportion of patients waiting greater than 6 weeks for MRI scans was also slightly higher (approximately 30% in November 2021) than the national level (approximately 22%), although this has steadily fallen from around 60% at the start of the pandemic.

Large reductions in endoscopy activity are observed since the start of the pandemic with a notable reduction in January and February 2021. Patients waiting more than six weeks for GI endoscopy are comparable with national levels of around 35%. Relatively more patients are waiting over six weeks for non-obstetric ultrasound in these ICSs (approximately 30%) compared to current national levels (just under 20%).

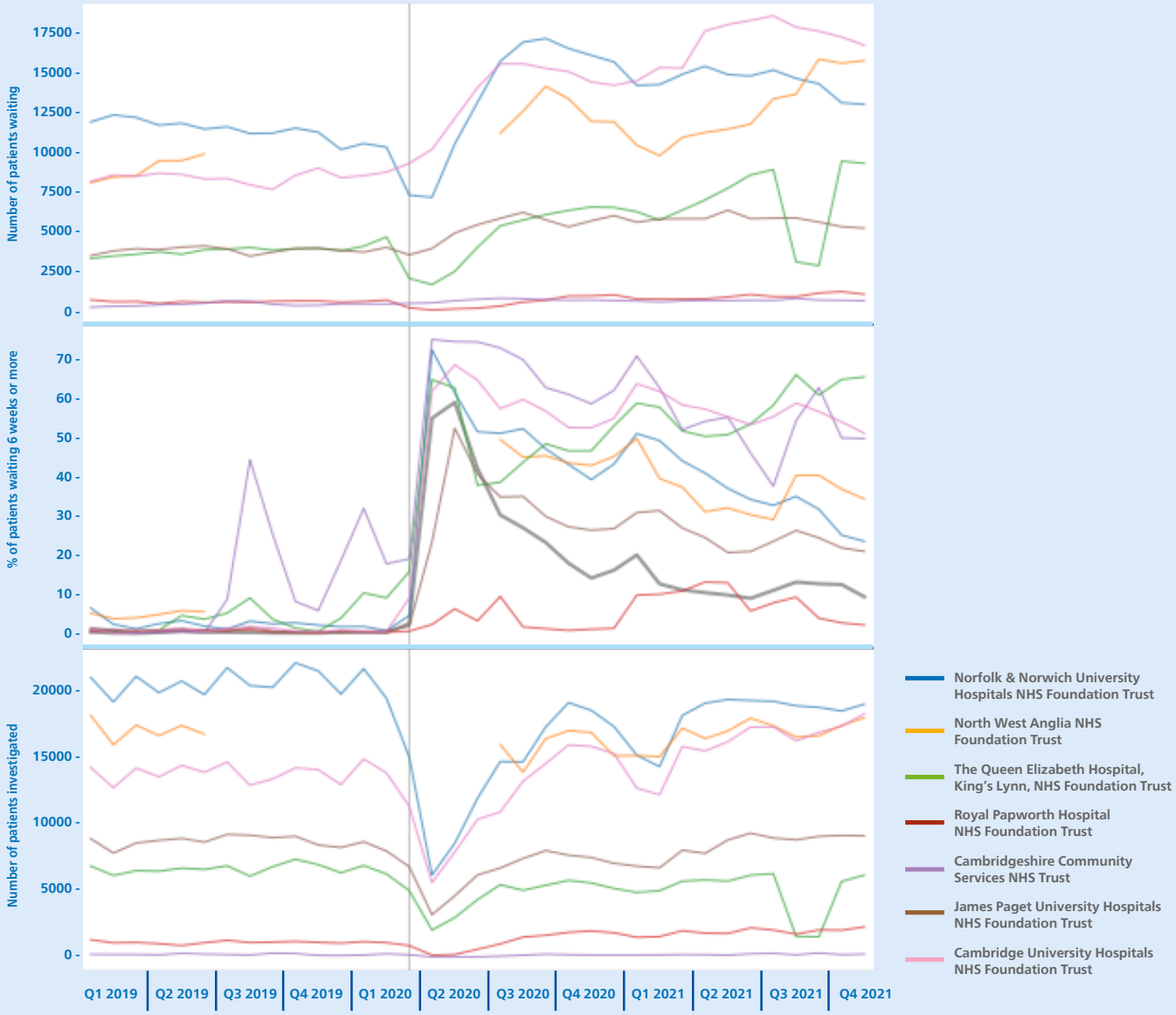


Figure 26 Summary activity for all diagnostic modalities for each hospital trust in the case study area from January 2019 to November 2021

Within these regions, some of the trusts investigated have been able to reduce backlogs of patients waiting for diagnostic tests more effectively than others. For example, Norfolk and Norwich University Hospitals NHS Foundation Trust has had a steady reduction in the percentage of patients waiting six weeks or more for diagnostic tests from a peak in April 2019 and a slight reduction in the backlog of patients waiting for diagnostic tests from a peak in September 2020. Cambridge University Hospitals NHS Foundation Trust, North West Anglia NHS Foundation Trust, and The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust, on the other hand, have had increasing numbers of patients waiting for diagnostic tests, indicating less capacity to reduce the backlog of tests delayed due to the pandemic. The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust has also seen an increase in patients waiting six weeks or more for diagnostics from a post-pandemic low of 38% in June 2020 to 65% at the time of the most recent data release in November 2021, as shown in Figure 26.

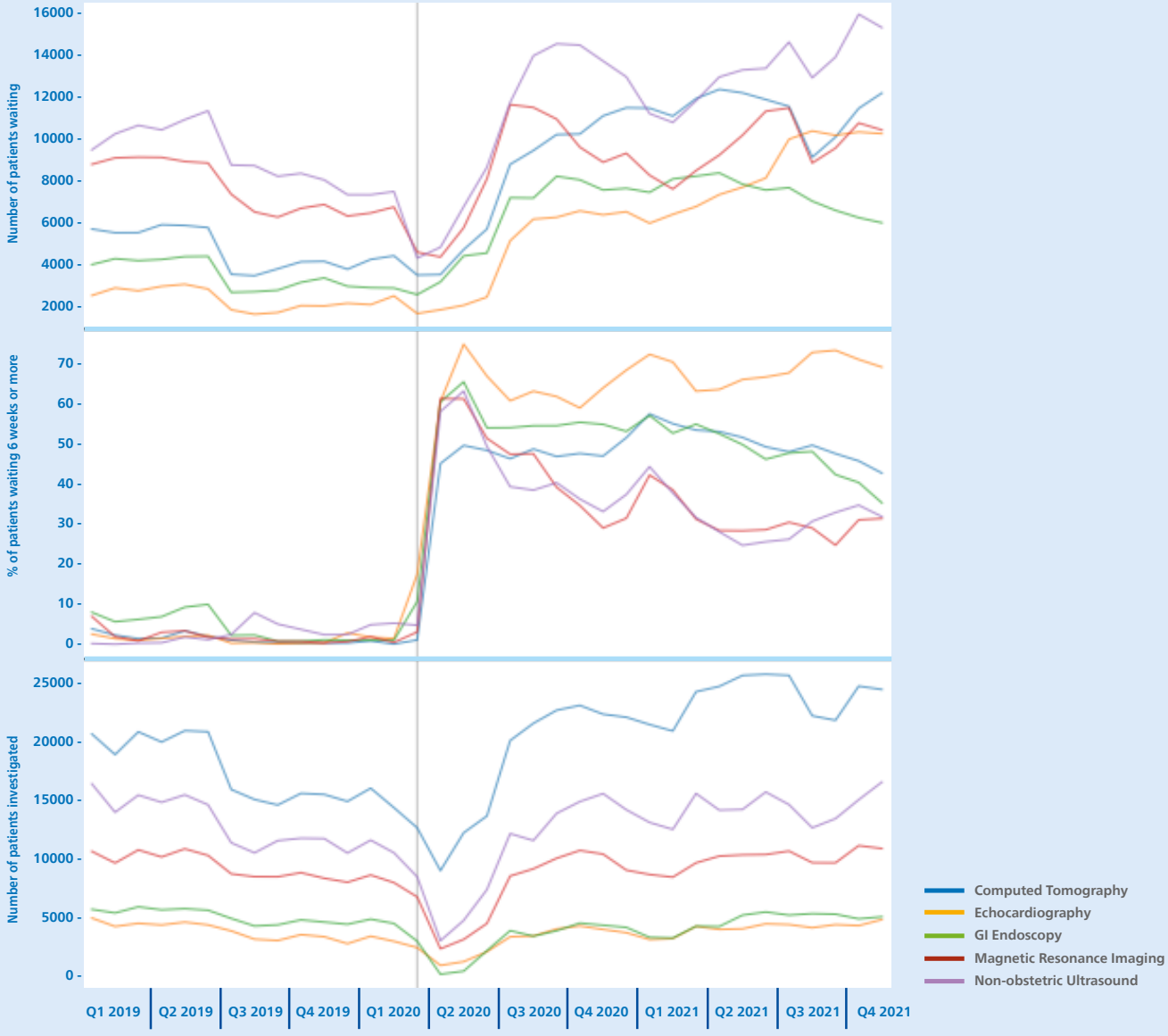


Figure 27 Summary activity for each major diagnostic modality from January 2019 to November 2021 in the case study area

Cancer activity

The number of patients with suspected cancer seen within the two-week target has reached pre-pandemic levels across all trusts in the East of England ICSs examined, as shown in Figure 28. In Norfolk and Norwich University Hospitals NHS Foundation Trust, Cambridge University Hospitals NHS Foundation Trust and North West Anglia NHS Foundation Trust, the number of two-week-wait (2WW) referrals seen has exceeded pre-pandemic levels since mid-2021.

The percentage of these seen within the two-week target, however, has reduced for most trusts in the region compared to pre-pandemic levels. In Norfolk and Norwich University Hospitals NHS Foundation Trust, for example the number of 2WW referrals seen within two weeks has reduced to 55% in November 2021, compared with 70-95% in months prior to the pandemic. As of November2021 data, only 66.9% of patients referred by the 2WW pathway resident in NHS Norfolk and Waveney CCG were seen within 2 weeks of referral, the second lowest in the country.

The number of patients with new cancer diagnoses treated within one and two months has been consistent with pre-pandemic levels, as shown in Figure 29 and Figure 30. The percentage of patients treated within one month of diagnosis, however, has reduced at several hospitals, including Norfolk and Norwich University Hospitals NHS Foundation Trust, Cambridge University Hospitals NHS Foundation Trust and North West Anglia NHS Foundation Trust where there has been an approximately 5-10% reduction in patients treated within the one-month target. At two months following referral for suspected cancer, patients that have received treatment is particularly low at Norfolk and Norwich University Hospitals NHS Foundation Trust and North West Anglia NHS Foundation Trust at approximately 40%, compared with 68% nationally and a published NHS standard of 85%.[14]

Figure 28 Number of 2WW referrals seen from January 2019 to November 2021 and the percentage of these patients seen within the two-week target.

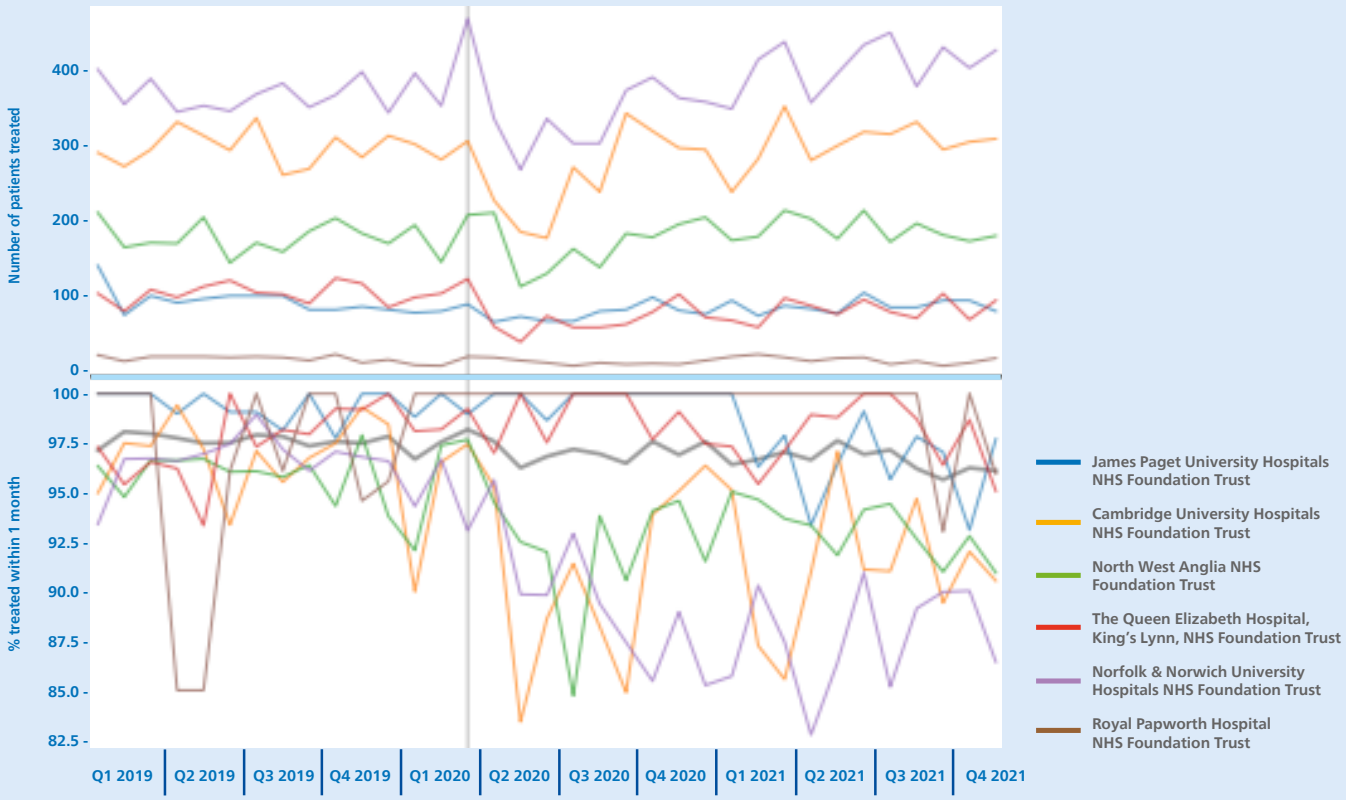


Figure 29 Number of cancer diagnoses treated from January 2019 to November 2021 and the percentage of these patients treated within the one-month target

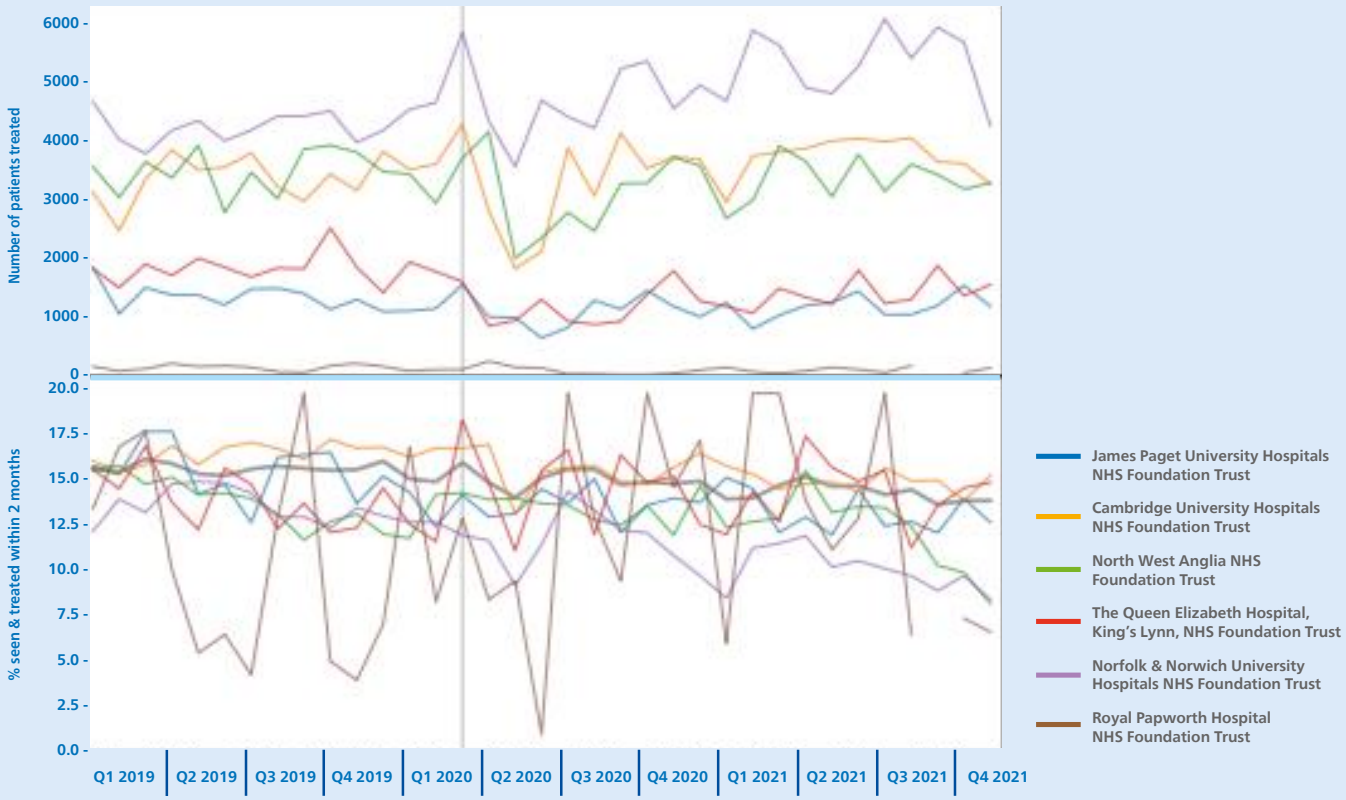


Figure 30 Number of patients seen and treated from January 2019 to November 2021 and the percentage of these patients seen and treated within the two-month target

Referral activity

As seen in the national review of RTT pathways, referrals to these hospital trusts in the East of England had returned to approximately pre-pandemic levels by November 2021, as shown in Figure 31.

Overall, the number of completed admitted pathways also reflected national trends, with a reduction in completed admitted pathways early in the pandemic, and during the 2020-21 winter Covid wave, as seen in Figure 32. There was considerable variation between trusts in this region in the median waiting time for patients on completed admitted pathways, with Cambridge University Hospitals NHS Foundation Trust performing particularly well with a median waiting time of approximately 8 weeks. This compares with approximately 13 weeks at the Royal Papworth Hospital NHS Foundation Trust.

Although the median waiting time for completed non-admitted pathways across trusts in this region had returned to approximately pre-pandemic levels (6 weeks) by November 2021, there was variation between trusts. As shown in Figure 33, the median monthly waiting times for completed non-admitted pathways at The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust, were the longest, at around 11 weeks.

There was a large increase in the number of incomplete pathways associated with the two largest trusts in the region, Norfolk and Norwich University Hospitals NHS Foundation Trust (from around 45,000 to 75,000) and Cambridge University Hospitals NHS Foundation Trust (30,000 to 50,000). The median monthly waiting time for incomplete pathways across the largest trusts in the region rose from less than 10 weeks before the pandemic to over 12 weeks in November 2021. As shown in Figure 34, there was significant variation between trusts.

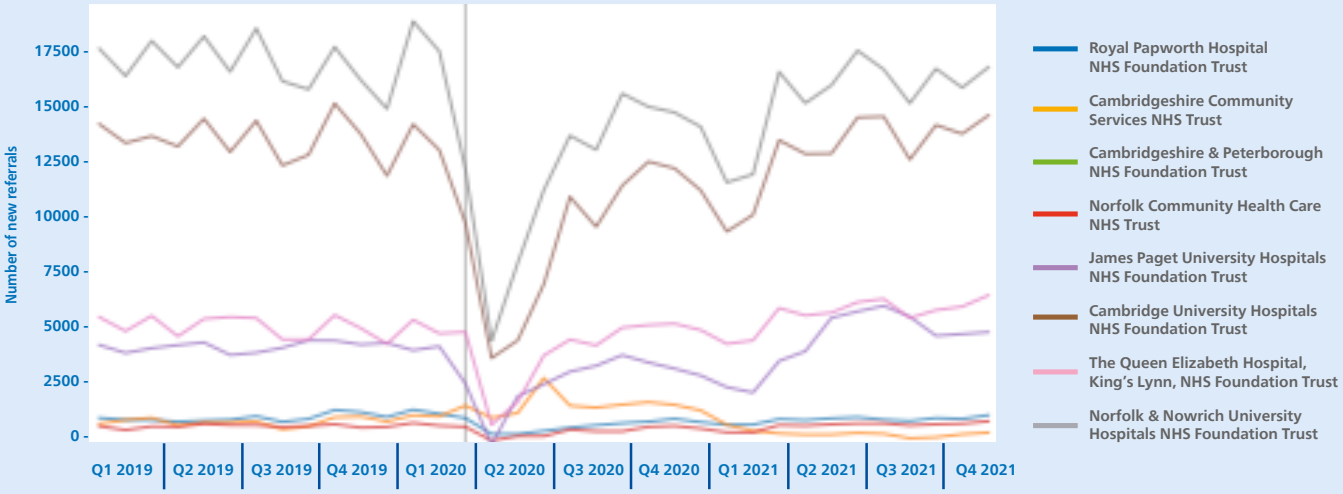


Figure 31 Number of new referrals made each month from January 2019 to November 2021.

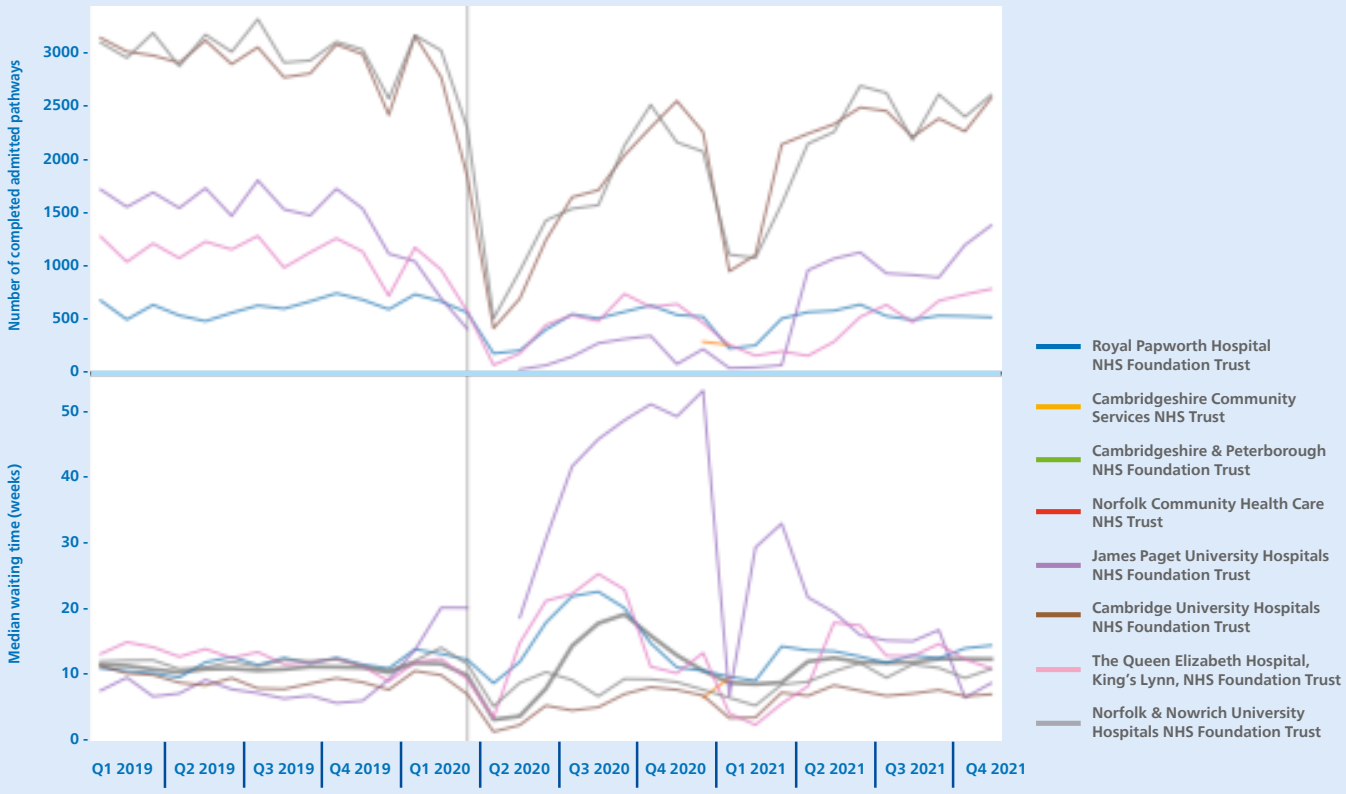


Figure 32 Number of patient pathways completed with admission each month from January 2019 to November 2021

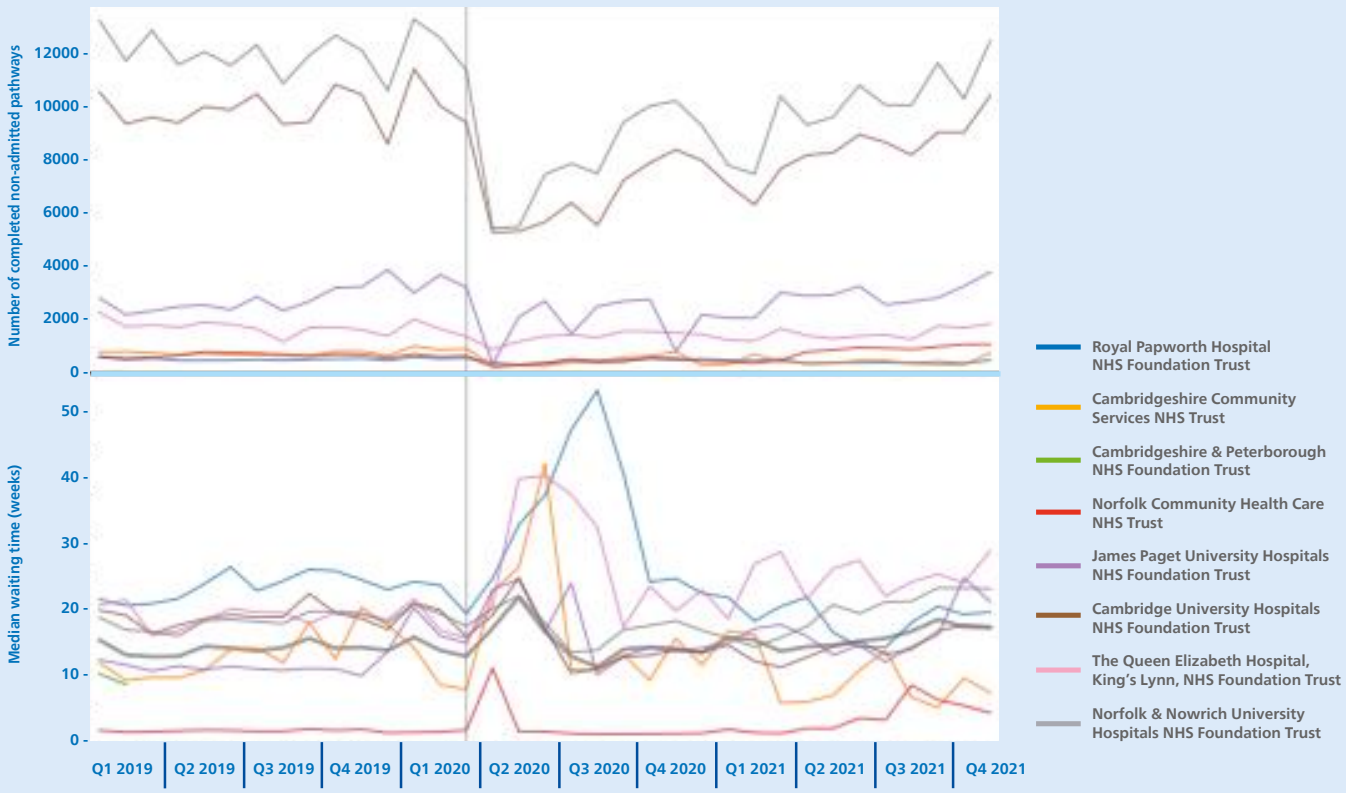


Figure 33 Number of patient pathways completed without admission for treatment each month from January 2019 to November 2021

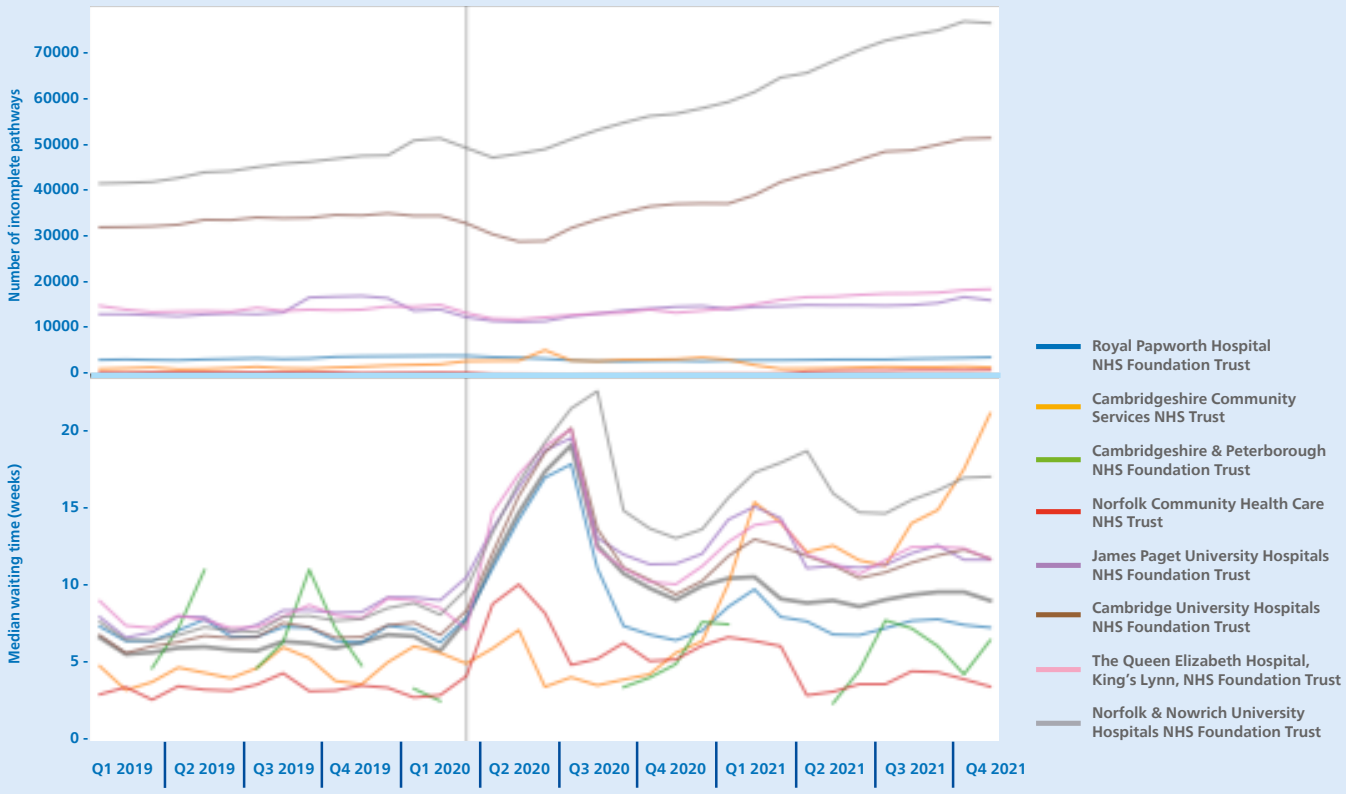


Figure 34 Number of incomplete pathways each month from January 2019 to November 2021

Summary of findings:

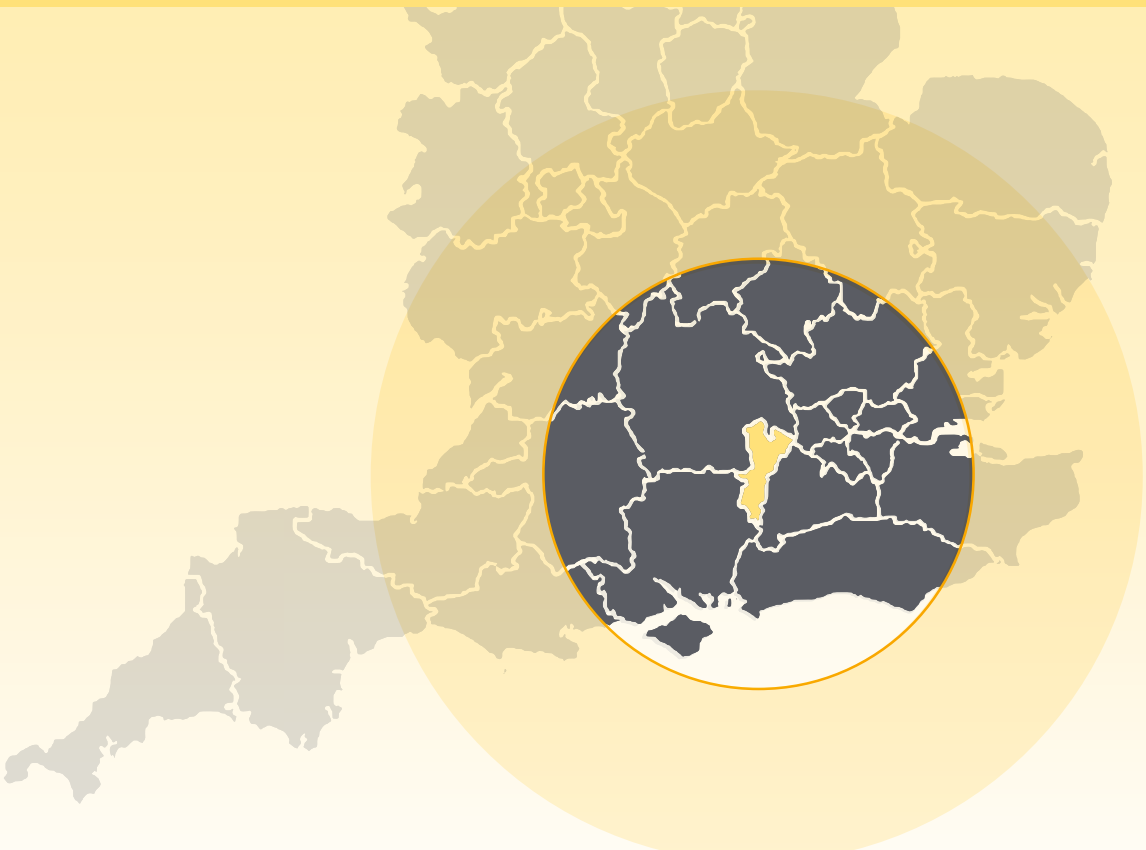
- The East of England region is associated with spatial differences in relation to the age of residents and deprivation, with older, more deprived populations in the north-eastern and coastal areas.
- In the two ICSs studied, the Cambridgeshire and Peterborough ICS and Norfolk and Waveney ICS, more patients waited 6 weeks or more for tests than the average hospital in England.
- Rates of growth of diagnostic demand are higher than the England average across the region.
- The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust was the worst performing hospital in terms of diagnostics waiting times, with up to 65% of patients waiting six weeks or more for diagnostics in November 2021.
- Many of the modalities associated with more patients waiting 6 weeks or more (such as echocardiography), or for which waiting lists are longest (such as non-obstetric ultrasound) may be delivered in a community setting without the infrastructure considerations of CT or MRI scans or GI endoscopy.
- Two trusts in the region (North West Anglia and Norfolk and Norwich) lagged behind the rest of the country in urgent cancer referral performance and this has worsened since the pandemic.
- Extensive variation is seen between trusts in the region in the time patients have waited for planned care. Some trusts in the area perform much better than average, while others perform much worse, with the poorest performing trusts before the pandemic continuing to underperform.
- Growing waiting lists for the two teaching hospitals in the area (Addenbrooke's and Norfolk and Norwich) are a particular concern and may be a target for additional focussed funding. To increase capacity in their own services or support a CDC in their locality.

East of England recommendations

- Improve access to diagnostics for patients in this region through community diagnostic centres where they are likely to have the greatest impact:
- A CDC in the Fenland area of North Norfolk would assist in reducing current long diagnostic wait times for patients in this area and overcome some of the long travel distances to current diagnostic sites. These areas also have older, more deprived populations, and a CDC would improve local diagnostics access for these residents and facilitate earlier diagnosis and improved monitoring of chronic diseases.
- A CDC in or around Norwich may help to assist with processing an increasing number of patients through referral to treatment and cancer pathways. A CDC here would also benefit a local population with relatively high levels of deprivation.
- Allocate additional resources to expand clinical capacity and improve pathways at Norfolk and Norwich University Hospitals NHS Foundation Trust and North West Anglia NHS Foundation Trust. These trusts are seeing higher numbers of urgent cancer referrals than before the pandemic and the proportion of these seen within 2 weeks is significantly below national averages and NHS standards.
- Encourage regional collaboration between providers to address regional disparities in diagnostic, cancer and referral to treatment pathways.

Regional case studies

Frimley health case study



Geographic summary

The Frimley Health case study consists of a single Integrated Care System (ICS) - Frimley Health and Care ICS. The ICS provides care to 746,739 residents, of whom 121,705 (16.3%) are aged 65 or more, compared to around 19% of the total population of England. Urban areas within the region have particularly low proportions of those aged 65 years and over, as shown in Figure 64. 94.6% of residents in this region live in urban areas.

The region is significantly less socioeconomically deprived than elsewhere in England, with 36.4% of residents of the ICS living in LSOAs in the least deprived decile of the Index of Multiple Deprivation compared to 10% nationally. Figure 65 shows the distribution of socioeconomic deprivation across the region, indicating foci of deprivation in the north east of the region around Slough and small areas of localised deprivation around Aldershot.

The median female life expectancy of LSOAs in the area is 85.1 years, compared to 83.2 years nationally. The inequality between the highest and lowest life expectancy within the area is 12.7 years (91.5 years in an area of Aldershot and 78.8 years in an area of Slough). Figure 67 shows the distribution of female life expectancy in MSOAs.

The median male life expectancy of LSOAs in the case study area is 81.6 years, compared to 79.7 years nationally. The inequality between the highest and lowest life expectancy within the area is 11.1 years (86.3 years in an area of Bracknell and 75.2 years in an area of Slough). Figure 66 shows the distribution of male life expectancy in MSOAs.

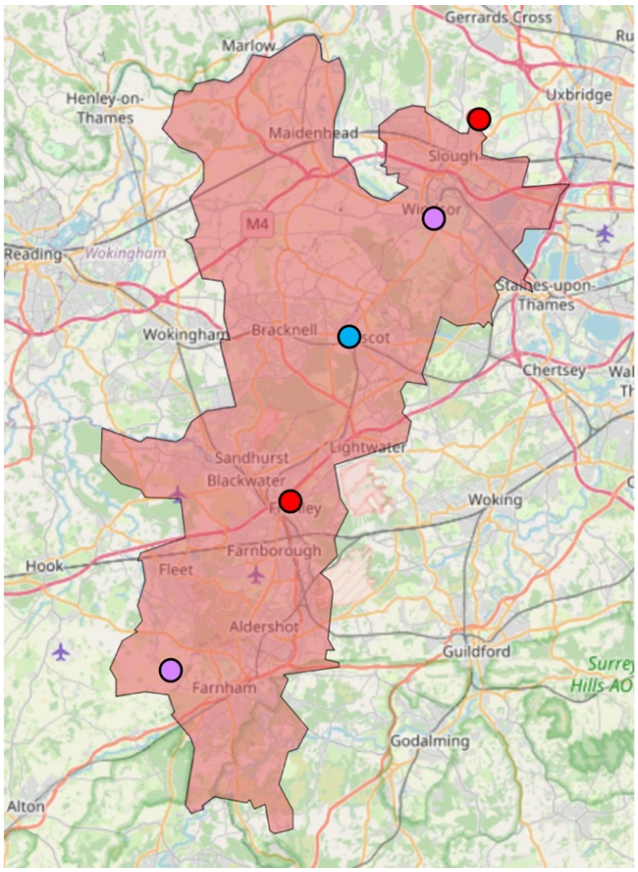


Figure 63 The locations of acute diagnostic sites (red), non-acute NHS diagnostic sites (blue) and private sector diagnostic sites for NHS patients (purple) in the case study area. © OpenStreetMap contributors

Figure 23 illustrates the distribution of deprivation in these two ICS regions, with relatively higher levels of deprivation in the Eastern and coastal regions and around the urban areas of Peterborough, Kings Lynn, Norwich, Great Yarmouth and Lowestoft. These areas are also associated with a lower life expectancy at birth, as shown in Figure 24 and Figure 25.

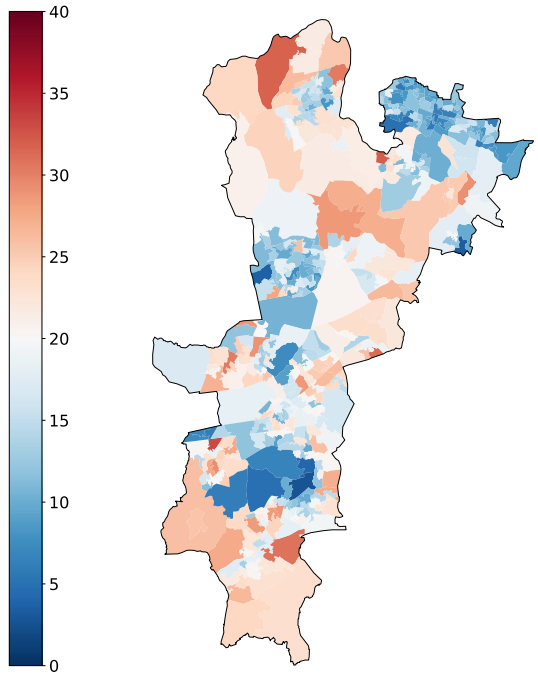


Figure 64 The percentage of residents aged 65 years and over in each LSOA within the case study area

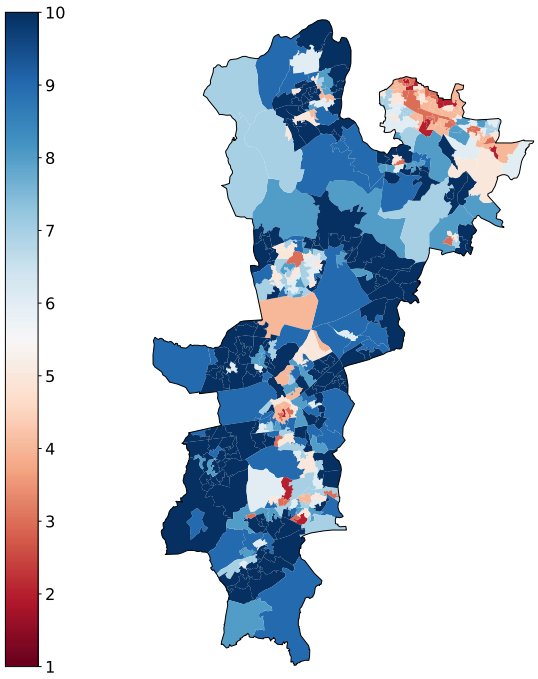


Figure 65 The Index of Multiple Deprivation decile of LSOAs contained within the case study area. Dark blue indicates the least deprived deciles and dark red indicates the most deprived deciles.

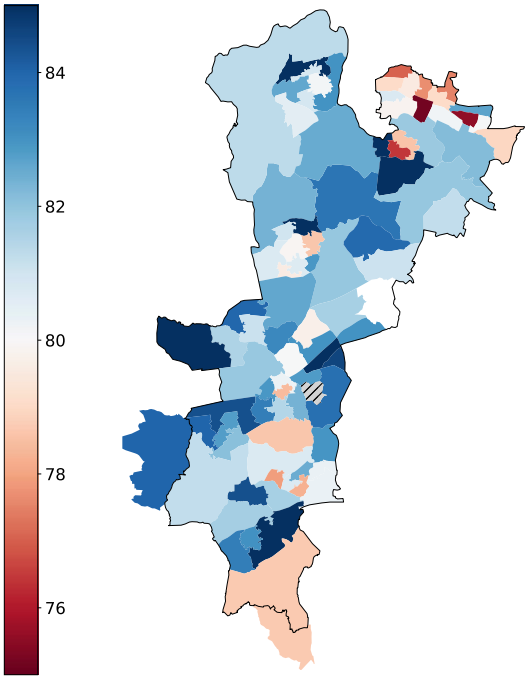


Figure 66 The life expectancy at birth (years) of male residents of the case study area as of 2019

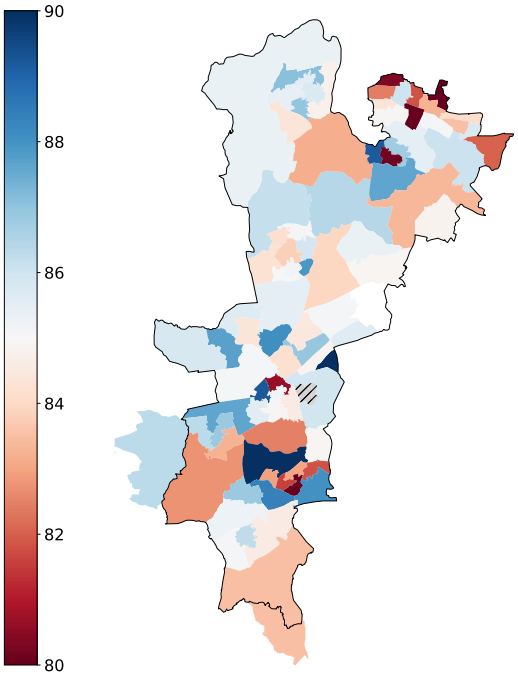


Figure 67 The life expectancy at birth (years) of female residents of the case study area as of 2019

Diagnostics activity

Patients waiting for diagnostic tests are at similar levels to before the pandemic. The number of patients investigated per month has reduced from around 20,000 to 17,000 in 2021 (Figure 68).

In this region, diagnostic tests are being conducted within six weeks for a higher proportion of patients than the national level. For example, less than 5% of patients are waiting more than six weeks for a CT scan, compared with approximately 20% nationally and up to 40% in other regions studied in the report. Over 90% of patients are also receiving MRI scans and GI endoscopy within six weeks of referral (Figure 69).

While the number of patients waiting for investigation overall has remained stable, the number of patients awaiting non-obstetric ultrasound has increased from 6,000 before the pandemic to over 7,000 as of November 2021, and is associated with the number of scans performed each month increasing to pre-pandemic levels in only the most recent data.

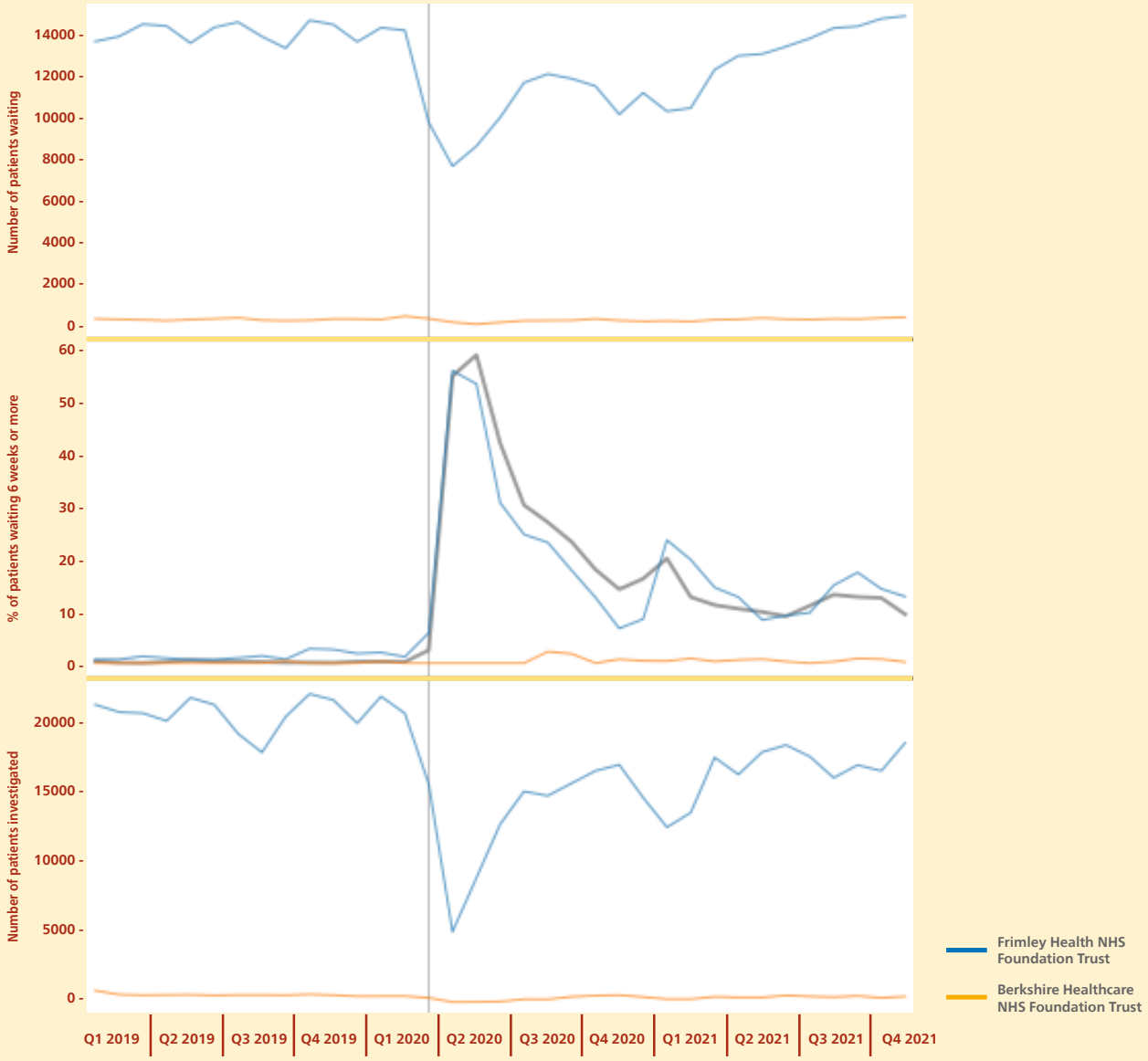


Figure 68 Summary activity for all diagnostic modalities for each hospital trust in the case study area from January 2019 to November 2021

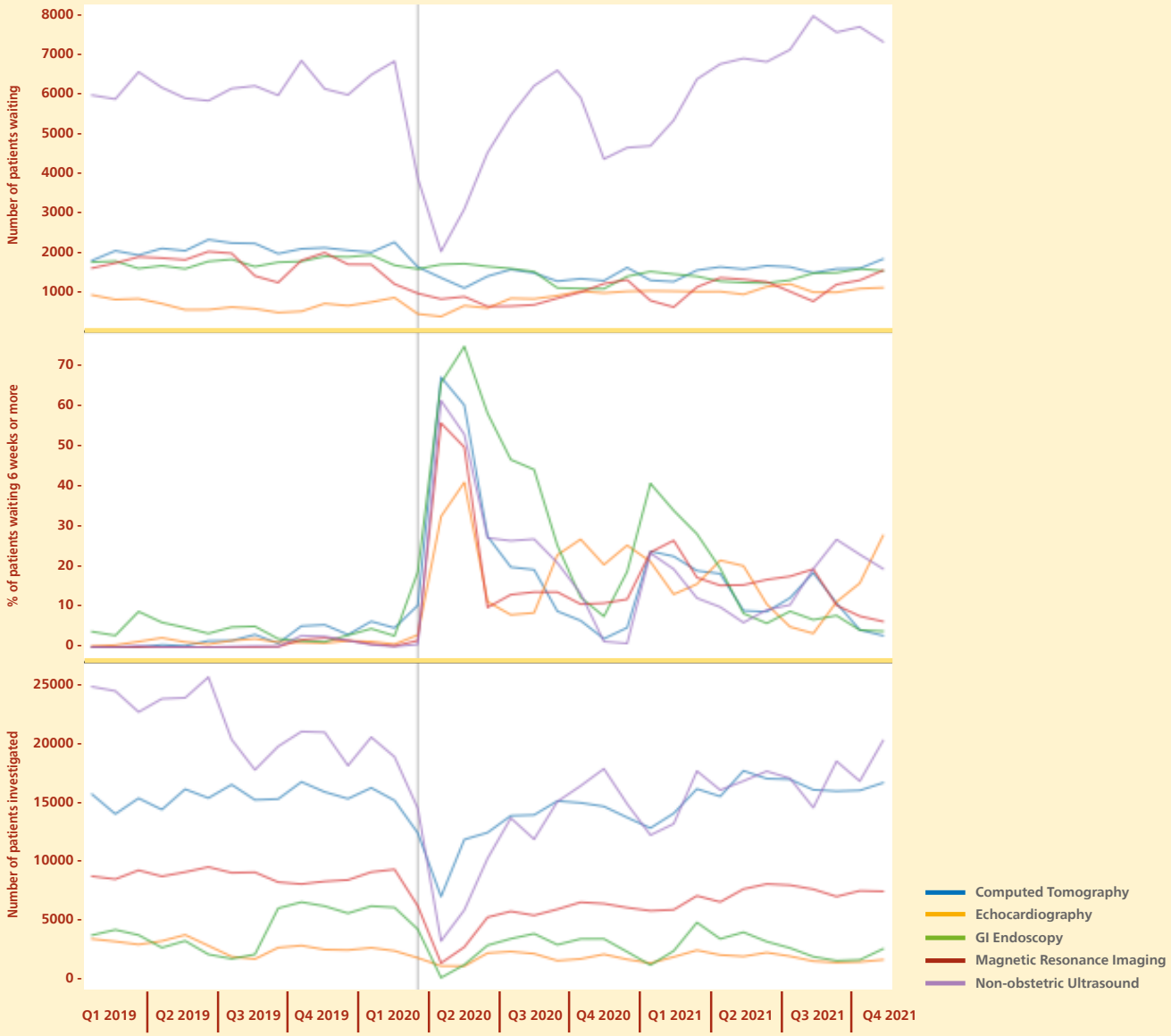


Figure 69 Summary activity for each major diagnostic modality from January 2019 to November 2021 in the case study area

Cancer activity

There is only one acute trust providing cancer care within the Frimley Health ICS boundary. Prior to the pandemic, Frimley Health NHS Foundation Trust outperformed the median acute trust in England across all two-week wait, 31-day and 62-day targets. Since the pandemic, performance in relation to the two-week wait target has largely tracked the median hospital in England and has remained relatively stable compared to 2019. In recent months, along with a decline in the percentage of patients seen within two weeks of referral nationally, the Trust has seen its performance fall from 90-95% to below 75%, exceeding the average fall for hospitals in England to around 85% (Figure 70).

Across England, the percentage of patients treated within 31 days of cancer diagnosis has remained relatively stable before and after the pandemic at between 96 and 98% (Figure 71). Prior to the pandemic, the Trust outperformed the national average, with almost 100% of patients meeting the target. Since the pandemic this has fallen and three notable decreases in performance were observed in May 2020, February 2021 and September 2021 where the percentage of patients meeting the target fell to around 92%.

From January 2019 to November 2021, the number of cancer patients treated remained stable, despite a large reduction in the number of two-week wait referrals received in the months after March 2020. In recent months, the number of two-week wait referrals has begun to exceed pre-pandemic levels. For the 62-day referral to treatment target, Frimley Health NHS Foundation Trust greatly outperformed the median trust nationally before the pandemic, with 90-95% of patients meeting this target, compared to 80% for the median trust in England (Figure 72). Since the pandemic, the national median has fallen to 75% while Frimley Health NHS Foundation Trust has fallen to around 80%. The trust therefore continues to perform better in this domain than the average trust in England, but the margin of this difference has greatly narrowed since the pandemic.

Figure 70 Number of 2WW referrals seen from January 2019 to November 2021 and the percentage of these patients seen within the two-week target.

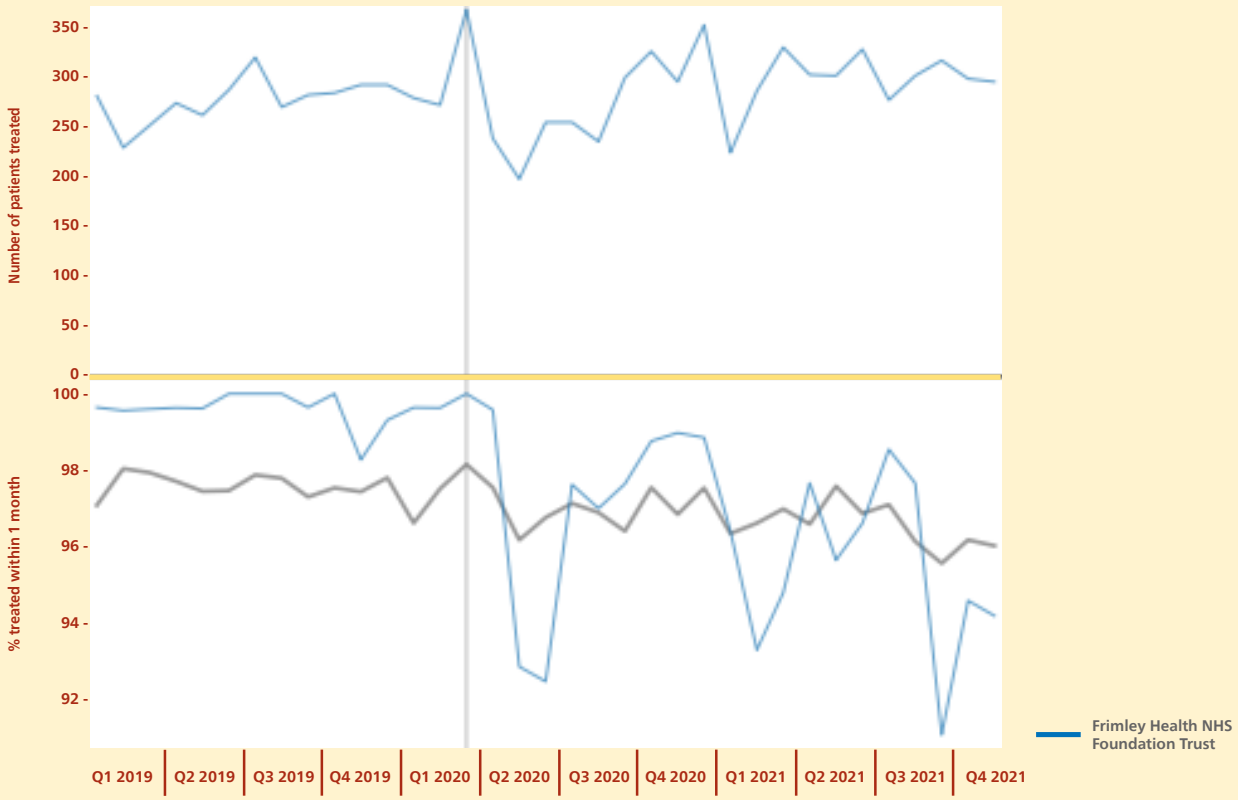


Figure 71 Number of cancer diagnoses treated from January 2019 to November 2021 and the percentage of these patients treated within the one-month target

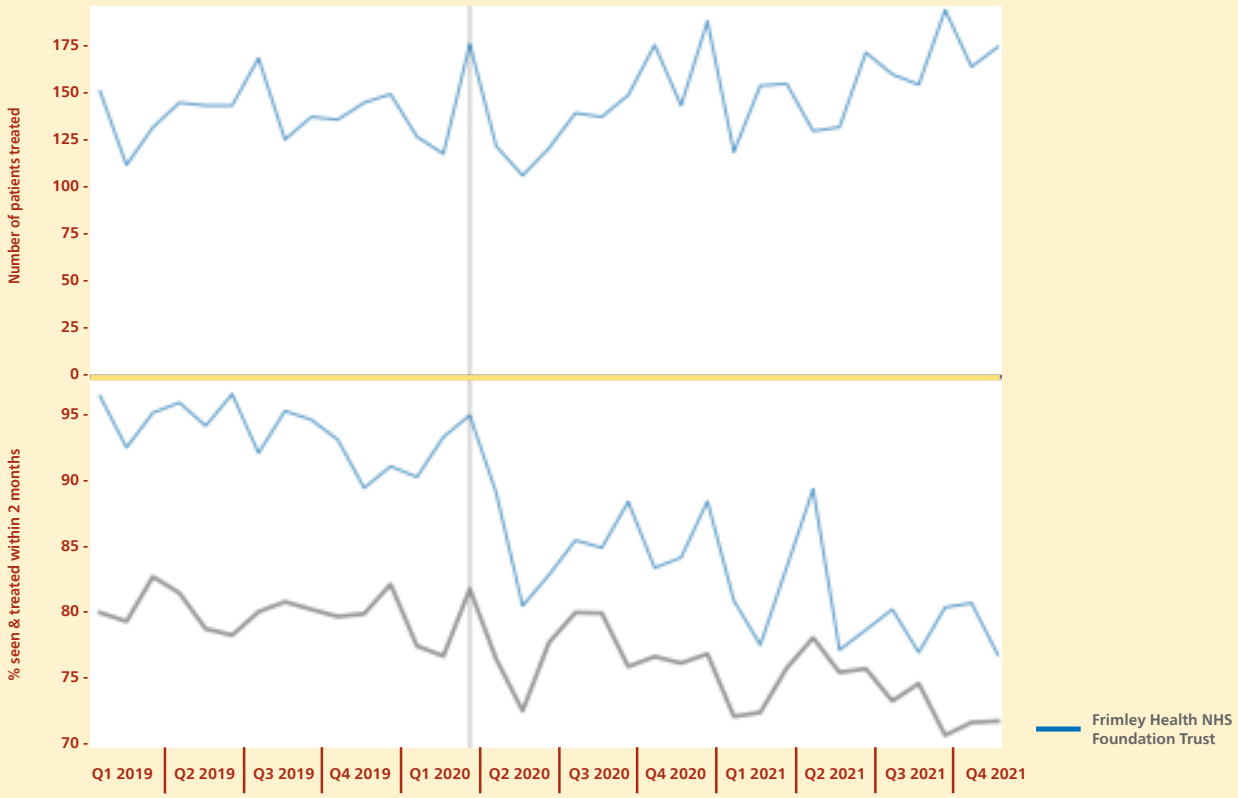


Figure 72 National number of patients seen and treated from January 2019 to November 2021 and the percentage of these patients seen and treated within the two-month target

Referral activity

Frimley Health NHS Foundation Trust performs the majority of planned surgical pathways for providers located in the ICS. The Berkshire Healthcare NHS Foundation Trust is a community healthcare trust which provides low volumes of referral activity in comparison to the acute provider.

As only one provider is undertaking planned treatment at scale within the region, there is no variation between providers to report. Total numbers and performance are reported for the Berkshire Healthcare NHS Foundation Trust for completeness. Before the pandemic, Frimley Health NHS Foundation Trust received an average of around 13,000 new RTTs each month, and this was steady for much of 2019. At the onset of the Covid-19 pandemic, the number of referrals received followed national trends and decreased by over 80% to around 2,000 referrals in April 2020 before steadily increasing to reach pre-pandemic levels by Autumn 2020. Since then, the number of new referrals received has stabilised at pre-pandemic levels (Figure 73).

Prior to the pandemic, patients referred to the Frimley Health NHS Foundation Trust who received treatment without admission waited on average around 2 weeks longer (8 weeks) than the national average of 6 weeks. At the onset of the pandemic, waiting times increased to around 10 weeks before falling in July 2020 to track the median hospital in England at around 6 weeks, where they have remained since (Figure 74).

Large variation in performance is observed for those patients receiving care resulting in hospital admission (Figure 75). Prior to the pandemic, patients seen at Frimley Health NHS Foundation Trust waited for treatment marginally longer than the average hospital in England (11 vs. 14 weeks). At the onset of the pandemic, there was a large decrease in the number of completed pathways from around 3,500 per months to less than 500 per month. This was also associated with a similarly dramatic reduction in the number of referrals received. Consequently, the waiting time for treatment fell after the pandemic, in line with trends observed nationally. However, the reduction in the number of admitted pathways completed persisted for around 5 months and during this time, the average time patients waited for treatment increased to a peak of around 30 weeks in October 2020 compared to 20 weeks for the average hospital in England. A similar but less marked decrease in activity was observed from December 2020 to March 2021, however it was not followed by an increase in waiting time. Currently median waiting time for admitted treatment tracks the average hospital in England.

As of November 2021, there are over 50,000 incomplete referral pathways, above the 2019 average of around 40,000 patients. Across the entire study period, Frimley Health NHS Foundation Trust has closely tracked the performance of the average hospital in England and the average time a waiting list patient of the Trust has waited for treatment has increased from around 7 weeks to 10 weeks (Figure 76).

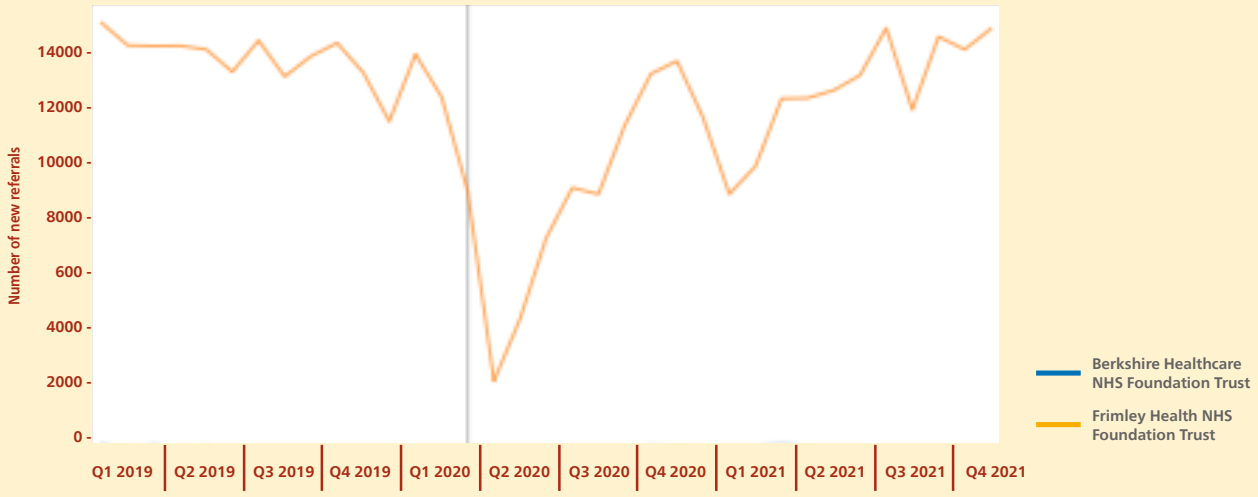


Figure 73 Number of new referrals made each month from January 2019 to November 2021

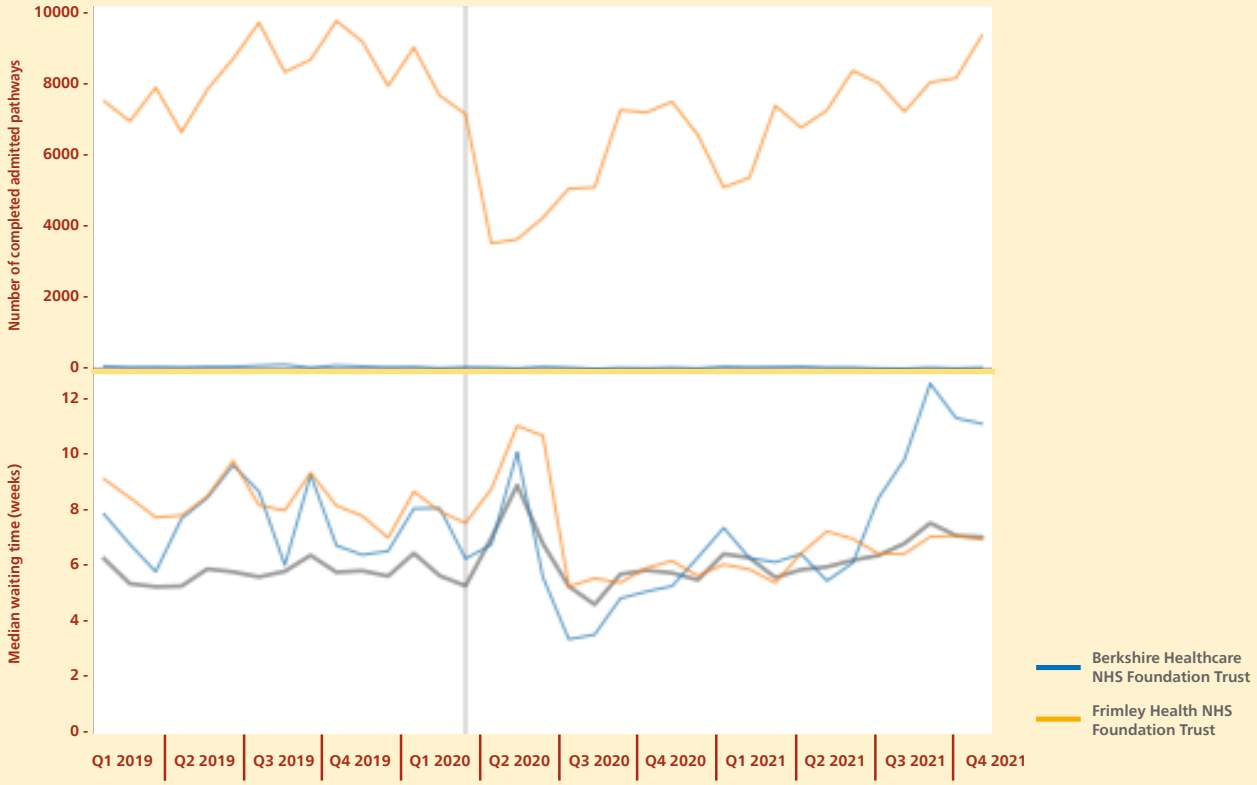


Figure 74 Number of patient pathways completed without admission each month from January 2019 to November 2021

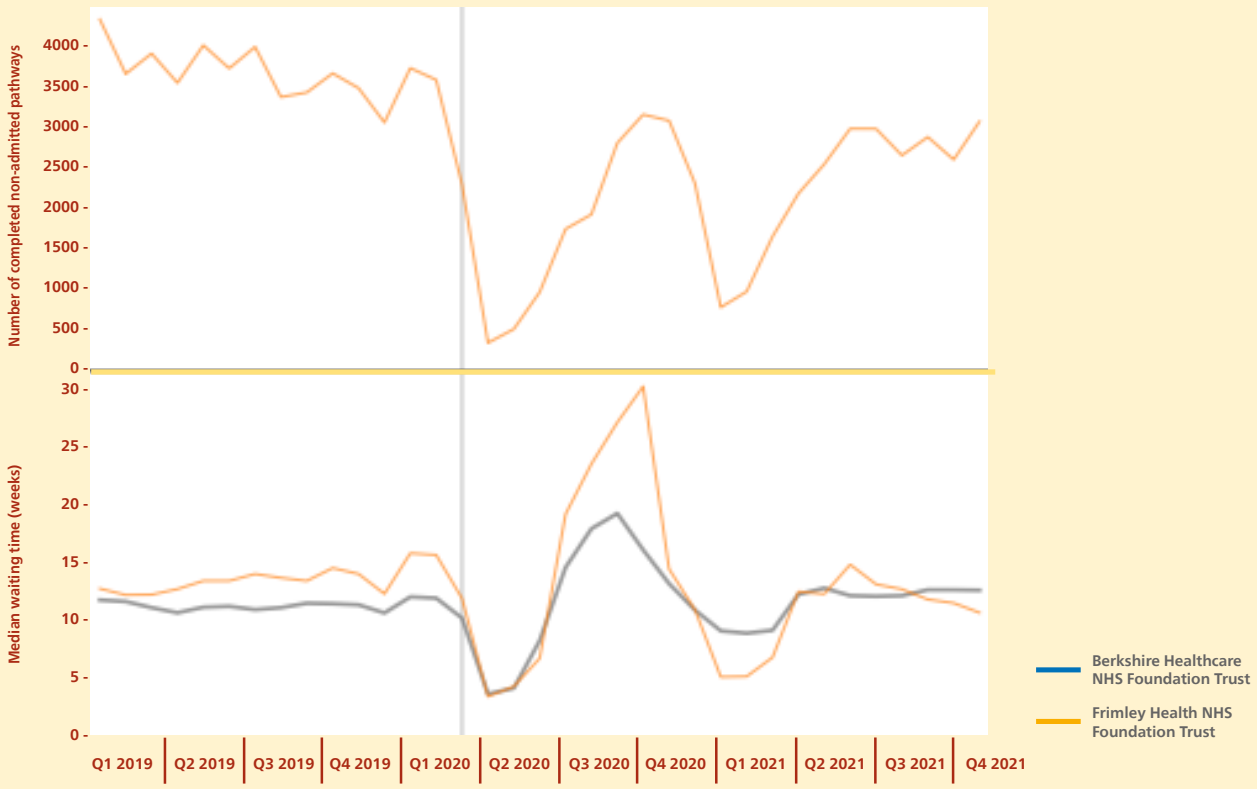


Figure 75 Number of patient pathways completed with admission for treatment each month from January 2019 to November 2021

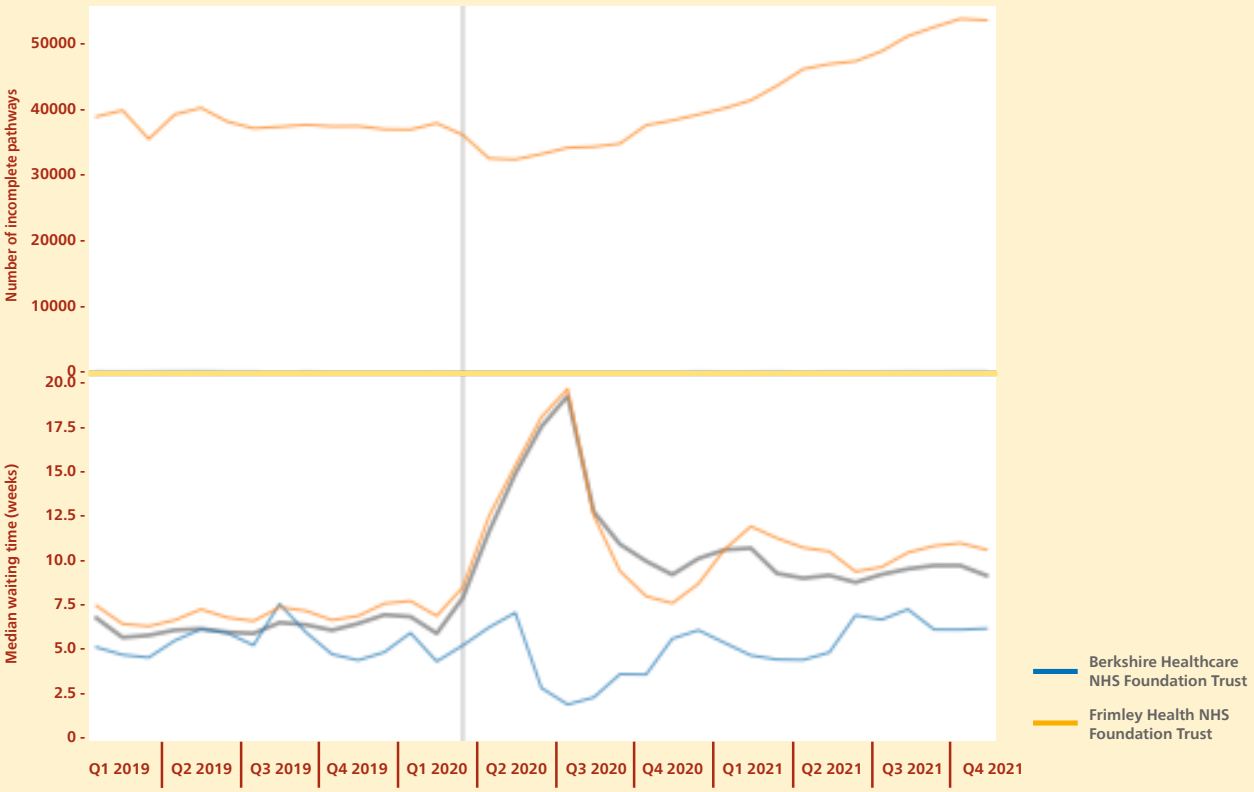


Figure 76 Number of incomplete pathways each month from January 2019 to November 2021

Summary of findings:

- The region is significantly less socioeconomically deprived than elsewhere in England.
- There are some localised areas associated with higher deprivation in the north east of this region around Slough and small areas of localised deprivation around Aldershot.
- In the Frimley Health and Care ICS, the number of patients waiting for the diagnostic tests examined in this report are at similar levels to before the pandemic.
- Diagnostic tests in this region are being conducted within six weeks for a higher proportion of patients than the national level.
- Non-obstetric ultrasound is the imaging modality associated with the greatest increase in patients waiting - from 6,000 before the pandemic to over 7,000 as of November 2021. Other modalities have small numbers of patients on diagnostics waiting lists (<2,000).
- Frimley Health and Care ICS has performed on par with, or better than, the national average in terms of cancer activity before and after pandemic, although the final months of data reported in this study showed a deterioration in the proportion of suspected cancer referrals seen within two weeks.
- There has been an increase in the number of incomplete referral pathways following the pandemic and a slight delay in waiting times for non-emergency treatment, in line with national trends.

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Frimley recommendations

- Improve access to community diagnostics, in particular non-obstetric ultrasound and echocardiogram, to reduce the proportion of patients waiting more than six weeks for these tests.
- Establish a CDC near Slough to improve access to community diagnostics for some of the more deprived populations in the area and reduce the burden of travel for patients that may otherwise have their tests performed in Frimley at Frimley Health NHS Foundation Trust.

Regional case studies

South West of England case study

Geographic summary

The South West case study consists of three adjacent Integrated Care System (ICSs) – Somerset ICS, One Devon ICS and Bristol, North Somerset and South Gloucestershire ICS. Collectively, they provide care to 2,742,880 residents, of whom 602,594 (22.0%) are aged 65 or more, compared to around 19% of the total population of England. Urban areas within the region have particularly low proportions of those aged 65 years and over, as shown in Figure 36, while high proportions are noted in coastal areas. 72.4% of residents live in urban areas.

The region has a mixed distribution of socioeconomic deprivation that is largely representative of England as a whole. 8.6% of residents live in areas in the least deprived decile, while 6.3% live in areas in the most deprived decile. Figure 37 shows the distribution of socioeconomic deprivation across the region, indicating foci of deprivation particularly in parts of Bristol and Plymouth, with areas of rural deprivation across northern Devon and Somerset.

The median female life expectancy of LSOAs in the area is 84.1 years, compared to 83.2 years nationally. The inequality between the highest and lowest life expectancy within the area is 13.2 years (90.8 years and 77.6 years, both within the city of Bristol). Figure 39 shows the distribution of female life expectancy in MSOAs.

The median male life expectancy of LSOAs in the case study area is 80.4 years, compared to 79.7 years nationally. The inequality between the highest and lowest life expectancy within the area is 12.9 years (86.2 years in an area of Bristol and 73.3 years in an area of Plymouth). Figure 40 shows the distribution of male life expectancy in MSOAs.

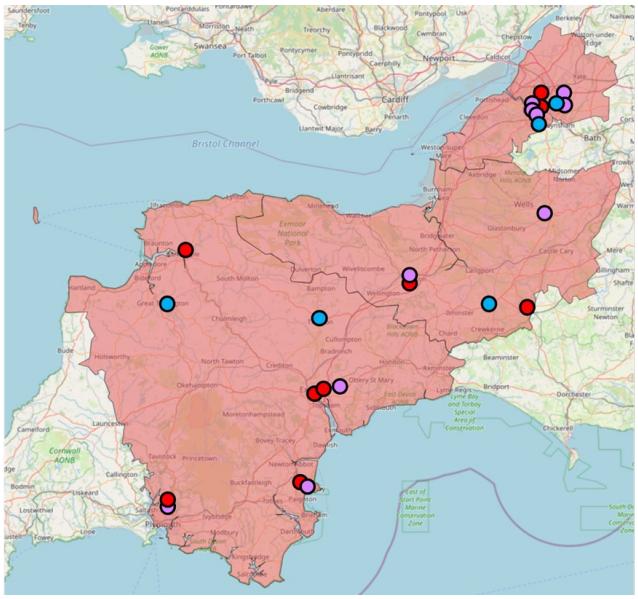


Figure 35 The locations of acute diagnostic sites (red), non-acute NHS diagnostic sites (blue) and private sector diagnostic sites for NHS patients (purple) in the case study area. © OpenStreetMap contributors

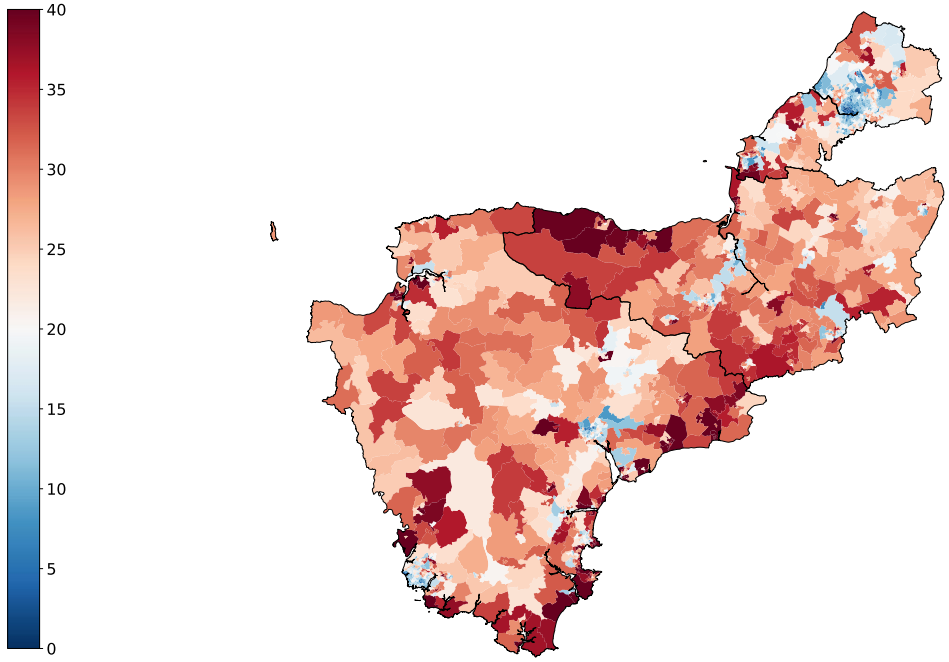


Figure 36 The percentage of residents aged 65 years and over in each LSOA within the case study area

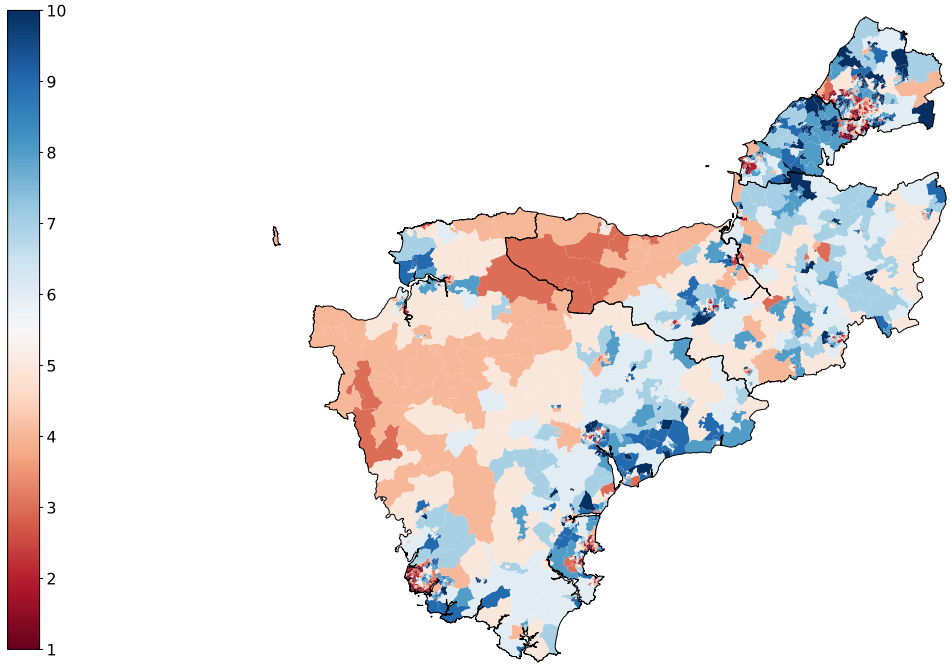


Figure 37 The Index of Multiple Deprivation decile of LSOAs contained within the case study area. Dark blue indicates the least deprived deciles and dark red indicates the most deprived deciles.

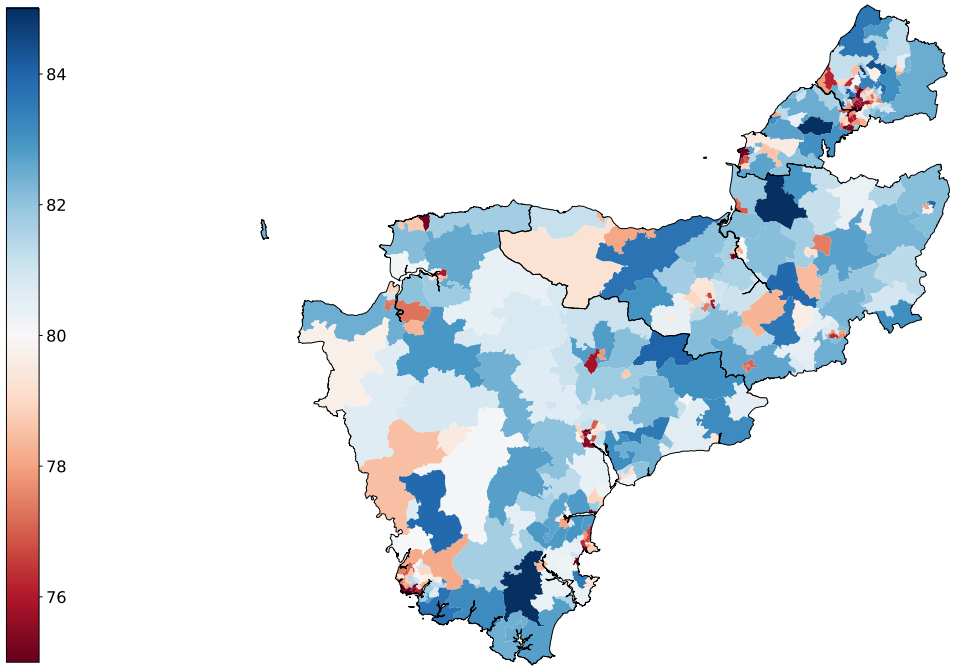


Figure 38 The life expectancy at birth (years) of male residents of the case study area as of 2019

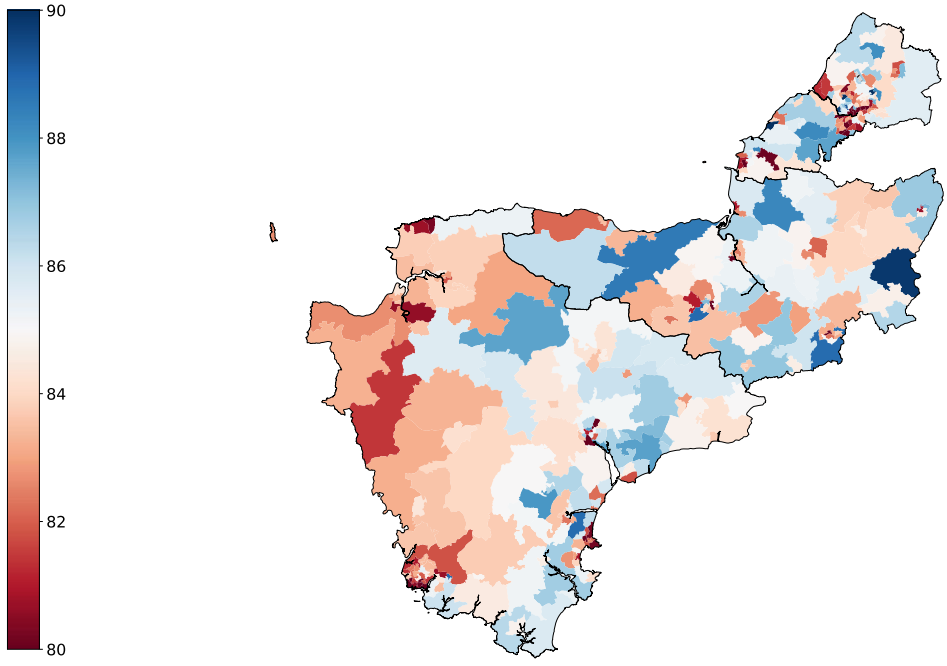


Figure 39 The life expectancy at birth (years) of female residents of the case study area as of 2019

Diagnostics activity

Figure 40 and 41 summarise the activity of clinical diagnostics pathways in the South West from January 2019 to September 2021. North Bristol NHS Trust and University Hospitals Bristol, Weston NHS Foundation Trust, University Hospitals Plymouth NHS Trust and Northern Devon Healthcare NHS Trust have seen significant increases in the number of patients on diagnostics waiting lists since the start of the pandemic. Most of these trusts are now providing diagnostics for a similar number of patients to their pre-pandemic levels, although a higher proportion of these patients are waiting 6 weeks or more for tests.

Patients waiting six week or more for diagnostics tests in these South West ICS regions was highest at Northern Devon Healthcare NHS Trust which has seen a significant increase in the number of patients waiting for diagnostic tests from approximately 2-3000 per month before the pandemic, to around 6000 per month in mid-late 2021. In Northern Devon Healthcare NHS Trust, as with other trusts in the South West, there has not been an increase in diagnostic testing beyond pre-pandemic levels to address the larger number of patients waiting for diagnostic tests.

There were some diagnostic modality-specific findings of interest in these ICSs. Compared to the rest of England, the patients receiving care in the South West case study were more likely to wait 6 weeks or more for their diagnostic test before the pandemic. This was particularly the case of endoscopy where between 20 and 30% of patients waited 6 weeks or more. This trend continued following the pandemic, with approximately 47% of patients waiting over 6 weeks for GI endoscopy in November 2021, compared with around 36% at a national level.

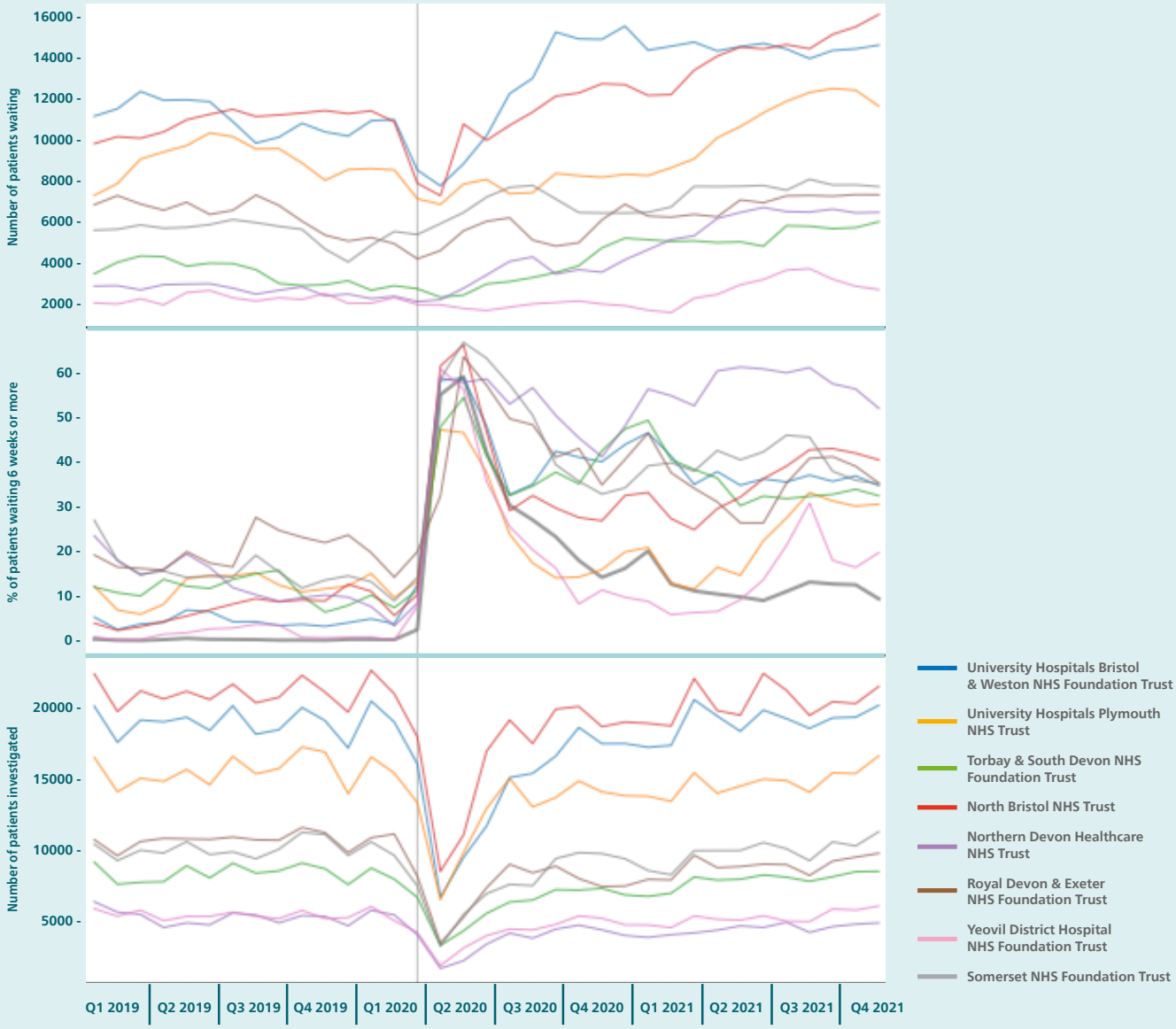


Figure 40 Summary activity for all diagnostic modalities for each hospital trust in the case study area from January 2019 to November 2021

In November 2021, approximately 30% of patients were waiting six weeks or more for CT scans in these ICSs, compared with approximately 20% at a national level. Furthermore, in November 2021, approximately 44% of patients waited over 6 weeks for echocardiograms, compared with around 40% nationally. MRI and non-obstetric ultrasound were also associated with a higher proportion of patients (over 25%) waiting over six weeks, compared with around 20% nationally.

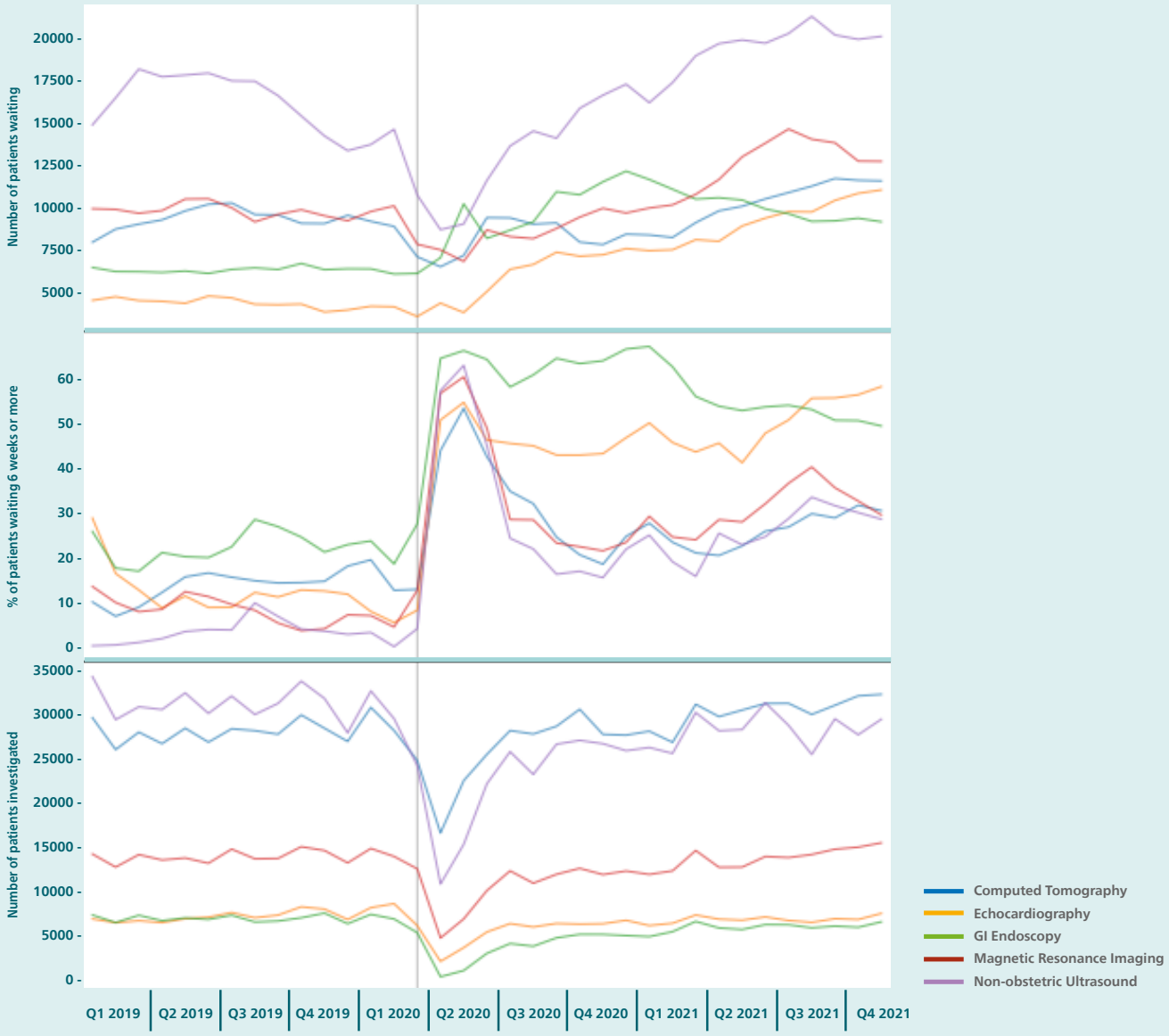


Figure 41 Summary activity for each major diagnostic modality from January 2019 to November 2021 in the case study area

Cancer activity

Although the number of patients referred for suspected cancer has returned to, or exceeded, pre-pandemic levels, the proportion of these that are seen within two weeks of referral has been declining in most trusts assessed in the area. This trend, as shown in Figure 42, mimics the national-level data relating to 2WW cancer referrals and is similar to other regions examined in the report.

The total number of patients treated for cancer following a 2WW referral has remained relatively constant throughout the study period for all trusts in this region apart from a small dip in activity in the six months following the onset of the pandemic in 2020. Figure 43 shows that the average proportion of patients treated within one month of a decision to treat has remained at over 95% for trusts in this region, which is better than the national average and close to the NHS standard of 96%. Some trusts, however, have performed worse on this metric in late 2021, including Northern Devon Healthcare NHS Trust and North Bristol NHS Trust, with less than 90% treated within one month in November 2021. As of November 2021 data, only 60.3% of patients referred by the 2WW pathway resident in NHS Dorset CCG were seen within 2 weeks of referral, the lowest in the country.

The proportion of patients seen and treated within two months of referral in this region are shown in Figure 44. This shows a reduction in the percentage of patients treated within two months from referral, with no trusts in the region meeting the NHS operational standard for treatment within 62-days of referral for more than 85% of patients.[14]

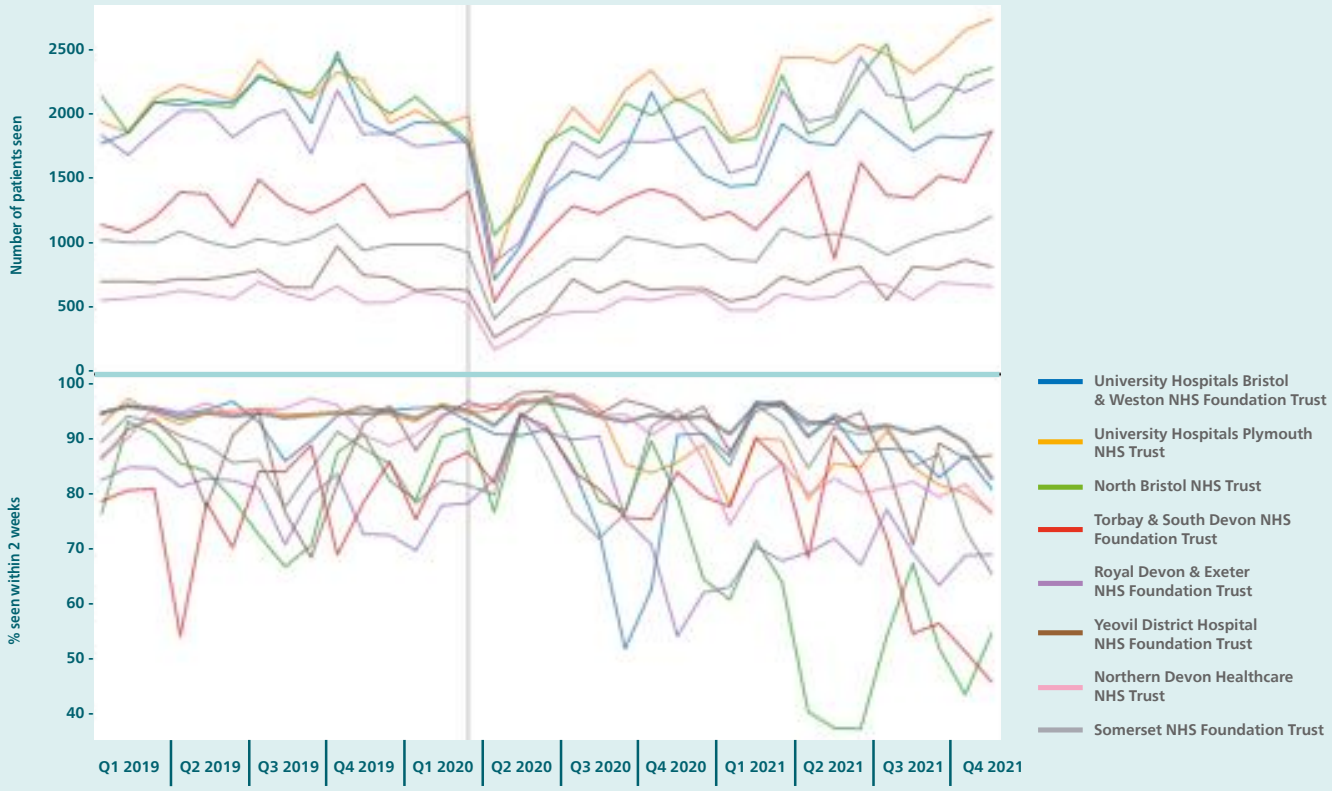


Figure 42 Number of 2WW referrals seen from January 2019 to November 2021 and the percentage of these patients seen within the two-week target.

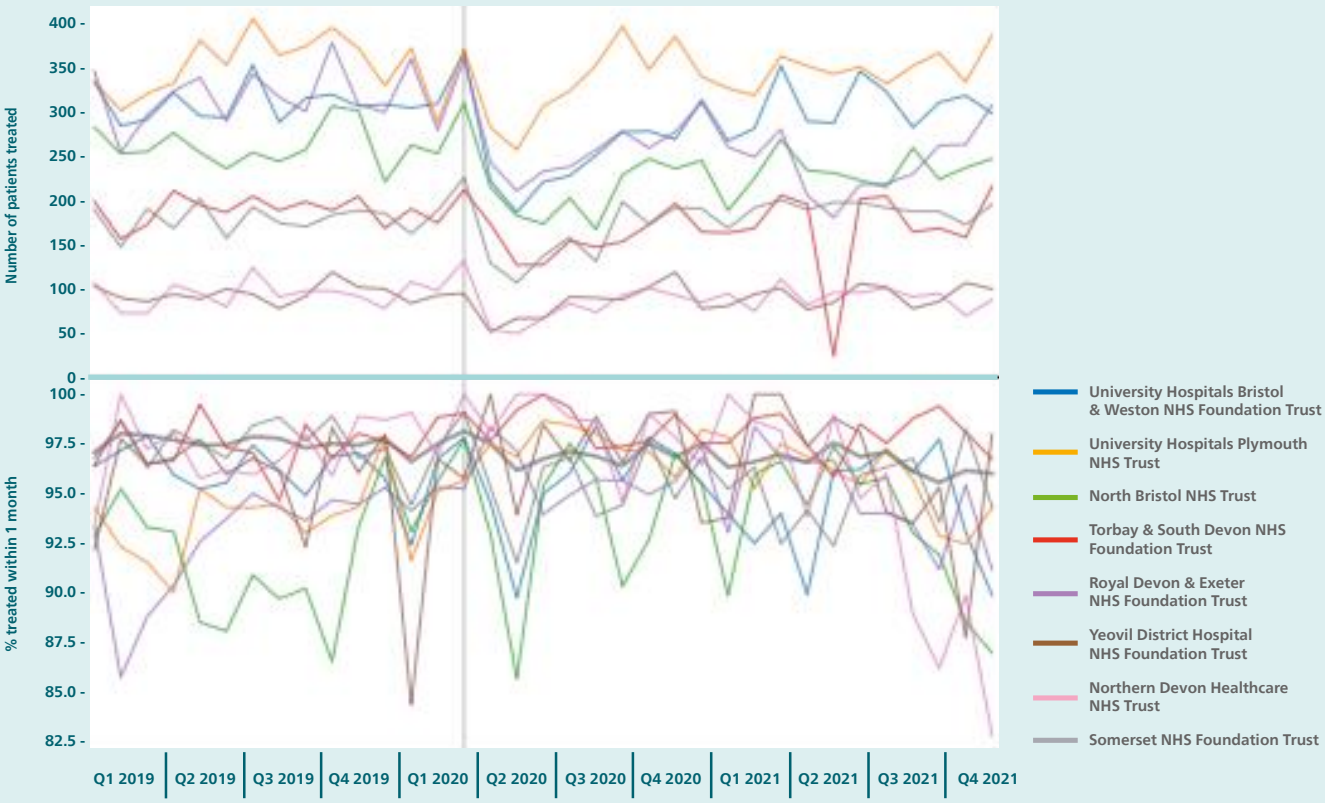


Figure 43 Number of cancer diagnoses treated from January 2019 to November 2021 and the percentage of these patients treated within the one-month target

Figure 44 Number of patients seen and treated from January 2019 to November 2021 and the percentage of these patients seen and treated within the two-month target

Referral activity

The hospital trusts located in the region receive varying numbers of waiting list referrals, with University Hospitals Bristol and Weston NHS Foundation Trust receiving around 15,000 referrals per month in 2019 and Northern Devon Healthcare NHS Foundation Trust receiving around 4,000 referrals per month in the same period. At the onset of the Covid-19 pandemic, each hospital trust experienced a reduction in the number of referrals seen of 50-75% in March to May 2020 before steadily increasing to around 75% of pre-pandemic levels as of November 2021 (Figure 45).

Given the large number of hospitals in the area operating at markedly different scales, performance in relation to targets will be focussed on, rather than absolute numbers of patients seen by each trust. Before the Covid-19 pandemic, the time patients waited for admitted treatment spanned the average hospital in England, with waiting times shorter in larger hospitals and longer in the smaller trusts. After the onset of the pandemic, larger trusts such as North Bristol NHS Trust continued to perform well, while trusts such as Yeovil District Hospital experienced large increases in waiting times in the Summer of 2020 that have largely persisted to November 2021 where the average patient has waited around 25 weeks when treated, compared to 12 weeks for the average hospital in England (Figure 46).

For non-admitted pathways, relatively little change in performance was observed over the period from January 2019 to November 2021. Before the pandemic, again, larger trusts were performing better than smaller ones, however after the onset of the pandemic, this gap narrowed as a result of improved performance by the previously worse performing trusts. As of November 2021, trusts in the region closely track the average hospital in England, with patients being seen on average after 4 to 8 weeks (Figure 47).

Across the trusts in the region, the number of patients waiting for treatment has increased since 2019, however this increase is most notable for the Royal Devon and Exeter NHS Foundation Trust where the number of patients waiting for treatment has almost doubled to 70,000 as of November 2021. This is associated with an increase in the time patients waiting for treatment have waited at the trust from around 8 weeks before the pandemic to 16 weeks as of November 2021. Waiting times for other trusts in the region are largely longer than the average hospital in England (Figure 48).

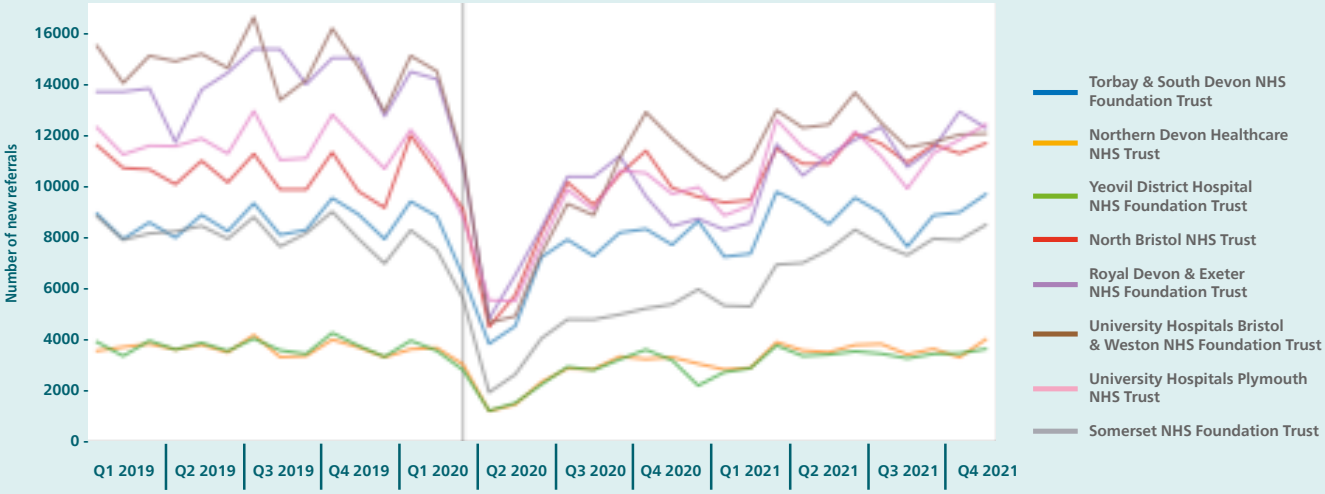


Figure 45 Number of new referrals made each month from January 2019 to November 2021

Figure 46 Number of patient pathways completed with admission each month from January 2019 to November 2021

Figure 47 Number of patient pathways completed without admission for treatment each month from January 2019 to November 2021

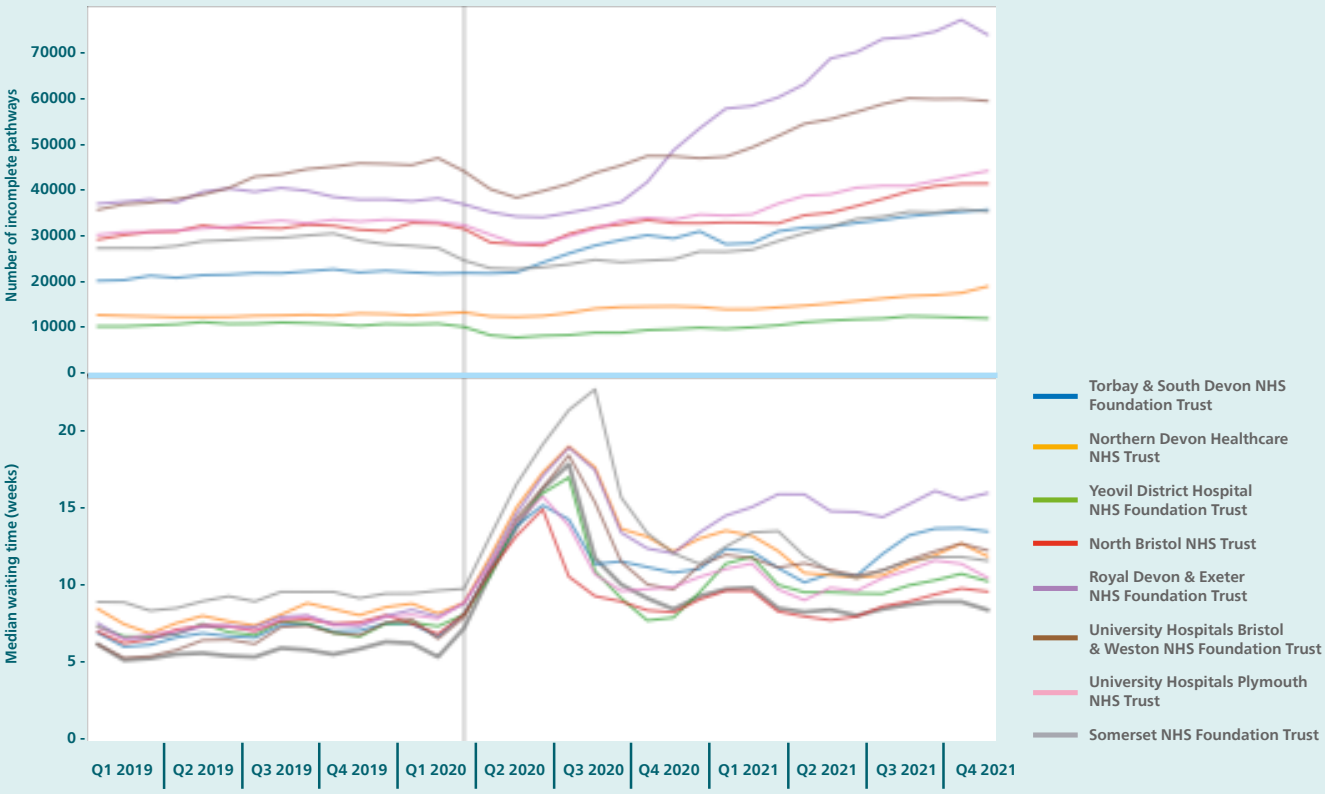


Figure 48 Number of incomplete pathways each month from January 2019 to November 2021

Summary of findings:

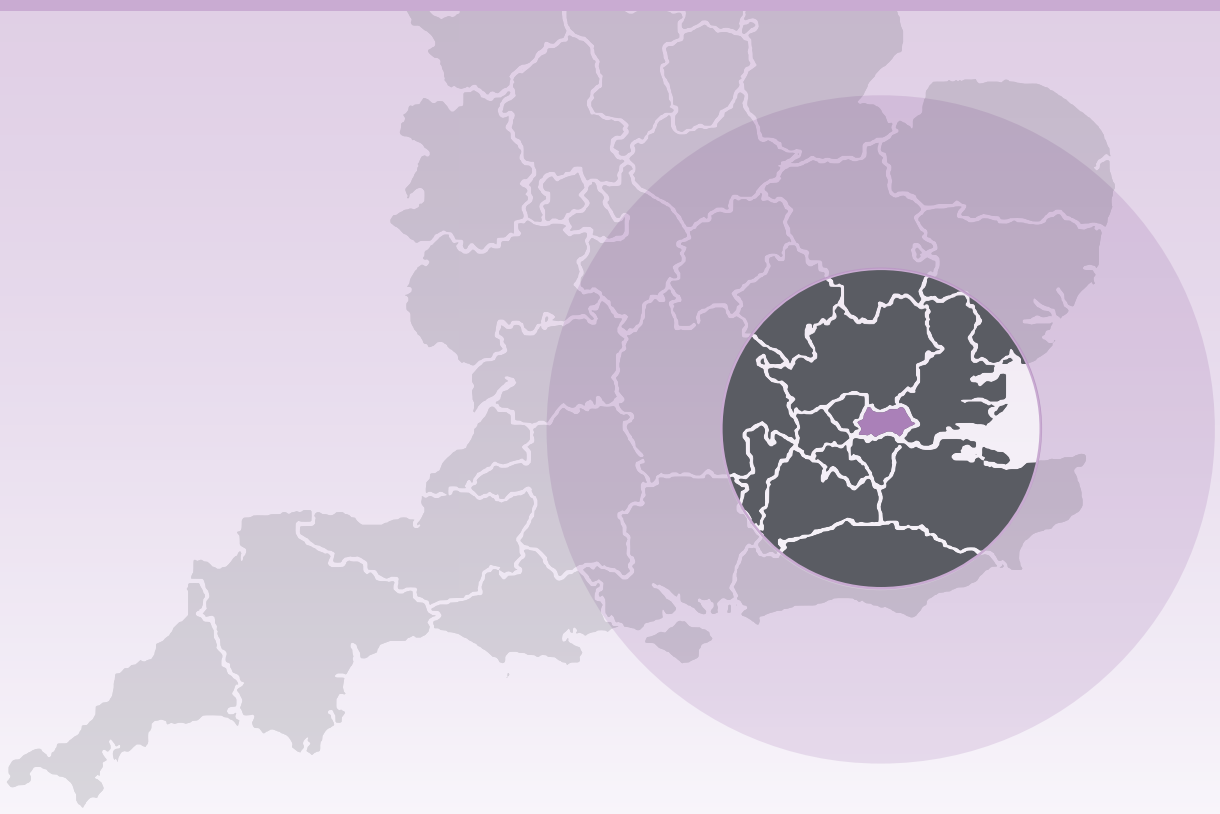
- The region covered by the three ICSs studied in the South West includes a population slightly older and less deprived than the English National average, with a higher life expectancy.
- Areas with higher levels of deprivation were predominantly located in urban conurbations in parts of Bristol and Plymouth.
- The hospital trusts included in these ICSs have seen significant increases in the number of patients on diagnostics waiting lists since the start of the pandemic and a higher proportion of these patients are waiting 6 weeks or more for tests.
- Patients waiting for GI endoscopy and echocardiography were most likely to wait six weeks or more for their tests, with long waits for GI endoscopy particularly common in this region, when compared to national averages.
- In November 2021, approximately 30% of patients were waiting six weeks or more for CT scans in these ICSs, compared with approximately 20% at a national level, indicating a case for better access to CT in this region.
- Several CDCs have been highlighted for this region, including four in Somerset, one in Exeter, one in Bath and one in Gloucestershire.
    - The Rutherford Diagnostic Centre in Taunton seems to be well located in this region and is already providing MRI, CT, ultrasound and other diagnostic tests in a community setting. This CDC will assist with diagnostic throughput from the Somerset NHS Foundation Trust.
- Cancer activity in the trusts examined in this region, including two-week wait referral and cancer treatment activity is equivalent to, or better than national averages on most metrics.
- Royal Devon and Exeter NHS Foundation Trust has had a particularly large increase in the number of patients waiting for non-emergency treatment, almost doubling from before the pandemic to 70,000 in November 2021. A corresponding significant increase in waiting times for patients seeking treatment in this trust was also seen.

South West of England recommendations

- Expedite the establishment of CDCs in this region to address the delays in diagnostics relative to national levels, particularly regarding CT, echocardiography and GI endoscopy.
    - Placing CDCs in Bristol and Plymouth may assist in addressing concerns regarding access to timely diagnostics for populations associated with higher levels of deprivation.
- Provide additional resources and clinical pathway support to reduce waiting lists for non-emergency treatment, at Royal Devon and Exeter NHS Foundation Trust, including the creation of Community Treatment Centres
- Monitor diagnostics activity in the functioning CDC in Taunton (Rutherford Diagnostic Centre) and how these impact waiting times for diagnostics through the Somerset NHS Foundation Trust.

Regional case studies

East London case study



Geographic summary

The East London case study – covering an entirely urban area - consists of a single Integrated Care System (ICS) - North East London ICS. This ICS provides care to 2,036,470 residents, of whom 209,887 (10.3%) are aged 65 or more, compared to around 19% of the total population of England. Areas closer to central London have particularly low proportions of those aged 65 years and over, as shown in Figure 50.

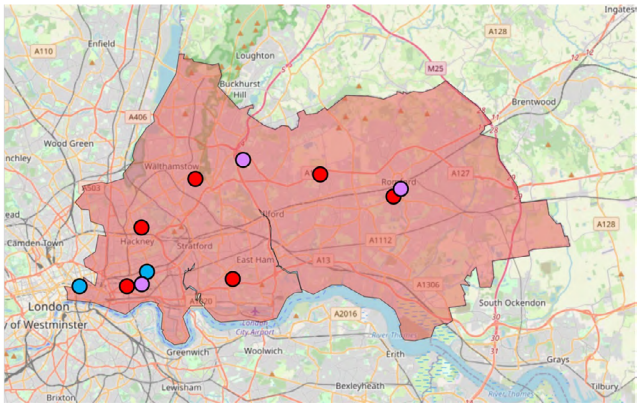


Figure 49 The locations of acute diagnostic sites (red), non-acute NHS diagnostic sites (blue) and private sector diagnostic sites for NHS patients (purple) in the case study area. © OpenStreetMap contributors

The region is more socioeconomically deprived than elsewhere in England, with 50.9% of residents of the ICS living in LSOAs in the three most deprived deciles of the Index of Multiple Deprivation compared to 30% nationally. Figure 51 shows the distribution of socioeconomic deprivation across the region, indicating that deprivation is particularly focussed in the boroughs of Newham, Barking and Dagenham and Redbridge, while Havering and Redbridge are areas of affluence.

The median female life expectancy of LSOAs in the area is 84.1 years, compared to 83.2 years nationally. The inequality between the highest and lowest life expectancy within the area is 13.7 years (90.1 years in the City of London and 76.4 years in an area of Newham). Figure 53 shows the distribution of female life expectancy in MSOAs.

The median male life expectancy of LSOAs in the case study area is 79.6 years, compared to 79.7 years nationally. The inequality between the highest and lowest life expectancy of areas within the area is 17.4 years (91.1 years in the City of London and 73.7 years in an area of Dagenham). Figure 52 shows the distribution of male life expectancy in MSOAs.

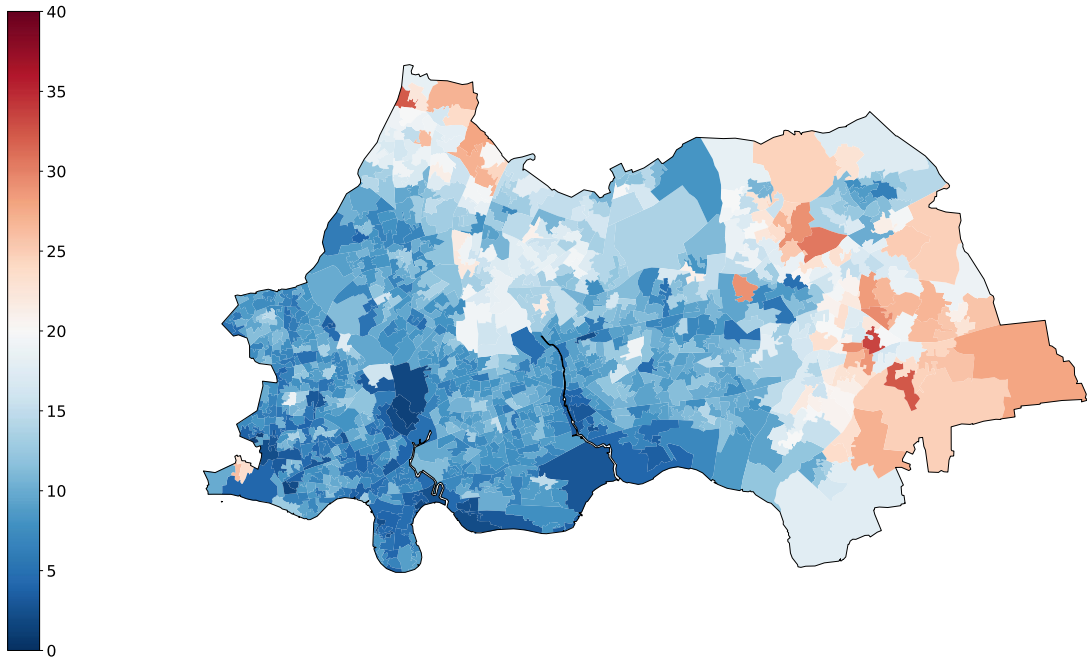


Figure 50 The percentage of residents aged 65 years and over in each LSOA within the case study area

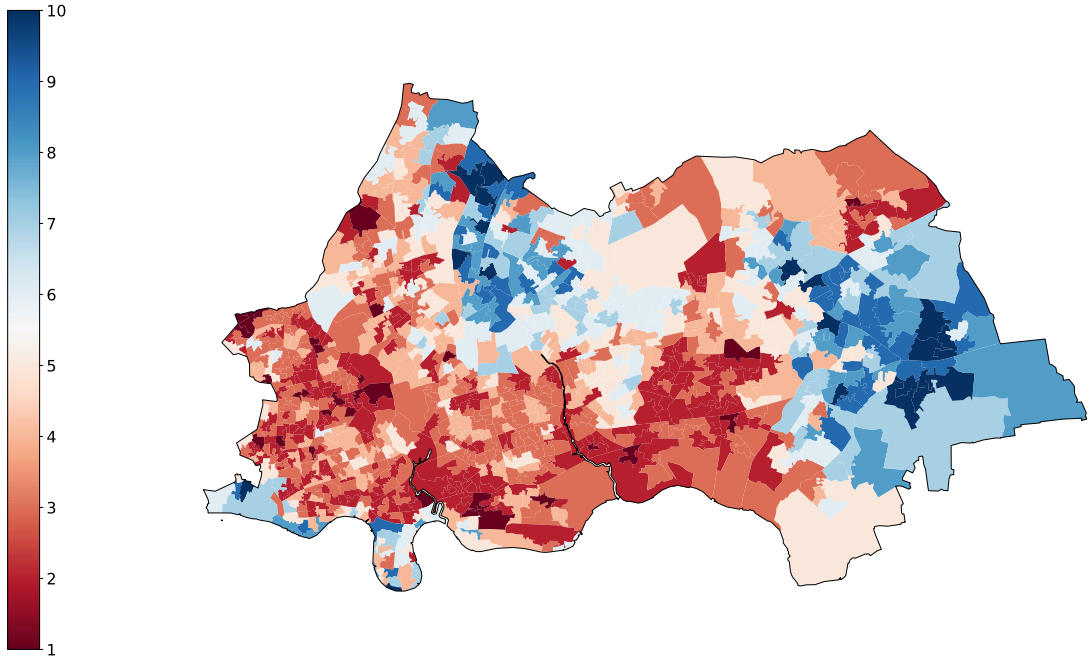


Figure 51 The Index of Multiple Deprivation decile of LSOAs contained within the case study area. Dark blue indicates the least deprived deciles and dark red indicates the most deprived deciles.

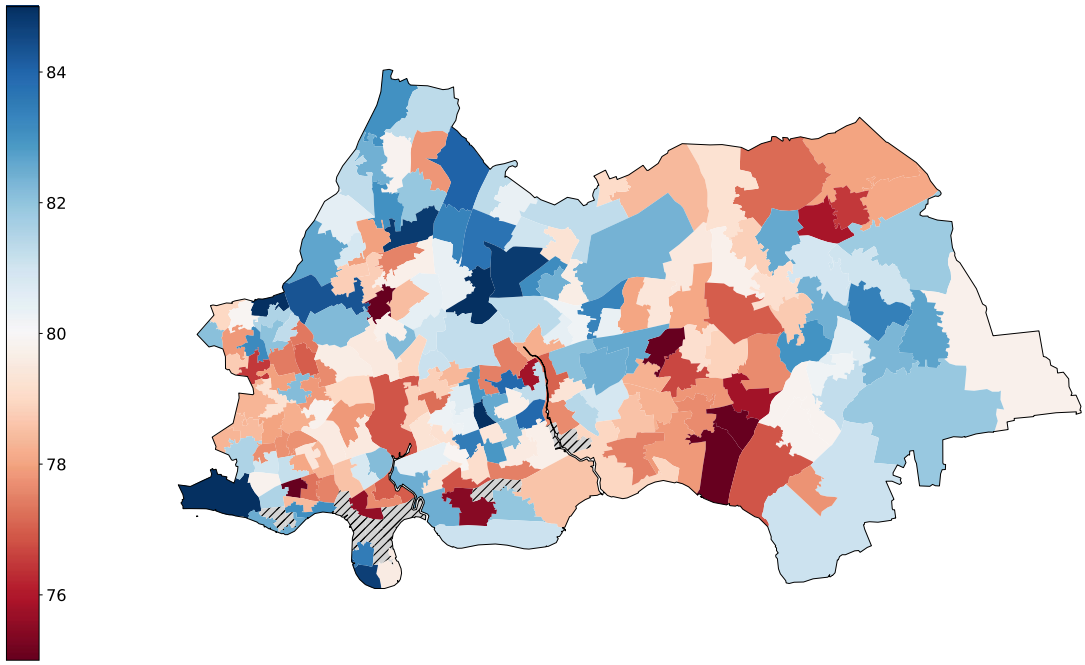


Figure 52 The life expectancy at birth (years) of male residents of the case study area as of 2019

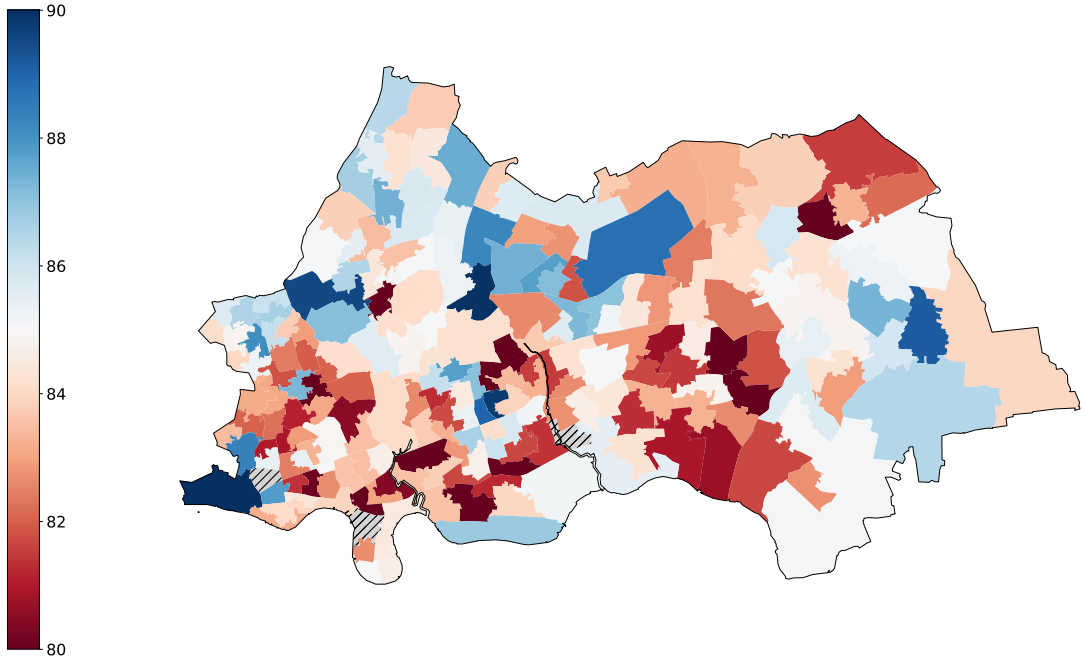


Figure 53 The life expectancy at birth (years) of female residents of the case study area as of 2019

Diagnostics activity

Figure 40 and 41 summarise the activity of clinical diagnostics pathways in the South West from January 2019 to September 2021. North Bristol NHS Trust and University Hospitals Bristol, Weston NHS Foundation Trust, University Hospitals Plymouth NHS Trust and Northern Devon Healthcare NHS Trust have seen significant increases in the number of patients on diagnostics waiting lists since the start of the pandemic. Most of these trusts are now providing diagnostics for a similar number of patients to their pre-pandemic levels, although a higher proportion of these patients are waiting 6 weeks or more for tests.

Patients waiting six week or more for diagnostics tests in these South West ICS regions was highest at Northern Devon Healthcare NHS Trust which has seen a significant increase in the number of patients waiting for diagnostic tests from approximately 2-3000 per month before the pandemic, to around 6000 per month in mid-late 2021. In Northern Devon Healthcare NHS Trust, as with other trusts in the South West, there has not been an increase in diagnostic testing beyond pre-pandemic levels to address the larger number of patients waiting for diagnostic tests.

There were some diagnostic modality-specific findings of interest in these ICSs. Compared to the rest of England, the patients receiving care in the South West case study were more likely to wait 6 weeks or more for their diagnostic test before the pandemic. This was particularly the case of endoscopy where between 20 and 30% of patients waited 6 weeks or more. This trend continued following the pandemic, with approximately 47% of patients waiting over 6 weeks for GI endoscopy in November 2021, compared with around 36% at a national level.

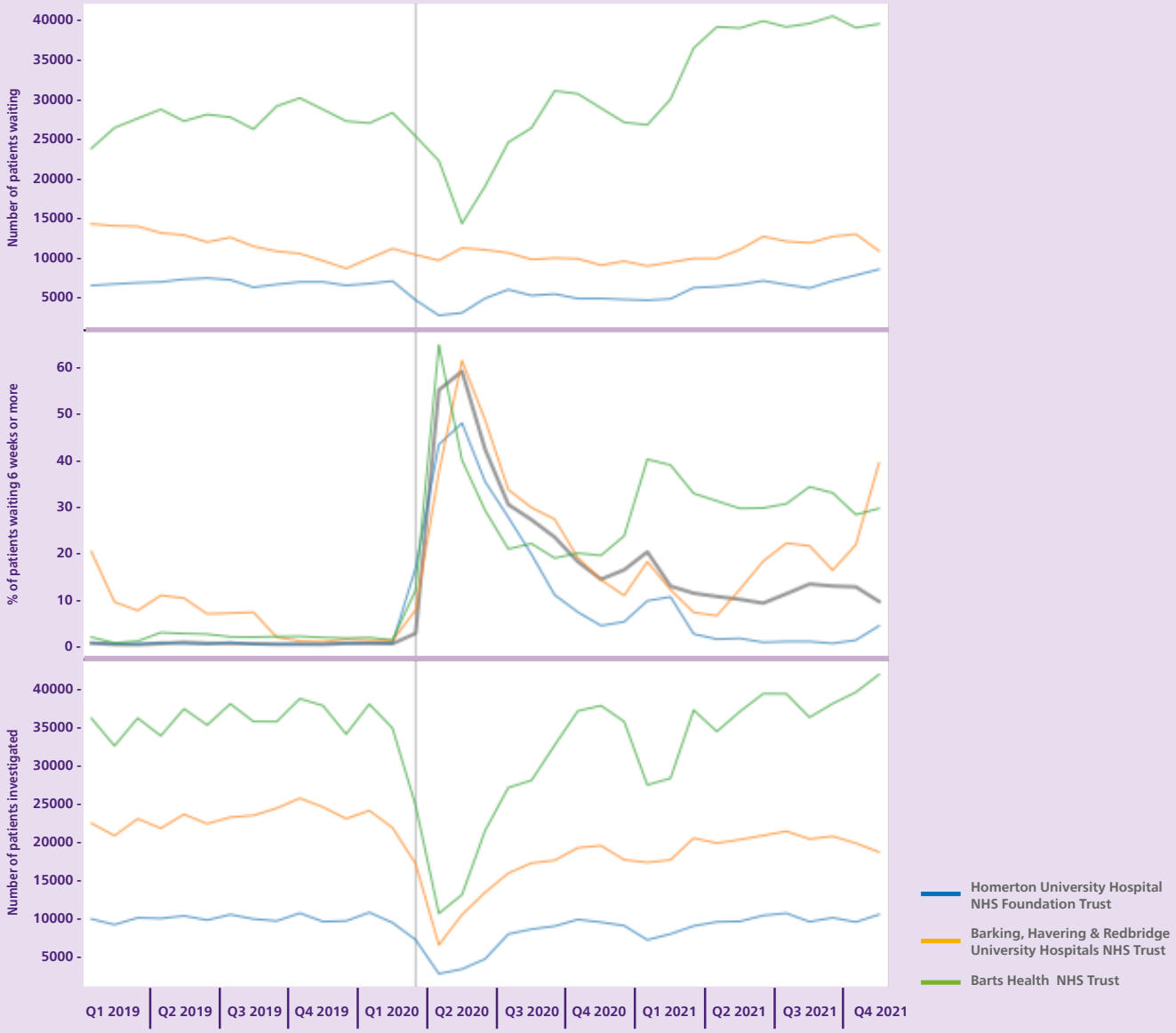


Figure 54 Summary activity for all diagnostic modalities for each hospital trust in the case study area from January 2019 to November 2021

In November 2021, approximately 30% of patients were waiting six weeks or more for CT scans in these ICSs, compared with approximately 20% at a national level. Furthermore, in November 2021, approximately 44% of patients waited over 6 weeks for echocardiograms, compared with around 40% nationally. MRI and non-obstetric ultrasound were also associated with a higher proportion of patients (over 25%) waiting over six weeks, compared with around 20% nationally.

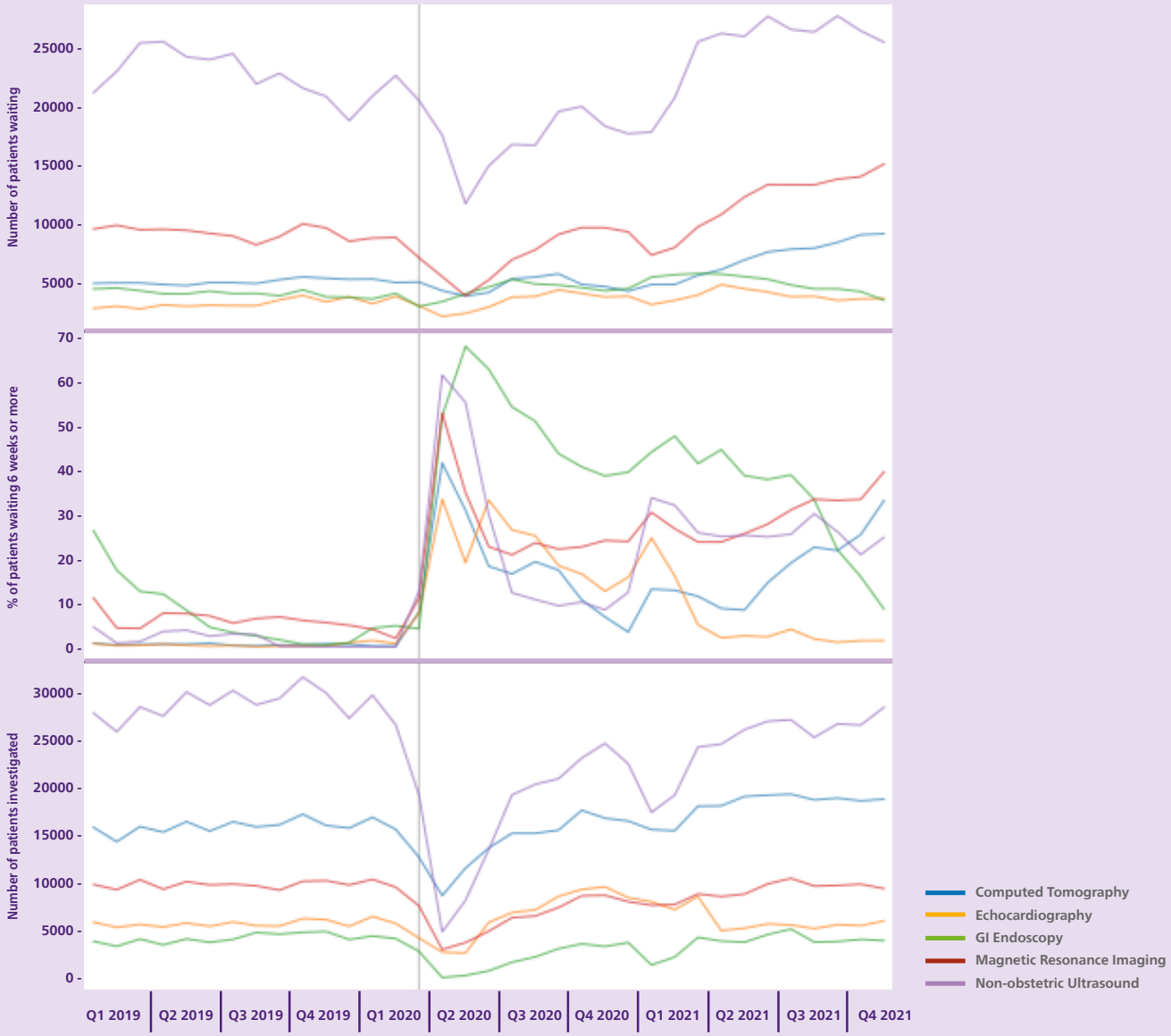


Figure 55 Summary activity for each major diagnostic modality from January 2019 to November 2021 in the case study area

Cancer activity

The number of patients seen on 2WW referrals for suspected cancer has returned to at least pre-pandemic levels for all trusts in this ICS, as shown in Figure 56. In Barts Health NHS Trust, the largest trust in the ICS, nearly 3,500 patients on 2WW referrals were seen in November 2021, compared with approximately 2,600 prior to the pandemic in February 2020. The percentage of patients on 2WW referrals seen within two weeks is less than prior to the pandemic, but higher than the national average in November 2021.

Patients referred on a 2WW pathway that have commenced treatment each month is comparable with pre-pandemic levels in all three trusts investigated. In these trusts, the percentage of patients that commenced treatment within one month of diagnosis was better than the NHS operational standard of 96% in November 2021. Barking, Havering and Redbridge University Hospitals NHS Trust has recovered well from particularly low rates of treatment within one month in the first six months of the pandemic. The large dips in 2WW activity at this trust may reflect a lower resilience to Covid-associated pressures during this initial Covid wave and the winter 2020-21 wave.

Patients commencing treatment within two months of referral was below the published NHS operational standard of 85% in the two largest trusts in this ICS, Barts Health NHS Trust and Barking, Havering and Redbridge University Hospitals NHS Trust from July 2021. These trusts did, however, perform better than the national average, as shown in Figure 58.

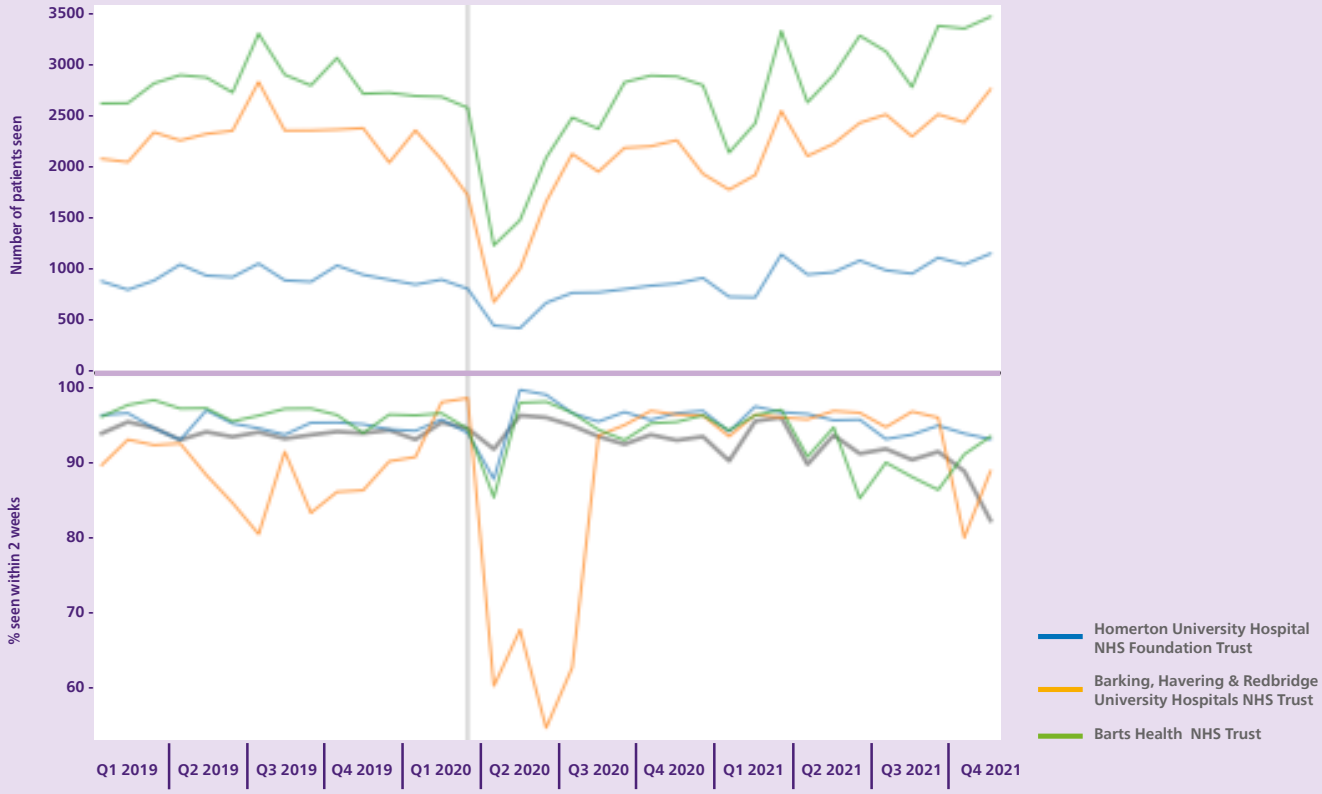


Figure 56 Number of 2WW referrals seen from January 2019 to November 2021 and the percentage of these patients seen within the two-week target.

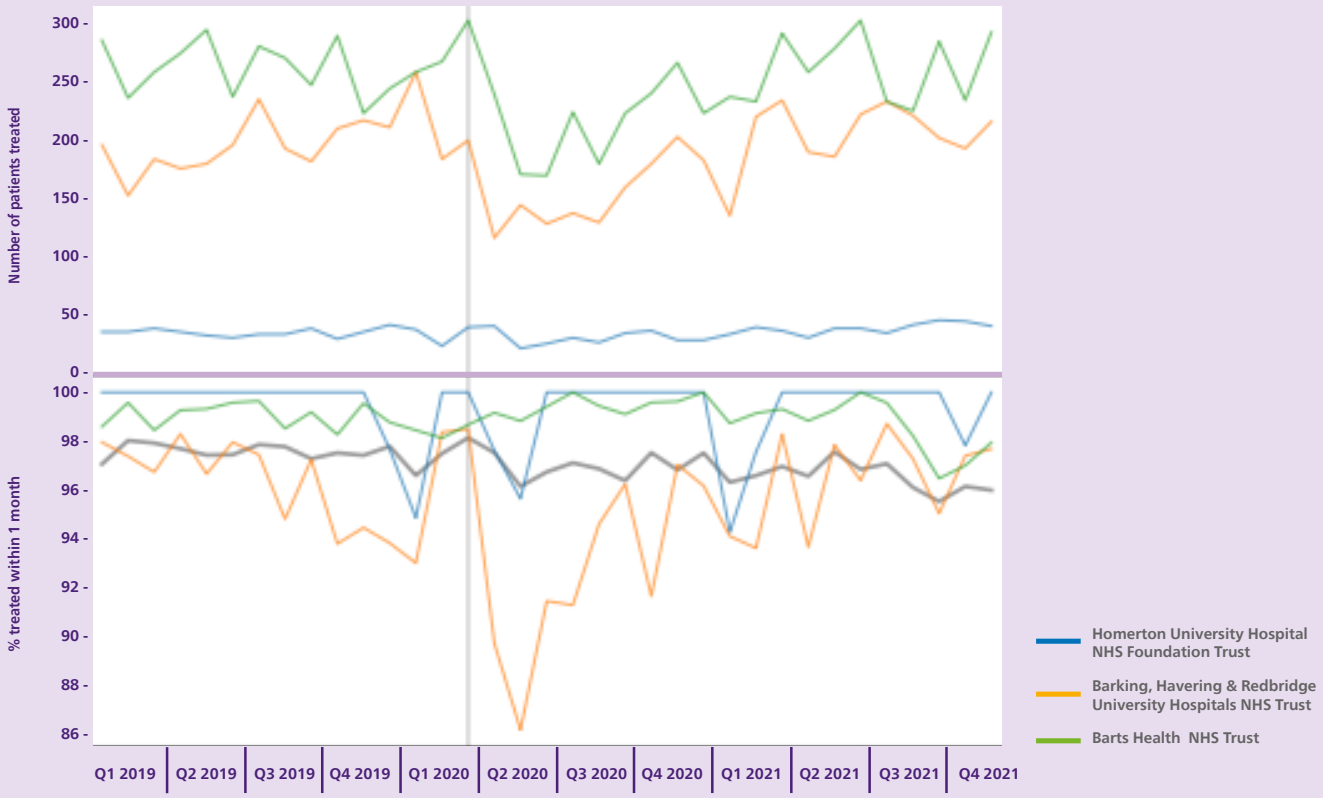


Figure 57 Number of cancer diagnoses treated from January 2019 to November 2021 and the percentage of these patients treated within the one-month target

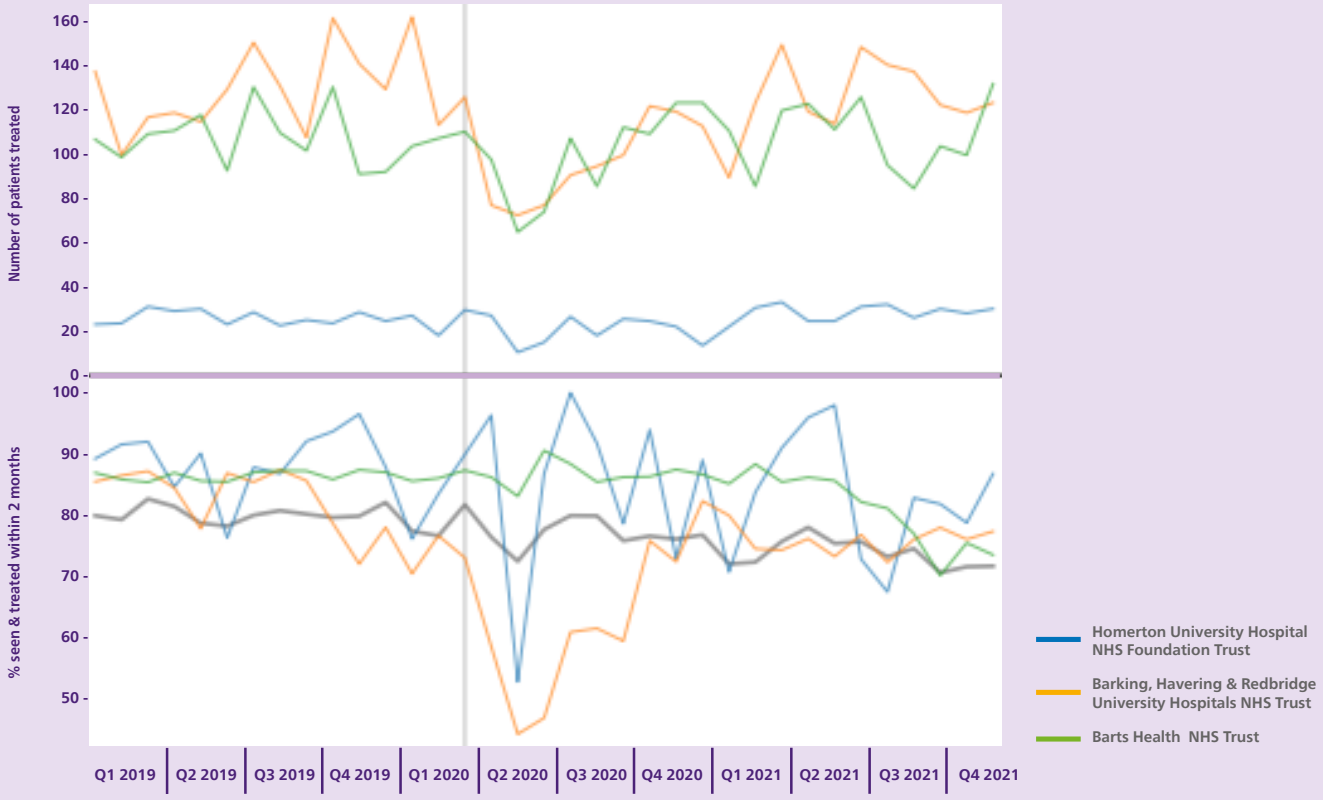


Figure 58 National number of patients seen and treated from January 2019 to November 2021 and the percentage of these patients seen and treated within the two-month target

Referral activity

The hospital trusts located in the region receive varying numbers of waiting list referrals, with University Hospitals Bristol and Weston NHS Foundation Trust receiving around 15,000 referrals per month in 2019 and Northern Devon Healthcare NHS Foundation Trust receiving around 4,000 referrals per month in the same period. At the onset of the Covid-19 pandemic, each hospital trust experienced a reduction in the number of referrals seen of 50-75% in March to May 2020 before steadily increasing to around 75% of pre-pandemic levels as of November 2021 (Figure 45).

Given the large number of hospitals in the area operating at markedly different scales, performance in relation to targets will be focussed on, rather than absolute numbers of patients seen by each trust. Before the Covid-19 pandemic, the time patients waited for admitted treatment spanned the average hospital in England, with waiting times shorter in larger hospitals and longer in the smaller trusts. After the onset of the pandemic, larger trusts such as North Bristol NHS Trust continued to perform well, while trusts such as Yeovil District Hospital experienced large increases in waiting times in the Summer of 2020 that have largely persisted to November 2021 where the average patient has waited around 25 weeks when treated, compared to 12 weeks for the average hospital in England (Figure 46).

For non-admitted pathways, relatively little change in performance was observed over the period from January 2019 to November 2021. Before the pandemic, again, larger trusts were performing better than smaller ones, however after the onset of the pandemic, this gap narrowed as a result of improved performance by the previously worse performing trusts. As of November 2021, trusts in the region closely track the average hospital in England, with patients being seen on average after 4 to 8 weeks (Figure 47).

Across the trusts in the region, the number of patients waiting for treatment has increased since 2019, however this increase is most notable for the Royal Devon and Exeter NHS Foundation Trust where the number of patients waiting for treatment has almost doubled to 70,000 as of November 2021. This is associated with an increase in the time patients waiting for treatment have waited at the trust from around 8 weeks before the pandemic to 16 weeks as of November 2021. Waiting times for other trusts in the region are largely longer than the average hospital in England (Figure 48).

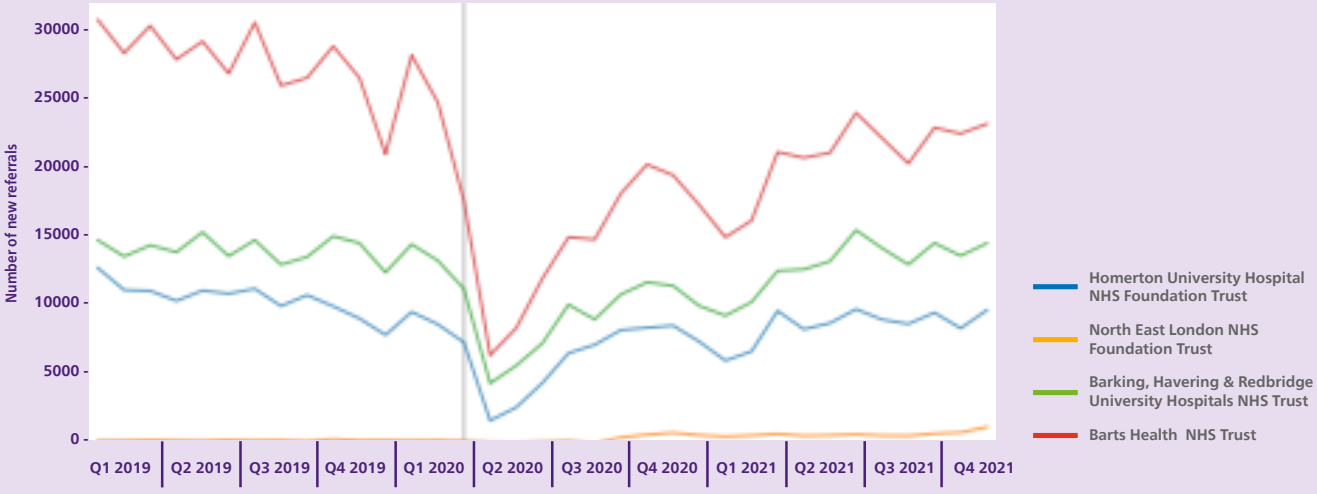


Figure 59 Number of new referrals made each month from January 2019 to November 2021

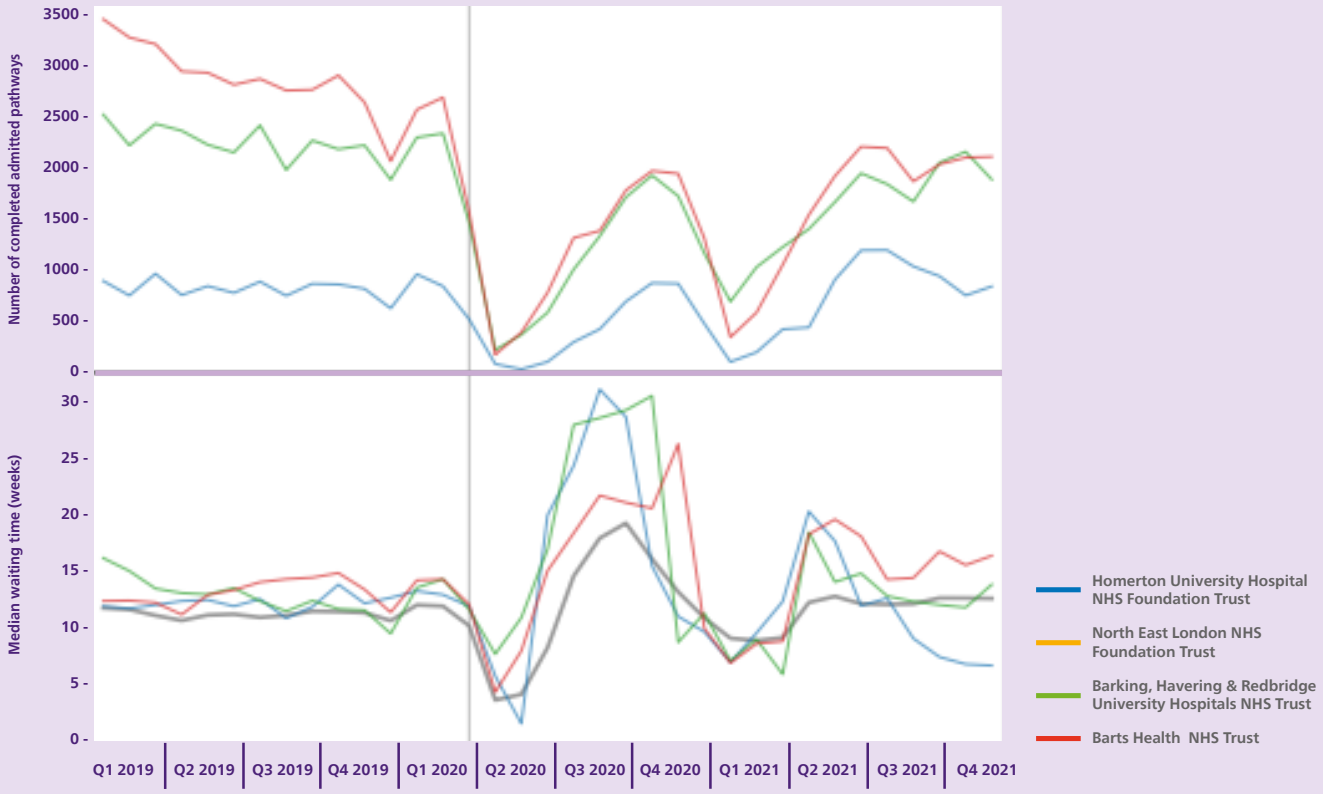


Figure 60 Number of patient pathways completed with admission each month from January 2019 to November 2021

Figure 61 Number of patient pathways completed without admission for treatment each month from January 2019 to November 2021

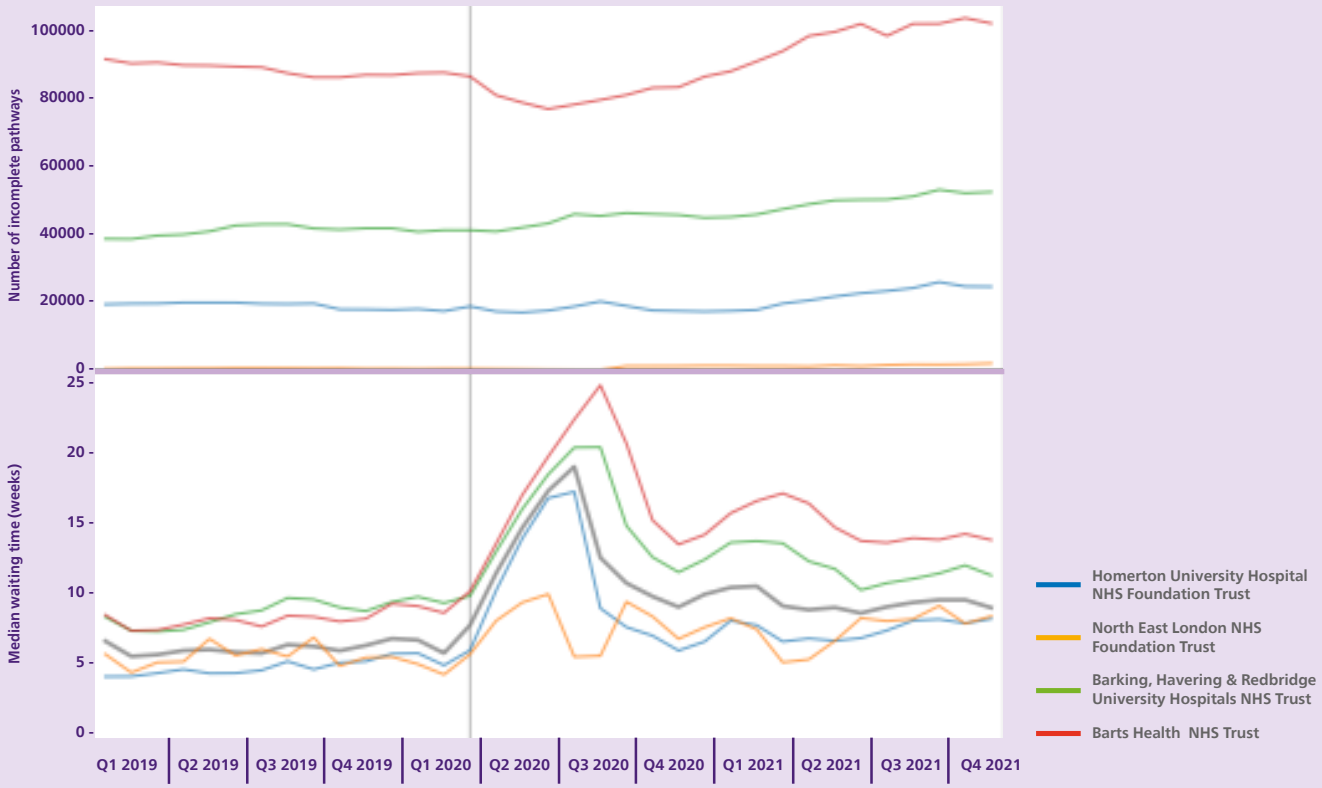
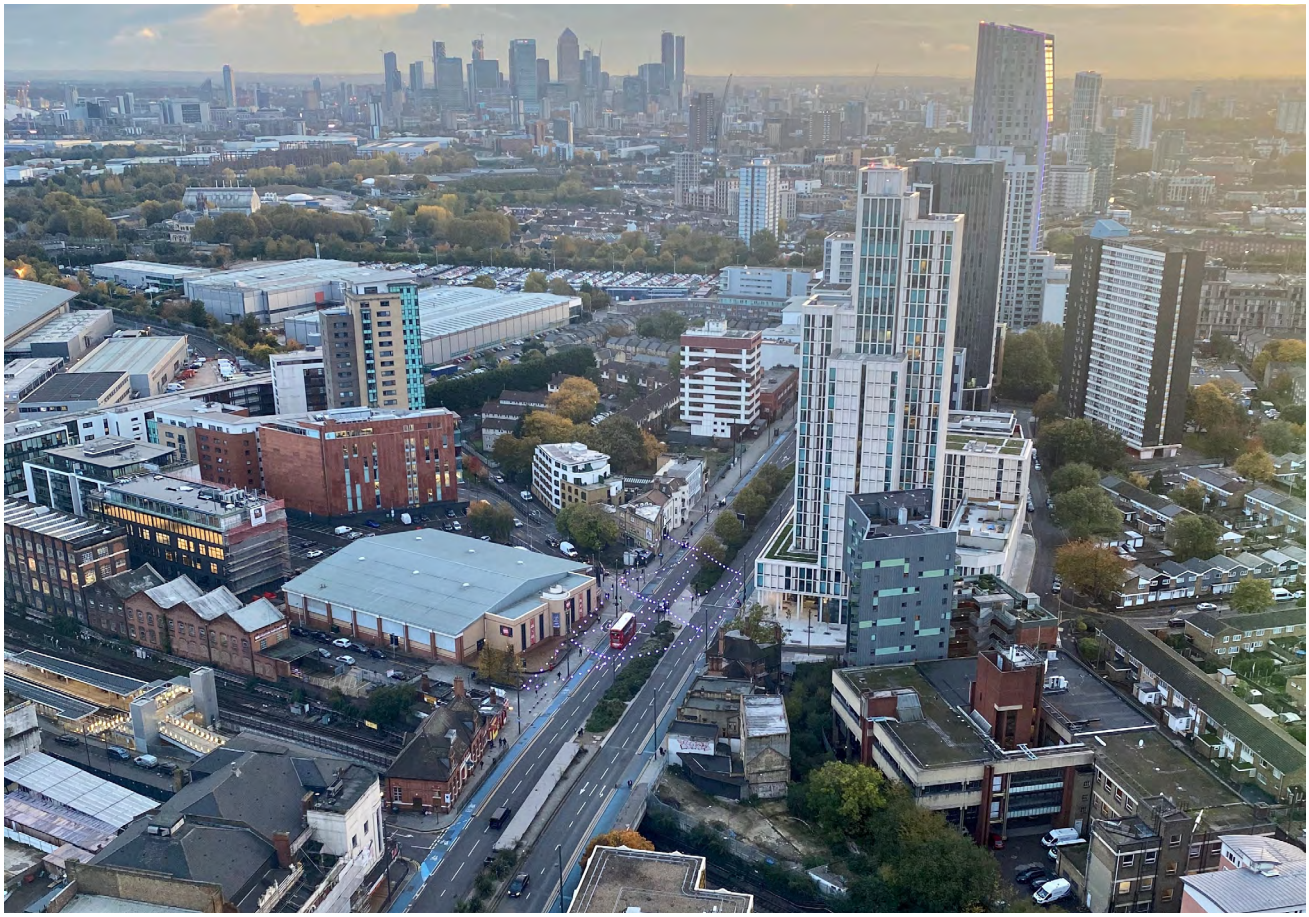


Figure 62 Number of incomplete pathways each month from January 2019 to November 2021



Summary of findings:

- The North East London ICS provides care to a younger population with relatively higher socioeconomic deprivation.
- Deprivation in this region is particularly focussed in the boroughs of Newham, Barking and Dagenham and Redbridge.
- More patients were waiting over six weeks for CT, MRI and non-obstetric ultrasound scans compared to national averages.
- Less patients had long waits for echocardiograms and GI endoscopy in this region compared to national averages.
- The proportion of patients waiting over six weeks for one of the selected diagnostic tests at Barts Health NHS Trust, the largest trust in this region, has been around 30% since January 2021, compared with less than 3% prior to the pandemic.
- The number of patients seen on 2WW referrals for suspected cancer has returned to at least pre-pandemic levels for all trusts in the ICS.
- The number of patients referred on a 2WW pathway that have commenced treatment each month is comparable with pre-pandemic levels in all three trusts investigated and better than the NHS operational standard in the most recent November 2021 data.
- Across the trusts, median waiting times for non-admitted treatment pathways were worse than national averages by 1-3 weeks and were generally deteriorating over the course of 2021.
- Barts Health NHS Trust had a particularly significant increase in patients with incomplete RTT pathways following the pandemic, with approximately 100,000 patients on incomplete pathways by November 2021.

East London recommendations

- Increase diagnostics and clinical pathway support for Barts Health NHS Trust, which has seen a significant increase in patients waiting for diagnostics and waiting times for tests.
    - A CDC located near to the Royal London Hospital, where socioeconomic deprivation is relatively high, will improve access to diagnostics for patients in this area and reduce the backlog of diagnostic tests at Barts Health NHS Trust.
- Improving access to CT, MRI and non-obstetric ultrasound will assist in reducing long waiting times for patients having these tests in this area of London.
    - Additional CDCs providing these tests may also allow many patients to be processed through or removed from referral to treatment pathways which are under pressure in this region.
- Ensure continual evaluation of waiting times for patients across the ICS to ensure disparities based on socioeconomic deprivation or ethnicity do not emerge or widen.

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Appendix

Overview of methods used in this research

This report explores the current state of clinical diagnostics in the NHS in England, with a particular focus on three regions located in London and the South East, the South West of England and the East of England.

While the Covid-19 pandemic has highlighted the importance of timely access to clinical diagnostics for a wide range of patient groups, it has also shown that diagnostic pathways cannot be considered in isolation from the wider healthcare system. Figure 2 shows a simple conceptualisation of clinical diagnostics within the wider healthcare system. As shown in the figure, requests for clinical diagnostic tests may only arise following a clinical encounter, whether in primary care, the emergency department or an outpatient clinic. These encounters are in turn reliant upon patients choosing to seek clinical examination or respond to an appointment letter.

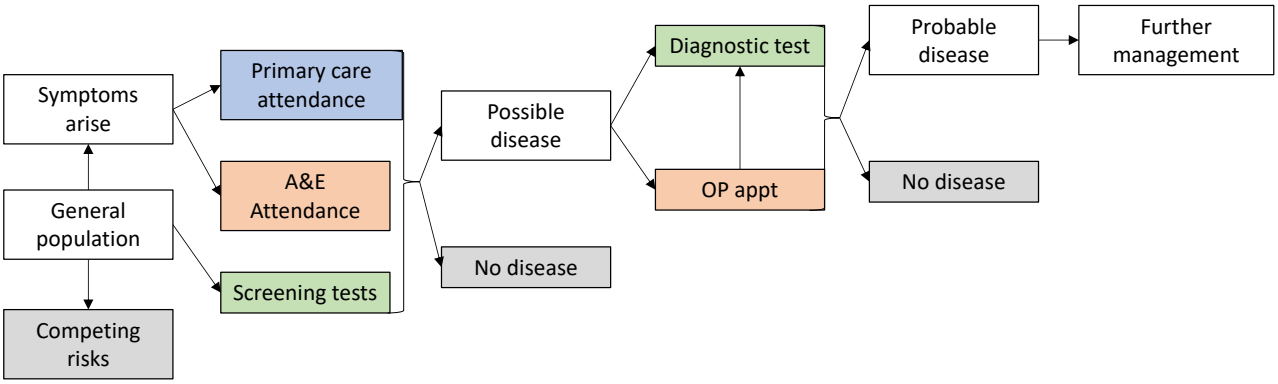

Figure 2 - A conceptual framework for clinical diagnostic pathways.

During the Covid-19 pandemic, many patients may have chosen to avoid contact with hospitals and GP practices due to either a fear of Covid-19 infection or placing what they felt was an inappropriate burden on a stretched healthcare system.13 As a result, instead of seeing an increase in waiting lists for clinical diagnostics and an increased time to treatment, we may observe apparent improvements in service delivery driven by a reduction in demand earlier in the clinical pathway. Consequently, in this report we place clinical diagnostic pathways in the wider context of the function of primary and secondary healthcare systems.

Key data sources

Clinical performance data

This report primarily draws from the monthly hospital trust-level aggregate data produced by NHS Digital, focussing on the period from January 2019 to November 2021. Data are available across several clinical processes explored in Figure 2. Data are provided for individual providers and also Clinical Commissioning Groups, and both datasets are used over the course of the report. Provider-level data allows for an understanding of the provision of diagnostic services by acute NHS providers, community providers and private providers and how this varies over time, while the CCG-level data offers an insight into regional demand and attainment of national targets at a coarser geographic level.

This dual approach to analysis of clinical pathways may capture variation over time in both demand for care and the way in which it is provided. This is particularly pertinent during the Covid-19 pandemic where innovation in the private provision of NHS services and the use of pooled waiting lists across acute providers precludes a focus solely on acute NHS providers.

Diagnostic data

These data are presented for all healthcare providers performing one of 15 different diagnostic tests for NHS patients. This includes NHS acute hospital trusts, NHS community trusts and private providers. Five key diagnostic tests were included in most analyses in the report, as requested by Philips: computerised tomography (CT), magnetic resonance imaging (MRI), ultrasound, gastrointestinal endoscopy and echocardiogram. In addition to measures of the number of tests performed and the number of patients waiting for a diagnostic test, the report also includes the proportion of patients in a particular month whose diagnostic test was performed within 6 weeks of referral.

Referral to treatment data

Planned treatment pathways are examined through the use of aggregate, hospital trust-level referral to treatment data provided by NHS Digital. Four monthly indicators are used in the report, namely, the number of new referrals made, number of clinical pathways completed through admission to hospital, number of pathways completed without admission to hospital and number of patients waiting for treatment. In the latter three cases, the median waiting time (in weeks) for each trust is also reported. It is possible to examine the performance of individual treatment specialties within a trust, however this is not performed within the report in its current form.

Cancer data

The performance of cancer diagnosis and treatment pathways are examined through the use of aggregate, hospital trust-level data exploring three separate indicators, namely, the proportion of patients referred through 'two-week wait' referral pathways that are seen within two weeks, the number of patients receiving their first treatment within 31 days of a decision to treat, and the proportion of patients receiving their first definitive treatment within 62 days of urgent referral. Data are available for individual cancer types; however they are not further presented in this report in its current form.

Geographic, socioeconomic and public health data

To accompany the clinical pathway data described above, the report also includes indicators of the geographic, socioeconomic and public health context of the individual case studies. Each of these domains may be explored using a wide range of different datasets and indicators, and a full exploration of each case study across each of these domains is beyond the scope of this report. Instead, some key insights relevant to each individual region are described in each case study.

Population aged 65 years and over

The local age composition of each population is expressed based on the proportion of residents aged 65 years and over, both in total across the case study, and locally within each Lower Layer Super Output Areas (LSOAs) of residence*. This affords the opportunity to understand local clustering of older residents, which may be associated with increased need for clinical services. *Lower Layer Super Output Areas (LSOAs) are geographic regions frequently used in the reporting of small area statistics in England and Wales that include a minimum of 1000 and mean of 1500 individuals.[15]

Rural – urban classification

The rural and urban composition of an area is expressed using the Office for National Statistics Rural Urban Classification which assigns all Lower Layer Super Output Areas in England according to the extent to which they are in a rural or urban setting. In this report, overall percentages of residents within a case study area living in rural or urban areas are described.

Deprivation data

The socioeconomic deprivation of case study regions is expressed through the 2019 Index of Multiple Deprivation produced by the Office for National Statistics. This index assigns a score to each LSOA in England according to a range of financial, employment, health and other data. These scores are then usually ranked and LSOAs are reported based on the decile in which their score falls. In this report, the national decile of deprivation of each LSOA within each case study is mapped to show the overall extent of socioeconomic deprivation within a case study, and the extent to which this is concentrated geographically.

Life expectancy data

Life expectancy at birth for residents of each Middle Layer Super Output Area (MSOA) in England are provided regularly by the Office for National Statistics, with the most recent release being in 2019. Estimates are produced for male and female residents and are mapped in this report for each MSOA in each case study. Some MSOAs span the borders of case study regions and in these cases MSOAs are included within the case study.

Provider locations

Many NHS trusts consist of more than one clinical site. In the Diagnostic Waiting Times and Activity dataset, NHS providers are reported are the level the NHS trust and therefore the activity of individual sites within a trust are not reported. Private providers are generally reported at the level of individual sites. The locations of sites within acute hospital trusts providing diagnostic services were therefore identified manually as follows:
The acute hospital trusts partnering with each ICS were identified from individual ICS websites. Acute hospital trust websites were searched to identify sites performing clinical diagnostic services excluding plain X-ray and their locations were determined by geocoding of postcodes identified from the NHS ODS. The locations of private sector healthcare providers were obtained from the NHS Organisational Data Service (ODS).

Community diagnostic centre locations

The locations of Community Diagnostic Centres were determined based on the list published by the Department of Health and Social Care on the 1st October 2021.9 Specific locations of sites were not specified in the release and are not available in a single official source elsewhere in the public domain. An internet search was therefore performed for each site to determine the location of each site from local newspapers and healthcare organisations.

Geographic Shapefiles

All geographic shapefiles were obtained from the Office for National Statistics Open Geography Portal under the Open Government Licence v3.0 (https://geoportal.statistics.gov.uk).

Logistics and workforce data

International comparisons of radiology equipment

International comparisons on the total number of CT and MRI scanners in the UK and comparator countries were obtained through published Organisation for Economic Co-operation and Development (OECD) data. OECD surveys collect data on the total number of CT and MRI scanners in each country, identifying whether these are located in hospitals or through ambulatory care providers, where relevant. Data is available through the OECD website health section (www.data.OECD.org/health.htm).

Radiology workforce data

The Royal College of Radiologists (RCR) collects radiology workforce data annually through a census completed by all UK NHS radiology departmental directors, or their delegates. This census does not collect workforce data in the independent sector. Standardised questions are used each year to compare information and identify year-on-year trends. Response rates to the RCR census are generally very high, with the 2020 census achieving a 99% response rate, with 164 out of 165 acute trusts and health boards in the UK that provide radiology services submitting information. Censuses from 2015 to 2019 had a 100% response rate. Data is available through the RCR website (www.rcr.ac.uk).

Licencing

All datasets obtained from NHS Digital and the Office for National Statistics are made available under the Open Government Licence v3.0. Base maps for the first figure in each case study are produced using Open Street Map under an Open Data Commons Open Database License and CC BY-SA licence.

Current NHS System performance and socioeconomic deprivation

Secondary Care Performance and Socioeconomic Deprivation

This section of the report investigates the relationship between the socioeconomic deprivation of a CCG and the performance of hospital care for its residents. The socioeconomic deprivation of a CCG was described by the Index of Multiple Deprivation rank of the median Lower Layer Super Output Area within that CCG. This is a simple representation of where the deprivation score of an average LSOA within a CCG compares nationally. This value was compared for each CCG in November 2021 to the average waiting time for planned treatment, percentage of patients waiting six weeks or more for a diagnostic test and the percentage of patients seen within two weeks of an urgent cancer referral. For the cancer pathways data, only results for the second quarter of the year 2021-22 were available, rather than monthly data.

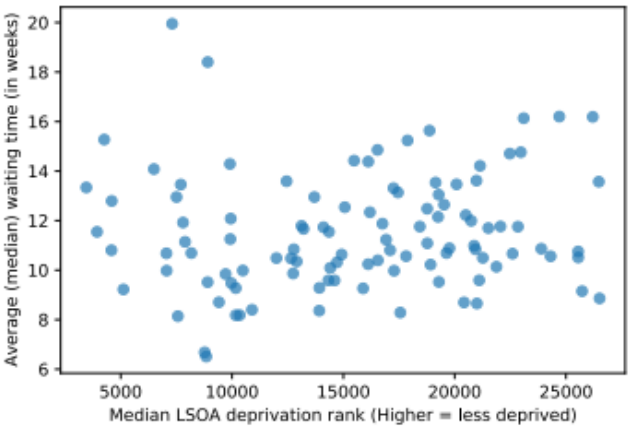

Figure 18 Scatter plot showing the average waiting time for patients awaiting planned treatment in each CCG in November 2021 compared to the deprivation rank of the median LSOA within that CCG

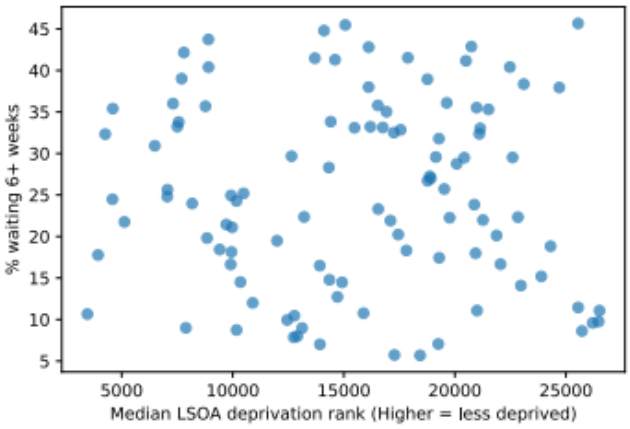

Figure 19 Scatter plot showing the percentage of patients waiting six weeks or more for a diagnostic test in each CCG in November 2021 compared to the deprivation rank of the median LSOA within that CCG

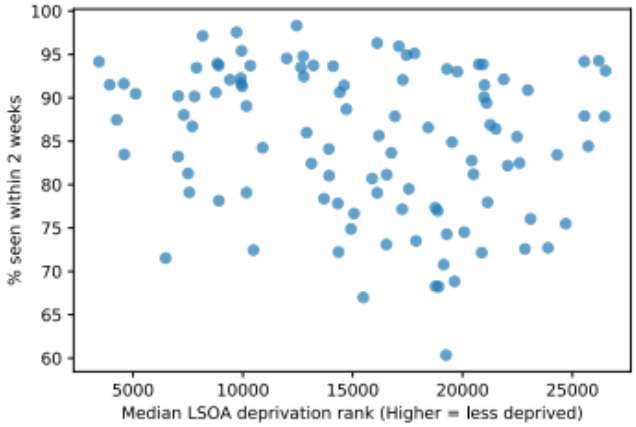

Figure 20 Scatter plot showing the percentage of patients seen within 2 weeks of an urgent suspected cancer referral being made in each CCG in November 2021 compared to the deprivation rank of the median LSOA within that CCG.

These figures show that there is extensive variation in the performance of CCGs across England in November 2021 across all three variables. Despite this, there are no strong correlations between the socioeconomic deprivation of a CCG and secondary care performance for its residents.

It should be noted that this analysis does not take into account variation with respect to socioeconomic deprivation within CCGs. It may be the case that associations do exist with respect to deprivation, however they are not expressed in the aggregate data used.

It is noteworthy that two of the case studies in this report feature the two worst performing CCGs in the country with respect to the percentage of patients seen within 2 weeks of referral for suspected cancer, namely NHS Dorset CCG (60.3%) and NHS Norfolk and Waveney (66.9%)

http://www.philips.co.uk