

Operating theatres: opportunities to reduce waiting lists

February 2019

We support providers to give patients safe, high quality, compassionate care within local health systems that are financially sustainable.

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Foreword

This report provides the insight to support clinicians, managers and hospital leaders further challenge themselves to improve how care is delivered and how valuable theatre resources and clinical expertise can be best used.

Patients should expect the best healthcare to be delivered safely, efficiently and effectively. But against the backdrop of continuing financial challenges, clinicians and hospital administrators are under ever-increasing pressure from rising demand for elective surgery, the availability of beds and workforce challenges. Trusts more than ever need to use their existing facilities and workforce as effectively and efficiently as possible if they are to continue to meet the needs of their patients.

Theatre services are at the centre of the hospital system and cover a wide range of activities, whether scheduled or unscheduled, complex or more routine day surgery. Such services are delivered by skilled clinicians using high value clinical infrastructure to provide the highest possible standard of patient care. The interconnection of hospital services often makes realising improvements in one part of a hospital dependent on those in another. However, this complexity should not deter us from continually striving to improve aspects of our services that are within our sphere of influence to change: this report focuses on these areas.

Getting It Right First Time (GIRFT) continues to support trusts to deliver quality and productivity improvements for patients in many surgical specialties. It has shown that putting clinicians and clinical leadership at the heart of change work is vital to realising real and sustainable improvements. This report does not deviate from this assertion. It adds data-driven insights into the opportunities for surgeons, anaesthetists, nurses, schedulers, porters and managers to work ‘as one’ to optimise the processes and flow of patients through theatres. This will free up more time for surgeons and anaesthetists to do what they do best – treat patients.

While our findings acknowledge that not all factors affecting theatre productivity are controllable within the theatres themselves, it is a call to all theatre staff and trust managers to work together proactively to push the boundaries of what can safely be achieved with the resources available.

I do hope you read this report thoroughly and use the evidence it sets out as a platform to identifying and acting on opportunities in your services.

A handwritten signature in black ink, consisting of a stylized initial 'T' followed by a long horizontal line.

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Summary

Performance against the national 18 weeks referral to treatment (RTT) time for elective care (pre-planned, non-emergency care) has been declining for several years against a backdrop of tightening finances and rising demand. Since April 2012, year on year the RTT waiting list has been increasing.

NHS providers have used a range of initiatives to tackle their growing waiting lists and to meet the RTT standard. For example, they have paid for additional weekend lists, agency staff and outsourcing to the private sector. The alternative – open to all trusts – is to further improve theatre productivity by fully utilising existing operating list capacity, and the staff and resources already committed for scheduled operations.

To assess the scale of the opportunity to improve theatre productivity, NHS Improvement commissioned Deloitte to analyse theatre productivity across England. This work forms part of an ongoing NHS Improvement programme to help trusts reduce waiting times for their patients by making better use of their theatre time.

We worked closely with the Royal College of Surgeons in producing this report and the College is supportive of our findings.

Overall findings

Data submitted by 92 trusts for the year January to December 2017 demonstrated significant variation in theatre productivity between different trusts and different specialties. Specific findings included:

- A third of operating lists started 30 minutes or more late and 38% finished 30 minutes or more early. More than 111,000 finished at least 60 minutes early. Day lists comprising three four-hour sessions were particularly likely to finish early.
- Theatre time lost to late starts, early finishes and delays between operations could potentially have been used by the 92 trusts to do up to 291,327 more operations (a 16.8% increase), had they been able to address their main causes, which we identify in Sections 3.1 to 3.4 of this

report. For the eight highest volume surgical specialties reviewed, this would have meant around:

- 30,000 more **ear, nose and throat (ENT)** operations
 - 42,000 more **general surgery** operations
 - 32,000 more **gynaecology** operations
 - 41,000 more **ophthalmology** operations
 - 27,000 more **oral and maxillofacial surgery (OMFS)** operations
 - 19,000 more **plastic surgery** operations
 - 57,000 more **orthopaedic (T&O)** operations
 - 44,000 more **urology** operations.
- Scheduled time allotted for operating lists varied between hospitals for the eight main specialties listed above and some specialties had consistently higher levels of early finishes.
 - The longest-lasting scheduled lists appear to offer the greatest opportunity to improve theatre productivity. Early finishes are more common for longer operating lists and the average interval between operations (intercase downtime) is also longer.

Individual trusts may have further productivity opportunities that are not covered in this analysis. These may include:

- Sessions that were funded and scheduled to run but did not go ahead because, for example, there was a shortage of beds. This analysis only covered theatre sessions that actually ran.
- Variation in individual 'touchtimes' (the time from the 'start of anaesthesia' to 'patient into recovery') for both simple and complex cases points to further productivity opportunities. Translating this variation into realisable productivity improvements requires further in-depth analysis – down to the level of individual surgeons' and anaesthetists' practice – to make sure safety and quality aspects are fully considered.

Realising the opportunity

While the data demonstrates the size of the opportunity in terms of 'unused' theatre capacity, the causes underlying this unused time differ, such that individual

programmes of work to improve productivity will vary between trusts. Many surgeons, anaesthetists and hospital managers will be all too aware of the problems that exist around bed availability and their effect on patient flow, but beyond this all trusts can target several areas to improve productivity. These include:

- effective scheduling and making sure theatre lists are always ‘fully’ booked
- streamlining admission processes to ensure availability of both the surgical team and the patient allows a prompt theatre start
- working with the whole surgical team to:
 - understand the reasons for surgery cancellations and thereby minimise cancellations on the day
 - streamline admission processes to ensure that the whole surgical team and the patient are available for a prompt theatre start
 - minimise the gaps between cases
- including surgeons and anaesthetists in their organisation’s leadership team for theatre improvement programmes.

This report can shine a light on the productivity and capacity opportunity for each trust, but is only the starting point.

Trusts need to consider how the insights from our analysis relate to their specific circumstances. Importantly, trusts need to ensure surgeons and clinicians are fully engaged and leading improvement work. Only with this clinical insight and ‘buy-in’ can sustainable improvements be delivered.

Understanding theatre productivity metrics

Clinicians at Hampshire Hospitals NHS Foundation Trust have been running a theatre productivity programme focused on gynaecology, orthopaedics, ophthalmology and urology for two years to support clinical and operational leads achieve high productivity with minimal theatre downtime.

It is characterised by:

- **List review and utilisation.** Clinicians take responsibility for ensuring their lists are fully booked, using their own touchtimes to judge whether they are or are not. They were supported to do this by adopting a visual management methodology the trust had originally developed for outpatients.
- **Agreeing the metrics and indicators to collect,** and reporting on these by clinician, site and speciality and at trust level. This ensures everyone counts the same thing and uses the same metrics to measure performance and improvement.
- **Ensuring everyone understands the metrics.** Every theatre door has a poster on it showing how many minutes were lost the previous week (calculated from the percentage of lists starting 15 minutes late or early) and why, and how much money has been wasted as a result (using the national cost of £20 per minute; minutes lost in year 1 were equivalent to a potential saving of £70,000). This has helped generate actions plans to resolve the issues.
- **Addressing issues immediately and taking action for rapid improvement.** Clinical staff are engaged and empowered to act quickly to change and improve delivery.

How will we support trusts?

We have run workshops in the five English NHS regions so that trusts can learn from those that have made productivity and capacity gains through structured improvement work.

NHS Improvement's regional teams are supporting trusts with theatre improvement work, using the insights from our analysis and drawing on expert advice from the GIRFT programme. We expect to increase the regional help we offer where the evidence of impact supports this, and we are seeking to build a network of trusts that have delivered transformational change in theatres and which other trusts can learn from.

We are also working with stakeholders to develop a theatres scheduling tool; this will be available to all trusts in 2019.

As NHS England and NHS Improvement start to work more closely, we expect further incentives to emerge for trusts to transform the way they deliver surgery, reduce waiting times and improve theatre productivity.

1. Introduction

The demand for elective services and waiting times continues to grow, and with this performance against the national standard for elective care waiting times (18 weeks or less for 92% of patients) is declining. Since April 2012, year on year the RTT waiting list has been increasing.

There is a widening mismatch between demands on the NHS and its available resources, including bed capacity, as demonstrated by the national deterioration in waiting lists. There are now over four million people waiting for elective surgery, the highest level since 2007.¹ Trusts more than ever need to use their existing infrastructure and workforce as efficiently as possible to better meet the needs of NHS patients.

We recognise that delivering the required scale of efficiencies while improving performance to again meet RTT standards is a considerable challenge for the NHS and that many providers need support to do so. Our theatre productivity programme uses empirical evidence to identify specific opportunities in each participating trust, and then supports trusts to realise them through an improvement programme delivered over the next 12 months.

We commissioned this national programme because work in trusts that have already undertaken theatre productivity projects suggests a real opportunity to increase the number of patients getting the surgery they need and reduce costs in a sustainable way.

Our programme aims to help balance demand and capacity by evaluating opportunities for each trust to use theatre capacity more efficiently and identifying what a trust needs to do to realise such opportunities. We wanted to identify how many more operations could be undertaken within the same number of theatre sessions. Doing this can avoid expensive alternatives such as employing agency staff for additional operating lists, contracting the independent sector to treat NHS patients or hiring more staff. Also, since an increasing proportion of elective procedures – now about 70% – are undertaken as day cases, improving theatre

¹ www.england.nhs.uk/statistics/statistical-work-areas/rtt-waiting-times/

productivity will mean that in some cases hospitals can treat more patients without adding to the rising pressure on beds from emergency care, particularly over winter.

Our regional offices selected trusts to participate in the programme based on their participation in the Carter Model Hospital programme and distance from the RTT performance target.

2. How we assessed the scale of the opportunity

Our analysis quantified the potential for extra cases to be completed within existing theatre capacity by identifying useable downtime in operating lists. We did not seek to address the extent to which this potential can be realised: that work will need to be led by each individual trust, tailored to its particular demand pressures, infrastructure, staffing levels and other circumstances. However, highly productive operating theatres have some common elements, and these are highlighted in this report to indicate the kind of measures trusts can take to realise their potential productivity improvements.

Each trust was asked to submit SUS data, including time points for each stage of a procedure, for all operating lists completed between 1 January and 31 December 2017. Trusts were then invited to confirm this baseline data was correct.

Using this data, the productivity of elective lists was analysed for eight major surgical specialties:

- ear, nose and throat (ENT)
- general surgery
- gynaecology
- ophthalmology
- oral and maxillofacial surgery (OMFS)
- plastic surgery
- trauma and orthopaedics (T&O)
- urology.

To note:

- Dedicated emergency lists were excluded from the programme, but any emergency procedures undertaken on the elective lists were included in the analysis.
- Operating lists with no scheduled cases (referred to as 'dropped sessions') were also excluded from this analysis, although tackling these may

represent another considerable opportunity for each trust to fit more operations into its funded theatre capacity. This opportunity may be explored in future iterations of the national theatre productivity programme.

- Our analysis of the overall productivity potential did not address the variation in touchtimes² at procedure classification (OPCS) level. But we did collect actual touchtime data for the individual procedures and used this to establish variations in procedure times across the participating trusts. Touchtime is a composite of both surgical and anaesthetic time and while each may indicate further opportunities for productivity improvements, we do not consider them in this report.

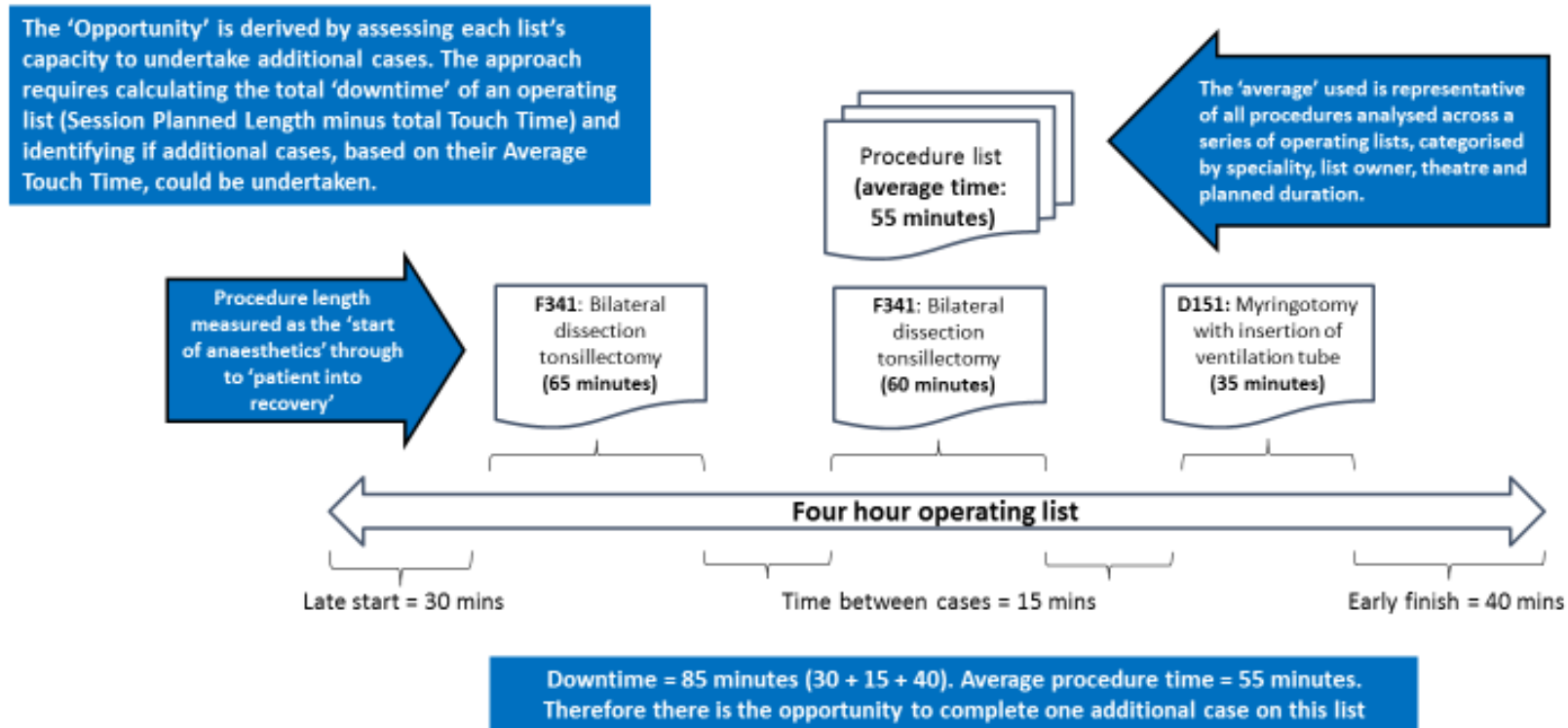
Our analysis identified the overall productivity opportunity in terms of the number of extra average-time cases that could have been completed on the available lists. The percentage opportunity was calculated from the number of potential additional cases divided by the actual number of cases completed in the time period analysed (January to December 2017).

The key elements of the analysis were:

- Each trust's submitted data was grouped by lead consultant surgeon (operating list owner), planned duration (operating list length) and designated operating theatre.
- The grouped data was then analysed to determine the average procedure time for all procedures completed over the 12-month period analysed. We identified and excluded from the analysis emergency lists and lists with no cases; for example, cancelled lists.
- Once an individual surgeon's average touchtime had been established for a particular grouping (list length and operating theatre), the lists were re-analysed to identify clinical team 'downtime' – that is, the time when no patient was in the anaesthetic room or theatre, or when the patient was being moved to recovery. Downtime can expand due to late starting of the list, intercase (turnaround) downtime or early finishing (see Figure 1).

² Touchtime is the time taken to complete a surgical procedure. It is measured using time stamp data from the start of anaesthesia (also known as induction) through to the patient entering recovery.

Figure 1: Identification of downtime



- Total downtime on each surgeon's list was calculated and a productivity 'opportunity' identified when this was greater than that surgeon's average touchtime to complete at least one whole average-time operation. Although shorter downtime periods could be used to add cases taking less time, this opportunity was not included to minimise the risk of overcounting. This method therefore produces conservative estimates of productivity opportunities.
- On the occasions when a list overran – that is, exceeded the planned end time – downtime was used to absorb the overrun **before** the opportunity to add a further case was calculated.
- So as not to overstate the opportunity, we adjusted it for any unavoidable 'on the day cancellations (OTDs)' that might affect the potential caseload and bring down the realisable opportunity. OTDs were estimated at 5% of the maximum potential caseload. The relevant number of cases (106,161) was then subtracted from the total opportunity (bringing it down to 291,327 cases) and the percentage opportunity was adjusted accordingly. We consider OTDs an unrealisable opportunity at this stage, because some patient cancellations will always be unavoidable for a broad range of reasons.

This approach has been tested over a number of years with thousands of surgeons, anaesthetists, theatre staff and operational managers in NHS trusts across the country. It is broadly supported as a robust and clinically credible approach to assessing current 'in-session' theatre productivity and identifying opportunities for improving it.

3. Findings

3.1 Overall opportunity

The 92 trusts completed over 1.72 million surgical cases in the equivalent of 685,075 elective four-hour sessions between January and December 2017 across the eight main surgical specialties (ENT, general surgery, gynaecology, ophthalmology, OMFS, plastic surgery, T&O and urology).

Overall, the approach described in Section 2 identified the potential for an extra 291,327 patients to have been operated on had recognised inefficiencies in using theatre time been resolved and assuming no other constraints along the surgical pathway. The productivity opportunity was similar in each of the four NHS Improvement regions (see Table 1).

Table 1: Overall opportunity to deliver more cases, by region

Region	Number of trusts	Number of sessions completed	Number of cases completed	Opportunity (%)	Potential number of additional cases
London	18	137,195	326,089	19.17%	62,518
Midlands and East	28	209,831	542,272	15.69%	85,069
North	23	181,105	458,043	15.88%	72,734
South	23	156,944	399,333	17.78%	71,006
Total	92	685,075	1,725,737	16.88%	291,327

This potential opportunity could have been used either to reduce waiting lists or to reduce costs:

- Waiting lists could have been reduced by up to 291,327 cases, subject to the potential limits on using downtime at the end of longer lists (see Section 3.1.3), the availability of subspecialist surgeons and equipment, and issues beyond the operating theatres, such as bed availability.

- Alternatively, trusts could have completed the same number of actual cases in less theatre time and therefore potentially reduced costs. This potential opportunity, if realised, would have meant the 2017 level of activity was delivered using 90,325 fewer operating sessions, subject to the limitations noted above (as summarised in Table 2).

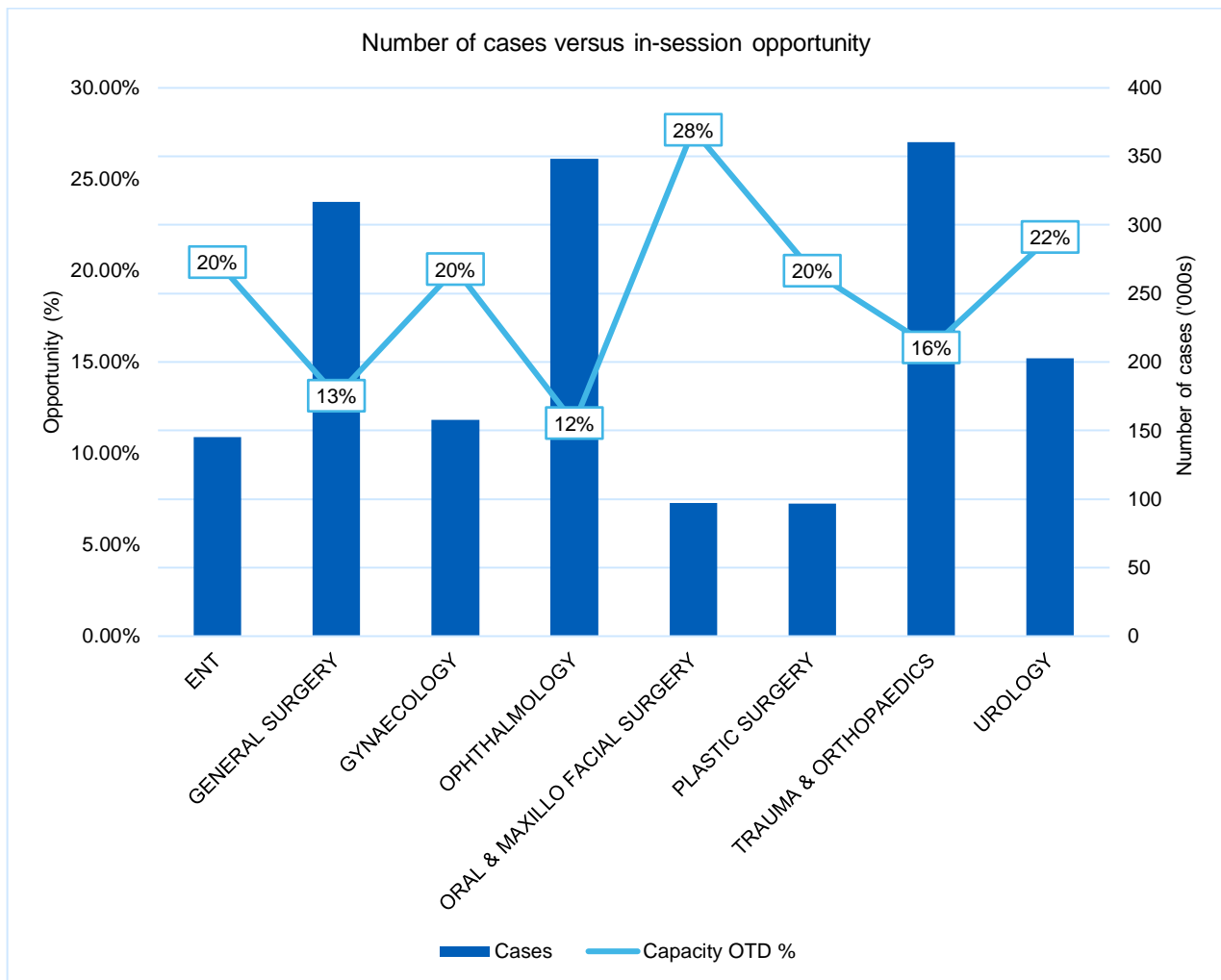
Table 2: Overall opportunity to reduce sessions, by region

Region	Number of sessions completed in 2017	Estimated number of sessions that could have potentially been removed in 2017
London	137,195	19,991
Midlands and East	209,831	25,656
North	181,105	23,126
South	156,944	21,552
Total	685,075	90,325

Opportunity by specialty

The potential opportunity was not evenly spread across specialties (Figure 2). The highest volume, namely orthopaedics, general surgery and ophthalmology, appear to offer a smaller in-session opportunity as a percentage of overall activity. However, these smaller percentage opportunities still represent the largest absolute opportunity to increase activity or reduce costs because of the volume of operations in these specialties. The appendix provides further details by specialty.

Figure 2: Potential opportunity by specialty



Downtime analysis

The analysis of usable downtime focused on identifying where lists started late or finished early, but also looked at delays between cases.

Around a third of the operating lists started at least 30 minutes late and/or finished at least 30 minutes early (Table 3). Further analysis indicated that more than 111,000 finished at least 60 minutes early (Table 3).

Table 3: Operating lists starting at least 30 and 60 minutes late or finishing 30 and 60 minutes early, by specialty

Specialty	Number and percentage of lists starting >30 minutes late	Number and percentage of lists finishing >30 minutes early	Number and percentage of lists starting >60 minutes late	Number and percentage of lists finishing >60 minutes early
ENT	13,268 (32%)	16,001 (39%)	2,916 (6%)	9,420 (23%)
General surgery	39,215 (35%)	41,663 (38%)	12,406 (11%)	27,365 (25%)
Gynaecology	17,107 (36%)	16,262 (34%)	4,501 (9%)	9,419 (20%)
Ophthalmology	20,736 (28%)	23,406 (32%)	4,718 (6%)	11,058 (15%)
OMFS	8,118 (33%)	10,056 (40%)	1,961(8%)	6,048 (24%)
Plastic surgery	8,285 (30%)	9,978 (37%)	2,116 (8%)	5,849 (21%)
T&O	33,900 (32%)	45,037 (43%)	9,110 (9%)	29,747 (28%)
Urology	19,212 (35%)	21,361 (39%)	5,595 (10%)	12,843 (24%)
Total	159,841 (33%)	183,764 (38%)	43,323 (9%)	111,749 (23%)

Impact of list/session length

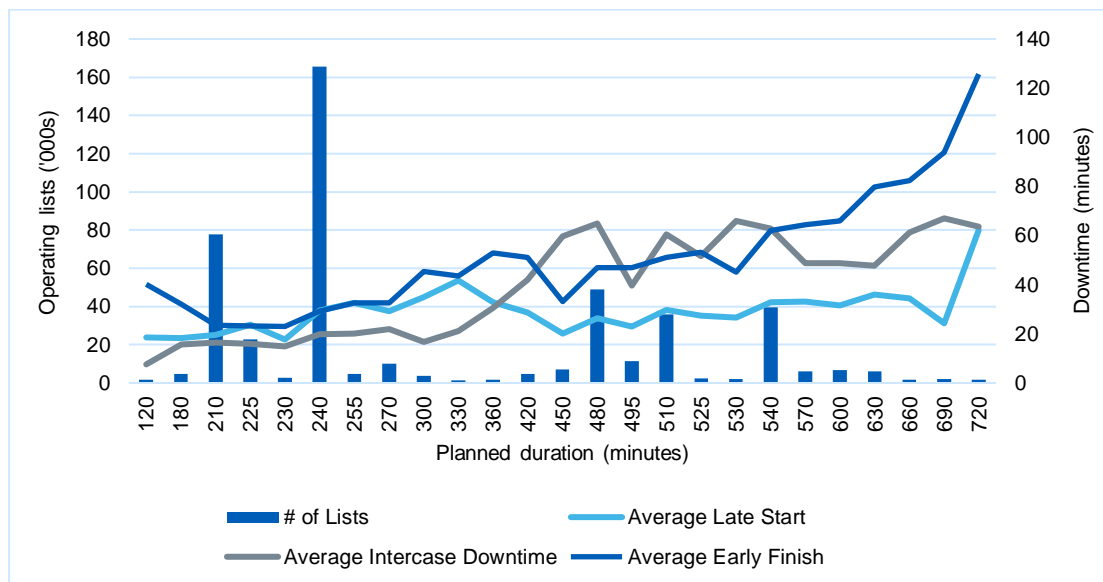
Four hours was the most commonly planned duration for a scheduled theatre session (34%), followed by 3½ hours (16%), 8 hours (10%), 9 hours (8%) and 8½ hours (7%). But there was wide variation in durations between the eight highest volume surgical specialties.

Many variables determine the optimal list duration, including the type of specialty and subspecialty. For example, high volume, short procedure lists – such as ophthalmology cataract lists, orthopaedic and/or pain injection lists, and urology cystoscopy lists – are better suited to shorter planned durations.

In planning their theatre utilisation, trusts need to consider whether scheduling longer sessions will in fact result in more cases being completed: the analysis indicated that as sessions become longer, time lost to early finishes rises rapidly (Figure 3). Sessions may finish early if lists are under-scheduled, cases are

cancelled on the day of the list or, more rarely, planned procedure times for complex cases change significantly.

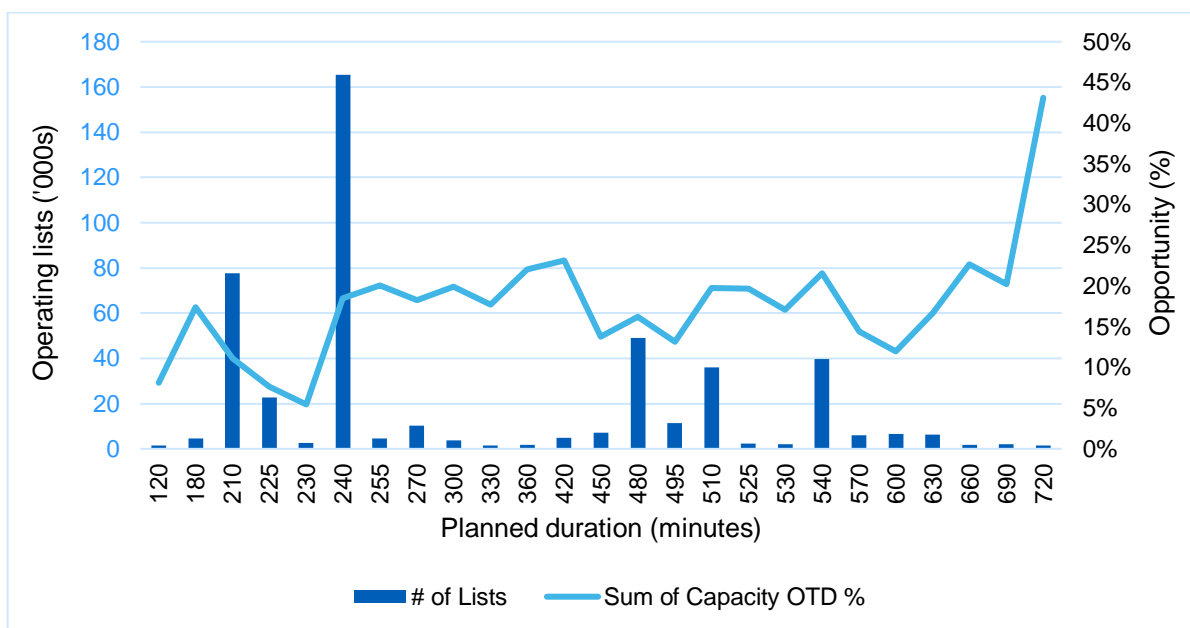
Figure 3: Average downtime by session length



However, longer operating sessions are usually scheduled in subspecialties in which a smaller number of longer, more complex operations are carried out (eg colorectal surgery and spinal surgery). For trusts that identify a productivity opportunity in these types of lists, completing additional long and complex cases at the end of a long session may not be feasible or appropriate. Instead, these trusts may find they can improve overall theatre productivity on these lists more by shortening the sessions and re-planning their workforce to reduce costs (eg through reducing their use of locum, bank and agency staff).

The average session time lost to late starts was not influenced by the planned duration of the session, but the average time lost to intercase downtime, along with early finishes, increased with the duration of the operating session (see Figure 4). This may be for several reasons: for example, the number and length of mid-session breaks and in-session delays, the number of staff changeovers required, and the fact that more time is available than required to complete the scheduled cases on the operating list.

Figure 4: Potential opportunity by session length



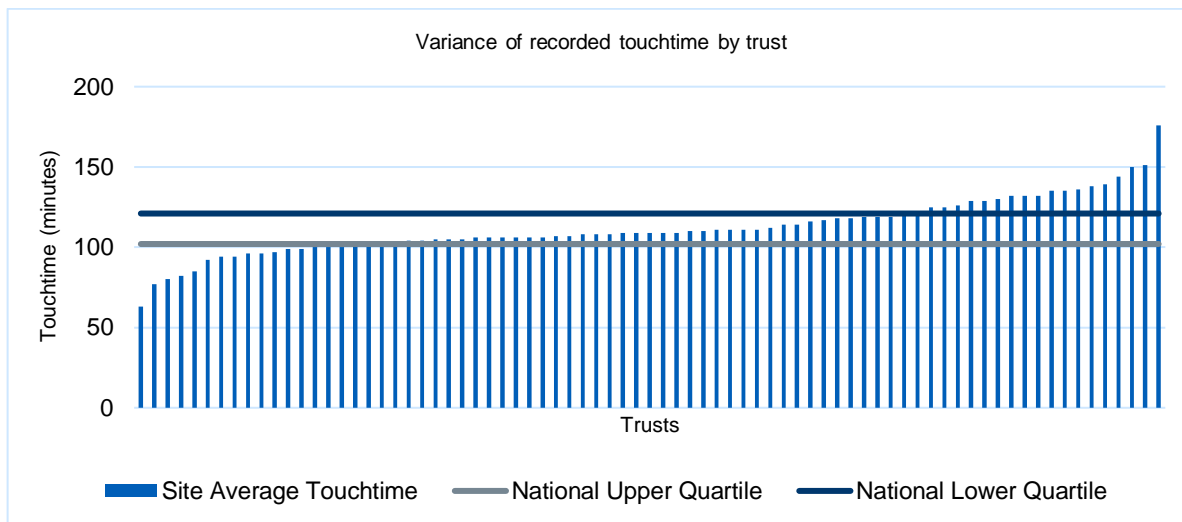
3.2 Touchtime analysis

Examining touchtime (procedure length) as well as downtime can reveal further opportunities to improve theatre productivity. Analysing the 1.72 million procedures reviewed here by specialty showed wide variation in the average touchtime for simple, high volume procedures across the 92 participating trusts. Figure 5 illustrates this for the procedure ‘total cholecystectomy NEC’. Overall average touchtime for the 26,989 procedures coded against this procedure’s OPCS code (J183) was 110 minutes, with trusts in the longest touchtime quartile averaging 121 minutes and those in the shortest quartile averaging 102 minutes. This variance suggests that while trusts in the shortest quartile could complete four procedures in an eight-hour operating session, those in the longest quartile could only complete three. Comparisons for other specialties are shown in the appendix.

However, translating this variation in touchtime into realisable productivity opportunities requires further in-depth analysis at individual trusts, including the touchtimes of individual surgeons and anaesthetists, to be sure of taking safety and quality aspects fully into account. For this reason, we have not included these potential further opportunities in the overall potential opportunity (number of cases and percentage) identified in this report (see Section 3.1), although the observed wide variation does suggest opportunity for further productivity gains in this area by

working with slower theatre teams to shorten their touchtimes for high volume procedures.

Figure 5: Variance of trust average touchtime – total cholecystectomy, by trust



4. Realising the opportunity

4.1 Helping trusts understand their opportunity

Each of the 92 trusts has received a summary report sizing their opportunity. These reports, a critical output from the review, identified the priority areas for each trust – for example, specific surgical specialties, lists and surgeons – showing where there is greatest potential for improvement, along with an indication of key measures for realising these opportunities.

It is accepted that lack of beds and issues around patient flow can be a problem for many trusts. This issue can affect theatre productivity in several ways, particularly in relation to inpatient theatre lists. Trusts are attempting to mitigate this by, for example, separating emergency and elective work and switching more theatre work to daycare units.

However, there are areas where work can be done to maximise theatre productivity. What these are will vary from trust to trust. The main measures are optimising the scheduling of lists, tackling the causes of late starts and systematically eliminating avoidable cancellations. Trusts are also encouraged to look closely at their data to identify the impact of standardising session durations and moving to average touchtimes.

To realise their specific opportunities in full, trusts need to work through the underlying drivers of the different types of downtime. In our experience, clinical engagement and leadership can be enormously powerful when appropriately supported in resolving these issues.

Freeing up theatres for complex gynaecological procedures

From looking at its theatre casemix, Taunton and Somerset NHS Foundation Trust identified that more gynaecological procedures could be completed in its day surgery centre, freeing up its main theatres for more complex work. Some cases could also be moved from daycase theatres to procedure rooms. Nurse-led discharge has also enabled a smoother, more efficient flow of patients. These changes were not only more clinically appropriate but have improved patient experience reducing the time patients have spent in hospital.

These changes have freed up 312 hours of inpatient capacity and 416 hours of daycase theatre capacity, enabling the trust to be more productive and at the same time reduce inpatient stays and improve patient experience.

Improve theatre capacity for more complex procedures

The University Hospitals of North Midlands NHS Trust identified an opportunity to improve theatre capacity for more complex cases by moving more activity from its main theatres to its daycare unit, having a nurse-led preoperative clinic to reduce cancellations, and extending theatre sessions from 3.5 to 6 hours for some specialties to reduce downtime within sessions. Better patient throughput was achieved by building a clean area environment outside each theatre clinic.

Key to the success was the clinical engagement and use of a disciplined project management approach to drive improvements. Consultant job plans have also been better aligned with theatre sessions, and with this a reduction in 85 waiting list initiatives has been seen since the programme began. Theatre utilisation metrics are now reported at board level to ensure ownership at the most senior level in the trust.

Scheduling

A key reason that planned and funded operating sessions are not completed is poor operating list scheduling. This generally arises from lack of expertise in constructing an operating list of patients whose predicted procedure times together optimise use of the time allotted for the operating session. Scheduling of lists may be suboptimal for several reasons, for example:

- Scheduling teams may under-book because they do not necessarily have the appropriate information on procedure times to schedule operating lists to optimum, or do not want to risk operating lists overrunning, even though overruns are more usually the result of late starts and intercase downtime rather than an operating list being too full. Theatre lists may be booked too late to allow them to be fully booked.
- Trusts may lack the capacity to pre-assess patients or may pre-assess them late, which can lead to scheduling staff booking patients onto operating lists who have yet to be cleared as fit for surgery.

Late starts

The key challenges here include:

- disparate views and understanding of operating list start times
- a suboptimal presurgical admission process
- a mismatch between work start times for the different members of the surgical theatre team
- waiting for specialist equipment or personnel
- waiting for clearance to start from clinical site management.

Reducing late starts

Northern Devon Healthcare NHS Trust set up a focused improvement programme supported by the trust leadership team to change the way its theatre teams planned and delivered care.

The creation of the 'perfect morning' has had a big impact and led to friendly cross-speciality competition to start lists on time. To make better use of the constrained theatres estate, the recovery room is used as a holding bay for the first patients about to go into surgery. This change alone has reduced average late starts by 10 minutes.

This focused improvement programme, together with the use of data to support decision-making, has helped orthopaedics improve its 'touchtime' utilisation from 73% to 85%. In ophthalmology, this metric improved from 72% to 86% and the average number of cases per session increased from 4.7 to 5.3.

Delays between cases

These are caused by many of the same factors that challenge starting on time:

- waiting for specialist equipment or personnel
- delays in patients arriving in theatre from wards or surgical admission units
- incomplete presurgical checks, etc
- late changes in the order of the operating list
- inability to provide, or a lack of planning for, cross-cover for surgical team members through handovers, breaks, etc
- recovery areas that are full because of insufficient recovery staff or patient flow problems.

Early finishes

Cancellations on the day and/or under-scheduling of operating lists can lead to significant underruns. In much rarer circumstances, the surgeon may appropriately change the surgical plan for the patient.

Given the above range of drivers and the links between them, trusts are encouraged to do more analysis to better understand what happens during their operating sessions, so they can identify specific improvements and implement changes. Clinical engagement and leadership is vitally important if the following measures are to be successful. Potential areas for action include:

- Improving the planning and sequencing of operating lists through deploying an effective 6–4–2 theatre management process, whereby the theatre programme is reviewed on a weekly basis and looking six weeks ahead. This checks that each specialty is scheduling the appropriate number of theatre lists to meet its activity assumptions, that clinicians are available and not on leave and that operating lists are scheduled in a timely manner. The 6–4–2 meeting should be chaired by an appropriate ‘decision-maker’ who can ensure immediate action and changes.
- Holding regular planning meetings with senior leadership to make sure capacity can meet expected demand, based on sound activity assumptions.
- Holding specialty-level scheduling meetings at which scheduling tools based on empirical evidence are used to test whether operating lists are fully booked and optimised.
- Identifying reasons for avoidable patient cancellations (eg patients who did not attend, patients who are unfit for surgery) and implementing systematic improvements to reduce the cancellation rate to 5% or below.
- Ensuring theatre groups implement operational standards in key areas such as list start times, overrun tolerances, staff cross-cover and the surgical admission processes.

Reducing cancellations and overruns

Southend University Hospital NHS Foundation Trust wanted to reduce cancellations for urological procedures. It has done this by shifting inpatient activity where clinically appropriate to day case, to reduce the risk of cancellations and delays linked to bed availability.

Better advanced planning for extended sessions means fewer overruns, which has bolstered staff morale and improved engagement. Scheduling meetings every Monday are attended by clinicians, booking clerks and operational managers, and this multidisciplinary team together ensures lists are optimally booked four weeks ahead. On Tuesdays a trust-wide 6–4–2 meeting considers all cases but priorities cases of urological cancer to ensure capacity is available for them.

Key to success has been senior staff reviewing performance metrics weekly on the theatre dashboard and making theatre utilisation decisions based on accurate data and insights.

4.2 Future actions

Trusts and national organisations could drive further improvements by taking the following actions:

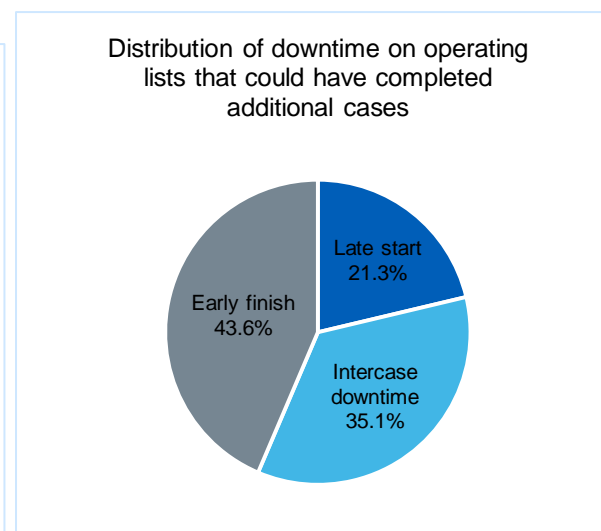
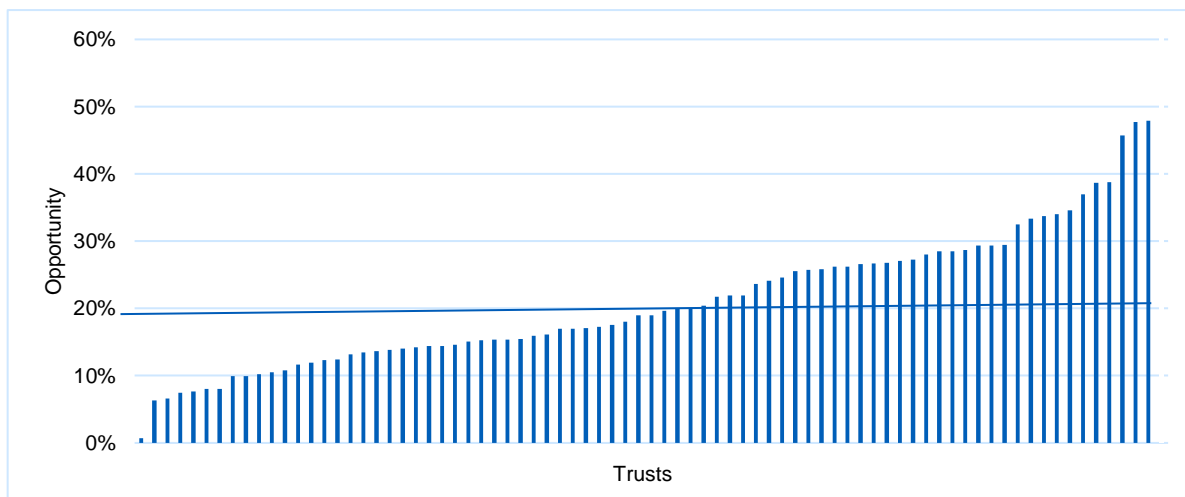
- developing and implementing improvement plans to realise their specific opportunities and that ensure surgeons and anaesthetists form part of the improvement team
- providing further productivity analysis on the average caseload per equivalent four-hour session, broken down by casemix, to determine productivity measures at procedure level
- identifying trusts that demonstrate best practice at specialty and procedure level, and sharing what they do to achieve consistently strong theatre productivity
- defining and refining planned session durations to help trusts identify the optimal fit between list length and casemix for each operating session
- supporting clinical service redesign across multiple sites by using rigorous data analysis to identify opportunities for high productivity services or centres
- strengthening demand and capacity planning and patient flow processes to ensure there is sufficient bed capacity for the elective workload in hospitals.

Appendix: Opportunity by specialty

ENT

Of the 79 trusts that submitted ENT data, 46% had an in-session productivity opportunity of >20% through the elective sessions that were delivered across the 12-month period. Early finishes made up the greatest proportion of downtime (44%).

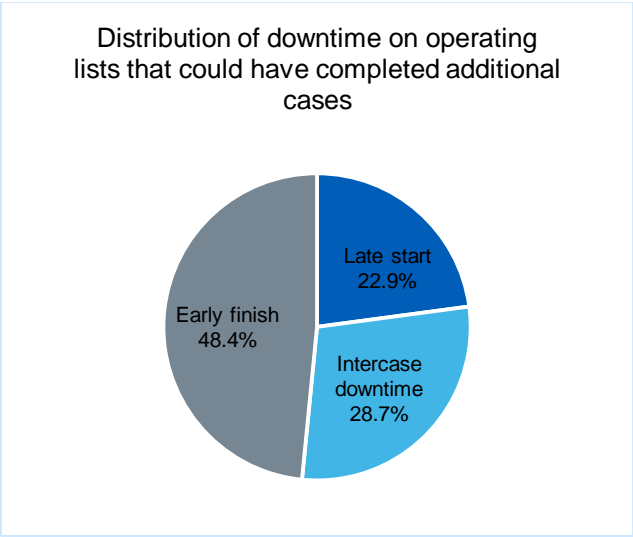
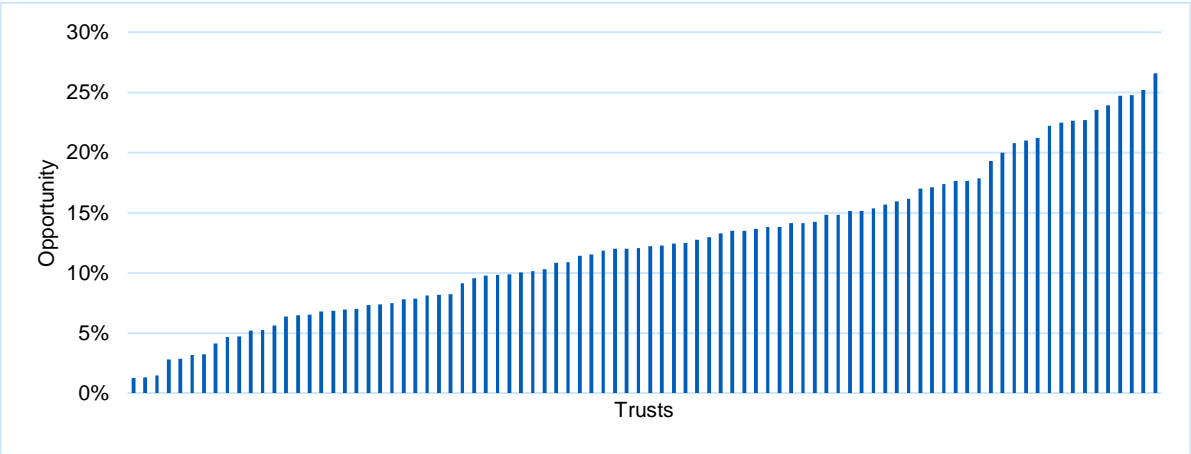
Figure A.1: ENT opportunity by trust



General surgery

Of the 88 trusts that submitted general surgery data, 15% had an in-session productivity opportunity of >20% through the elective sessions that were delivered across the 12-month period. Early finishes made up the greatest proportion of downtime (48%).

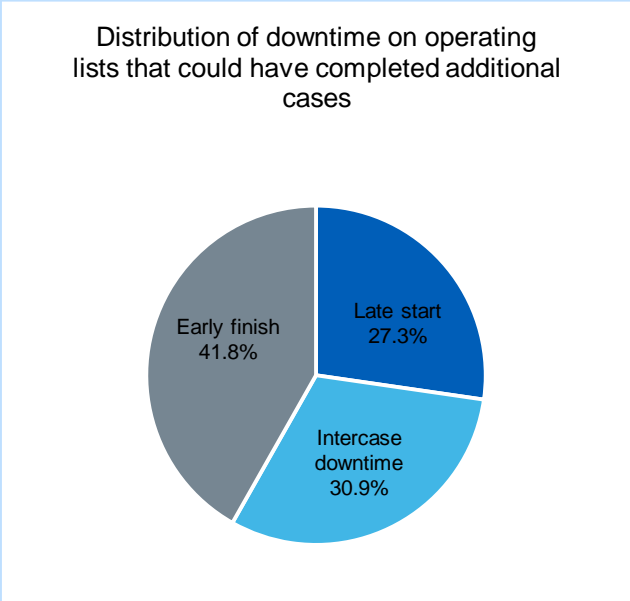
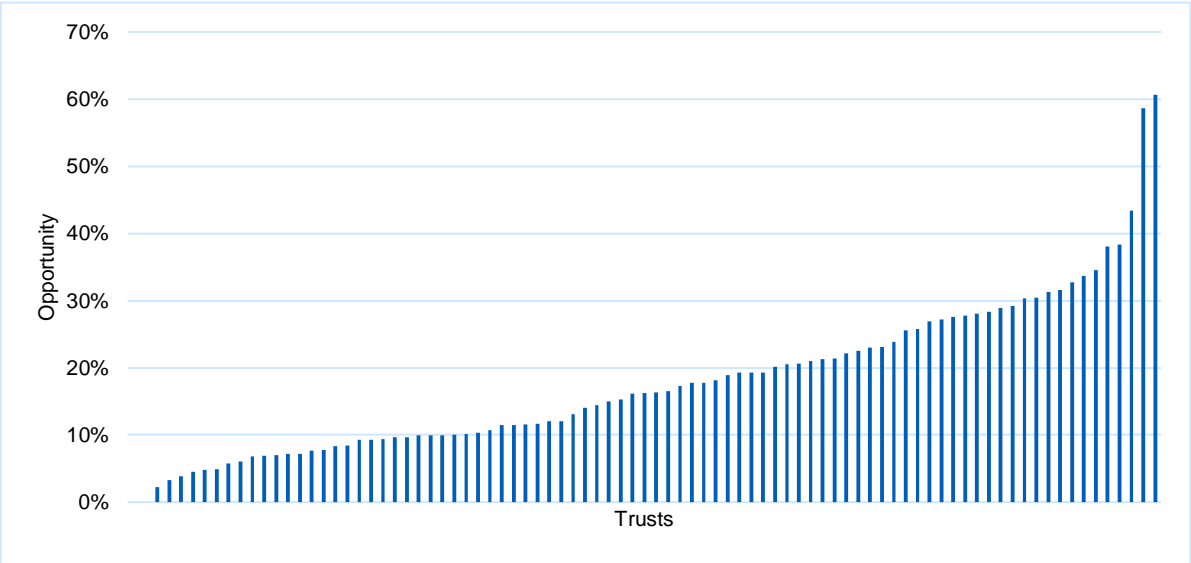
Figure A.2: General surgery opportunity by trust



Gynaecology

Of the 87 trusts that submitted gynaecology data, 38% had an in-session productivity opportunity of >20% through the elective sessions that were delivered across the 12-month period. Early finishes made up the greatest proportion of downtime (42%).

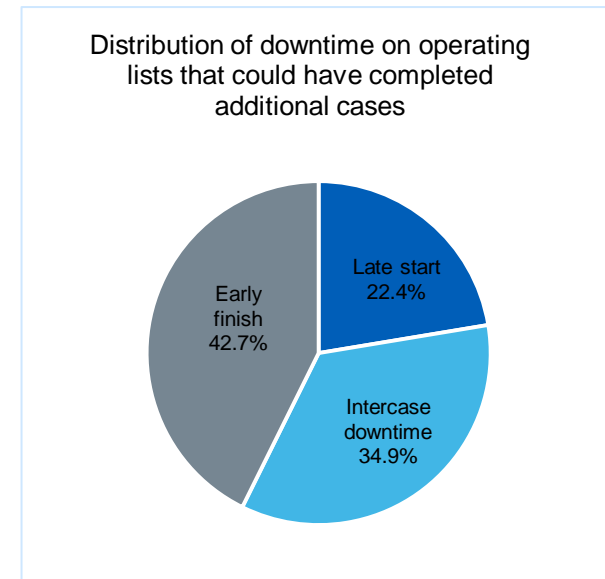
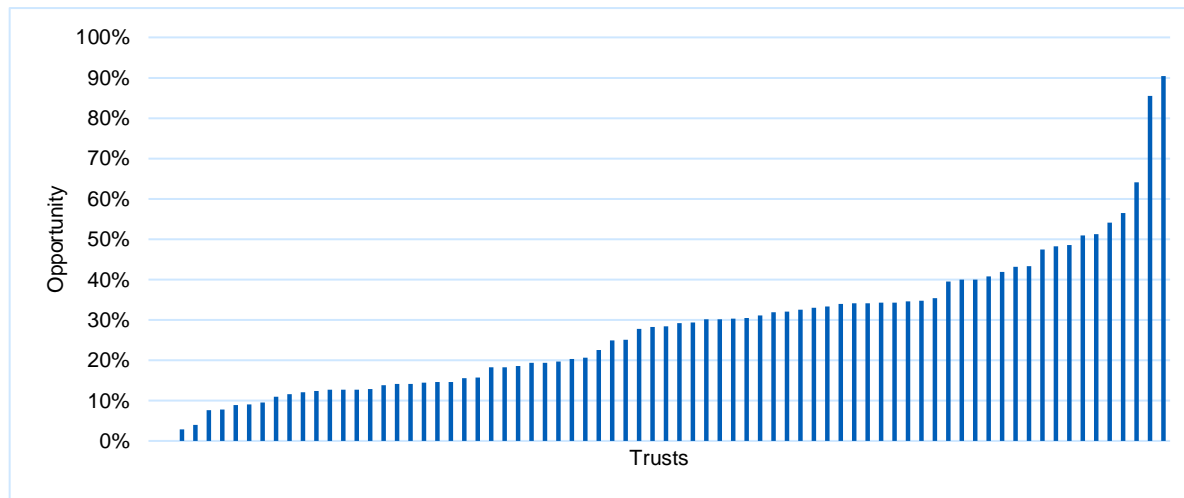
Figure A.3: Gynaecology opportunity by trust



OMFS

Of the 75 trusts that submitted OMFS data, 59% had an in-session productivity opportunity of >20% through the elective sessions that were delivered across the 12-month period. Early finishes made up the greatest proportion of downtime (43%).

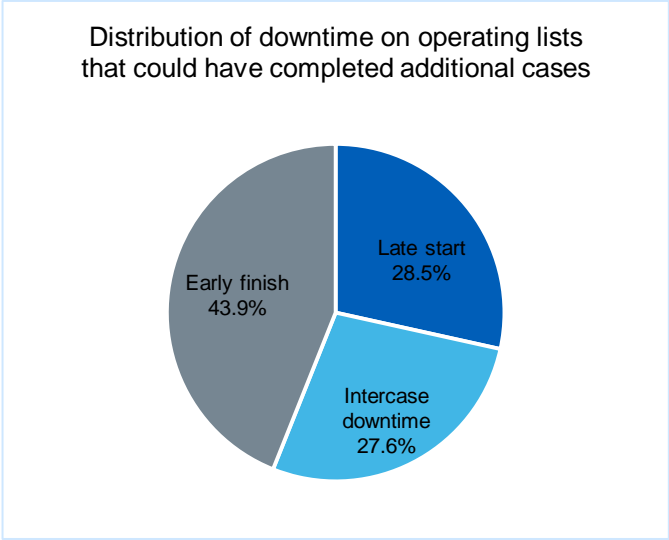
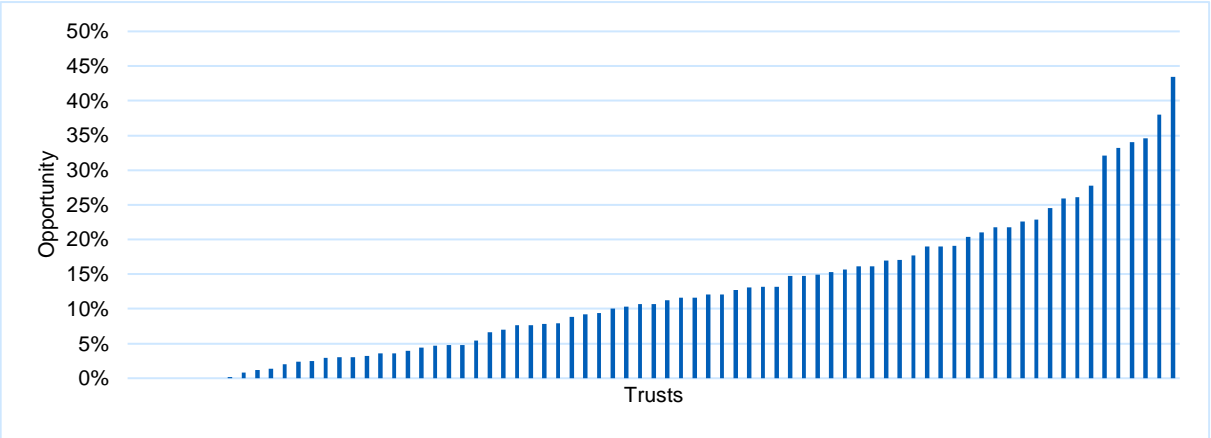
Figure A.4: OMFS opportunity by trust



Ophthalmology

Of the 77 trusts that submitted ophthalmology data, 21% had an in-session productivity opportunity of >20% through the elective sessions that were delivered across the 12-month period. Early finishes made up the greatest proportion of downtime (44%).

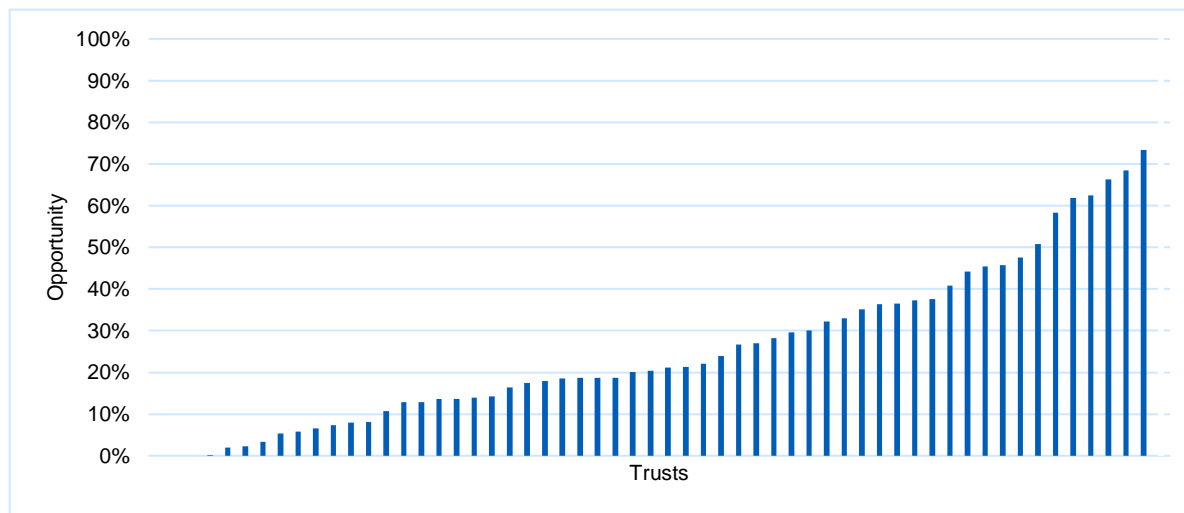
Figure A.5: Ophthalmology opportunity by trust



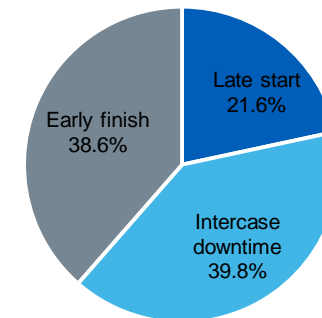
Plastic surgery

Of the 58 trusts that submitted plastic surgery data, 53% had an in-session productivity opportunity of >20% through the elective sessions that were delivered across the 12-month period. Intercase downtime made up the greatest proportion of downtime (40%).

Figure A.6: Plastic surgery opportunity by trust



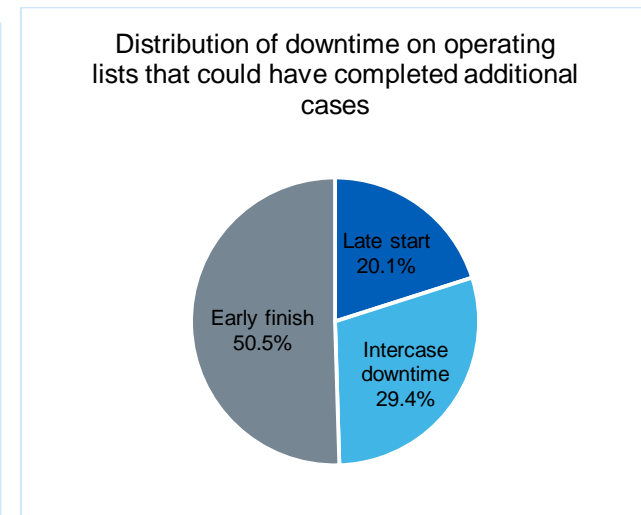
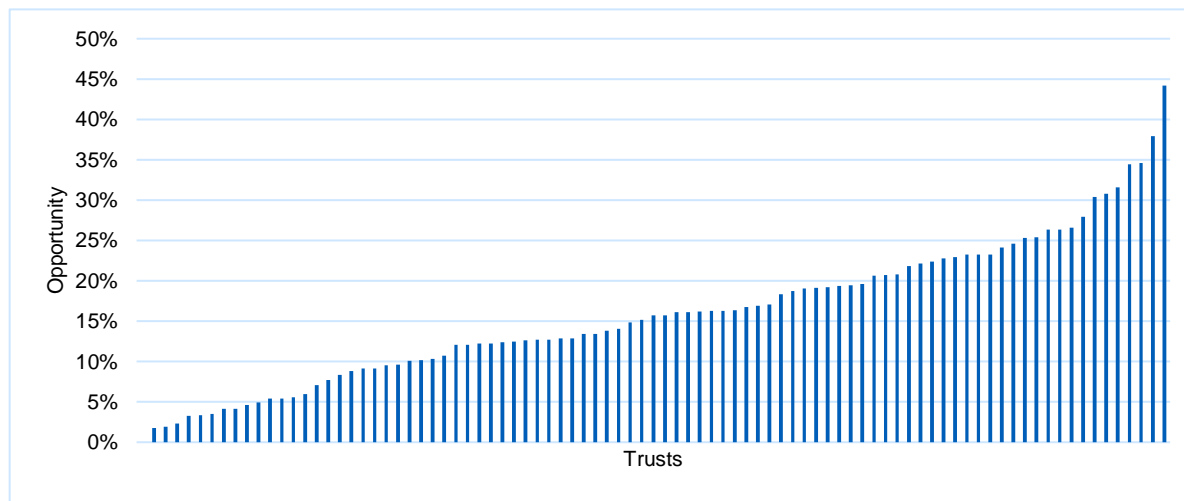
Distribution of downtime on operating lists that could have completed additional cases



T&O

Of the 89 trusts that submitted orthopaedic data, 29% had an in-session productivity opportunity of >20% through the elective sessions that were delivered across the 12-month period. Early finishes made up the greatest proportion of downtime (51%).

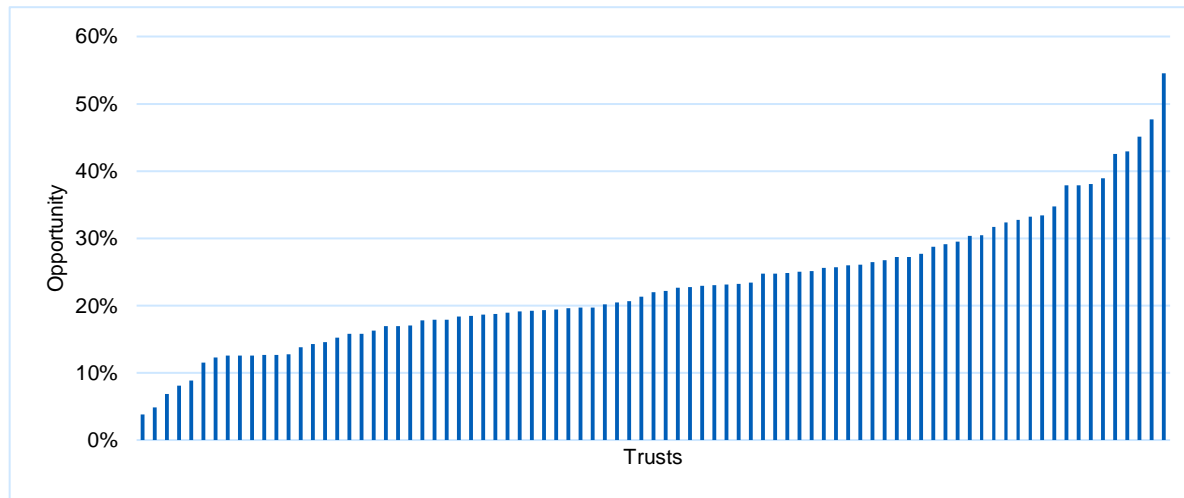
Figure A.7: T&O opportunity by trust



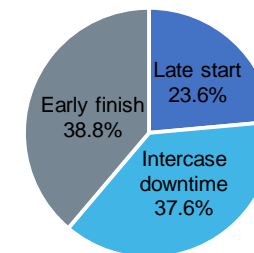
Urology

Of the 86 trusts that submitted urology data, 55% had an in-session productivity opportunity of >20% through the elective sessions that were delivered across the 12-month period. Early finishes made up the greatest proportion of downtime (39%).

Figure A.8: Urology opportunity by trust



Distribution of downtime on operating lists that could have completed additional cases



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