

Optimising Gynaecology Theatre Utilisation: A Quality Improvement Initiative on Enhancing Efficiency

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Introduction

- ❖ Efficient theatre utilisation is vital for optimising healthcare resources, particularly in gynaecology – a specialty which has a high elective procedure demand.
- ❖ The current waiting list for elective gynaecology surgery at Royal Derby Hospital (RDH) is longer than 12 months.
- ❖ Therefore, this Quality Improvement Project (QIP) aimed to assess theatre utilisation and efficiency to identify areas to optimise theatre scheduling and reduce waiting list times.
- ❖ This QIP aimed to assess theatre utilisation at RDH and subsequently benchmark performance against the **Model Health National Target of 85% in-session theatre utilisation**.
- ❖ Additionally, we aimed to measure efficiency parameters, which could then contextualise the current state of gynaecology theatre scheduling and organisation.
- ❖ Our goal was to identify key inefficiencies and recommend targeted interventions to optimise throughput and reduce waiting lists.

Methods

- ❖ A **retrospective analysis** of all gynaecology theatre sessions (Theatres 1–4) at RDH was performed over a 4-month period (**August–December 2023**).
- ❖ Data were extracted from ORMIS and theatre planning lists and analysed using Excel.

Capacity Utilisation

- ❖ Total capacity is defined as two sessions per day (morning list, and afternoon list), and 10 sessions per week.
- ❖ Capacity utilisation is calculated by number of sessions per week / total capacity per week.
- ❖ Each theatre utilisation was calculated separately.
- ❖ Number of cancellations as well as reasons for cancellation were also measured.

Theatre Efficiency

- ❖ A points-based system, used to reflect procedure complexity, is used at RDH to plan theatre lists for optimal use of theatre time.
 - Hysteroscopy = 1 point
 - Laparoscopic sterilisation = 2 points
 - Total laparoscopic hysterectomy = 3 points
- ❖ Total theatre session utilisation is defined as:
 - Half-day list target = 5 points
 - Full-day list target = 10 points
- ❖ Theatre efficiency is calculated by number of points per session / target for that session.
- ❖ Start times for each session, as well as time lag between patients, was measured.

Results

Capacity Utilisation

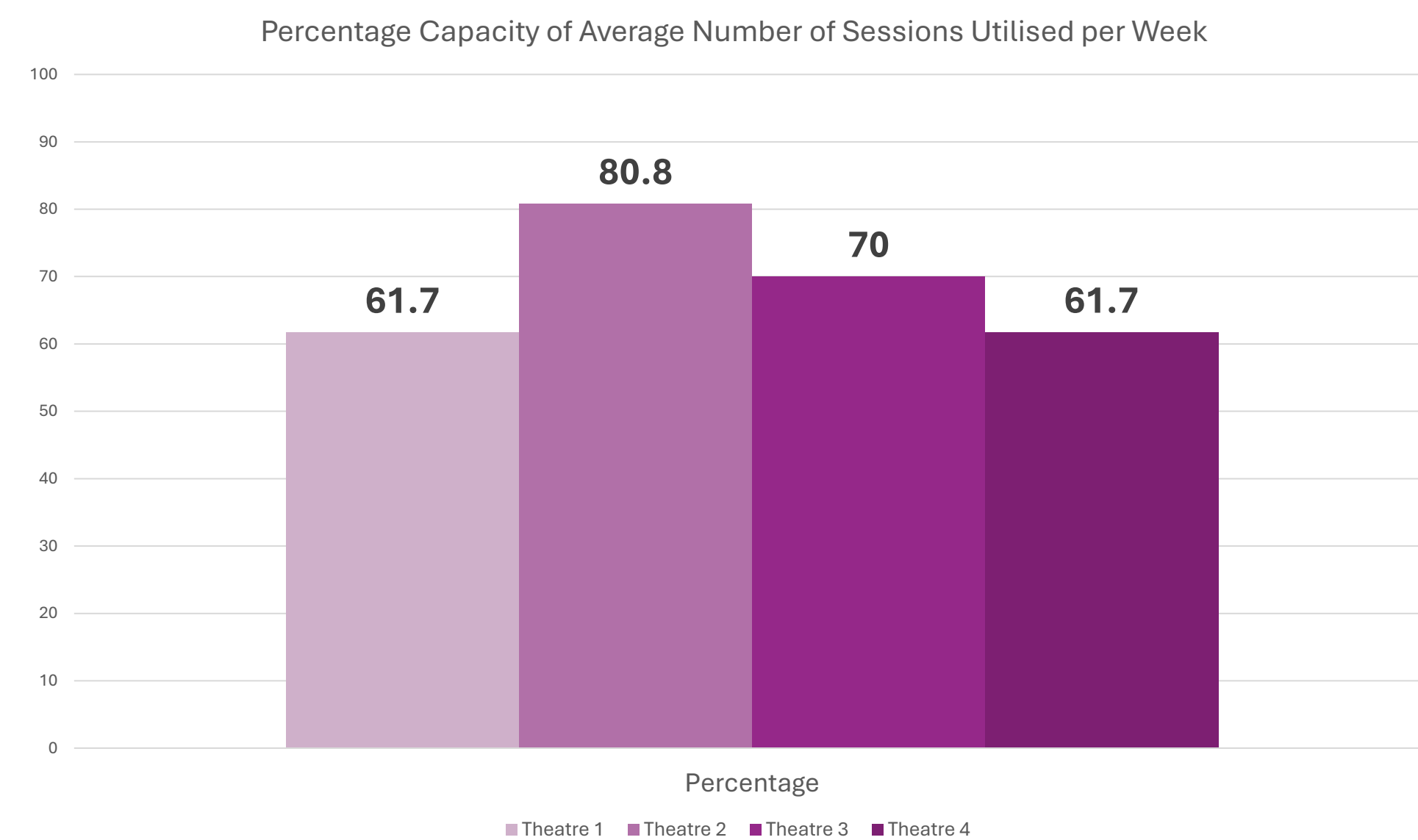


Figure 1. Graph showing percentage capacity utilisation of theatres per week at RDH.

- Sessional utilisation was highest in Theatre 2 (80.8%), with Theatres 1 and 4 falling below 62%.
- Full-day lists were more efficient (81%) than half-day sessions, highlighting value in maximising case volume.

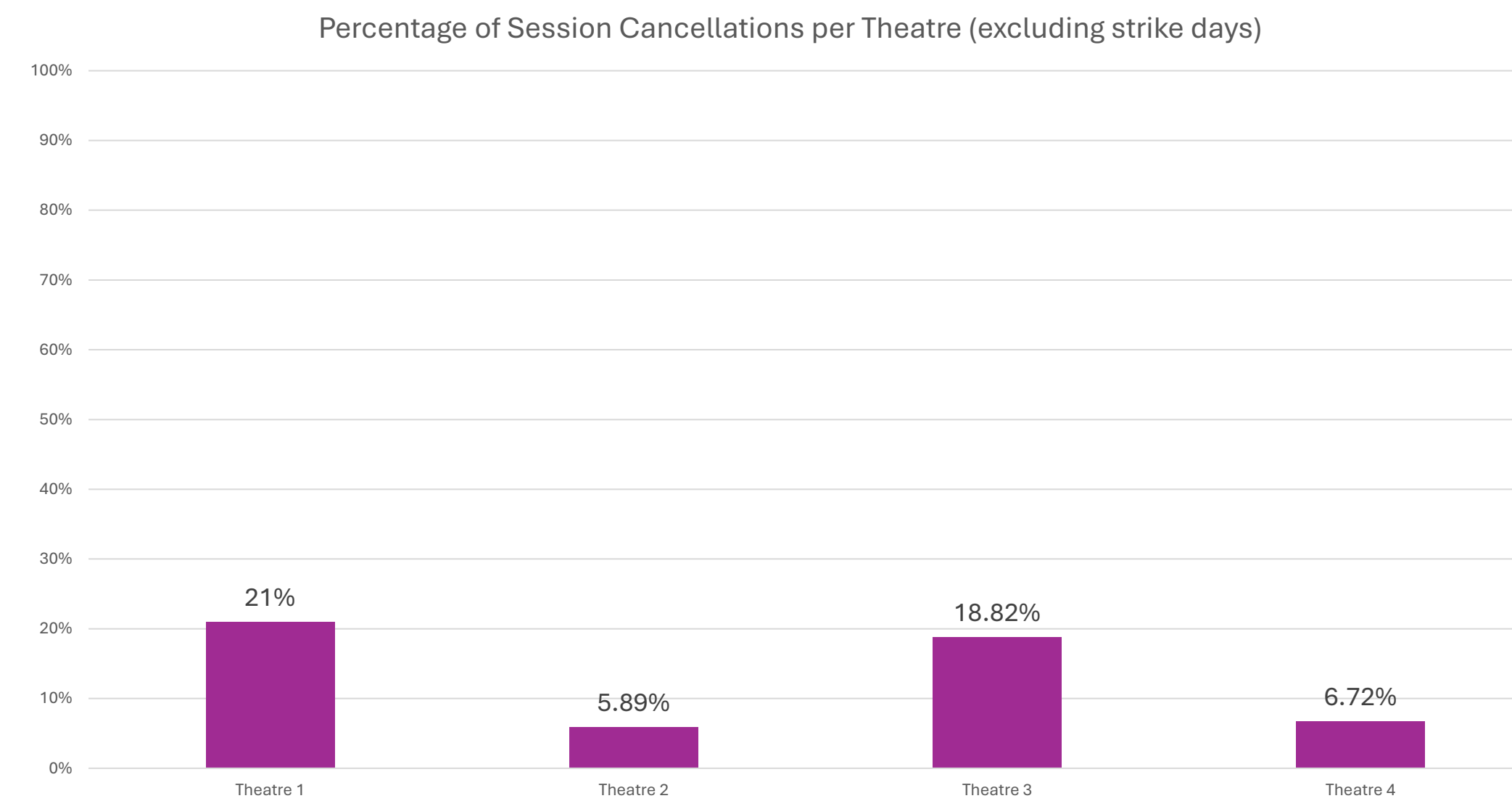


Figure 2. Bar chart showing percentage of session cancellations per theatre over August-December 2023.

- Cancellations were highest in Theatre 1 (21%) - primarily due to staffing issues, patient no-shows, and lack of ITU beds (**Table 1**).
- Theatre 2 maintained the lowest rate (5.89%) despite higher utilisation.

Categorised Reasons for Cancellation of Gynaecology Theatre Cases

Reason for cancellation of surgery	Frequency
Understaffing	5
List overran	4
List overbooked	1
Theatre needed for emergency patient	4
Anaesthesia related	2
No ICU/HDU bed available	4
Further investigations needed prior to surgery	3
Patient unwell / patient comorbidities	17
Patient cancelled	8
Other / not specified	10

Table 1. Table displaying the reason recorded for each individual cancellation of surgery.

- The patient being unwell on the day of surgery was the most common reason for cancellation.

Theatre Efficiency

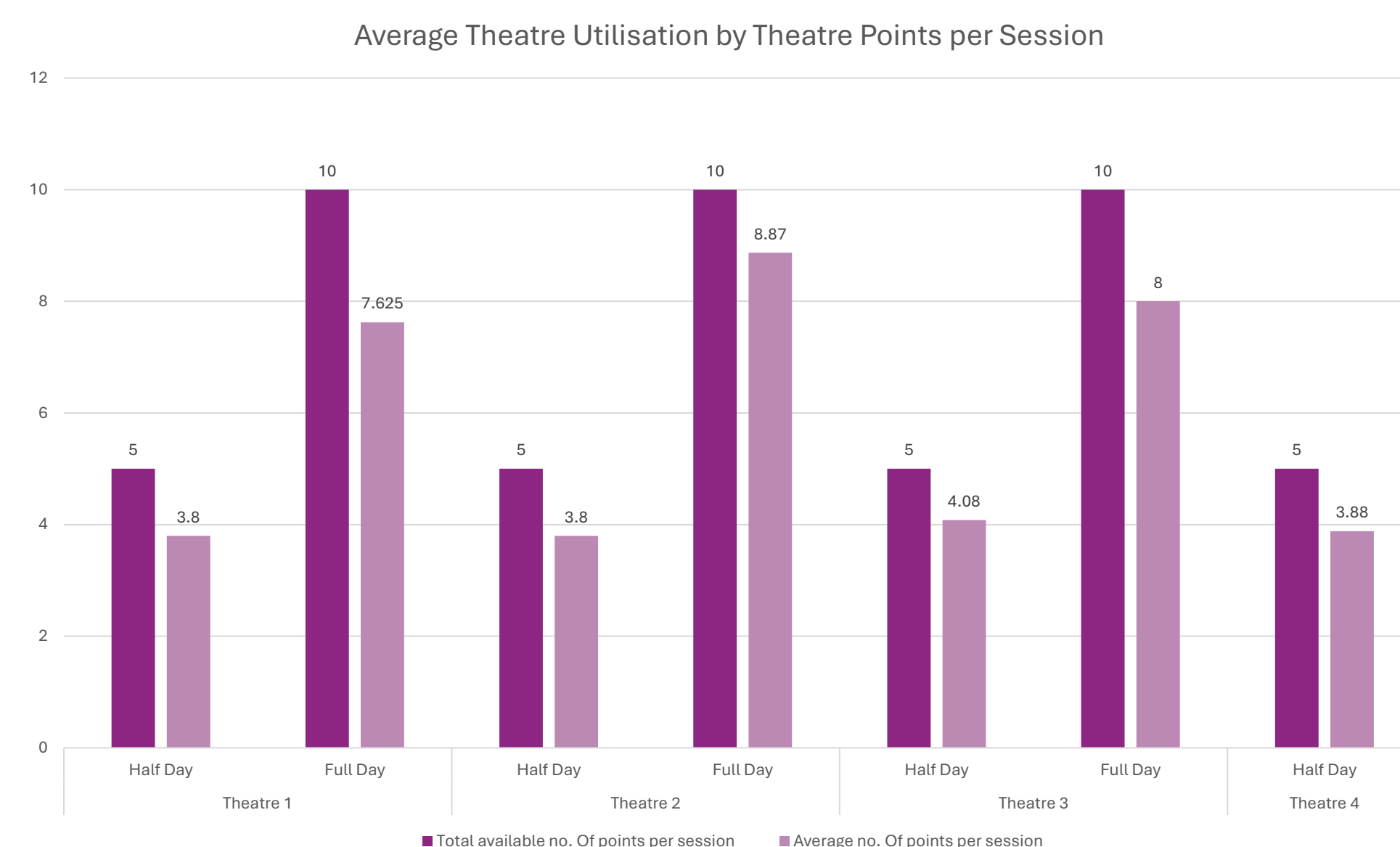


Figure 3. Bar chart to show average theatre utilisation by theatre points per session (half day; full day) per theatre.

- No theatre sessions met their target points, particularly in Theatres 1 and 4.
- There were no significant differences in theatre efficiency between half-day and full-day lists.

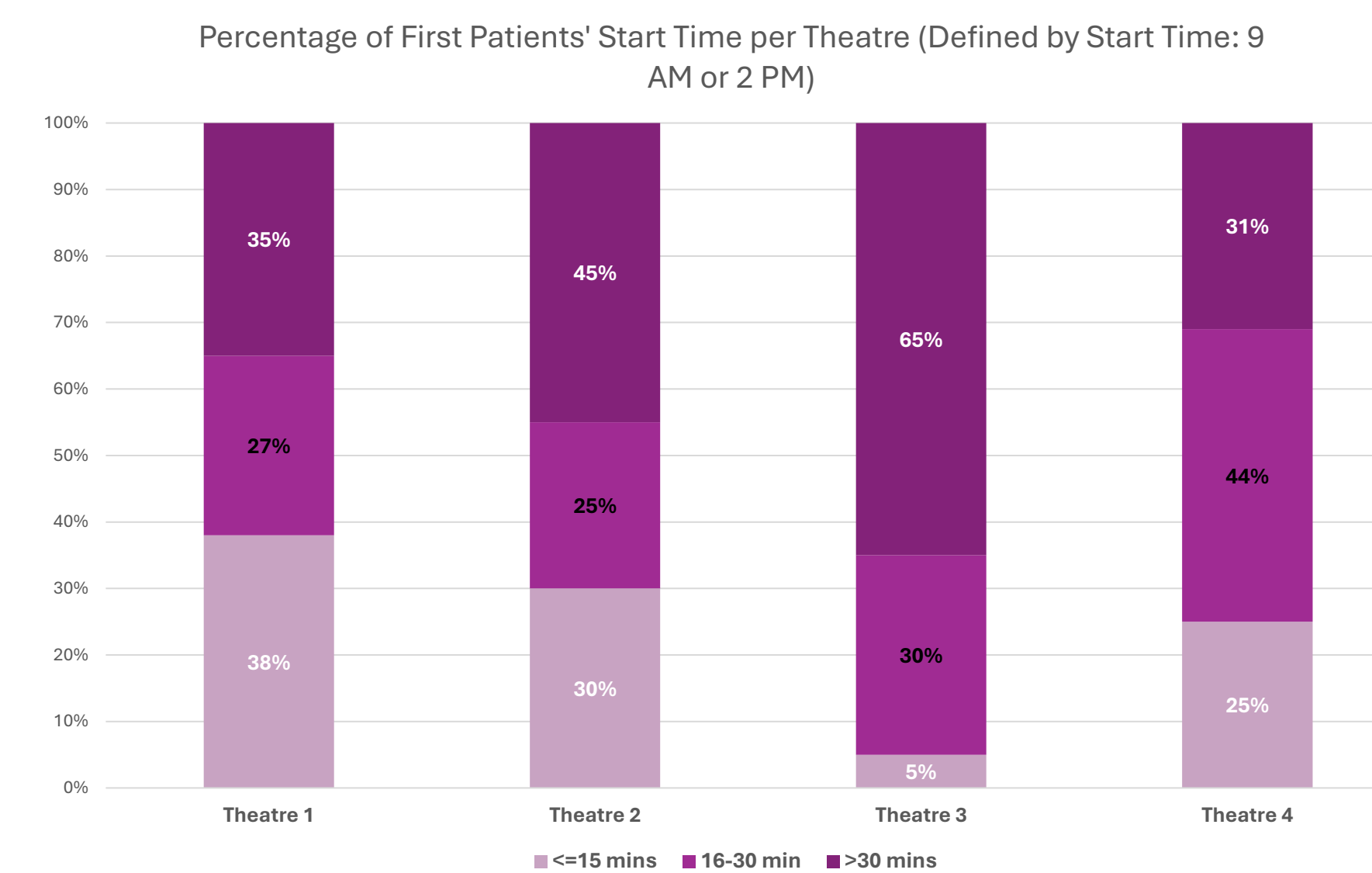


Figure 4. Stacked bar chart showing percentage of start times per theatre.

- Late starts were common across all theatres, with >70% of sessions starting more than 30 minutes after the allocated start time.
- Theatre 3 had the latest start times, with 65% of sessions starting more than 30 minutes late.

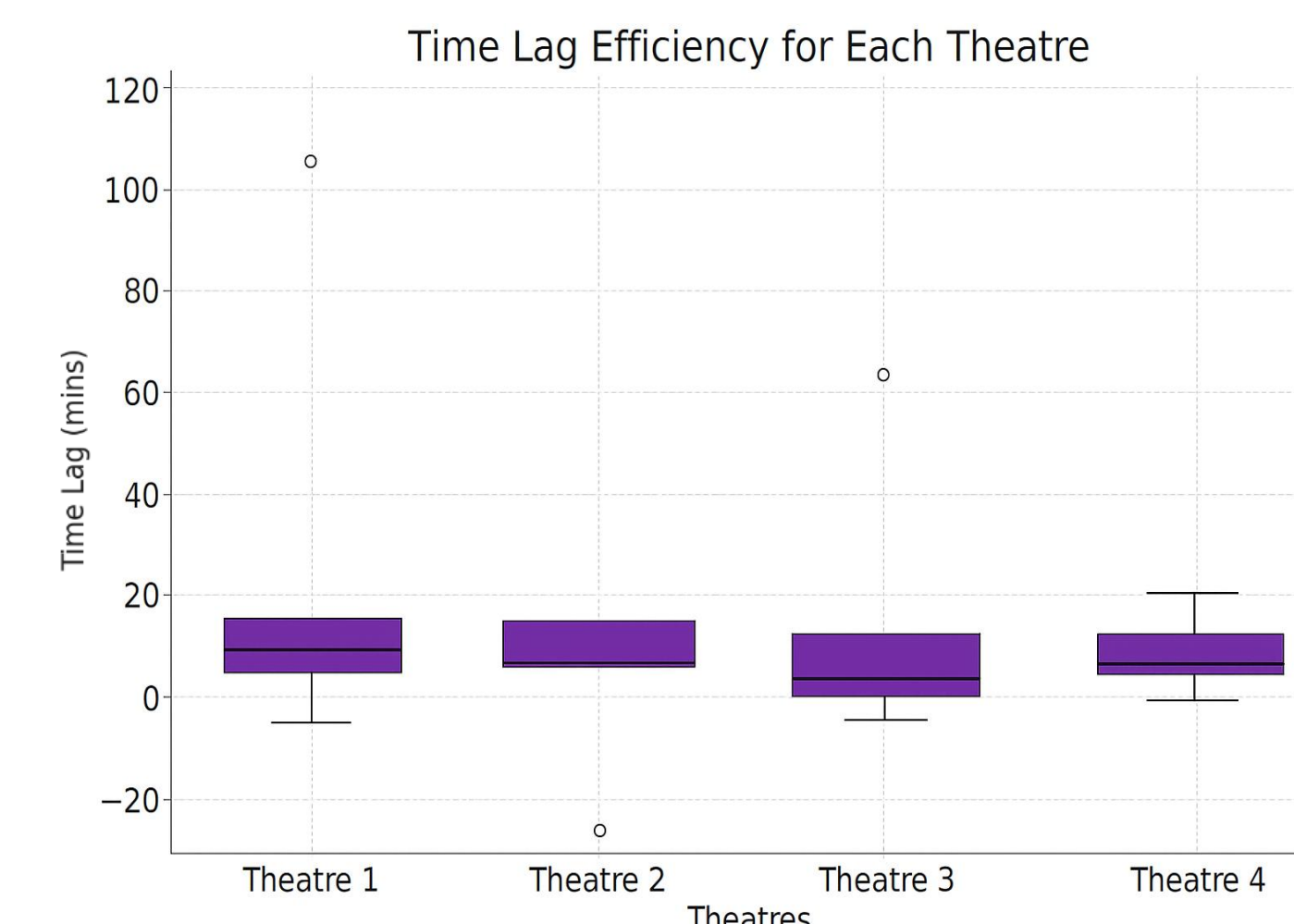


Figure 5. Box and whisker plot showing the time lags between patients during theatre (defined as the time between end of previous patient to anaesthetic start time of next patient).

- Theatre 1 had the longest average interval between patients (17.5 mins).
- Theatre 3 was most efficient (11.8 mins).
- Theatre 2 showed outlier values (e.g., -20 mins) from early prep prior to previous patient completion.

Conclusions

- ❖ The findings highlight notable inefficiencies in both gynaecology theatre utilisation and efficiency at RDH.
- ❖ Capacity utilisation metrics show that all gynaecology theatres fall short of the 85% national utilisation target; this is mainly due to short-notice cancellations and staffing supply.
- ❖ Theatre efficiency measurements show suboptimal use of available theatre time.
- ❖ Key drivers of this inefficiency are:
 - Poor case complexity planning due to outdated points design
 - Late theatre starts
 - Time lag between patients

Recommendations

- ❖ **Redesign theatre points system**
 - To include anaesthetic complexity of patient (e.g., obesity, diabetes, other comorbidities).
 - To include expertise of surgeon, as well as presence of junior surgeon for teaching.

Outcome: improved case prediction and more realistic theatre scheduling, leading to more efficient theatre sessions and improvement of waiting lists.
- ❖ **Introduce earlier pre-operative ward rounds**
 - To change rounds to 07:30/08:00, from the current 09:00 start in order to facilitate timely anaesthetic starts.

Outcome: earlier start times, hence more cases per session + reduced fasting time for patient, hence better patient experience and post-operative outcomes.
- ❖ **Implement a theatre cancellation protocol**
 - To include proactive contact of backup patients 3-5 days in advance to minimise empty slots.

Outcome: higher capacity utilisation, and improved waiting list times.

Future Directions

- ❖ Engage theatre teams in simulation workshops to trial new scheduling methods
- ❖ Expand QIP to other surgical specialties for cross-specialty learning
- ❖ Monitor impact of interventions with yearly audits

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These findings highlight theatre underutilisation due to inefficient list planning, late starts, inter-case delays, and avoidable cancellations. Targeted changes in scheduling, pre-op routines, and cancellation handling could markedly enhance throughput and patient care.