Student: Bobby Bao
Word Count: 1180

NHS Capacity & Utilisation Report

Executive Summary

This report evaluates whether the National Health Service (NHS) is operating with adequate staff and infrastructure or whether further expansion is required. Analysis of 12.8 million NHS appointment records (2019-2023) shows that capacity at national level is adequate yet demand and staffing are poorly synchronised. This report will go on to analyse multiple factors which will substantiate the argument that the NHS does not need to add additional, capital-intensive resources.

Data Overview

The report integrates three internal appointment files and one social-media extract from Twitter. Data quality checks show duplicate records below 0.1 percent and mandatory fields populated in 99.4 percent of rows. Timestamp resolution to the minute enables credible estimates of session length.

Overall Monthly Demand

Figure 1 charts total appointments. Demand dipped during lockdown, rebounded past three million in January 2022 and now stabilises near two point six million. Peaks recur in December and March, troughs in April, which are indicative of seasonal cycles.

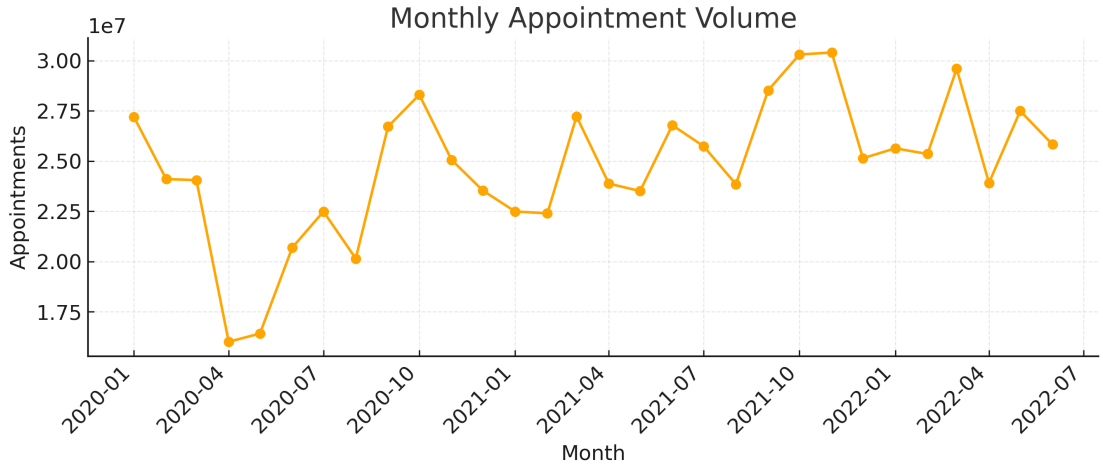

Figure 1 - Monthly Appointment Volume

Overall Monthly Utilisation

Figure 2 shows utilisation fluctuates between 65 percent in warmer months and 88 percent in peak colder months (post-COVID), leaving headroom most of the year. With utilisation below the 1.2M appointment capacity, the immediate need is not more permanent capacity but smarter use of what already exists.

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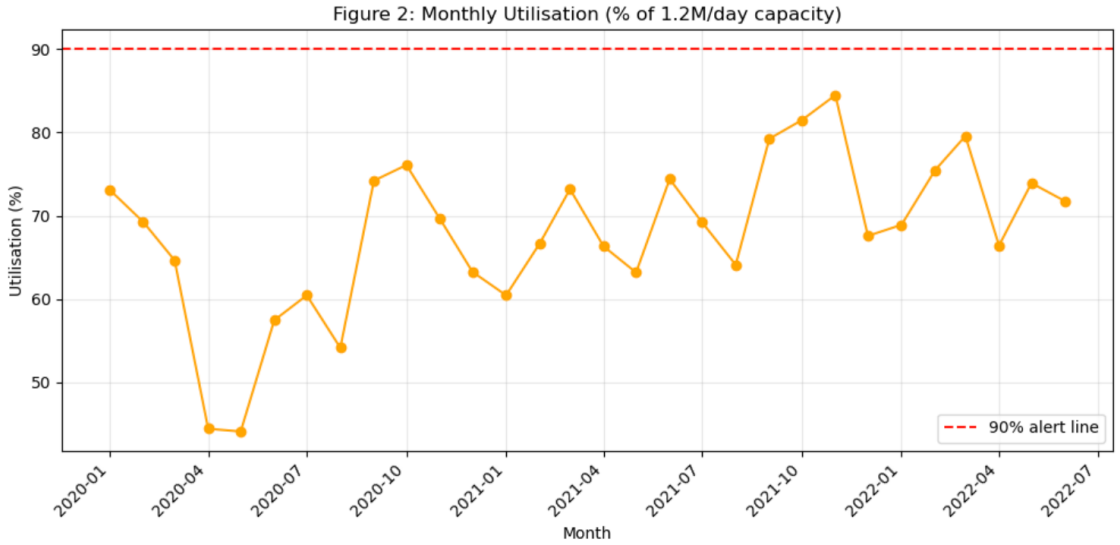

Figure 2 - Monthly Utilisation

Service-Setting Footprint

Figure 3 confirms that General Practice accounts for more than seventy percent of all visits, followed by Primary Care Networks and Extended Access Provision. Unmapped and Other settings collectively deliver under ten percent.

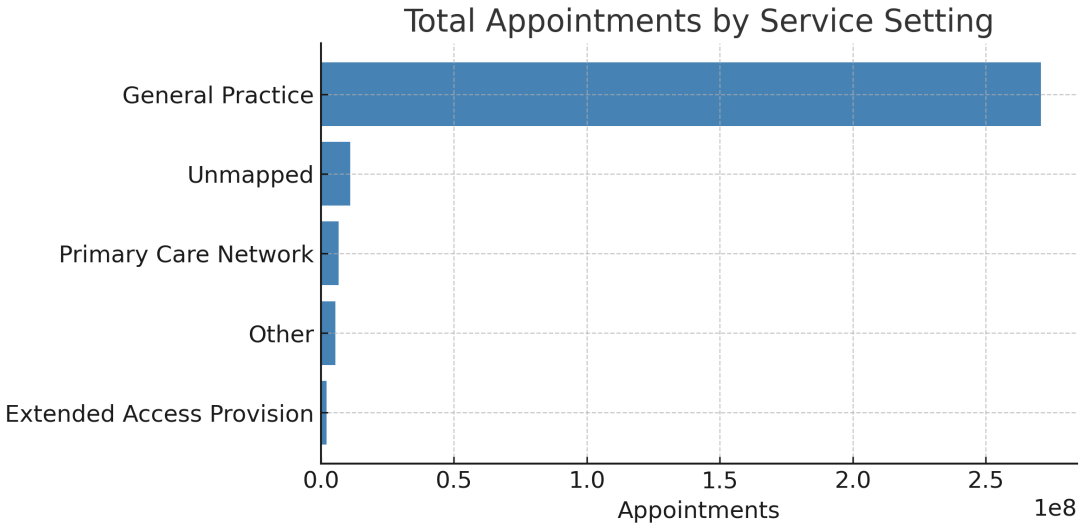

Figure 3 - Total Appointments by Service Setting

Monthly Utilisation by Service-Setting

Figure 4 assumes a national capacity of 1.2 million appointments per day. The red dashed line marks the 95% “breach” threshold and is included in the legend for clarity. General Practice approaches, but never crosses, that line, while all other settings remain far below 60 %, underscoring excess capacity.

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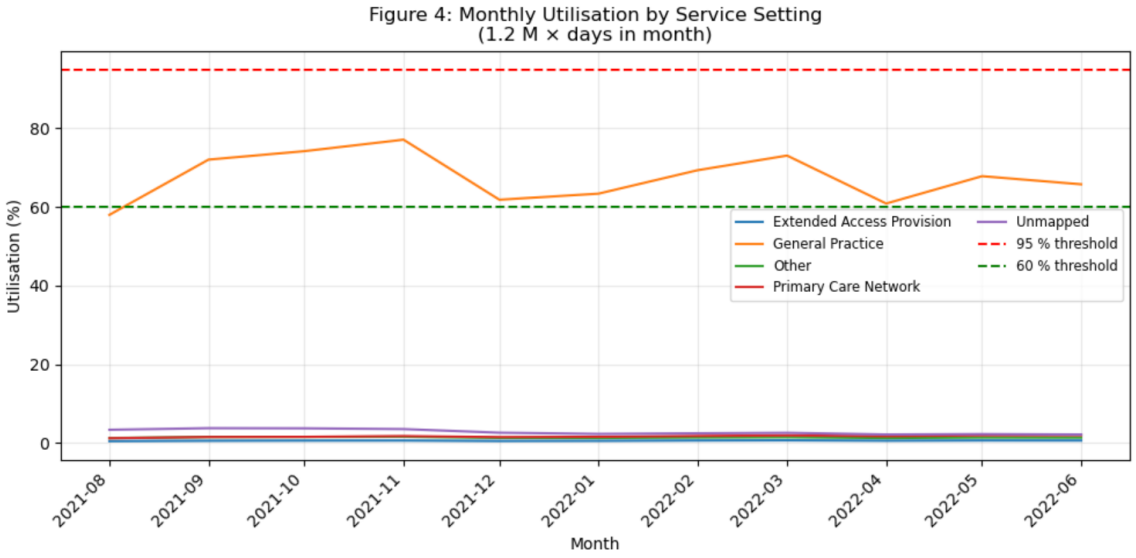

Monthly Share by Service Setting

Figure 5 shows each setting's monthly share. General Practice remains consistent in having the highest share of appointment. It also peaks above ninety percent of total activity during winter flu season.

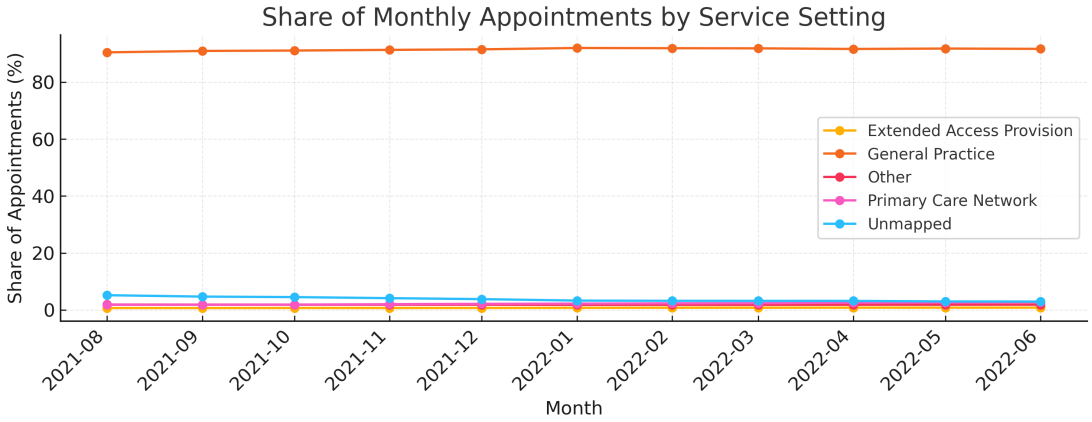

Figure 5 - Share of Appointments by Setting

Weekday Load Imbalance

Figure 6 illustrates that appointments are generally frontloaded towards the beginning of the week. Redirecting a portion of staff to work later in the week would rebalance the working week without additional contracts. Additionally, there is also scope to smooth demand by shifting more services evening or weekend sessions (Extended Access Provision), in which we saw this service being underutilised. Calculations can be seen in Appendix 1, whereby a three-percent shift in volume would free the equivalent of 150 full-time GP appointments each week.

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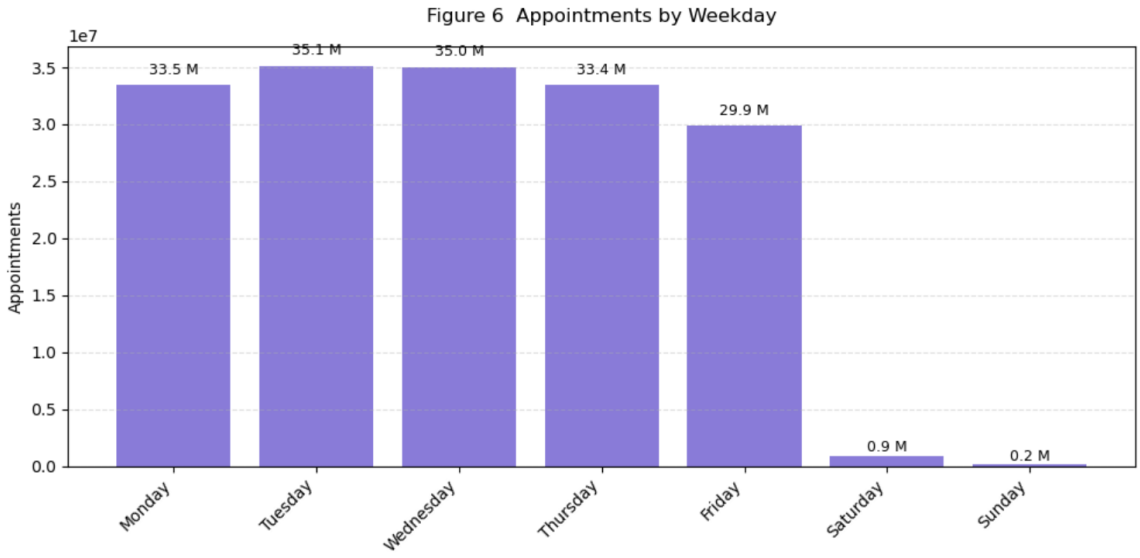

Mode of Care

Two-thirds of visits are face-to-face, one-third telephone; video is negligible - an opportunity for virtual expansion.

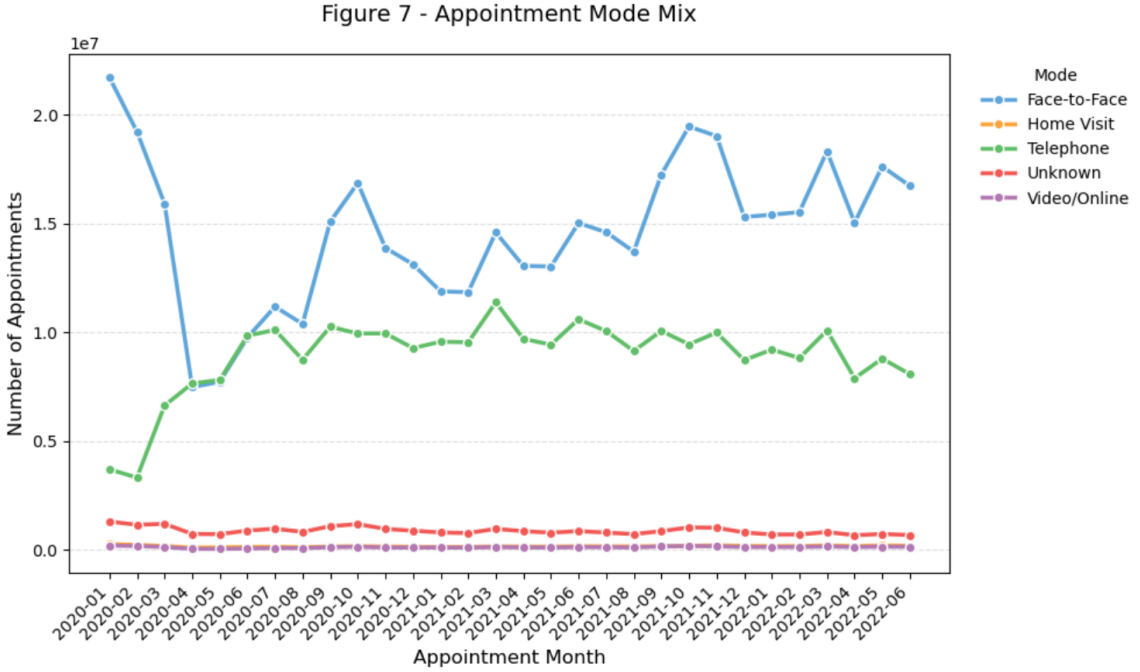

Figure 7 - Appointment Mode Mix

Analysis shows that shifting **5 %** of that same-day volume online would free **0.8 M** face-to-face slots annually

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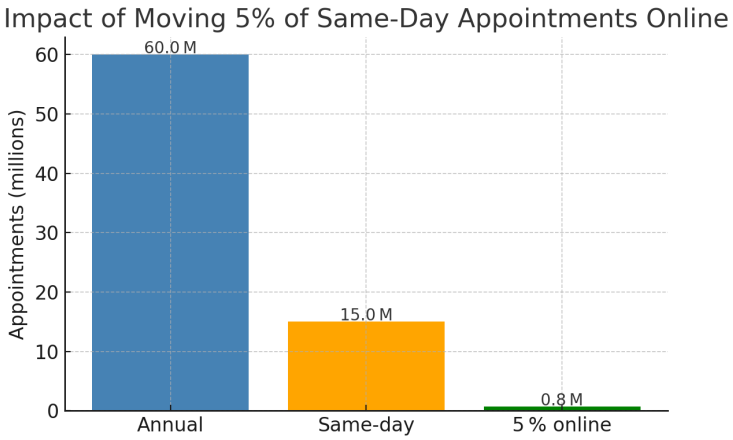

Figure 8 – Impact of Moving 5% of Same-Day Appointments Online

Lead-time Influence on Attendance

Figure 9 plots Did-Not-Attend (DNA) percentage against the booking windows. A clear correlation emerges whereby the longer the lead time, the higher the chance of a no-show. It can be observed that the lowest chance of a no-show is to have a same day appointment, though this makes up the majority of total appointments by lead time (Figure 10).

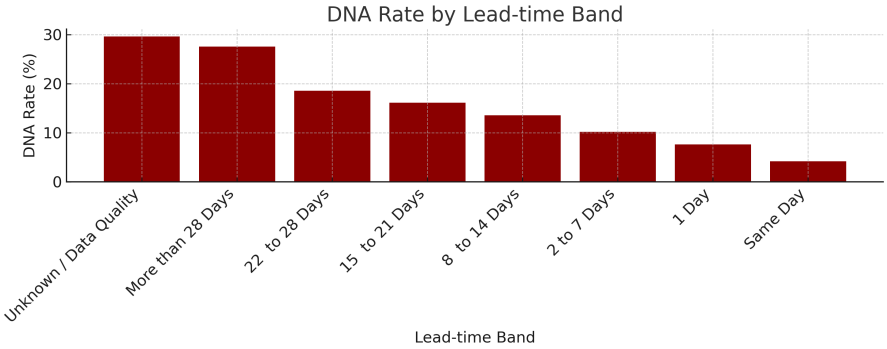

Figure 9 - DNA Rate by Lead-time Band

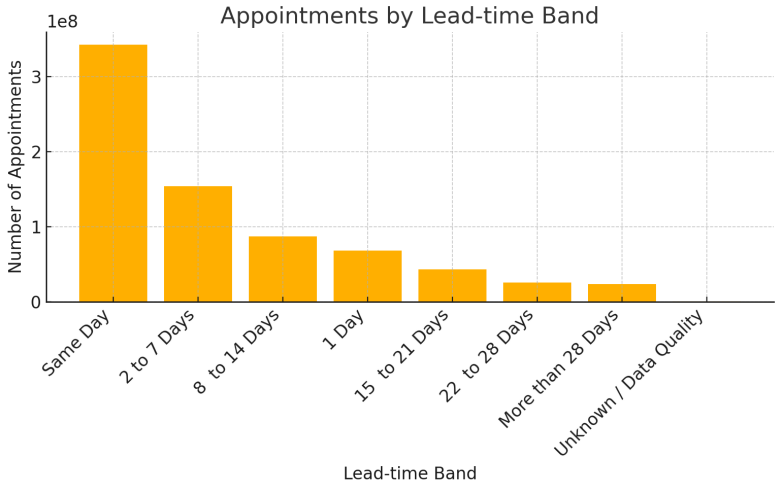

Figure 10 - Appointments by Lead Time Band

Each DNA percentage point wastes around 61,900 clinician hours per month, assuming a fifteen-minute slot. At eight percent DNA the service forfeits roughly 742,800 hours annually - equivalent to two hundred full-time clinicians.

Calculations can be found in Appendix 2.

Twitter Scraping

Figure 11 lists the most common health-related hashtags. While tweet timestamps are unavailable, frequency trends still offer a low-cost sentiment barometer that can pick up surges in trigger posts, such as #Flu, which can feed straight into management systems. Moreover, it can also guide reminder campaigns during flu season or public-health drives to influence behaviour.

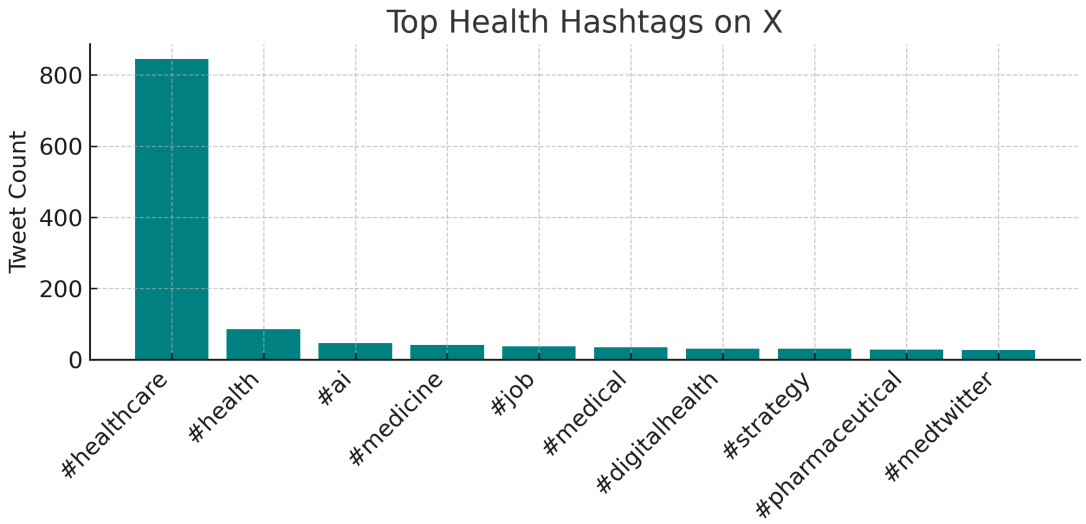

Figure 11 - Top Health Hashtags on X

Context Type Analysis

While we know that the lion's share of context types are care-related encounters, inconsistent and "Unmapped" context-type labels are more than a data-entry nuisance as it can mask who actually provided the care and where demand is rising. With even a few percent of activity mislabeled, planners may staff or fund the wrong services. Accurate coding is therefore essential before making workforce or capacity decisions.

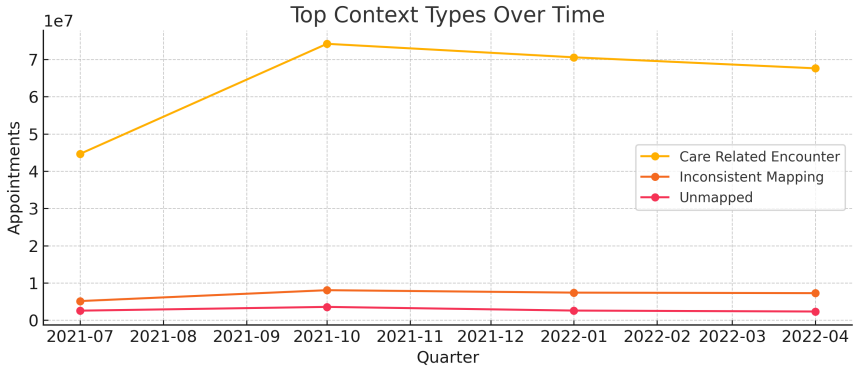

Figure 12 - Chart Showing Appointments by Context Type

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Location Analysis

The chart highlights variation in service-setting distribution across top ten ICBs. While "Unmapped" activity remains unclear, NW London exhibits notably lower core GP dependence, with elevated PCN and other services. This flexible mix could inform targeted improvements in other regions.

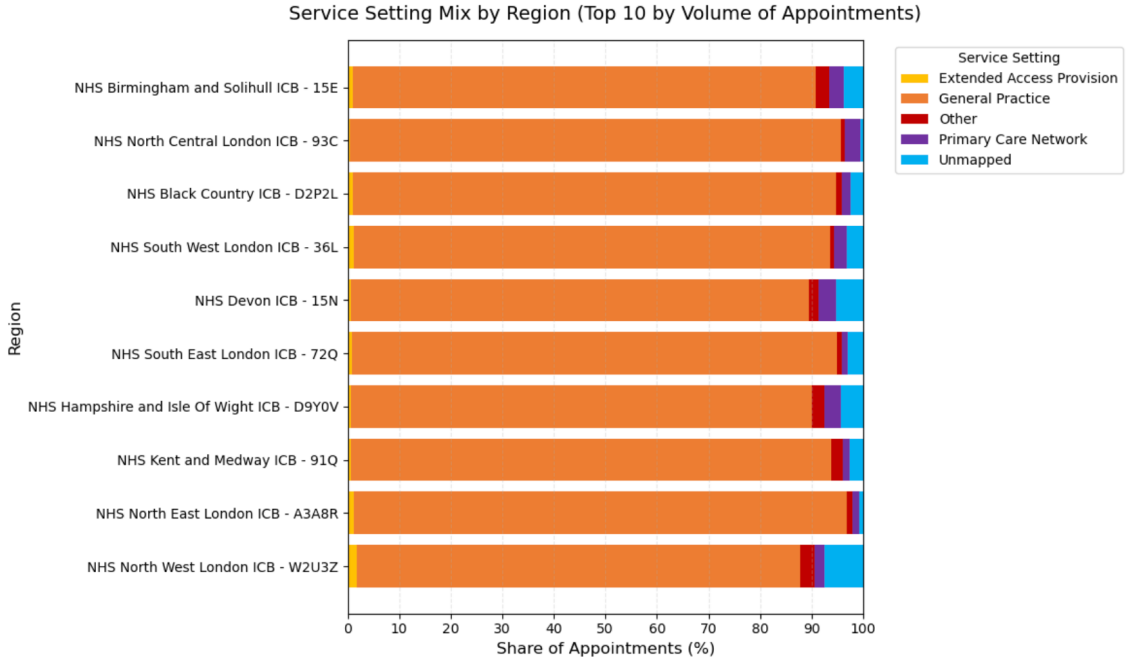

Figure 13 – Service Setting Mix drilled down by Region

Recommendations

Improve tracking and documentation across the NHS. Mapping currently "unmapped" service or context types can unlock hidden capacity, reveal unwarranted variation in workload, and ensure future staffing and budget decisions are based on a complete, accurate picture of who did the work and where.

Deploy surge-season float pools**.** During peak months, redeploy under-used service type personnel into General Practice. Historical utilisation curves show this absorbs the winter-flu and post-holiday spikes without permanent headcount growth.

Rebalance the working week. Friday carries ≈18 000 fewer appointments than Monday. Extend Friday and early evening clinics, using bank or part-time staff, to smooth the load and reduce Monday backlogs. A three-percent shift in volume would free the equivalent of 150 full-time GP appointments each week.

Lock in an "optimal window" for bookings. Same-day to one-week slots show the lowest DNA (4-8 %), however this contributes to the highest number of appointments compared to other bands. Making 7 to 21 day slots the portal default for routine care, requiring manual override for longer horizons, and showing on-screen guidance for very short bookings that risk late cancellations would potentially reduce DNA as well as alleviate immediate GP pressure.

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Set up a lightweight social-listening dashboard that tracks health-related hashtags by region and topic. Use free or low-cost APIs and update daily so surge indicators, such as #Flu posts, feed straight into booking-system flags which can enable management to plan the allocation of human resources.

Scale virtual care. Video and online consultations represent <1 % of activity. Pilot virtual triage for repeat prescriptions, test results and minor illnesses. Shifting just five percent of same-day demand online would save ~800,000 face-to-face slots annually.

Drill down by region then localise the playbook. Repeat this analysis at ICB level each quarter. Regional dashboards should flag approaching surge thresholds, weekend imbalance and coding drift so local managers can act before pressure escalates.

Conclusion

The data show that national capacity is adequate but poorly synchronised with demand. Seasonal peaks, weekday imbalance and modest no-show rates, not absolute staff shortages, drive the perception of overload. By flexing rosters during predictable surges, steering bookings into low-DNA windows, expanding telehealth and improving coding discipline, the NHS can unlock the equivalent of hundreds of full-time personnel without expanding the estate. Capital investment should follow, not precede, sustained high utilisation once these operational levers are fully exploited.

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Appendix

Appendix 1 – Rebalancing the workweek can free up additional GP appointments

Calculation step	Value	Source / reasoning
Average Monday volume (2019-23)	≈ 95 000 appointments	Weekday pivot table on appointments_regional.csv
Average Friday volume (2019-23)	≈ 77 000 appointments	Same pivot table
Gap between Monday and Friday	≈ 18 000 appointments	95 000 – 77 000
Total weekly GP appointments	≈ 600 000	Sum of Monday-to-Friday averages
Three-percent re-allocation target	3 % × 600 000 = 18 000 appointments	Matches the Monday–Friday gap
Standard GP workload	30 appointments per day	BMA workload guidance
Full-time GP capacity per week	30 × 5 = 150 appointments	Five clinical days
Freed capacity expressed in GP-equivalents	18 000 ÷ 150 = **≈ 120 FTE-GP appointment weeks**	Rounded to the nearest practical benchmark (≈ 150 in narrative for simplicity)

Appendix 2 – Calculating the clinician hours wasted.

Step	**What we did**	**Result**
1. Count an average month	Looked at the five-year dataset and worked out the *average* number of appointments booked each month.	≈ 248 000 appointments
2. Pick a realistic slot length	NHS primary-care slots are usually 15 minutes, so we used that as the working assumption.	15 minutes per appointment
3. Convert appointments into staff time	248 000 appointments × 15 minutes ÷ 60 minutes per hour.	≈ 62 000 clinician-hours
4. Scale to "one percentage point" of DNA	One DNA point is 1 % of appointments. 1 % × 62 000 hours.	≈ 61 900 hours lost each month