NHS Capacity Utilisation

Diagnostic Analysis Using Python

1st March 2024

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Background

Context

The NHS needs the right capacity to support an increasing population. Some stakeholders believe capacity should be added through investment others that resources should be better utilised. The NHS needs to understand current utilisation and trends within its' network to make the right decision(s).

The NHS believes missed GP appointments contribute to lower utilisation. To determine if this is true, utilisation of current resources needs to be understood and two questions have been posed:

1. Has there been adequate staff and capacity?
2. What was the actual resource utilisation?

Interpretation & Focus of Analysis

A. Is there adequate staff and capacity in the network (utilisation)?

B. Do missed GP appointments cause low utilisation?

Is there adequate staff and capacity in the network (utilisation)?
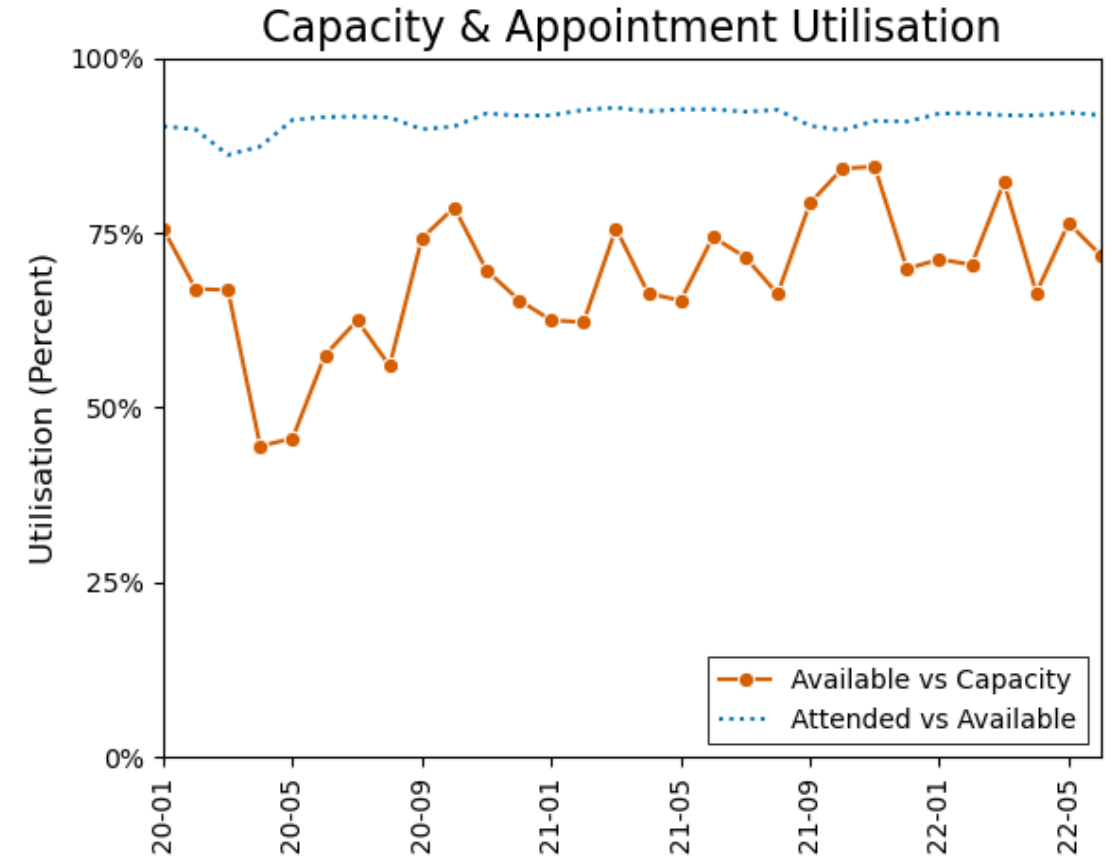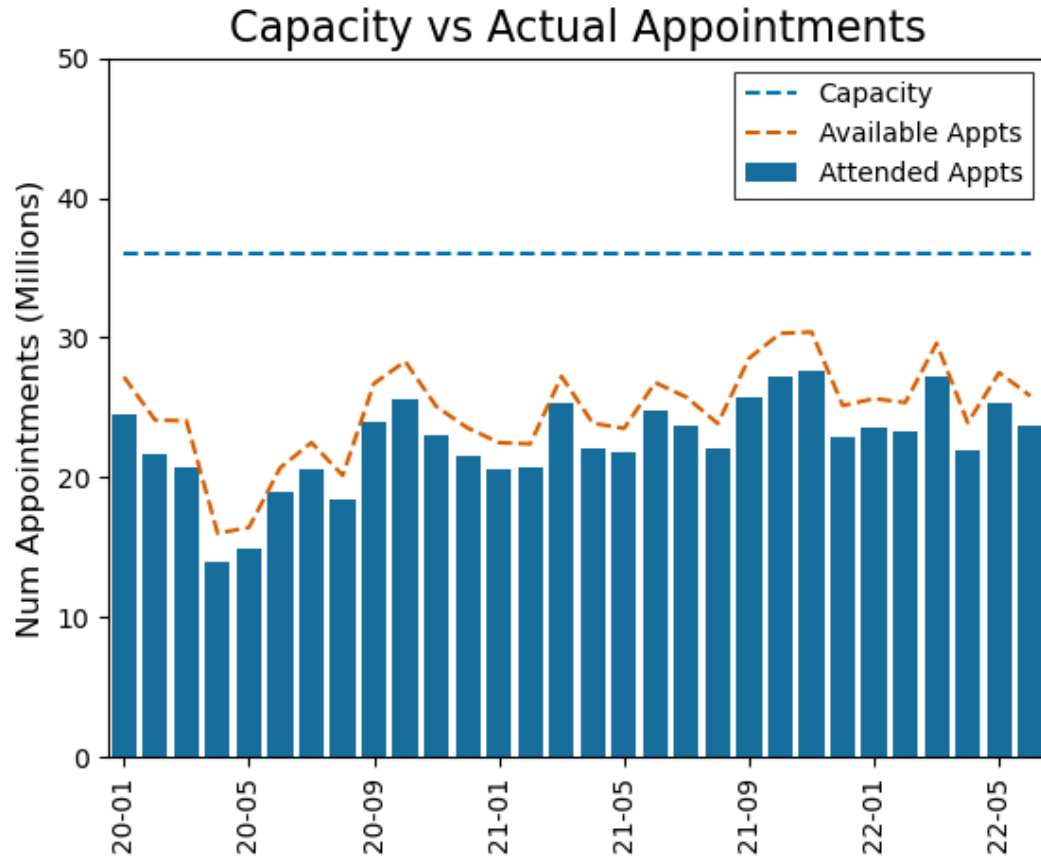
Capacity utilization ranges *between 44% and 75%* (mean = 68%)

Attendance of available appointments ranges *between 86% and 92%*, (mean = 91%)
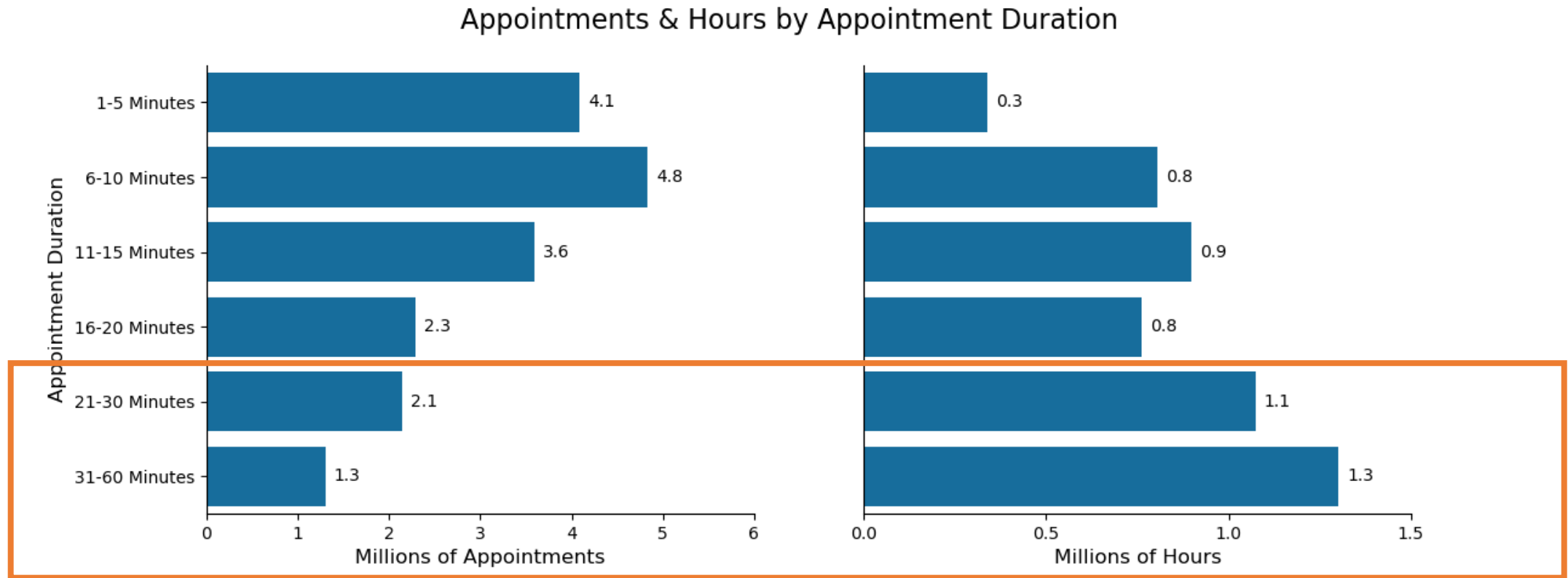
Is there adequate staff and capacity in the network (utilisation)?

Number of available appointments is a function of the number and type of staff, and the mix of appointment durations

$$num_{appointments} = f (num_{staff}, mix_{staff}, mix_{appointments})$$

Staffing data was **unavailable** therefore, **focus on appointment mix**

Is there adequate staff and capacity in the network (utilisation)?

Appointments & Hours by Appointment Duration

Appointment Duration	Millions of Appointments	Millions of Hours
1-5 Minutes	4.1	0.3
6-10 Minutes	4.8	0.8
11-15 Minutes	3.6	0.9
16-20 Minutes	2.3	0.8
21-30 Minutes	2.1	1.1
31-60 Minutes	1.3	1.3

19% of appointments consume 46% of available appointment time

Could the number of longer appointments be reduced to free up time for more shorter appointments?

# Is there adequate staff and capacity in the network (utilisation)?

Modelling the impact of a 10% reduction in longer appointments

Appt Duration	Appts per Month	10% Appts	Equiv 11-15 Min Appts	Net Monthly Impact	Annual Impact
21-30 Minutes	2.1	0.21	0.42	0.21	2.52
31-60 Minutes	1.3	0.13	0.52	0.39	4.68
Totals	**3.4**	**0.34**	**0.94**	**0.6**	**7.2**

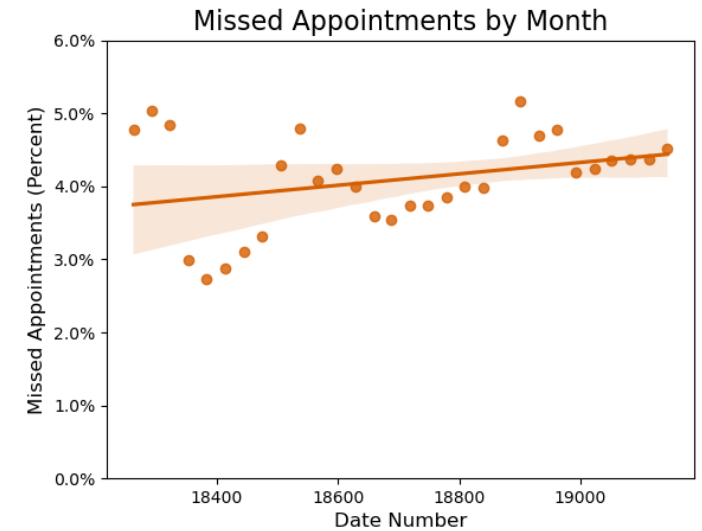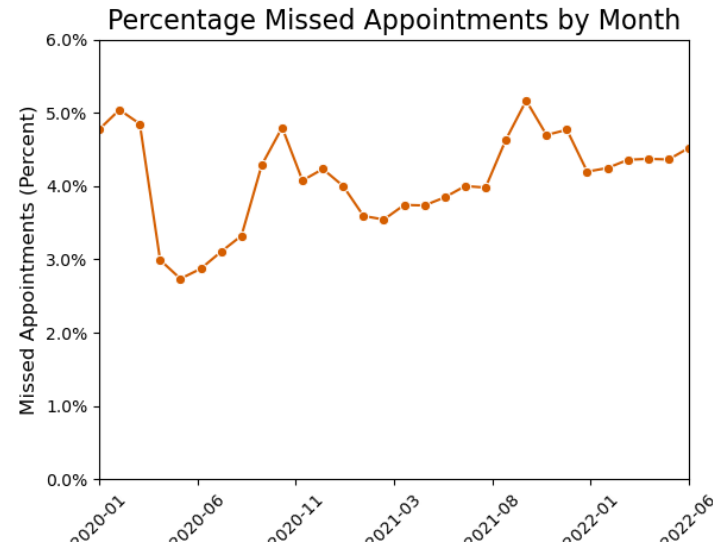Based on 742.8M appointments, this would equate to a 1% increase overall
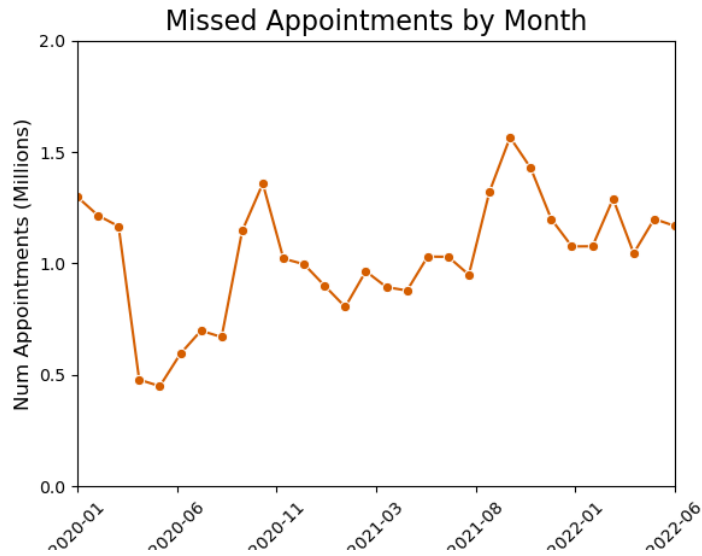
A *10% reduction* in longer appointments would *create 7.2M additional appointments* per year

Do missed GP appointments cause low utilisation?
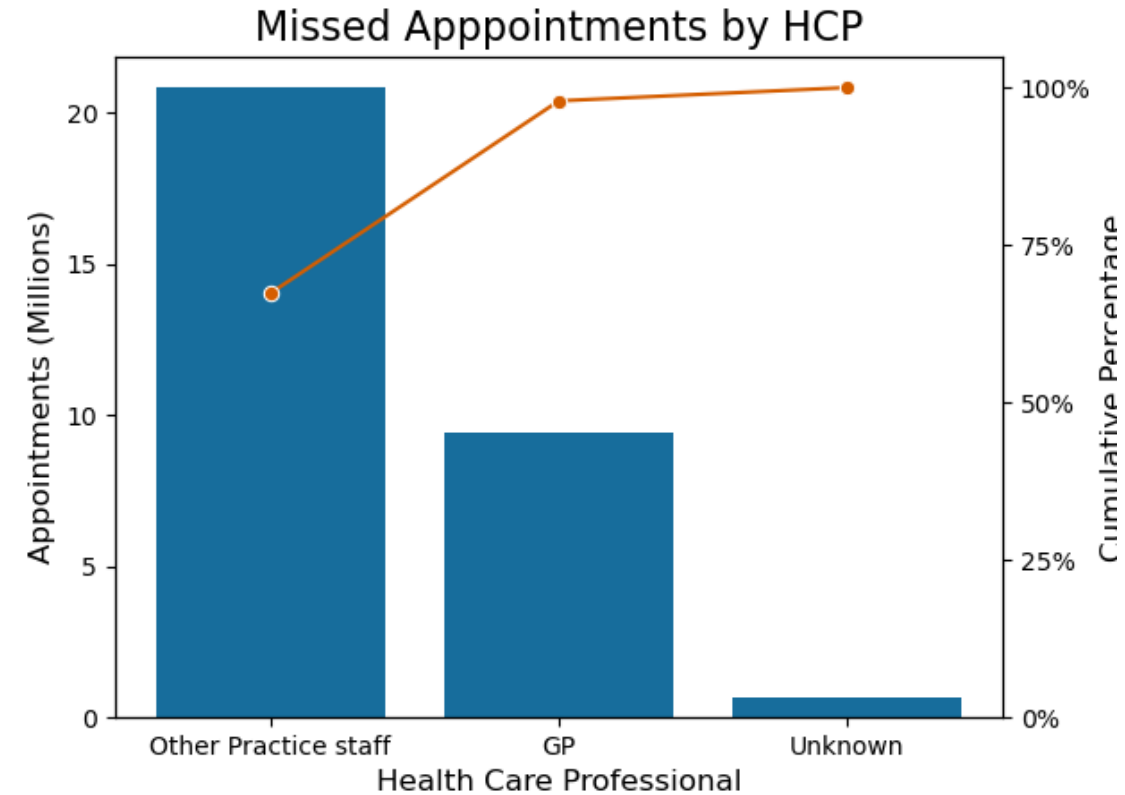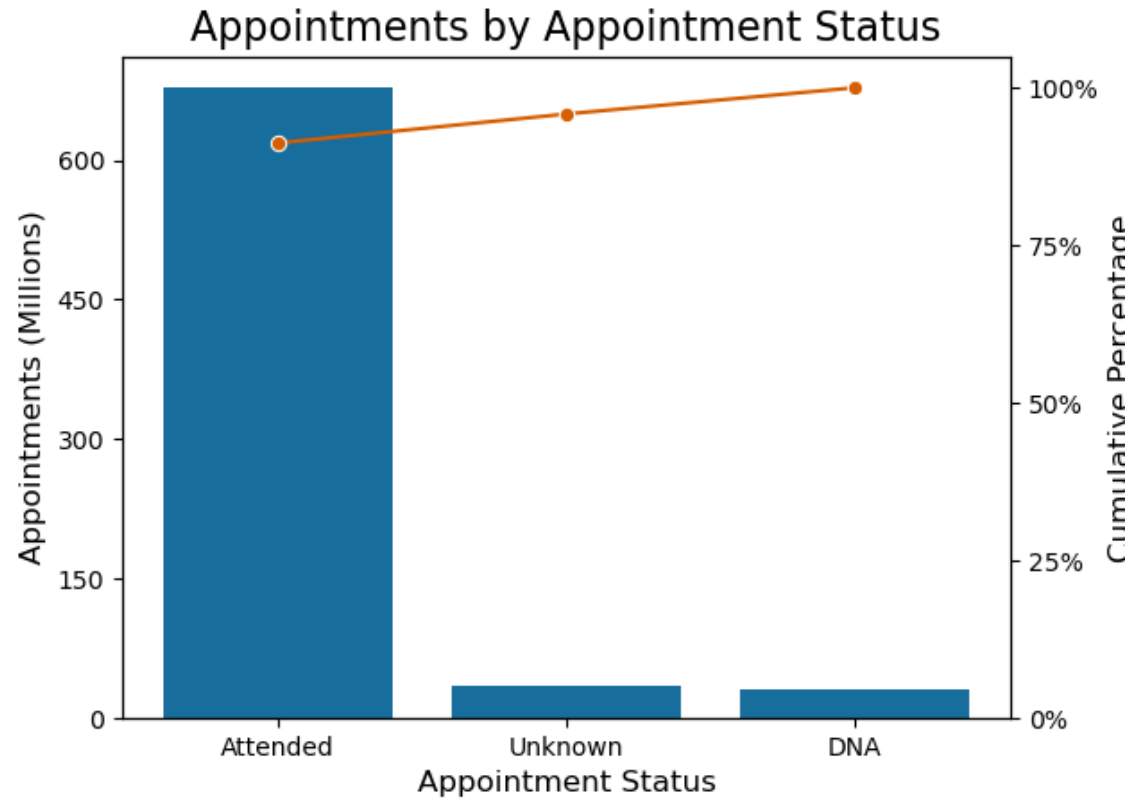
65% of all *missed appointments* are with *Other Practice Staff*, *30%* with *GPs*

Do missed GP appointments cause low utilisation?

If this **_trend continues_** there will be a further **_increase of 0.84M_** (0.24%) **_missed appointments_**

in the next twelve months

Recommendations & Next Steps

Is there adequate staff and capacity? *No*

- Available appointments range between 44% and 75% of quoted capacity

- Reducing or limiting the number of longer appointments by 10% would increase available appointments by 1% (Priority # 2)

- Staffing levels need to be reviewed (Priority #1)

Do missed GP appointments cause low utilisation? *Not significantly*

- 65% of missed appointments are with Other Practice Staff, 30% with GPs

- Although reducing this would be helpful, it would not materially impact on capacity utilization overall (Priority # 3)

Further analysis and investigation

- Quoted capacity should be reviewed to make sure its aligned with patient demand
  - Adding unneeded capacity would waste money and resources.
  - Not adding capacity that's needed would impact patient care

- Further investigation is required of unknown data values, 4.7% of appointment statuses and 24% of appointment durations