

# Analytical report

NHS: operational efficiency and utilisation trends

**Prepared by:** Yuliya Pazuunova

# Background and context

**Client:** National Health Services (NHS)

**Business problem:** Design and implement a financial and operational strategy to ensure NHS infrastructure and resources match population capacity

**Analytical problem:** Identify utilisation trends in the NHS network to inform the decision-making process around NHS budget allotment and operational efficiency

## **Analytical objectives/questions:**

1. Assess the full capacity and actual utilisation of existing infrastructure and resources
2. Identify utilisation trends and patterns and possible reasons for this
3. Recommend potential measures to reduce or eliminate identified inefficiencies

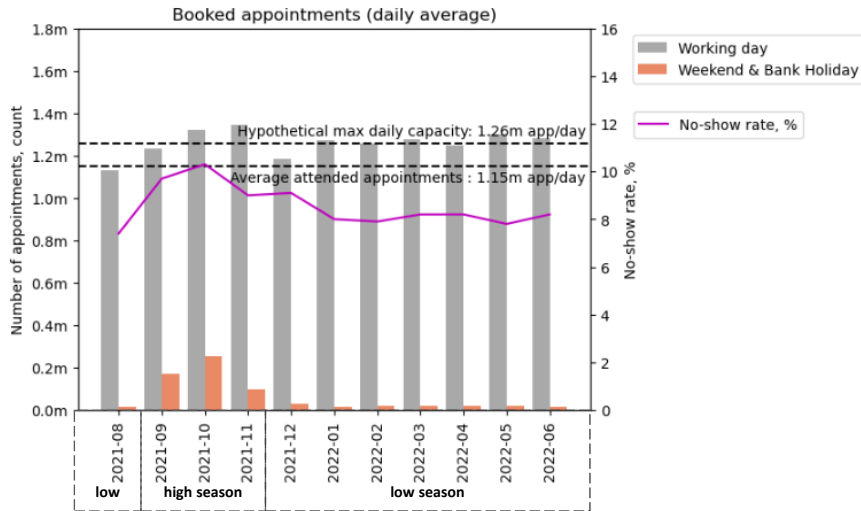
## **Data sources used**

### 1. Provided by client:

- actual\_duration.csv – Details of appointments made by patients. For example, the regional information, date, duration, and number of appointments pertaining to a certain class.
- appointments\_regional.csv – Details on the type of appointments made by patients. For example, regional information, the month of appointment, appointment status, healthcare professional, appointment mode, the time between booking and the appointment, as well as the number of appointments pertaining to a certain class.
- national\_categories.xlsx – Details of the national categories of appointments made by patients. For example, the regional information, date of appointment, service setting, type of context, national category, and the number of appointments pertaining to a certain class.

### 2. Data related to healthcare in the UK scraped from Twitter.

# Utilisation trends overview



## Key KPIs to manage

Waiting time

No-show rate

## Factors to address

Capacity  
(infrastructure  
and resources )

Workload

Attendance

## Possible solutions

Increase  
capacity

'Smart  
scheduling'

Appointment  
reminders

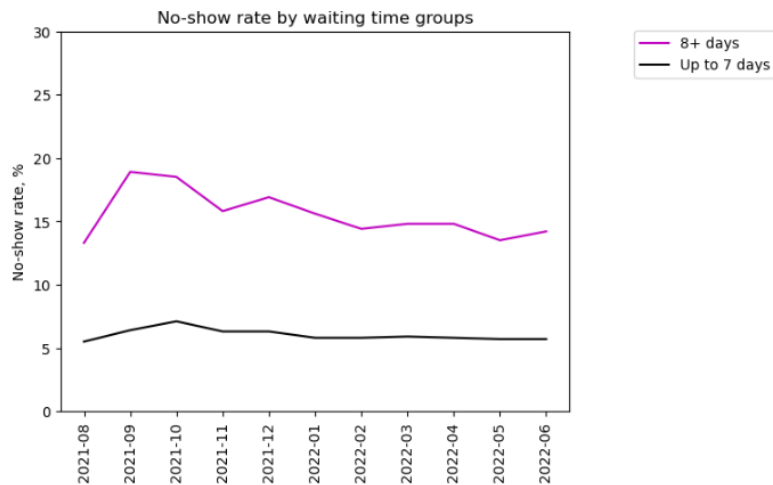
Leaves policy

Time-slots  
optimisation

## Recommendations

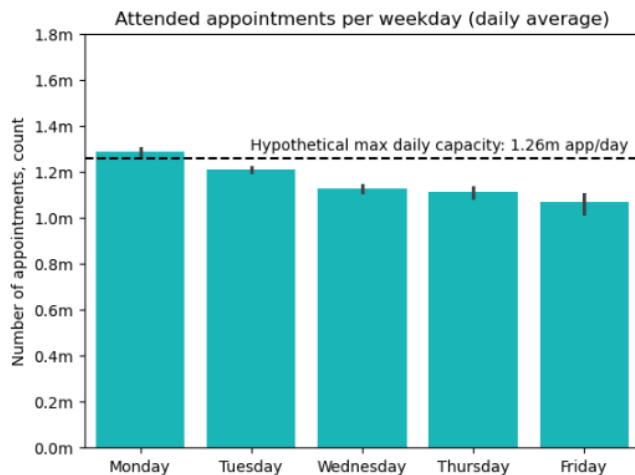
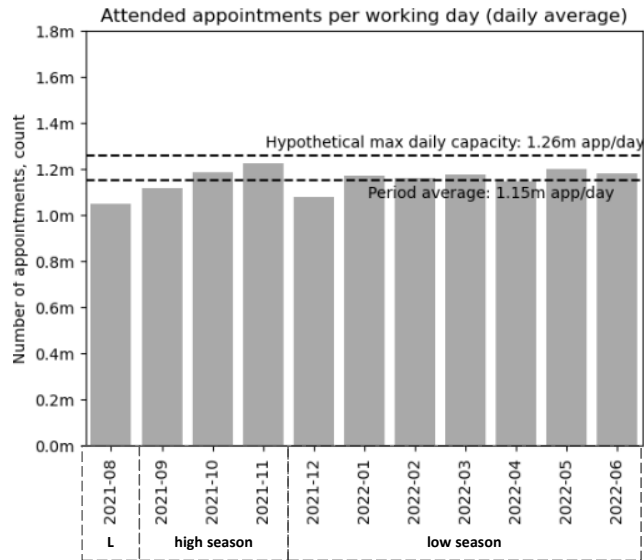
Prioritise free and low-cost measures:

- 'Smart scheduling'
- Appointment reminders
- Leaves policy



Note: No show rate = No show number / Total number of booked appointments.  
No show number = appointments with 'Did Not Attend' and 'Unknown' appointment status per NHS data.

# Demand and capacity management



## Seasonal patterns

Weekly

Annual

## Possible solutions

'Smart scheduling'  
(reallocate non-urgent appointments from high- to low-season)

## Recommended measures

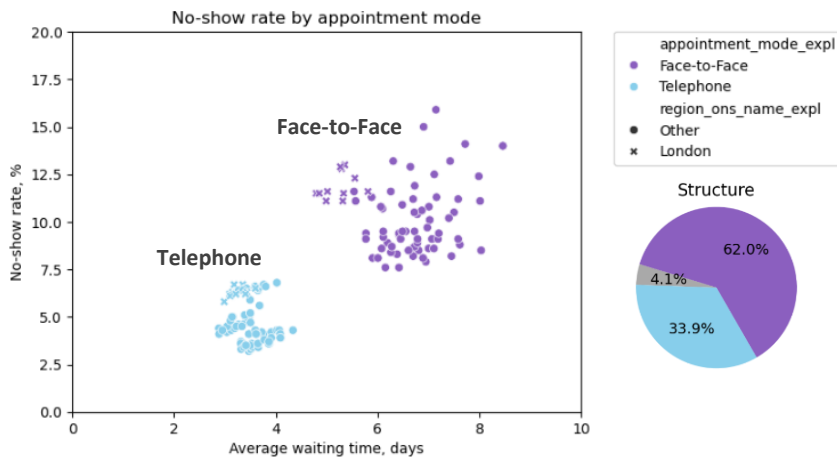
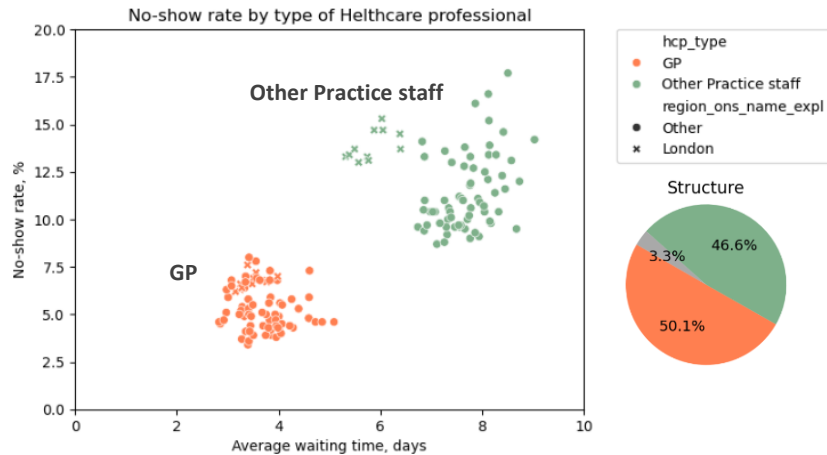
Book non-urgent  
appointments to Thursday  
and Friday

Reallocate non-urgent  
appointments from high-  
to low-season

## Further analysis

Our recommendation is to carry out analysis that focuses on identifying the categories of appointments that are suitable for rescheduling to the low season.

# Appointment attendance optimisation



Note: Each point represents observation per ONS region per month.

## Potential for optimisation:

### - By healthcare professional group & appointment mode

	GP	Other
F2F	High	Very high
Tel	Lower	High

### - By region

London	Other
Lower	Higher

### - By waiting time groups

Up to 7 days	8+ days
Lower	Very high

## Recommended measures

- Appointment reminders
- Promote telephone appointment setting over F2F, where possible

Focus effort on segments with higher potential for optimisation

# Recommendations summary

1. Use appointment reminders to actively manage customer attendance and reduce missed appointments.
2. Focus on appointments that have a waiting time of more than 8 days, appointments with other healthcare professionals, face-to-face GP appointments and appointments in regions other than London to optimize no-show rates.
3. Take measures to slow down or reverse the trend of decreasing share of appointments in telephone mode. This can be achieved through increasing client awareness about the Telephone option and, potentially, making the Telephone option default for services where it is suitable.
4. Implement 'smart scheduling' by scheduling non-urgent appointments for Thursdays and Fridays to smooth workload seasonality on a weekly horizon.
5. Conduct an analysis to identify categories of appointments that can be rescheduled from the high season (September - November) to the low season on an annual horizon to reduce waiting times and working hours on weekends in the high season, resulting in cost savings on compensation for working on holidays.
6. Implement leave policies that stimulate healthcare professionals to take leave during the low season (December - July) to manage resource availability.