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# NHS in Crisis: Increased Demand, Staffing Shortages, and Funding Cuts - What Can We Do to Save Our National Health Service?

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# Abstract

The National Health Service (NHS) in the UK is facing increasing demand for care, coupled with ongoing challenges around capacity and funding. In this report, we will examine the current state of the NHS, including trends in demand for services and capacity to meet that demand. We will also explore the impact of these factors on patient care and consider recommendations for how the NHS can be improved. By understanding the root causes of the current challenges facing the NHS, we can work towards finding solutions that ensure that all patients have access to high-quality care. This report aims to gain an insight as to why A&E waiting times are increasing and will be split into three parts:

1. Why demand for NHS services has increased so dramatically
2. Why the quality of service and capacity have reduced
3. Conclusions and recommendations

# Why has demand for NHS services increased?

## Population Increase

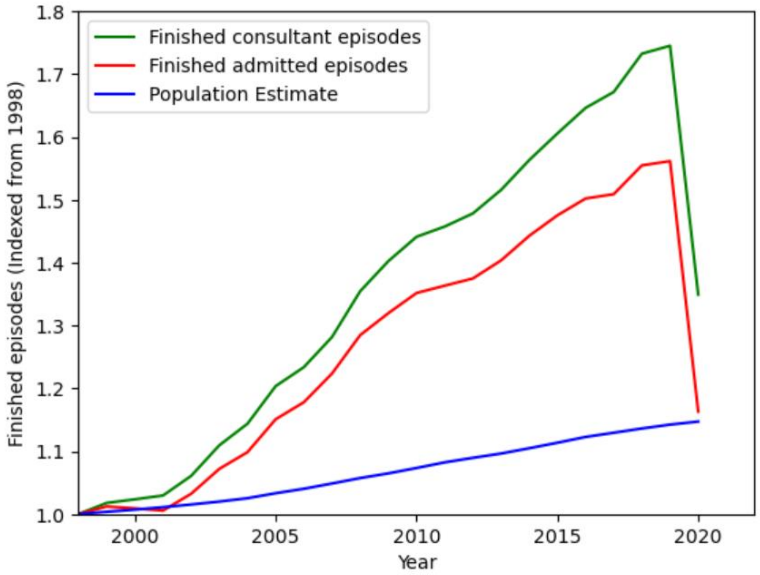



*Figure 1: Change in number of admission episodes and population indexed from 1998* (Roskams, 2022)

Demand for NHS services has increased significantly over the last 20 years, due to a confluence of factors including demographic changes and increased complexity of care. From 1998 to 2020, the population of England grew from 58 million to 67 million, representing a 15% increase, hence it may be expected for hospital admissions to increase with similar magnitude. Despite this, the number of finished consultant episodes in UK hospitals has soared by over 70% at the peak in 2019-2020, indicating the increase in hospital admissions is not driven solely by population growth.

# Ageing population

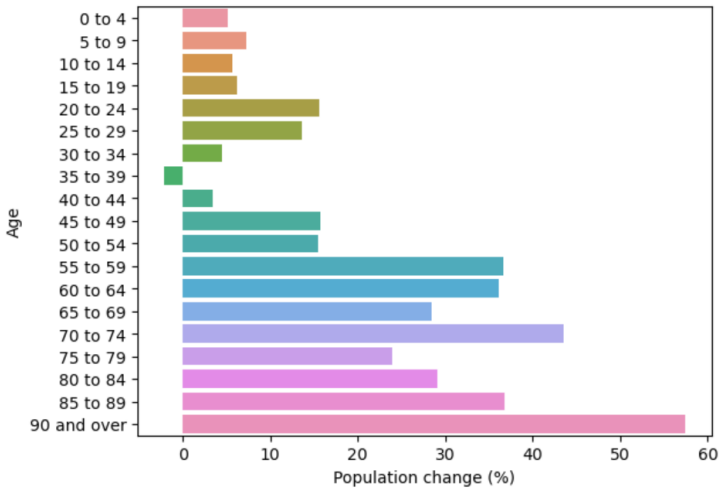



*Figure 2: Change in population in England from 2001 to 2021 (%)* (Park, 2021)

The population of the UK overall has aged significantly due to significant improvements in life expectancy and declining fertility rates since the 1960s (Lewis, 2021). Figure 2 shows the absolute increase in population per age bracket in 1000s based on data collected in England from the 2021 and 2001 census. There is an overall trend of all age brackets increasing, which is consistent with population increase, however there is a disproportionate growth of those over the age of 55 compared to those below 55.

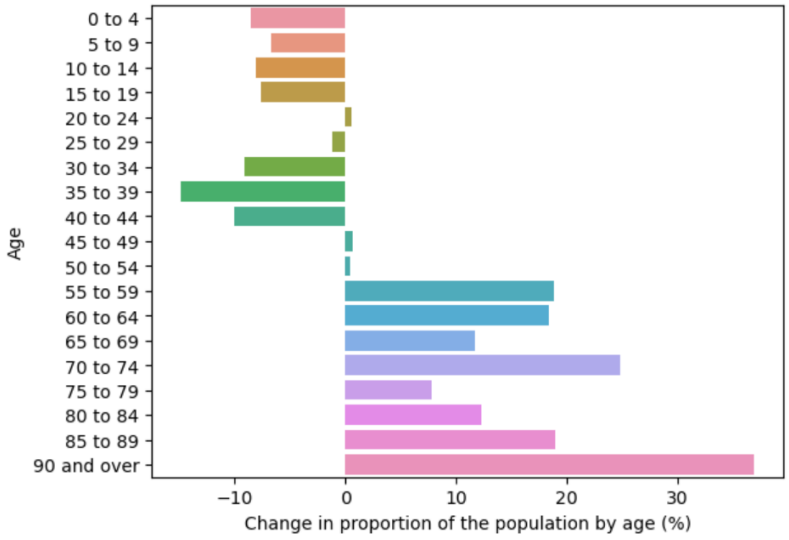
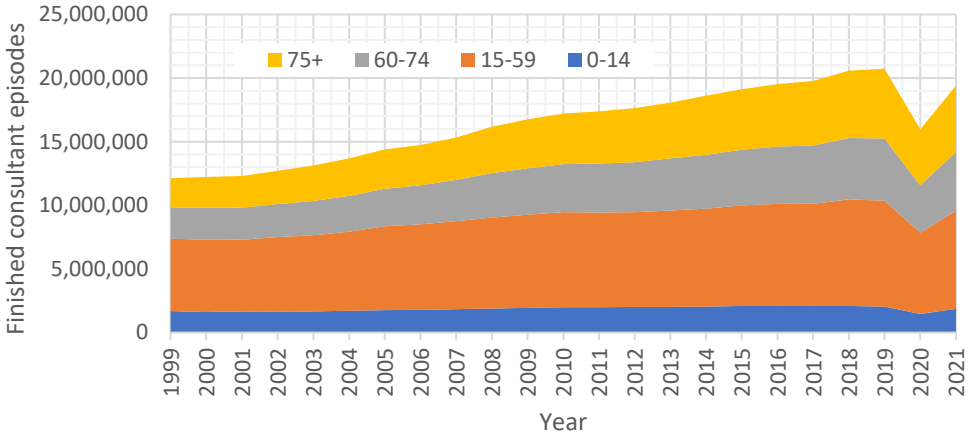



*Figure 3: Percentage change in proportion of population by age in England from 2001 to 2021* (Park, 2021)

Figure 3 shows the change in the proportion of the population represented by each individual age group as a percentage, illustrating the overall demographic shift of England. It can be clearly seen that the proportion of the population under 40 has declined modestly while simultaneously the proportion of those over 55 has increased significantly. This is particularly true of those aged 90+, who represented an over

30% increase in proportion of the population. These fastest growing age groups are significantly more likely to require NHS services, hence adding fuel to the growing engine of demand on NHS services.




| | 0-14 | 15-59 | 60-74 | 75+ |
|---|---|---|---|---|
| Growth in FCE's from 1999 to 2001 | 12% | 35% | 88% | 126% |

*Figure 4: Finished consultant episodes by age from 1999 to 2021* (*Hospital Admitted Patient Care Activity,* 1999-2022)

Figure 4 shows the breakdown of finished consultant episodes by age bracket from 1999 to 2021 and it supports the hypothesis that the increase in demand is led by an increasing older population. Finished consultant episodes for those over the age of 60 have doubled in the last 20 years while those under 60 have increased by 30%. While the increase in FCE's may be mainly fuelled by an increase in older generations, the increase in FCE's for those under 60 is still increasing at a faster rate than the population over a similar period, during a time when these younger generations contributed less significantly to overall population growth. This suggests that demographic shifts within the population are not the leading driver of increased NHS demand.

# Increased complexity of care

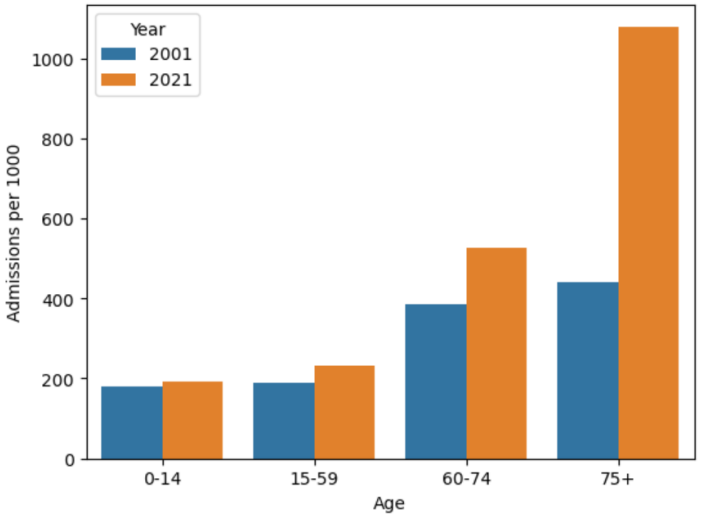



*Figure 5: Admissions per 1000 by age from 2001 to 2021*

In the past 20 years there have been major breakthroughs in healthcare, pharmaceutical development and diagnostic techniques which have promoted an improved life expectancy and greater quality of life for patients. As a result of these breakthroughs, many patients who previously wouldn't have been able to receive treatment are now admitted into hospitals to receive care. Figure 5 shows the number of admissions per 1000 within each age group from 2001 to 2021. For each age group there are more admissions per 1000 in 2021 than 2001, and the older the age group, the larger the difference in the number of admissions. This is particularly true of those in the 75+ age bracket, whose rate of admissions has more than doubled over the 20-year period. This is indicative of an increased complexity of care and greater capacity to treat chronic illness, which ultimately has led to increased demand on NHS services.

# Why has capacity within the NHS decreased?

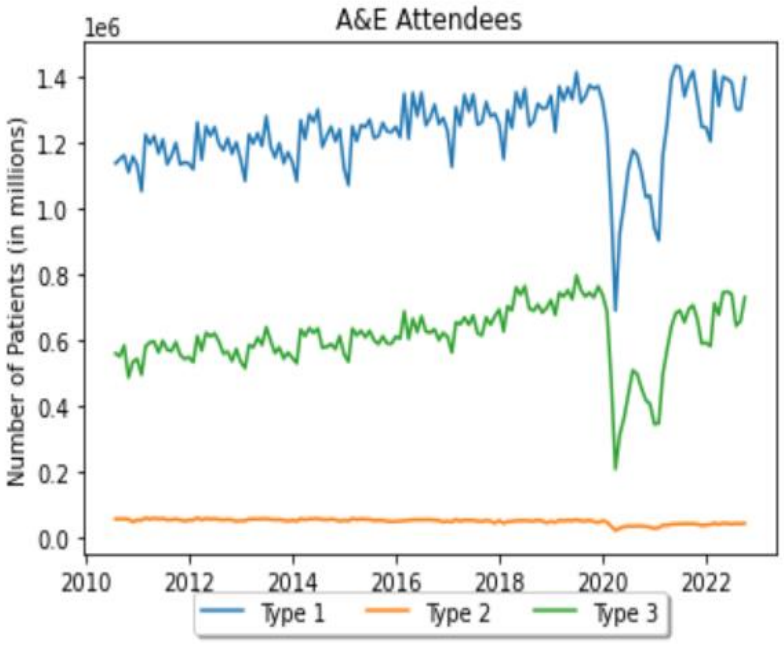



*Figure 6: Number of patients by care type from 2010 to 2022*

Figure 6 shows the breakdown of different care types utilized within A&E departments, to help understand trends within the different care types offered. Table 2 summarizes the definitions of the different care types shown in Figure 6. From figure 6 we can see that Type 1 departments are responsible for the majority admissions and therefore increased pressure within Type 1 departments will result in increased waiting times.

| Care type | Definition |
|---|---|
| Type 1 | A consultant led 24-hour service with full resuscitation facilities and designated accommodation for the reception of accident and emergency patients. |
| Type 2 | A consultant led single specialty accident and emergency service (e.g., ophthalmology, dental) with designated accommodation for the reception of patients. |
| Type 3 | departments treat the least minor injuries and illnesses (sprains for example) and can be routinely accessed without an appointment. (NHS 2019). |

*Table 2: Definitions of care types within NHS A&E admissions*

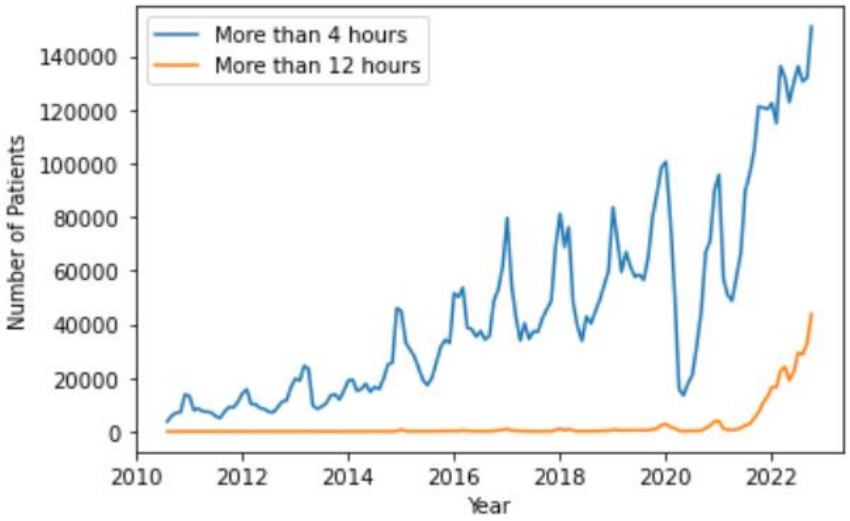



*Figure 7: Number of patients waiting >4 hours and >12 hours before admission 2010-2022*

During the early 2000s the labour party introduced the four-hour standard, dictating the targeted time within which attendees should be admitted, transferred, or discharged from arrival (The Nuffield Trust 2022). Figure 7 allows us to see the overall increasing trend in total patients waiting longer than the 4-hour standard and more than 12 hours. Furthermore, figure 7 shows us that since early 2021 waiting times have seen a massive spike and have consistently been rising. When digging into this further we can see how seasonal trends come into play. During the Winter months waiting times experience a sharp spike which would assume is due to a combination of the winter flu and staff shortages, which will be elaborated on further in this report.

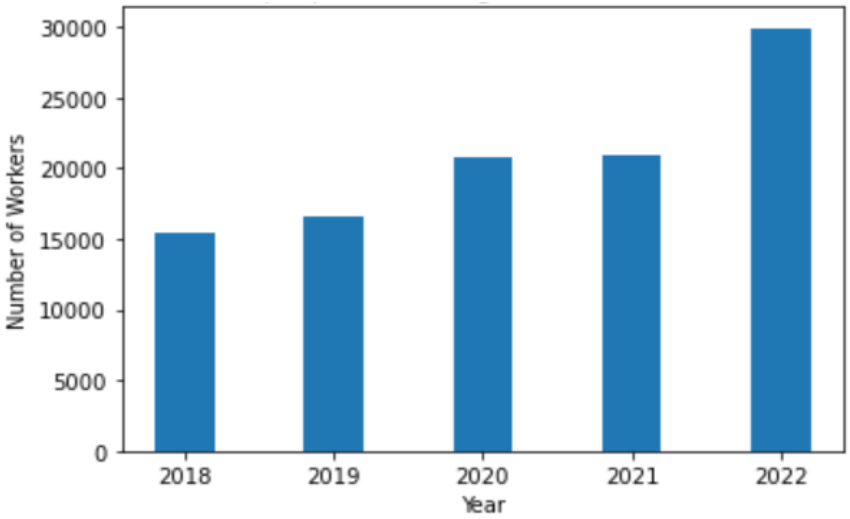



*Figure 8: Total number of people on the register with address outside the UK*

Migrant workers play a vital role in the National Health Service (NHS), with approximately 220,000 out of 1.4 million staff reporting a non-British nationality. This represents one in six of NHS staff with a known nationality, and these staff hold over 200 different nationalities. Data from March 31st of each year shows a minimal increase in the number of workers with an address outside of the UK, at 0.6%. This increase can

be attributed to the difficulties caused by Brexit in the NHS recruitment process. Since then, there has been a stagnant intake of workers from EU countries, but an increased intake from Africa and Asia. This adjustment period has likely impacted the demand for and supply of workers, as evidenced by the Royal College of Physicians census, which found that 48% of positions for consultants were unfilled, with half of them receiving no applications.

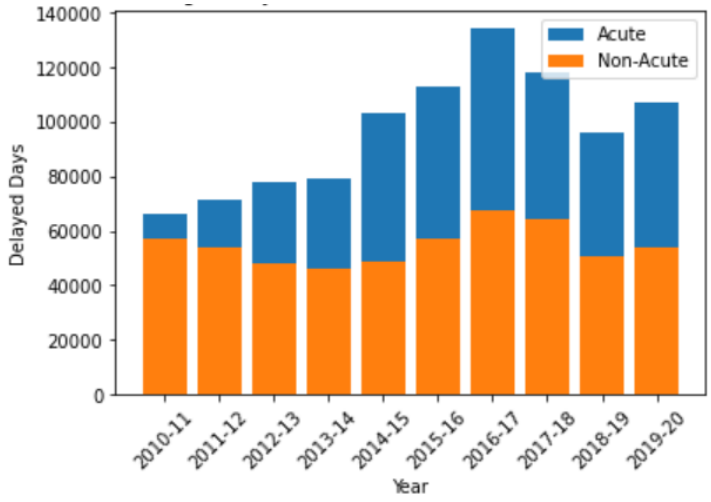



*Figure 9: Average delay in transfer of acute and non-acute care*

One of the impacts that has been observed is an increase in the average delays in patient transfers of care. This occurs when a hospital bed is occupied by a patient who is ready to be discharged. According to NHS England, which is responsible for monitoring these delays nationally, a patient is considered ready for transfer when a clinical decision has been made that the patient is ready to be transferred and a multidisciplinary team has determined that the patient is safe to be discharged or transferred (The Kings Fund, 2022). Figure 9 shows the number of delayed days over time. From 2016-2017, there was a gradual decrease in the total number of delayed days. However, this trend was reversed in the final months of 2018, with a 24.7% increase from December 2018 to January 2020. Upon further analysis of the data provided by the NHS, it was found that the main causes of the increase in delayed days were due to patients awaiting further non-acute NHS care, residential home placement, nursing home placement, or care in their own home (NHS, 2020).

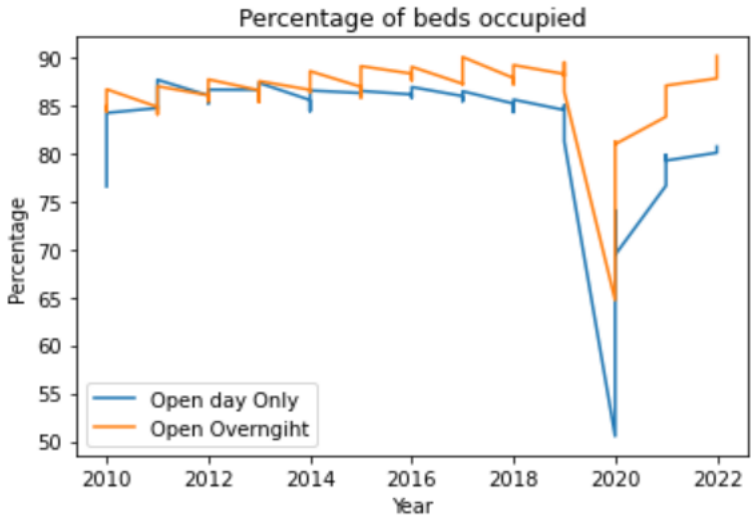



*Figure 10: Percentage of beds occupied*

Figure 10 illustrates the percentage of occupied hospital beds over time. It is evident that there are seasonal trends, with higher occupancy rates during the winter months. There was a significant drop in bed occupancy during the COVID-19 pandemic due to regulations implemented by the NHS. However, upon the lifting of these restrictions, there was a sharp increase in bed occupancy in 2021, reaching record highs in 2022.


*Figure 11: Number of hospital beds from 1987 to 2020*

Figure 6 illustrates the marked decline in the number of hospital beds in the NHS since the late 1980s. The total number of hospital beds in England has decreased by more than half over the past three decades, falling from approximately 299,000 in 1987/88 to 141,000 in 2019/20. During this time, the number of patients treated by the NHS has increased significantly (The Kings Fund, 2022). As previously discussed, the combination of an aging population and a growing population suggests that this trend is likely to continue.

# 111 services

The NHS 111 line was introduced in 2014 to provide a fast line to connect to the most appropriate service for urgent treatment and avoid backlogs in A&E waiting rooms. 111 respondents direct non-life threating calls to specific services and help book A&E appointments with your local A&E to control the flow of waiting times. 111 respondents comprise of health advisors and paramedics to help facilitate the most appropriate diagnosis and discharge.

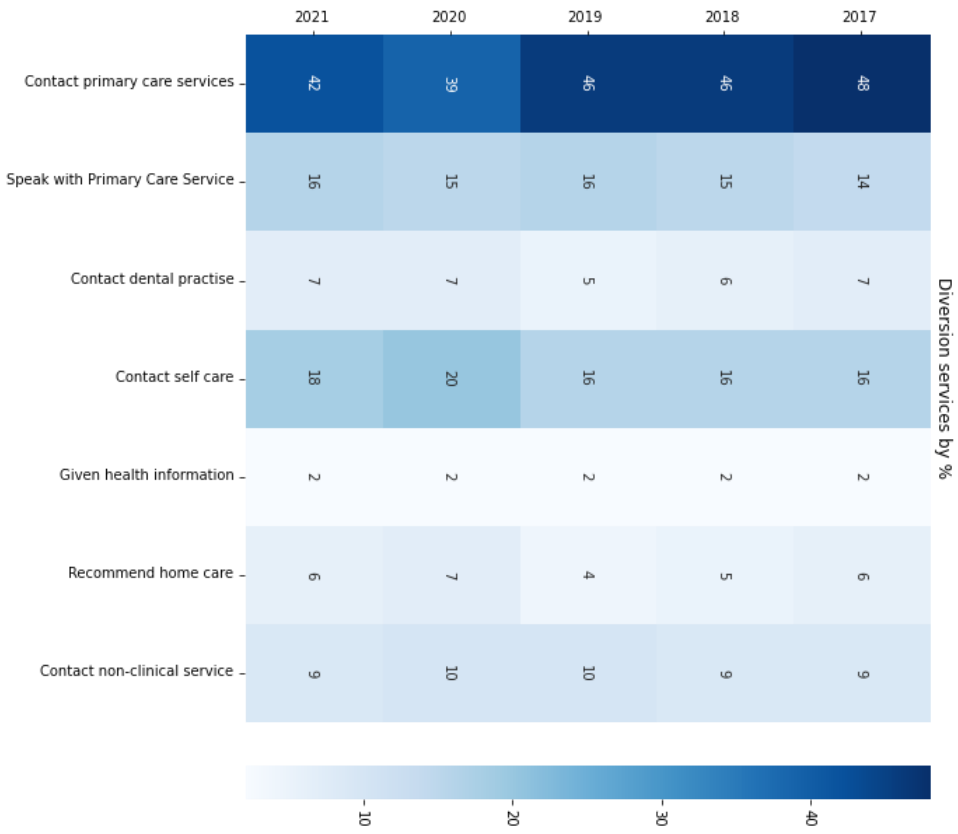



*Figure 12: Heatmap showing the diversion strategy for call patients by proportional distribution.*

Figure 12 illustrates the diversion services available offered by 111 callers. For urgent, non-life-threatening calls, the most popular service is to contact and speak with the primary care service. This entails of a primary care practitioner at a GP, walk in centre, minor injuries unit and urgent care centres. Through the density shading, 2020 saw the lowest in contacting primary care services in the last 5 years in an attempt to relief surge in demand due to health implications from the pandemic – allocating to other services such as to contact nonclinical services where automated responses for test results are handled.

Over the 5-year period, the distribution of diversion strategies has remained relatively stable. However, in 2020, during the peak of the COVID-19 pandemic, there was a 25% increase in the use of contact self-care. This aligns with government measures to promote social distancing and reduce the spread of the virus in

public spaces, particularly in critical areas such as hospitals and healthcare settings. Additionally, the use of recommended home care, which includes self-guided advice and the option to contact a primary care practitioner if the condition does not improve at home, also reached its highest levels in the last 5 years.

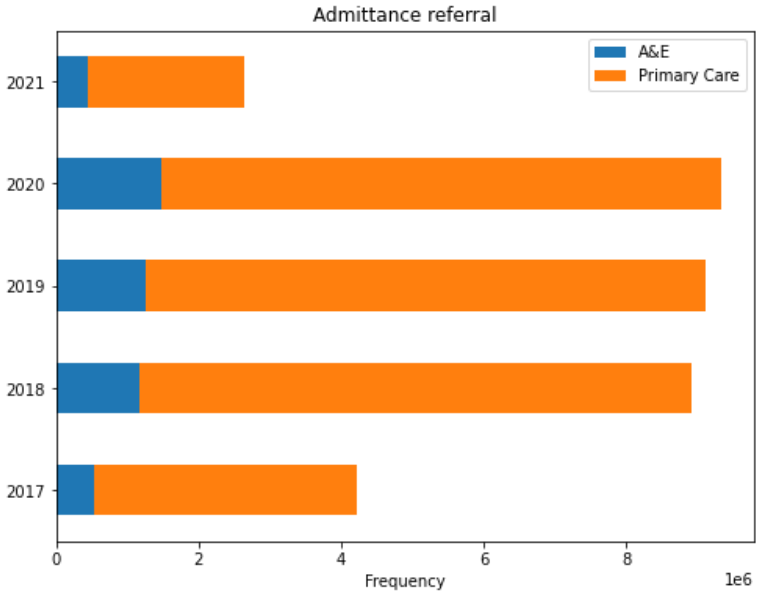



*Figure 13: Frequency distribution for healthcare institution referrals.*

Figure 13 illustrates how A&E services has increased over the last 5 years. Admittance from 111 calls is predominantly biased towards directing to primary case institutions such as local GP and walk in centres. Admittance to A&E increased by 16% from 2019 – 2020.

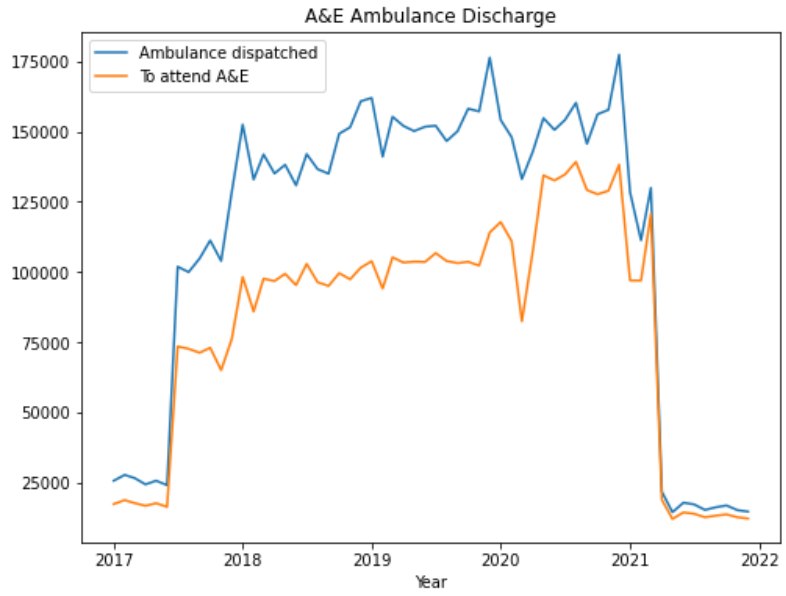



FIGURE 14: FREQUENCY OF AMBULANCE DISPATCH AND A&E ATTENDANTS

Seasonality peaks can be observed from the line plot of sum of ambulances dispatched, as shown in Figure 14. For instance, during the latter quarters of the year towards the holiday seasons. A&E admittance had a sharp rise from early 2020 to the end of Q1 in line with the early stages of transmission of the virus. The relatively high volume of A&E during 2020 presents risk towards NHS occupancy and quality of healthcare.

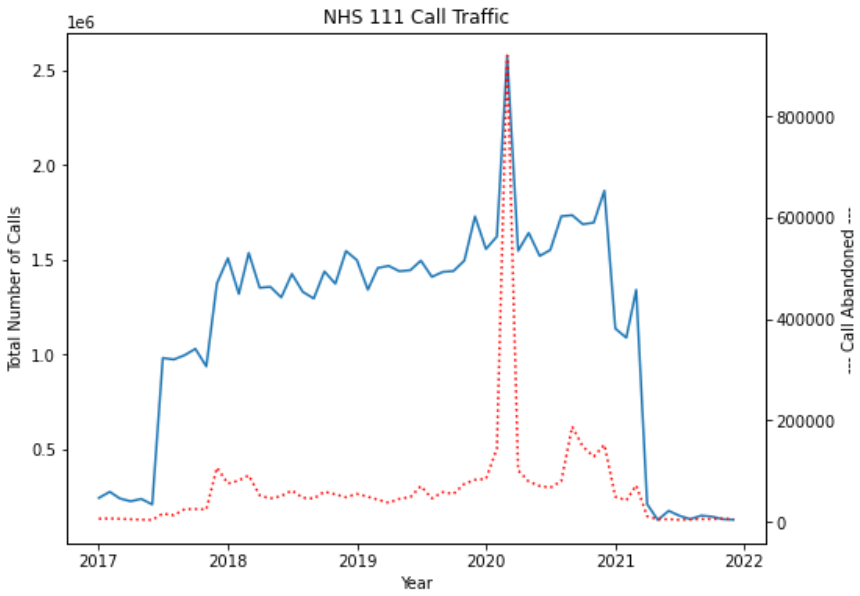



*Figure 15: Annual breakdown of NHS 111 call traffic*

Collating and summarising the data monthly for total of numbers of calls to NHS 111 line, a steady increase is presented annually, as shown in Figure 15. Seasonality for calls can be observed, with peaks in calls occurring during the end of years and early new years. A sharp rise in abandoned calls coincides with the highest record peak for total number of calls in Q1 of 2020.

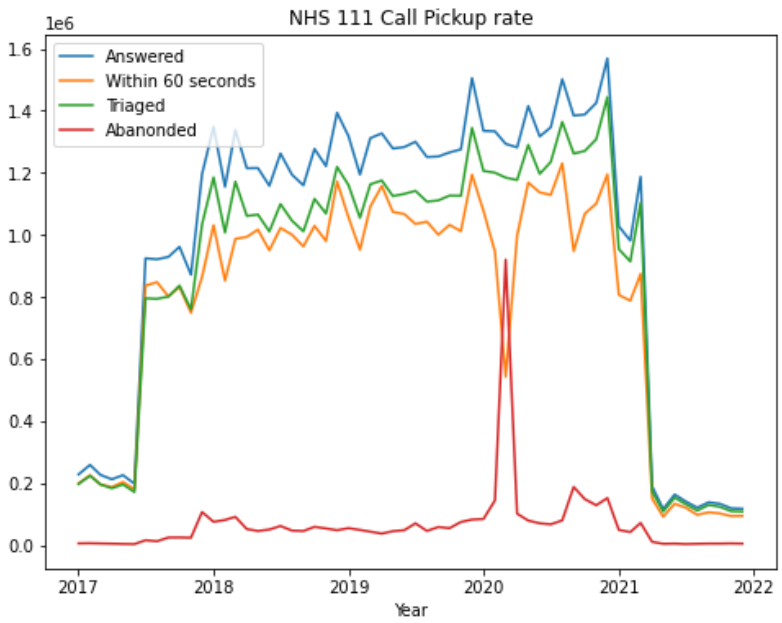



*Figure 16: Turnover of NHS 111 Call Pickup*

Analysing the pickup rate of calls, the response rate of answering calls within 60 seconds consecutively lags behind answered. A coincidence can be observed at early Q1 in 2020 whereby the number of cancelled calls aligned with the lowest rate of answering the phone within 60 seconds. This suggests turnover of recipient due to long waiting times is a positive correlation and can be used as a measure to improve user experience using 111.

The green line represents triage whereby an assessment case tool was opened to examine the patient's condition over the call. This allows for a more in-depth insights into the patient condition to discharge to the most appropriate service.

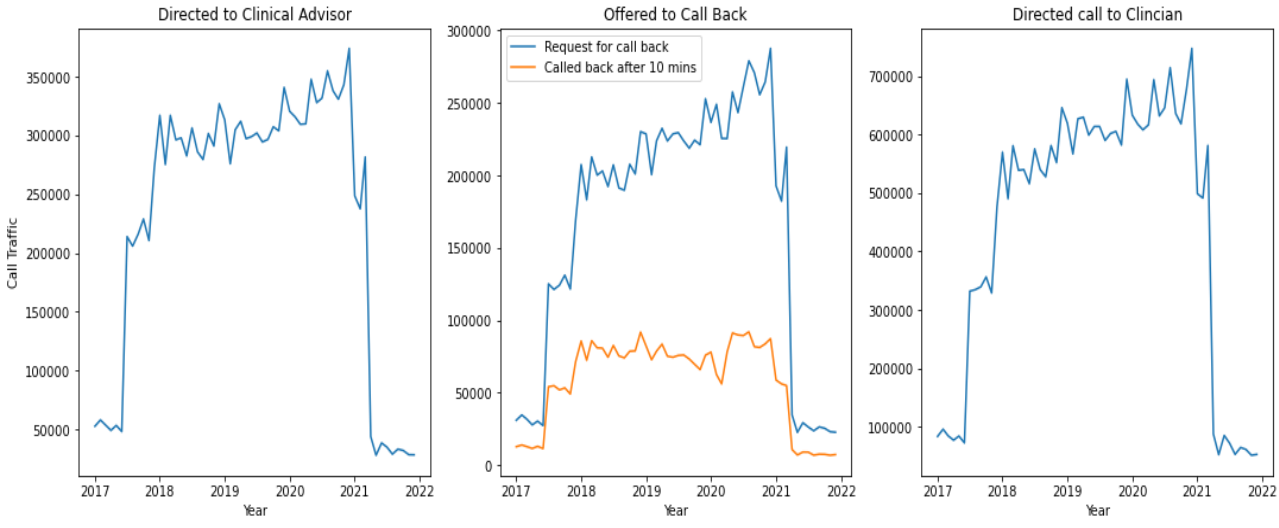



*Figure 17: Directed points after triage opened*

Decomposing the answered and processed successful calls, further related action to treating the call patient can be observed above for getting further examined. The chart for getting called back within 10 minutes after a request is around 3x short of that initial request, thus this metric needs to be improved in order to improve the patient's experience. Being directed to a clinician is the popular proposition after a call, doubled that of a clinical advisor, which all 3 direction strategies shows year on year increase in demand.

# Conclusions and Recommendations

This report explores three areas that affect the current state of the NHS Accident and Emergency department. It examines factors contributing to the demand for services, the decline in the quality of healthcare, and the shortcomings of NHS services. We suggest the following recommendations to reduce overall strain and efficiently maximise capacity of NHS services.

## Improve the infrastructure of the 111 helplines by automating responses and directing urgent cases to clinician advisors to improve the handling of calls within 60 seconds.

The 111 helpline is a service that provides advice and assistance for non-emergency health issues. The recommendation to improve its infrastructure involves using automated systems to handle routine queries and directing more urgent or complex cases to clinician advisors. This can help improve the efficiency of the helpline by reducing the workload of advisors and ensuring that calls are answered within 60 seconds.

## Work closely with the government to address the challenges posed by an aging population and ensure that immigration policy considers the capacity of the NHS to handle demand.

The population of the UK needs to be carefully managed to balance the needs of the economy, and the capacity of the NHS. The NHS is not feasibly able to support a further ageing population without further investment and given tough economic conditions due to covid, this may not be possible. Therefore, our recommendation would be for the NHS to work closely with government and to communicate the impending risk which are caused by ageing population, to inspire policy which helps to combat this. To manage the challenges posed by an aging population, the UK can implement a range of strategies, including increasing funding for healthcare, promoting healthy aging and supporting informal caregivers, investing in long-term care facilities and encouraging immigration in a way that takes into account the capacity of the healthcare system. By adopting a comprehensive approach to addressing the needs of an aging population, it is possible to improve the overall quality of life for older people and reduce the burden on the healthcare system.

## Automate the frontline pickup of the NHS 111 service and use automated services to direct calls to the appropriate department to reduce waiting times in A&E.

The recommendation to automate the frontline pickup of the NHS 111 service and use automated services to direct calls to the appropriate department is based on the findings of an exploratory data analysis, which showed a clear correlation between the length of time it takes to answer a call and the likelihood of the call being abandoned. Automating the pickup and directing calls to the appropriate department can help improve the efficiency of the 111 service and reduce waiting times in A&E.

## Adopt stricter criteria for delayed transfers of care and plan with third parties such as care home providers to facilitate efficient transitions, reduce bed occupancy, and potentially increase investment in bed capacity.

Delayed transfers of care occur when patients are ready to be discharged from the hospital but are unable to leave because there is no suitable care or support available for them. This can lead to increased waiting times in the hospital and can be a strain on resources. The recommendation to adopt stricter criteria for delayed transfers and plan ahead with third parties such as care home providers is based on the findings of an explanatory data analysis, which showed a clear correlation between delayed transfers and increased waiting times. By adopting stricter criteria and planning ahead with third parties, it is possible to facilitate more efficient transitions, reduce bed occupancy, and potentially increase investment in bed capacity.

## Consider increasing seasonal contracts for nurses or using students who wish to gain experience to alleviate pressure on the NHS during the winter season.

The NHS often experiences increased pressure during the winter season, which can lead to longer waiting times and a strain on resources. To alleviate this pressure, it is suggested that the NHS consider increasing seasonal contracts for nurses or using students who wish to gain experience. This can help increase capacity and improve efficiency during times of high demand.

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