The gap between need & supply of GP practice consultations

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Document control

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Executive Summary

Introduction

In the previous paper in this series, we showed that GP consultation rates, the average number of consultations per person, increased between 1995 and 2012, before falling steadily to 2019. Trends beyond this point become more difficult to interpret and the available evidence is not consistent. This is important contextual information for those keen to address patients' concerns about access to GP services, but additional insight is needed before a grounded policy response can be settled on. Interpreting trends in supply, would ideally take place alongside data on trends in patients' needs.

In this paper we seek to answer two related questions.

(1) How have consultation rates changed over time relative to need? i.e., are patients with a given level of need, more or less likely to receive a GP practice consultation now than they were in the past?

and,

(2) If gaps between need and supply of GP consultations exist, do we see any evidence of displaced demand and failure demand elsewhere in the healthcare system?

Our analysis covers the period from 2008 to 2019, and uses the primary care research database, CPRD Gold. Over this period there is close agreement between the various available data sources about trends in consultation rates. Supplementary analysis draws on data from the GP Patient Survey, the Emergency Care Dataset (ECDS) and Hospital Episode Statistics (HES) for admitted patient care.

Key findings

The use of GP practice consultations increases with age and with levels of morbidity. Since 2008, the population has aged and age-specific morbidity levels have increased. This suggests that need for GP practice consultations has grown, whilst the average number of consultations per person has reduced. We estimate that in 2019, a patient was 12.2% less likely to receive a consultation than a patient with similar needs in 2012. An additional 36.6 million consultations (+13.9%) would have been required to meet needs in 2019 as they were in 2012.

Patients are finding it increasingly difficult to contact and make a convenient appointment with their GP practice. It has become more common for patients to use emergency

departments and urgent care centres to access care that would normally be delivered by GP practices. Hospital admissions for acute, and to a lesser extent, chronic ambulatory care sensitive conditions, had been rising prior to the pandemic.

Implications for Midlands Integrated Care Boards

In 2019, most ICBs in the Midlands delivered more than their need-weighted share of GP practice consultations. The notable exception was Staffordshire and Stoke-on-Trent ICB, that delivered 11.3% fewer consultations than its comparative need levels indicate.

However, the supply of consultations relative to need has reduced substantially since 2012. None of the ICBs in the Midlands were meeting needs in 2019 at the national average need-adjusted rate from 2012. These need-supply gaps were modest in some ICBs, such as Herefordshire and Worcestershire, but were substantial in many.

All ICBs have seen a substantial rise in the number of patients reporting difficulties getting through to their GP practice by telephone. Herefordshire and Worcestershire, and Coventry and Warwickshire ICBs have resisted this trend more than others, but even here, more than 40% of patients reported difficulties contacting their GP practice in 2022.

Rates of avoidable ED attendances have increased substantially since the pandemic, and were particularly high in 2022, in the Black Country and Staffordshire and Stoke-on-Trent ICBs. Rates of admissions of ambulatory care sensitive conditions had been rising before the pandemic. In 2022, these rates were notably high in Birmingham and Solihull, the Black Country, Staffordshire and Stoke-on-Trent, and Northamptonshire ICBs.

In conclusion, the gap between need and supply for GP practice consultations, relative to service levels delivered in 2012, is present to varying degrees in all ICBs in the Midlands. In those ICBs where the gap is modest, the effects may be limited to increased patient inconvenience. In those ICBs with somewhat larger need-supply gaps, we see some evidence of displaced demand impacting on activity levels at emergency departments. And in those ICBs with the largest gaps, there is evidence of failure demand in the form of avoidable hospital admissions.

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Contents

1. Measuring patient need

In this paper, we estimate relative levels of needs with reference to four variables: age, sex, deprivation, and morbidity. Deprivation is measured using the area of residence of patient and the English Indices of Deprivation 2019.[1][i] Morbidity is measured using the Cambridge Multimorbidity Score, a composite measure based on the presence of 20 groups of conditions, and calibrated to predict future GP Practice consultation rates.[ii]

The number of consultations that a patient receives is strongly associated with these four factors. Figure 1 shows adjusted incident risk ratios, the chance that a patient will receive a consultation in a fixed time period, relative to a reference group (male aged 11, least deprived quintile for deprivation, no comorbidities for multimorbidity).

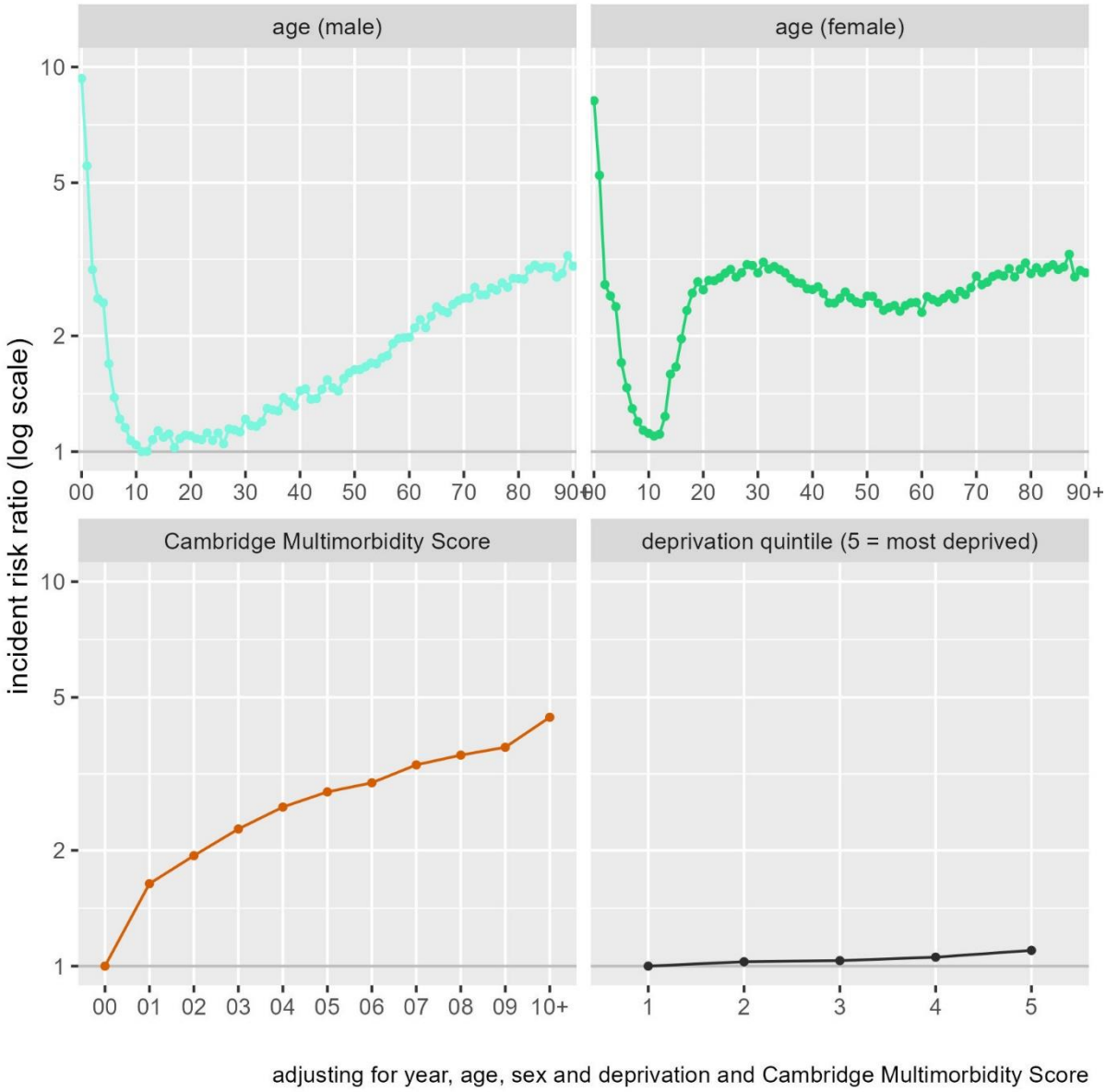
The top two panels display incident risk ratios by age for men (top left) and women (top right), relative to boys aged 11 years (the reference category)[2], having controlled for differences in deprivation and morbidity. In both men and women, adjusted consultation rates decline over the first ten years of life, to about one tenth of the level seen at birth. Rates then increase, sharply for women and more gradually for men to the age of 25. Rates continue to rise for the remainder of life for men but stabilise for women, such that the adjusted consultation rates for men and women aged 90+ years are similar, around 30% of those seen at birth. The difference in consultation rates between men and women during early and middle adulthood, is mirrored in many other health services. These differences are commonly attributed to maternity-related activity and treatment for sex-specific conditions[iii] which tend not to feature in the calculation of the Cambridge Multimorbidity score.

The bottom left panel shows the impact of morbidity levels on consultation rates. Rates increase with morbidity, such that a patient with a Cambridge Multimorbidity score of 10 or more is almost 5 times more likely to receive a consultation than a patient with a score less than one, having controlled for differences in age, sex, and deprivation.

The bottom right panel illustrates the effect of deprivation on the rate of consultations. Rates for people living in the most deprived quintile are approximately 10% higher than those living in the least deprived areas having controlled for differences in age, sex, and morbidity. After adjustment, the impact of deprivation is modest relative to that for age, sex, and morbidity levels.

[1] At lower-super output area level. Time invariant. Based on a patient's last recorded postcode in CPRD.
[2] 11-year-old males were selected as the reference category, since this is the age-sex group with the lowest adjusted consultation rate.

Figure 1: Adjusted incident (consultation) risk ratios by age, sex, deprivation & Cambridge Multimorbidity Score

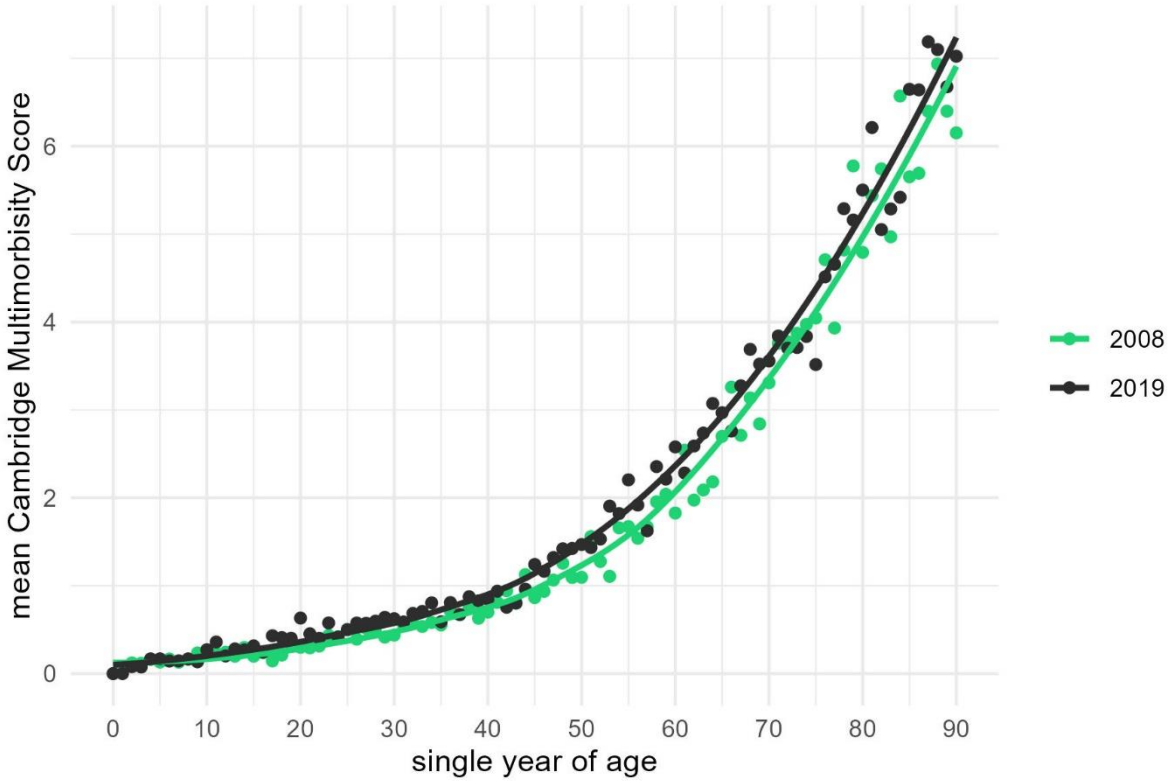


2. Changes in patient need over time

The changing age profile of the population of England has been widely reported. The two age groups that experience the highest consultation rates are the very young and the very old. Between 2008, and 2021, the share of the population aged under 5 years reduced from 6.1% to 5.5%, whilst the proportion aged 75+ years increased from 7.7% to 8.6%.

Rates of morbidity also increased steadily over the period. The mean Cambridge Multimorbidity score rose from 1.4 in 2008 to 1.6 in 2019, and the proportion of the population with a multimorbidity score of 3 or more increased from 17% to 19%. Increases in the Cambridge Multimorbidity score will, in part, be driven by an increase in the number of older people, but these morbidity increases are present even after changes in the population age structure have been controlled for. In other words, average morbidity levels for people of a particular age are marginally higher in 2019 than their counterparts of a similar age in 2008 (see figure 2).

Figure 2: Mean Cambridge Multimorbidity Score by age in 2008 and 2019



lines are local regressions (loess smooths)

In our analysis, deprivation is an area-based, time invariant variable, but studies that have measured poverty levels over time, indicate little change between 2008 and 2021.[iv]

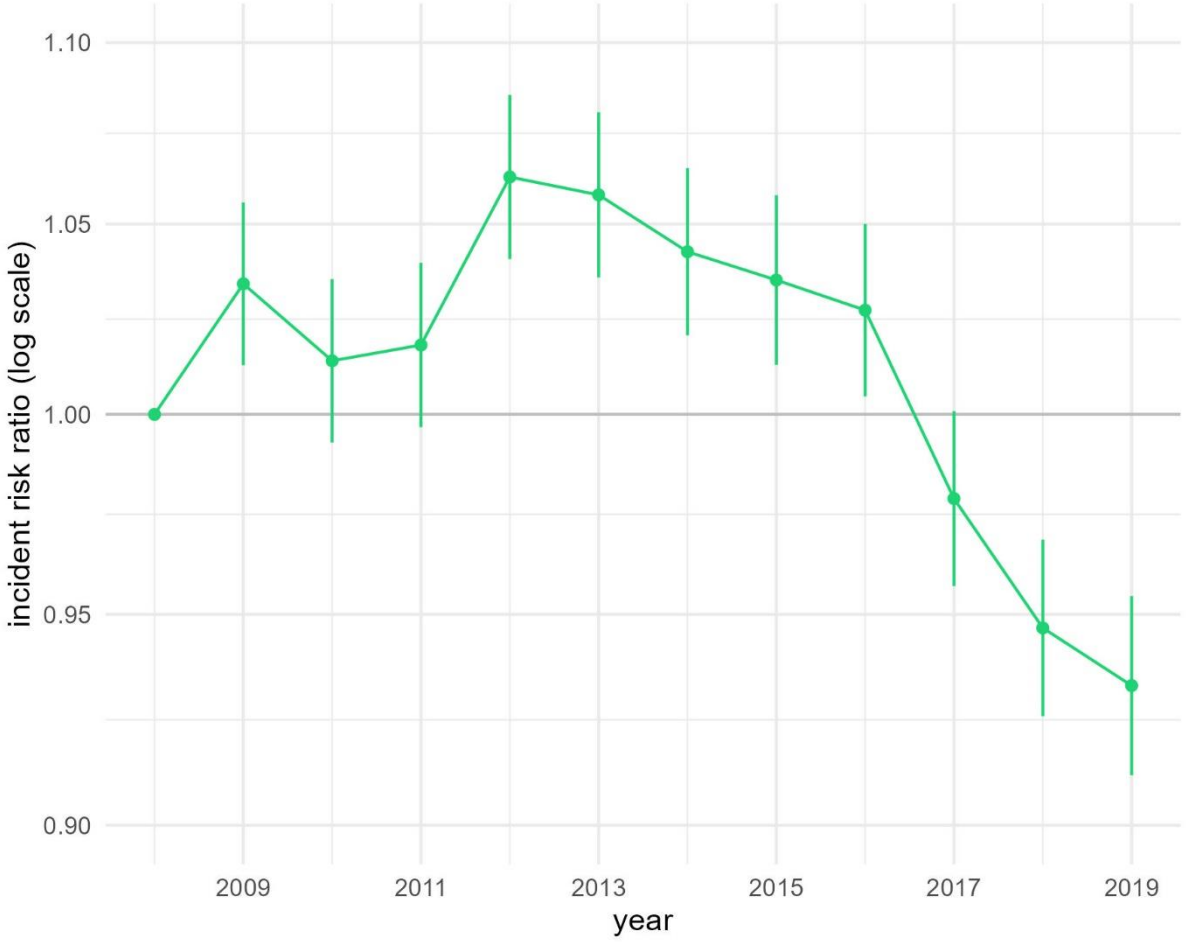
In conclusion, whilst the size of one high-use subgroup has reduced (children aged 0 to 4 years), the number of older people and levels of morbidity having controlled for age have both increased. On balance, levels of need for GP practice consultations have likely risen between 2008 and 2019.

3. Trends in consultation rates relative to need

In the previous report in this series, we showed that the average rate of consultations per person in England increased between 2008 and 2012, before reducing until 2019.

Having taken account of changes in need, we find that consultation rates increased between 2008 and 2012, before reducing slowly until 2016 and then more sharply to 2019. We estimate that by 2012, a patient was 6.3% more likely to receive a consultation than a patient with similar needs in 2008. But by 2019, a patient was 6.7% less likely to receive a consultation than a patient with similar needs in 2008 and 12.2% less likely than a similar patient in 2012.

Figure 3: Adjusted incident (consultation) risk ratios by year, 2008-2019



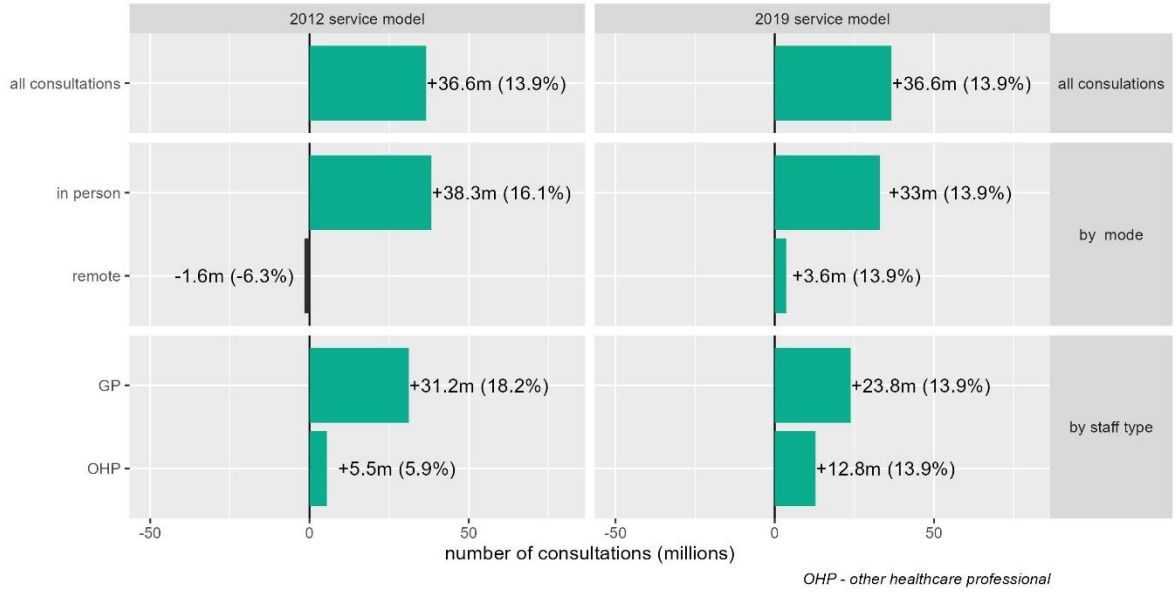
Adjusted for age, sex, deprivation (IMD2019) and Cambridge Multimorbidity Score, Whiskers denote 95% confidence intervals, Derived from CPRD Gold (Vision)

4. The gap between need and supply

National results

Our models suggest that an additional 36.6 million consultations (+13.9%) would have been required to meet population need in 2019 at 2012 service levels[3]. Figure 3 below indicates how many of these additional consultations would have been delivered in person (in the GP practice or during a visit), remotely (e.g., by telephone or video call), by a GP or by another healthcare professional. We provide two sets of estimates. First, we estimate the *levels* of provision if the *pattern* of service provision (in-person vs remote consultations and GP vs other health care professional consultations) had not changed since 2012. Then we estimate the number of additional consultations if supply had increased in line with need, whilst also incorporating changes in the relative frequency of consultation types that have taken place since 2012.

*Figure 4: Additional activity required to meet need in 2019, at **2012** service levels*



If staff to activity ratios were maintained, then an additional 4,800 FTE GPs, 2,300 FTE nurses, 1,700 FTE other healthcare professionals and 9,400 FTE administrative staff would have been required to carry out this additional activity in 2019.

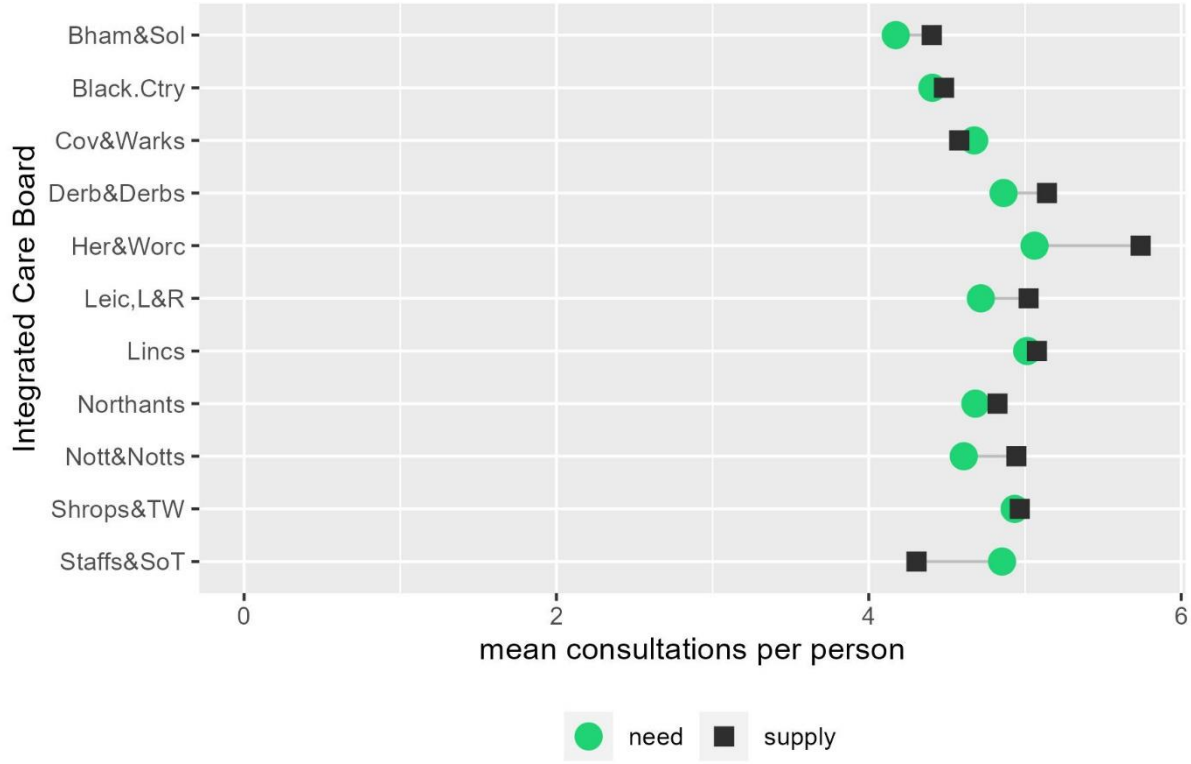
[3] 2012 is selected as the year of comparison because this is the year when need-adjusted consultation rates were highest.

Results for Midlands ICBs

Exploring geographic variation in the supply of GP practice consultations relative to need is challenging, since the source data used to construct our models (CPRD) does not contain sub-regional geographic identifiers. We estimate need for GP consultations in each ICB, using our models to predict counts of consultations given the population structure (age, sex, deprivation, morbidity levels) in each ICB. We compare these population need-based estimates against levels of supply from the NHS Digital GP practice appointments data. Having excluded DNA'd appointments, these two datasets reconcile well at a national level in 2019.

Figure 5 displays data on the average number of GP practice consultations per person for each ICB in the Midlands region. The green circle indicates the consultation rate in each ICB had the total number of consultations delivered in 2019 in England been distributed over ICBs in line with need. We would expect higher rates in ICBs with an older, more deprived, and sicker populations. The black square indicates the number of GP practice consultations (non-DNA'd appointments) delivered in each ICB in 2019.

*Figure 5: Need and supply of GP practice consultations by Integrated care Board in 2019 at **2019** service levels*



We can see that supply levels in most ICBs in the Midlands in 2019 were greater than their need-weighted share of consultations. The main exception is Staffordshire & Stoke-on-

Trent ICB, whose supply levels were 11.3% below their need-weighted share. Supply levels in Coventry & Warwickshire were also marginally below their need-weighted share.

We can also compare supply levels in 2019 with need-weighted shares, had supply kept pace with changes in need since 2012. Figure 5 shows that supply levels in all ICBs in 2019 were below need-weighted shares of activity that were delivered in 2012.

*Figure 6: Need and supply of GP practice consultations by Integrated care Board in 2019 at **2012** service levels*

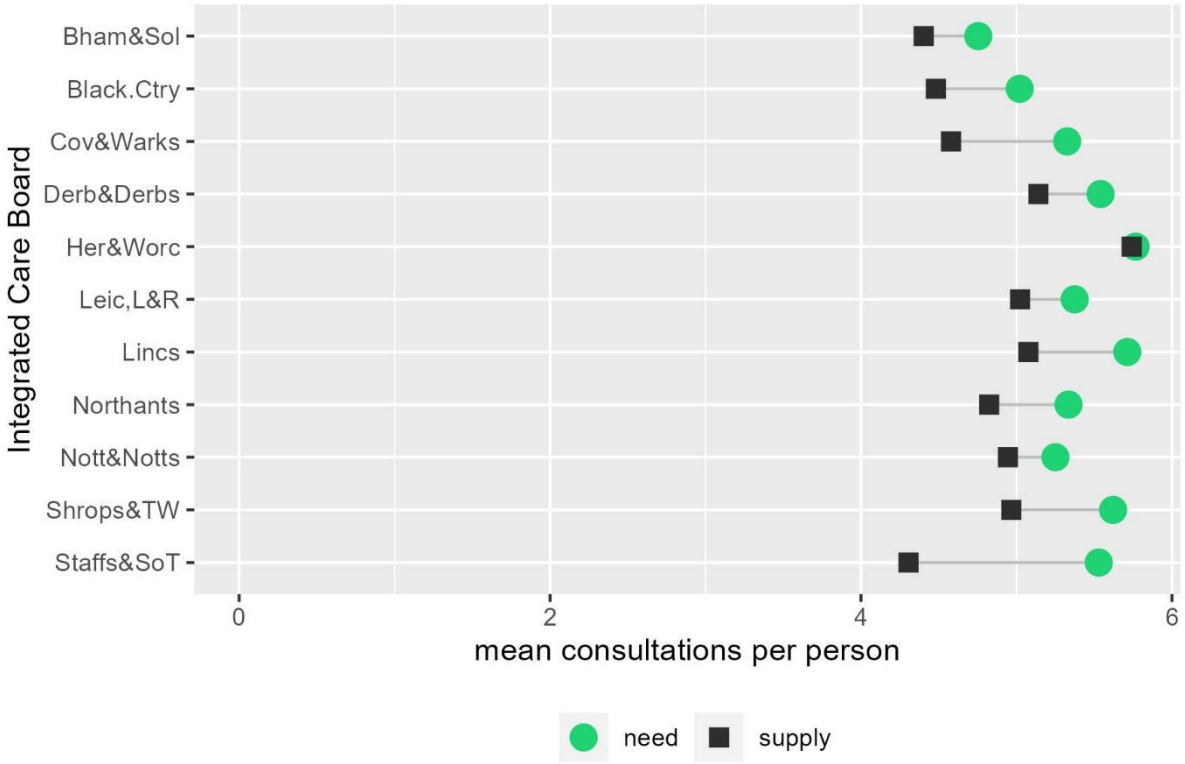


Table 2 summarises these results, indicating the gaps between supply and need-weighted shares in 2019 at 2019 and 2012 service levels.

Table 2: Gap between supply and need-weighted shares of GP practice consultations in 2019, at 2019 and 2012 service levels

Integrated Care Board	Gap to need-weighted shares at **2019** service-levels		Gap to need-weighted shares at **2012** service-levels	
Birmingham & Solihull	353k	5.2%	-539k	-8.0%
Black Country	95k	1.7%	-686k	-12.0%
Coventry & Warwickshire	-97k	-2.1%	-756k	-16.3%
Derby & Derbyshire	303k	5.4%	-436k	-7.8%
Herefordshire & Worcestershire	543k	11.8%	-21k	-0.4%
Leicester, Leicestershire & Rutland	353k	6.1%	-405k	-7.0%
Lincolnshire	49k	1.2%	-503k	-12.5%
Northamptonshire	112k	2.9%	-403k	-10.6%
Nottingham & Nottinghamshire	409k	6.8%	-371k	-6.2%
Shropshire, &Telford & Wrekin	17k	0.7%	-330k	-13.2%
Staffordshire & Stoke-on-Trent	-632k	-12.7%	-1413k	-28.4%

The reliability of these need-supply gap estimates is dependent on two factors: (1) the quality of our need models, and (2) the accuracy of NHS Digital's data on appointment rates. In the previous report we noted that CPRD data on remote appointments varied significantly between sources (Gold and Aurum), and that NHS Digital's appointment data appeared to be at odds with patient reported appointment rates. These discrepancies however, only appeared after the COVID-19 pandemic, whereas our need-supply-gap estimates are based on data from 2012 and 2019. Nonetheless, NHS Digital still regard their appointments data as experimental, and so some caution should be exercised when interpreting these results.

5. What might happen if need exceeds supply? A theoretical framework

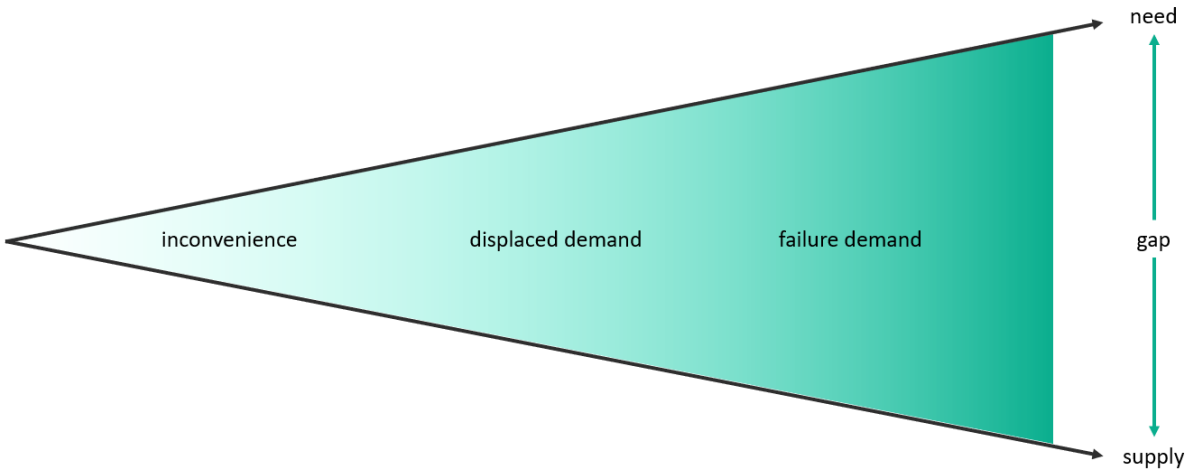
In theory, as a gap between need and supply emerges and grows, what might we expect the consequences to be, for patients and the wider health system?

Initially, we might expect the impact to be limited to inconvenience and some service disruption. Patients may struggle to contact their practice. The intervals between request and appointment may increase. And patients may be unable to secure an appointment at a time and date that they would prefer.

As the gap increases, then we might expect that some patients, who have been unable to contact their practice, secure an appointment in an acceptable time frame, or who are insufficiently reassured by a triage call, to present at some alternative location such as an Emergency Department. We refer to this as displaced demand.

If triage is successful, then the health consequences of the gap between need and supply of GP practice consultations will be limited. But if the gap grows further then we might expect some GP practices to miss opportunities to treat acute conditions, or to diagnose or manage patient's long-term conditions. In some of these cases, a patient's health needs will deteriorate, rapidly for acute conditions and more slowly for chronic conditions such that an unplanned admission to hospital is required. We refer to this as failure demand. In the remainder of this report, we look for evidence of these three effects.

Figure 7: Possible consequences of a gap between need and supply of GP Practice consultations

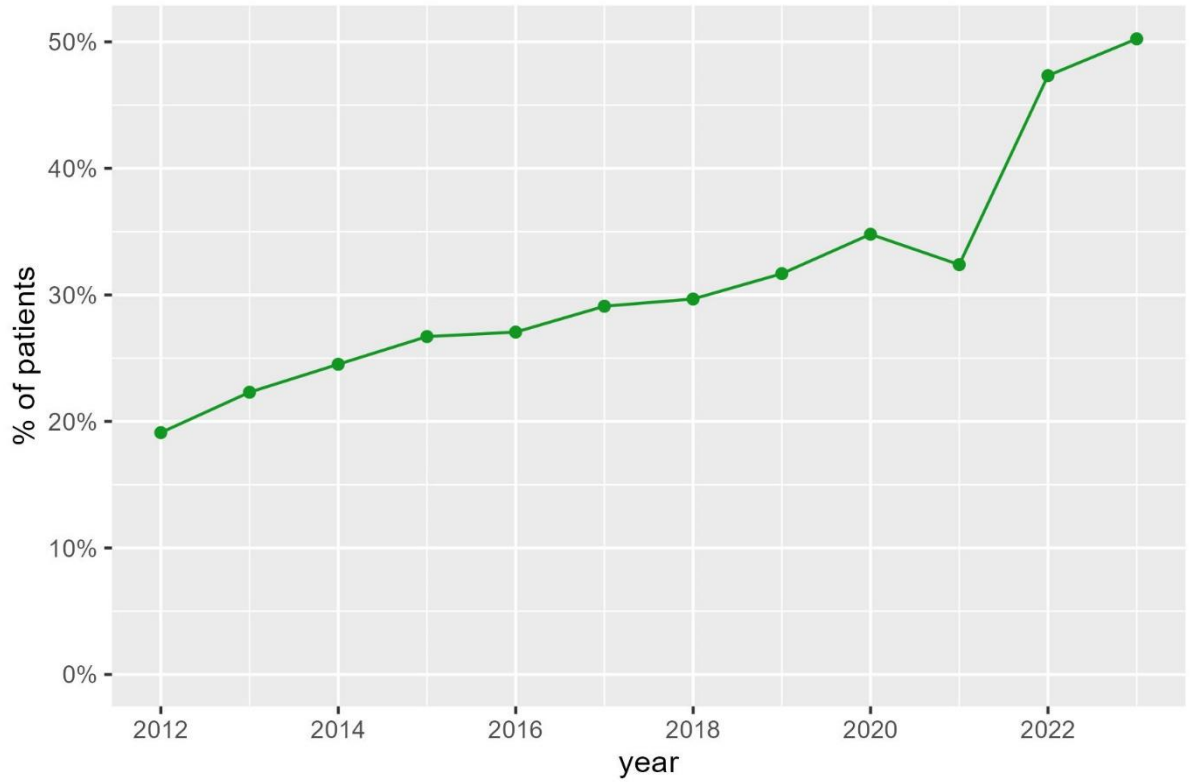


Inconvenience and service disruption

A regular complaint from patients is that they are unable to get through to their GP practice by telephone to book a consultation. If need and therefore demand for GP consultations increases more rapidly than supply, then we might expect this complaint to become more common. In 2012, 19.1% of patients surveyed reported difficulties getting through to their practice by telephone.[v] By 2023, this proportion had increased to 50.2%.

Figure 8: Patients reporting difficulties getting through to a GP Practice by telephone

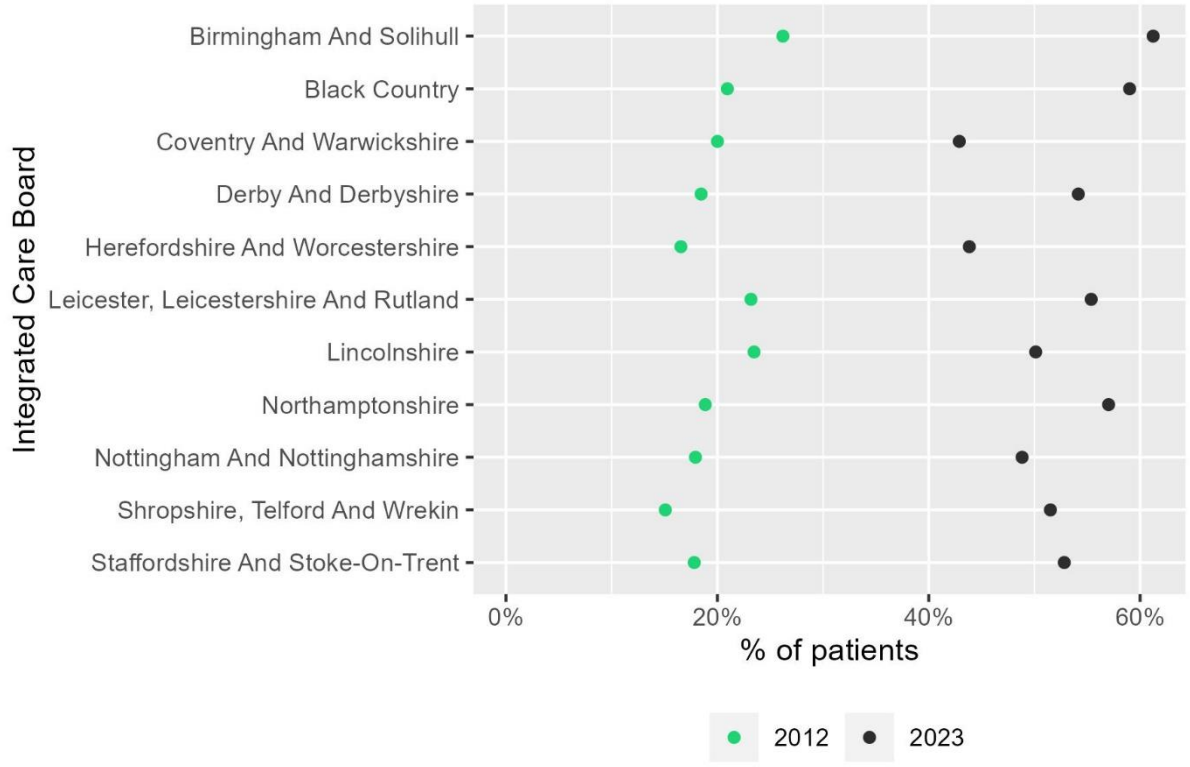
England | 2012-2023



This trend is seen in all ICBs in the Midlands (see figure 9)

There has also been a steady increase in the proportion of patients who accept an offer of an appointment despite not being happy with the appointment offered, either because of the date and time of appointment or because of the practitioner offered. This proportion has risen from 19.8% in 2018 to 24.0% in 2023.

Figure 9: Patients reporting difficulties getting through to their GP Practice by telephone Midlands | ICBs 2012-2023



Displaced demand

When demand for GP services is displaced, activity that would normally be handled in a GP practice occurs somewhere else in the healthcare system, such as in emergency departments (EDs). The concern here is primarily about the additional burden this places on already over-stretched emergency departments, reducing timely access for ED patients with more pressing needs. It can also be viewed as a source of allocative inefficiency, since a patient contact in ED tends to be more expensive than a contact with a GP practice. There are more subtle concerns too. Risk thresholds in ED tend to be lower than in GP practices, in part because EDs staff calibrate their practice on higher risk patients, but also because staff in EDs are unlikely to have a rounded knowledge of a patients' circumstances and history. This can lead to unnecessary escalation of treatment. And finally, the displacement of GP practice activity to EDs disrupts the development of care continuity between a patient and GP practice staff.

Previous studies have suggested that minor ED attendances can substitute for urgent GP practice consultations. A cross-sectional study estimated that nearly 6 million ED attendances in England in 2012/13 were preceded by an unsuccessful attempt to secure a GP appointment.[vi] Another study by the same author, found an association between patient reported accessibility of primary care and the frequency of ED visits.[vii] A 2016 study reported relative reductions in ED attendances for registrants of practices offering extended opening hours.[viii] And a 2018 study estimated that 15.1% of ED attendances in the Yorkshire and Humber region between 2001 and 2014 were "*amenable to management in alternative non-emergency settings such as GP or nurse led urgent care facilities in either hospital or community settings*".[ix] We use the definition developed in this paper to track changes and geographic variation in avoidable ED attendance rates.

Figure 10 shows the rate of avoidable ED attendances between 2014 and 2022, having adjusted for changes in the age-sex population structure. Trends are shown for consultant-led emergency departments and also for urgent care centres.

Figure 10: Avoidable attendances at Emergency Departments and Urgent Care Centres

Directly age sex standardised rate per 10,000 population | England | 2014 – 2022

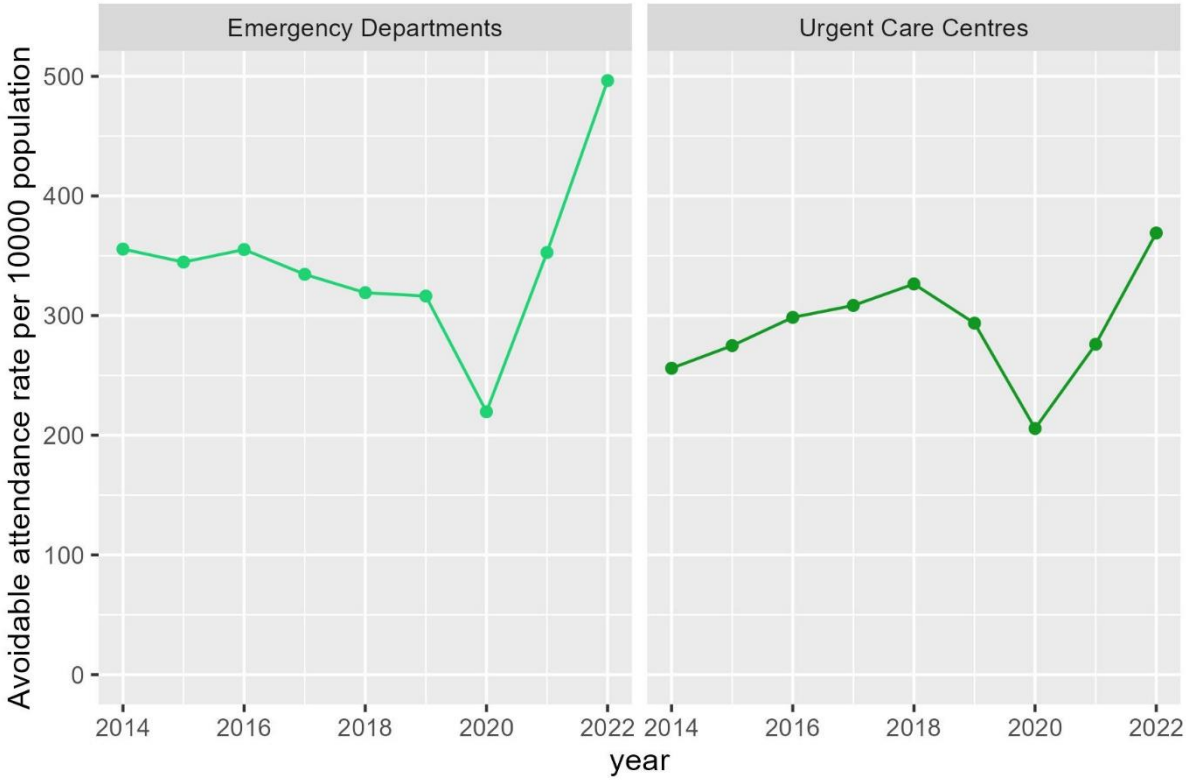


Figure 10 suggests a rapid increase in the rate of avoidable ED attendances since the COVID-19 pandemic. Prior to the pandemic, avoidable ED attendances had been falling in consultant-led emergency departments with marginally larger increases in urgent care centres. Taken together these figures suggest that avoidable attendances had been increasing slowly before the pandemic, with some movement from consultant-led emergency departments to urgent care centres.

We must be careful not to jump to the conclusion that increases in avoidable ED attendances have been caused by reduced access to primary care. Although certainly plausible, other explanations include the residual impact of COVID-19 on population health and changes in coding and coverage of emergency department datasets. Nonetheless, this finding is certainly in line with our earlier data suggesting a gap between need and supply of primary care consultations.

Figure 11: Avoidable attendances at Emergency Departments, Midlands ICBs 2022

Directly age sex standardised rate per 10,000 population | all dept types

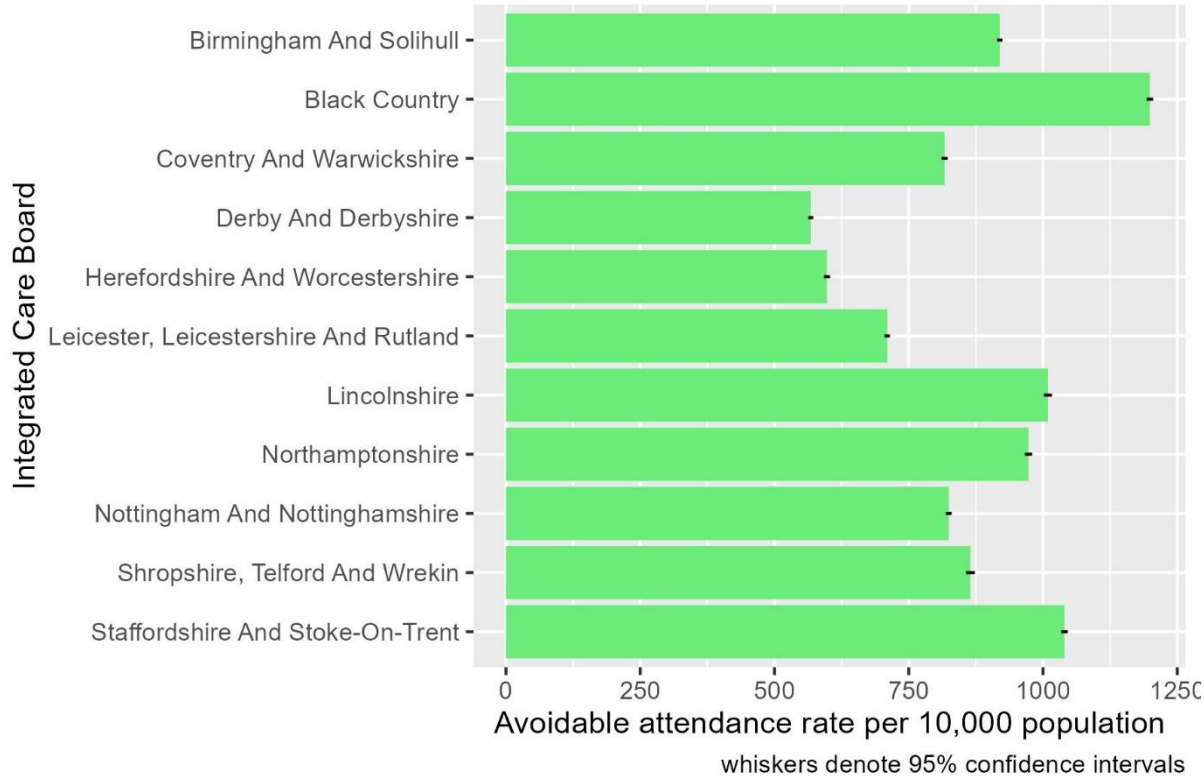


Figure 11 shows the level of avoidable emergency department attendances in 2022 for each of the Integrated care Boards in the Midlands region, having controlled for differences in the age-sex population structure. The highest rates are seen in the Black Country, Staffordshire & Stoke-on-Trent and Lincolnshire ICBs. Lower levels are seen in Derby & Derbyshire and Herefordshire & Worcestershire ICBs.

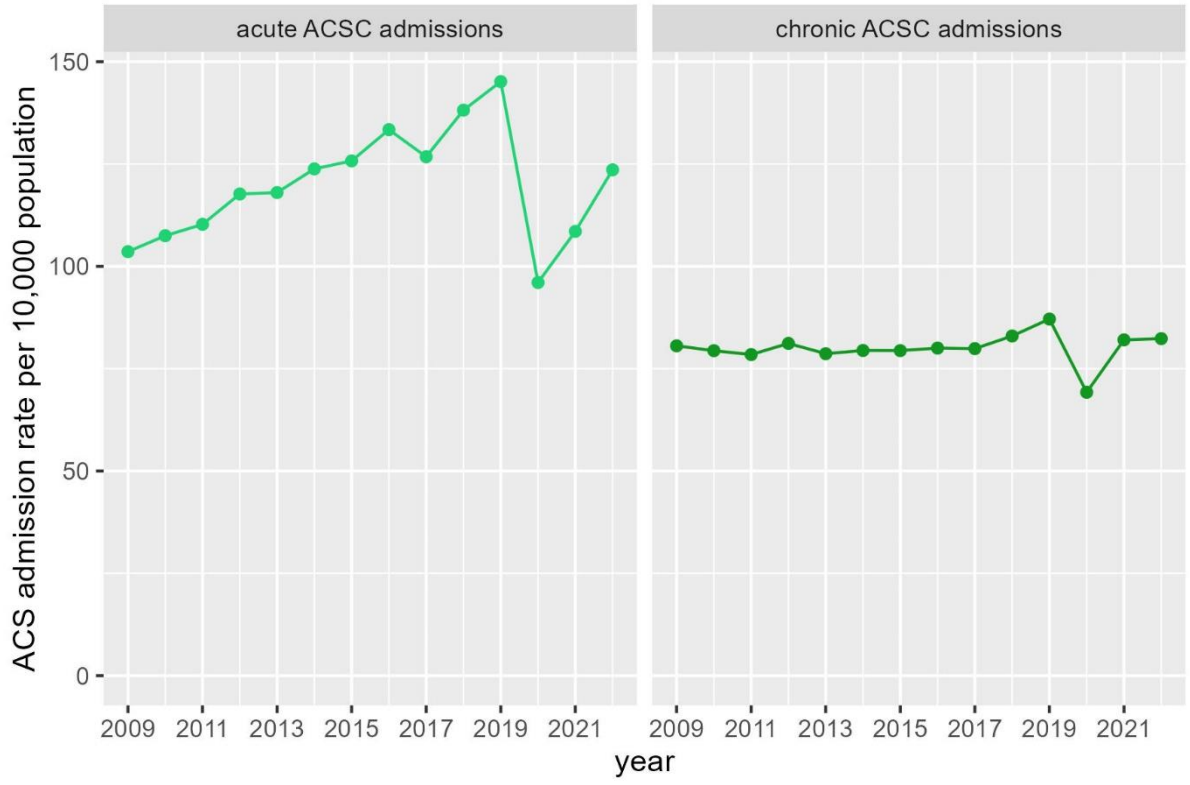
Failure demand

In contrast to displaced demand, failure demand occurs as a result of missed opportunities to diagnose or treat a health problem. Hospital admissions for ambulatory care sensitive conditions are commonly used to indicate failure demand in primary or community services.[x] These admissions take two forms: (1) those arising from acute conditions such as cellulitis, urinary tract infection or pressure ulcer, and (2) the exacerbation or deterioration of chronic conditions, such as diabetes, COPD or heart failure. Figure 12 shows trends in these admissions in England over the period from 2009 to 2022.

The chart suggests that admissions for acute ambulatory care sensitive conditions had been rising steadily between 2009 and 2019, before falling rapidly during the pandemic. Rates of admissions for chronic ambulatory care sensitive conditions had been comparatively stable, although had begun to increase in the 2 years before the pandemic. If GP services were failing to meet need for consultations, then we might first expect to see this in failure demand for acute conditions that can arise rapidly, and more slowly for chronic conditions that deteriorate progressively.

Figure 12: Ambulatory care sensitive admissions for acute and chronic conditions

Directly age sex standardised rate per 10,000 population | England | 2009 - 2022

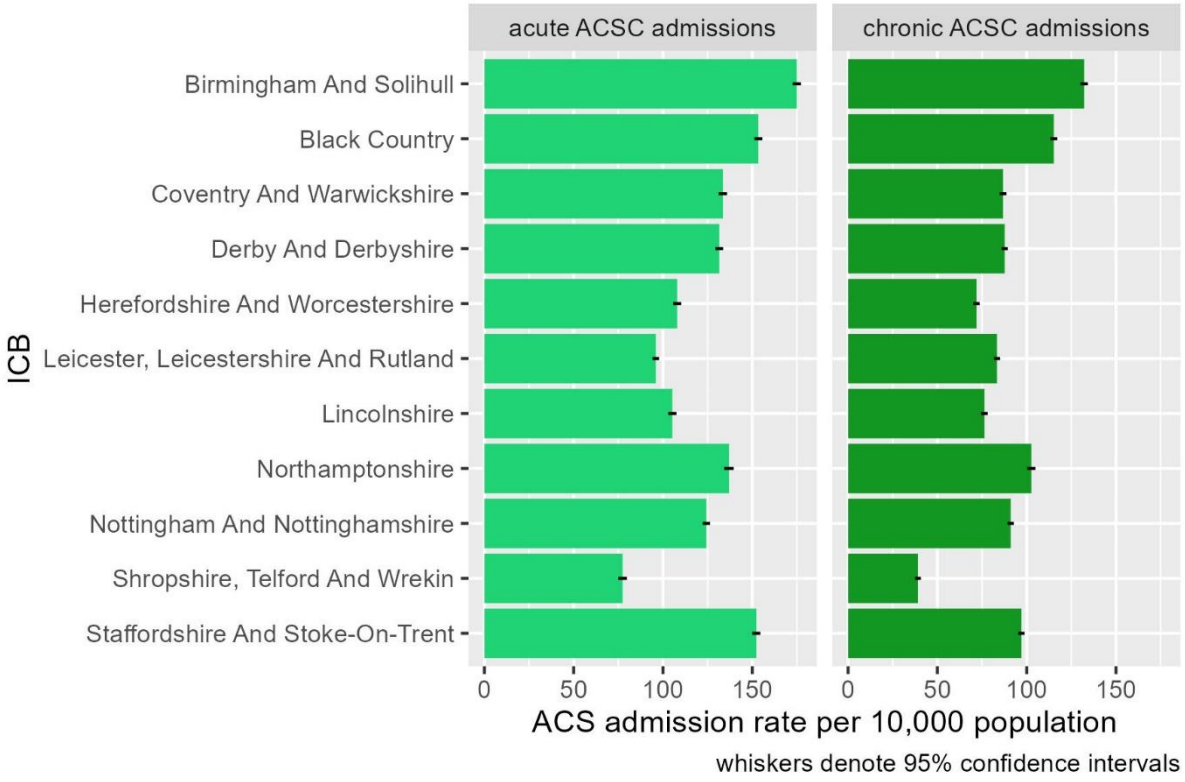


Rates of admissions in 2022 for both acute and chronic conditions remained below pre-pandemic levels. Research by the Health Foundation found that the rate of all-cause emergency admissions remained below pandemic levels, whilst average length of stay had increased. They point out that in a system with limited bed stock and very high levels of bed occupancy, the only way to manage increases in length of stay is to increase admission thresholds. This dynamic may also explain why admissions for acute and chronic ambulatory care sensitive admissions remain below pre-pandemic levels.

Figure 13 shows the level of ambulatory care sensitive admissions for acute and chronic conditions in 2022 for each of the Integrated Care Boards in the Midlands region, having controlled for differences in the age-sex population structure. The highest rates are seen in Birmingham & Solihull, Black Country, Staffordshire & Stoke-on-Trent and Northamptonshire ICBs. Lower levels are seen in Herefordshire & Worcestershire, Leicester, Leicestershire & Rutland and Shropshire, Telford & Wrekin ICBs.

Figure13: Acute and chronic ambulatory care sensitive admissions, Midlands ICBs 2022

Directly age sex standardised rate per 10,000 population



The Impact of pressures in acute services on GP practices

In the previous sections we have highlighted the consequences for acute hospital trusts of need-supply gaps in primary care. It is important to acknowledge however that acute, community and mental health providers are also under pressure, and that shortfalls or failures in these sectors are likely to increase the workload in primary care.

The number of patients waiting for elective care has tripled since January 2010, increasing from 2.3 to 7.7 million patients in October 2023.[xi] A recent analysis by the Health Foundation suggested that the number might increase further, peaking above 8 million patients in the summer of 2024.[xii] Managing patients waiting for treatment places a burden on GP practices. Additional care, treatment, and tests may be required to monitor and manage the patient's health status whilst waiting. Long waits, are also likely to lead to additional administrative and indirect care tasks: communication with the hospital consultant, revising treatment plans in response to changes in the patient's condition etc. In 2010 a GP would, on average, be managing 59 patients waiting for elective treatment. By October 2023, the number had risen to more than 200 patients.

A 2020 qualitative study explored the impact of operational failures on GP's work.[xiii] The most commonly cited failure related to the supply of information to the practice, such as delayed or missing discharge letters. The study concluded that, '*Dealing with operational failures imposed significant additional strain in the context of already stretched daily schedules*, *but this work remained largely invisible*'.

Concurrent pressures in GP practices and in hospital services create a negative feedback loop. Under-supply in one sector creates failure demand in the other, adding to pressures and reducing capacity to respond to new patient need.

6. Discussion

In our previous paper, we showed that the average number of consultations per person fell between 2012 and 2019. Over the same period, the population has aged and age-specific morbidity rates have increased. All other things being equal, we should expect this to increase need for GP practice consultations.

Taking these two factors together we estimate that a patient was 12.2% less likely to receive a GP practice consultation in 2019 than a patient with similar levels of need in 2012. This gap is likely to have increased further since 2019. Need-supply gaps are present in all ICBs in the Midlands, ranging from 0.4% in Herefordshire and Worcestershire to 28.4% in Staffordshire and Stoke-on-Trent.

There is strong evidence that patients are finding it increasingly difficult to contact and make a convenient appointment with their GP practice. There is also evidence that demand for GP practice consultations is being displaced to emergency departments and urgent care centres, adding an additional burden to these services that are already under great pressure. Perhaps of greater concern is the increase in failure demand, expressed as admissions to hospital for ambulatory care sensitive conditions. Admissions for *acute* ambulatory care sensitive conditions had been increasing steadily for several years before the pandemic. Admissions for *chronic* ambulatory care sensitive conditions had been stable but began to rise in 2017. These trends were disrupted by the emergence of COVID-19 and the associated social distancing measures, and rates have yet to return to pre-pandemic levels.

Formal tests of the causal relationships between need-supply gaps in GP service consultations and patient reported access, displaced demand, and failure demand, are beyond the scope of this paper. However, we note that Herefordshire and Worcestershire, the ICB with the smallest need-supply gap in 2019, has amongst the lowest levels of patient reported difficulties with access, avoidable emergency department attendances, and ambulatory care sensitive admissions[4]. Meanwhile Staffordshire and Stoke-on-Trent, the ICB with the largest need-supply gap, is ranked amongst the highest for these markers of patient reported access difficulties, displaced and failure demand.

[4] After age-sex adjustment

Appendices

Methods and data sources

Information about the methods and data sources used in this analysis is available in an accompanying document.

Acknowledgements

This study is based in part on data from the CPRD database, obtained under license from the UK Medicines and Healthcare products Regulatory Agency (protocol ID 22_002493). The data were provided by patients and collected by the National Health Service as part of their care and support.

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Suggested citation

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