Strategies to reduce inequalities in access to planned hospital procedures

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Document control

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Foreword

In our 2021 report, we described how people living in more deprived areas have poorer access to planned hospital care than their more affluent counterparts. These deficits are widespread, substantial, and worsening. In this report, we move beyond describing and explaining the problem, providing practical support for those keen to address it. We start from the premise that inequities are not immutable. Tackling the issue will not be easy, but it is essential if the NHS is to be true to its founding principles. Efforts to date have clearly not been sufficient. Bolder action and more potent interventions are required.

A report for integrated care boards

The report is primarily aimed at integrated care board (ICB) members. Is addressing inequities in planned hospital care a priority for your organisation? If it is, then we hope this report will help. How much additional care, and of what type, would be required to 'level-up' access to planned hospital procedures? Is levelling-up the only solution? What interventions exist that might help reduce inequities? How might an ICB go about setting its strategy? And once set, how should the strategy be monitored? These are the questions addressed by this report.

This is an ideal time for an ICB to settle on its strategy. Over the next three years, the NHS will strive to increase the capacity and productivity of its planned hospital services in an effort to reduce waiting lists and waiting times. The scale of the challenge is huge. In this context there is a danger that throughput, will overshadow all other considerations, and equity will suffer. However heroic, managing the waiting list down to acceptable levels cannot be seen as a success if it's done in a way that leads to greater inequities. ICBs must ensure that their short-term strategies to reduce waiting lists are compatible with their long-term objectives to reduce inequalities.

It might be convenient to believe that we can maximise productivity of our planned hospital services whilst also tackling inequities. In practice however, there is usually a trade-off between equity and productivity. If we deliver care as quickly as we can, then the more affluent segments of the population will benefit the most. Finding, supporting, and treating historically underserved populations will take effort. To deliver equity we may need to sacrifice some productivity. This will take courage, particularly if performance management systems fixate on waiting times alone. ICBs will need to be clear why a

slightly less productive but more equitable service is preferable to a highly productive but unfair one.

The right balance between productivity and equity is a value judgement. The decision will rest with ICBs, but a sensible one will engage with its population, their representatives and its staff and explore the trade-offs they may be willing to make.

It is true that differences in health outcomes are driven, predominantly, by the wider determinants of health: poverty, employment, education, crime, discrimination, environment and exposure to health risks. It might be easy for the NHS to shrug its shoulders, disappointed with the state of affairs but knowing that the big solutions lie beyond its remit. It might want to help, but what can it do? However, with respect to planned hospital care, and despite its policies and best intentions, the NHS actually makes matters worse. Yes, delivering planned hospital care improves peoples' health, but the way in which it is delivered today serves to exacerbate health inequalities. We can fix this by equitably distributing planned hospital care. This is entirely within the gift of the NHS. This is something we can do.

The structure and content of this report

In **chapter 1**, we set out the challenge for ICBs. We review the key findings from our previous report and explore how the COVID-19 pandemic has affected the level and distribution of planned hospital care. We show that as elective care was scaled back during the pandemic, inequity of access deteriorated. In 2020 and 2021, elective care was distributed more inequitably than at any point since the turn of the century. We set out what we mean by equity and explore three theoretical routes to achieve it: levelling-up, levelling-down and zero-sum redistribution. What are the virtues and challenges of each route?

In **chapter 2**, we show what these theoretical routes to equity mean in practice when applied to planned hospital procedures. We estimate that the NHS in England would need to deliver an additional 2 million procedures, an increase of 10 per cent, to level-up care within each ICB area. We compare this to the activity changes under the levelling-down and zero-sum redistribution scenarios and show how these figures vary across ICBs. Finally, we estimate what types of procedures need to be increased and by how much if levelling -up is to become a reality.

In **chapter 3**, we set out the various interventions that might be used to improve equity in planned hospital care. We explore the mechanisms, evidence, and the practical considerations of each, as they play out across the care pathway.

In **chapter 4**, we describe a process that an ICB might follow to consider the various options available to it and settle on a coherent strategy to reduce inequities in planned hospital care. We sketch out five potential strategies and discuss their merits.

In **chapter 5**, we describe how an ICB might monitor its strategy. What principles should be followed and what metrics might be used?

Midlands Decision Support Network

Contents

1. The challenge

In 2021, The Strategy Unit published a review of socio-economic inequalities in access to planned hospital care: diagnostic tests, outpatient care and planned surgery. The review highlighted substantial and widespread differences in rate of access for people living in the most and least deprived parts of the country.

This follow-up report, commissioned by the Midlands Decision Support Network, sets out what needs to be done to address these inequalities, and how this might be achieved.

The key findings from The Strategy Unit's 2021 report are set out below.

Box 1: Key findings from 2021 report

Socio-Economic Inequalities in access to planned hospital care: causes and consequences

The Strategy Unit, May 2021

Rates of access to planned hospital care are lower among those living in the most deprived areas. This was not always the case.

This pattern holds for most major causes of morbidity and in most ICB areas, and persists even after careful adjustment for need.

These inequities tend to emerge late in the care pathway, after patients are referred to secondary care.

Successive policy initiatives to improve and control access to planned hospital care have often succeeded in their own right but have systematically favoured those living in the least deprived areas.

Comparatively poor access to planned hospital care amongst people living in the most deprived areas, explains in part, their elevated use of hospital care in an emergency.

1.1 The context

In 2022, the NHS finds itself fighting on three fronts:

- **managing the direct impacts of COVID-19** - treating patients who become severely unwell, or who suffer long-term effects of infection, delivering an unprecedented vaccination programme and doing this despite high levels of staff sickness and exhaustion.
- **addressing the indirect effects of COVID-19** – the pandemic and the associated lockdown measures have led to a surge in mental health problems, and reduced access to routine and urgent care during the early phases of the pandemic mean that many health problems have gone undetected or untreated.
- **recovering lost ground** – as routine hospital care was cancelled, waiting lists grew, leaving the NHS with the challenge of identifying and treating more patients under circumstances that have limited its productivity.

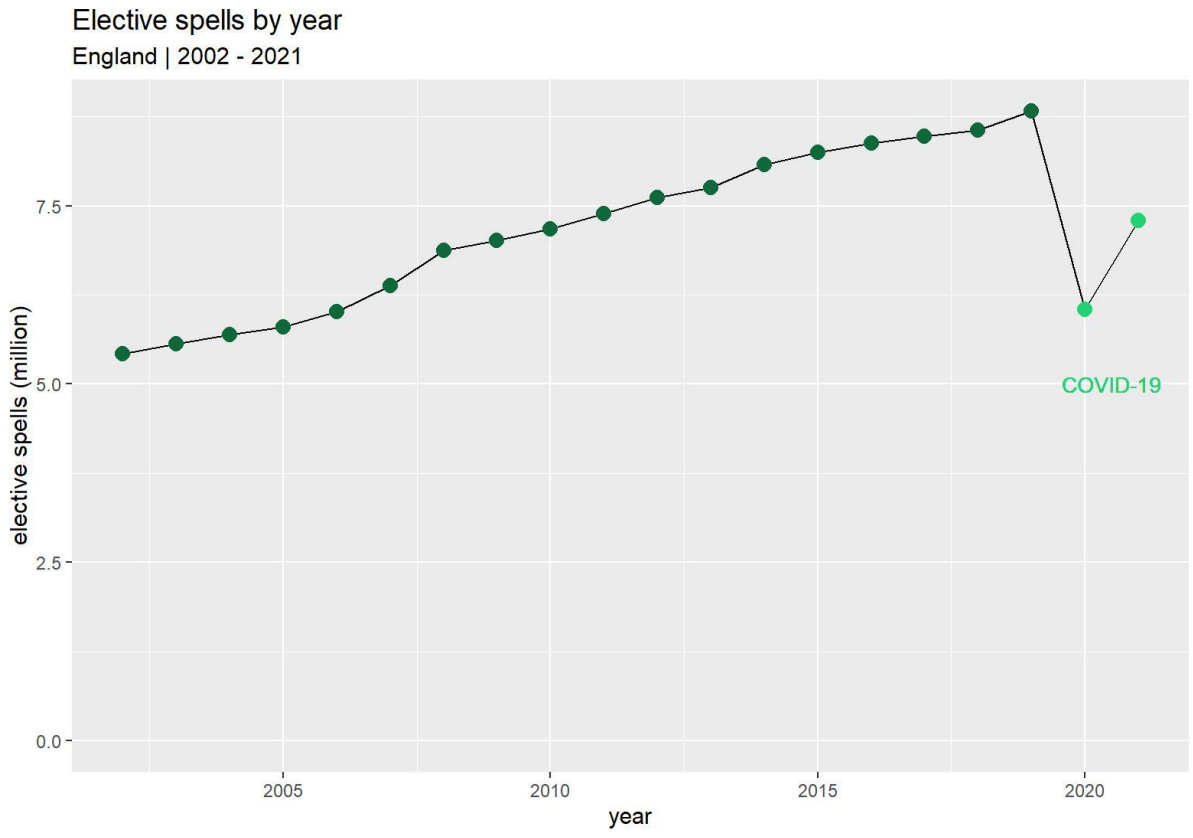
Even under more favourable conditions, the principle of equity is often lost. This principle asserts that an individual's access to care should be governed by their ability to benefit and should not vary systematically across population subgroups (defined by socio economic status, ethnicity, etc) unless this is an explicit feature of patients' preferences.

History suggests that those population subgroups who have comparatively poor access to care, often lose out further when systems are in flux. It is for this reason that the NHS must focus on equity as it faces the challenges ahead. Fairness in the distribution of services should be seen as important as service delivery itself.

1.2 The impact of COVID-19

During the first, second and third waves of the pandemic, access to many forms of planned hospital care reduced. These reductions can be explained by three related factors. Initially, the NHS cancelled many planned hospital appointments and procedures to release capacity to accommodate the anticipated surge in COVID-19 cases. Some surgery was cancelled to reduce the risk of infection to elective patients. Research suggested that the risk of death following surgery was higher for those with COVID-19. Patient referrals from GPs to secondary care fell sharply as access to primary care reduced and patients and their GPs sought to balance the risks and benefits of referral. Even after the initial waves of COVID-19 had subsided, hospitals struggled to deliver care at pre-pandemic rates because necessary infection control procedures reduced throughput.

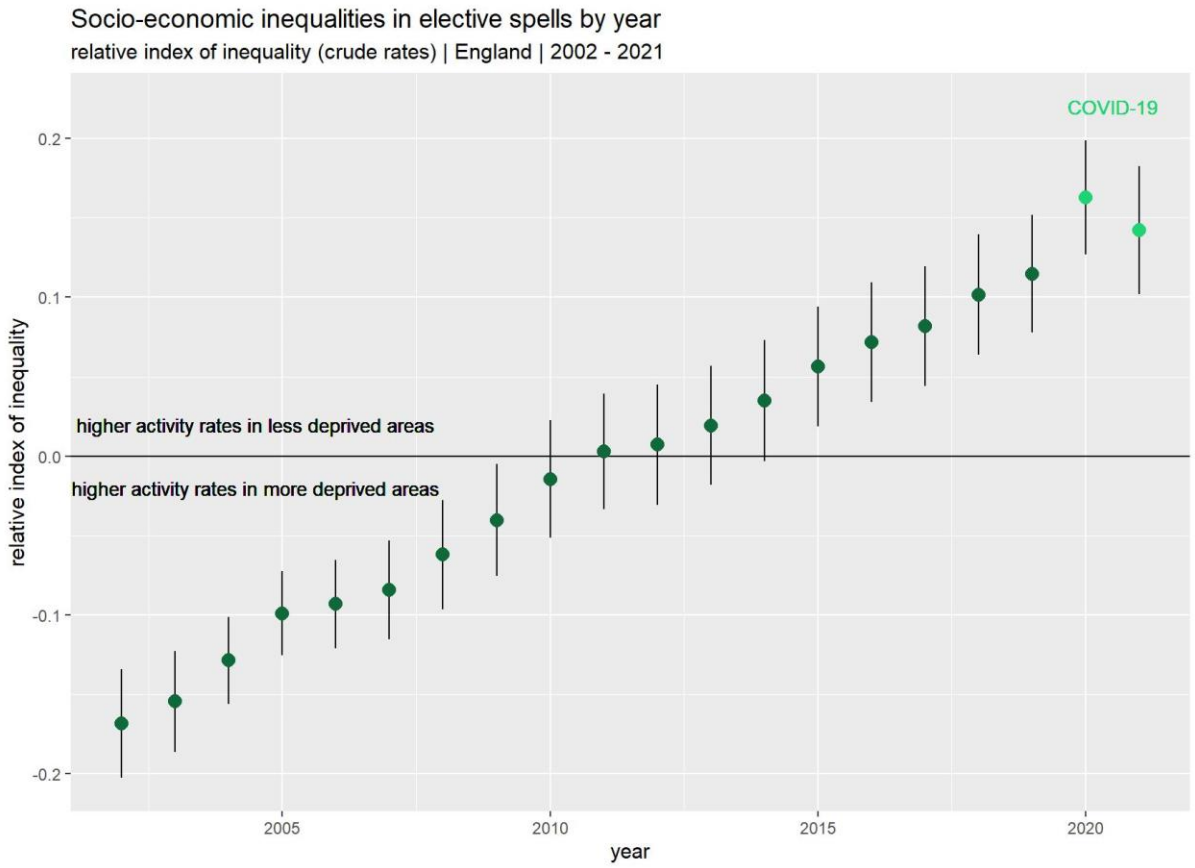
Figure 1: Trends in elective spells



Reductions in activity need not lead to reduction in equity. In fact, if activity reductions are focused in those population subgroups receiving the highest rate of activity relative to need, then equity may improve. But this does not seem to have been the case during the COVID-19 pandemic. Reductions in activity in 2020 were associated with sharp increases in inequity, compounding the prevailing trend. These effects were moderated somewhat

in 2021 as activity increased, but 2020 and 2021 were nonetheless the two most inequitable years since 2002 in terms of the distribution of elective care.

Figure 2: Trends in inequalities in elective spells

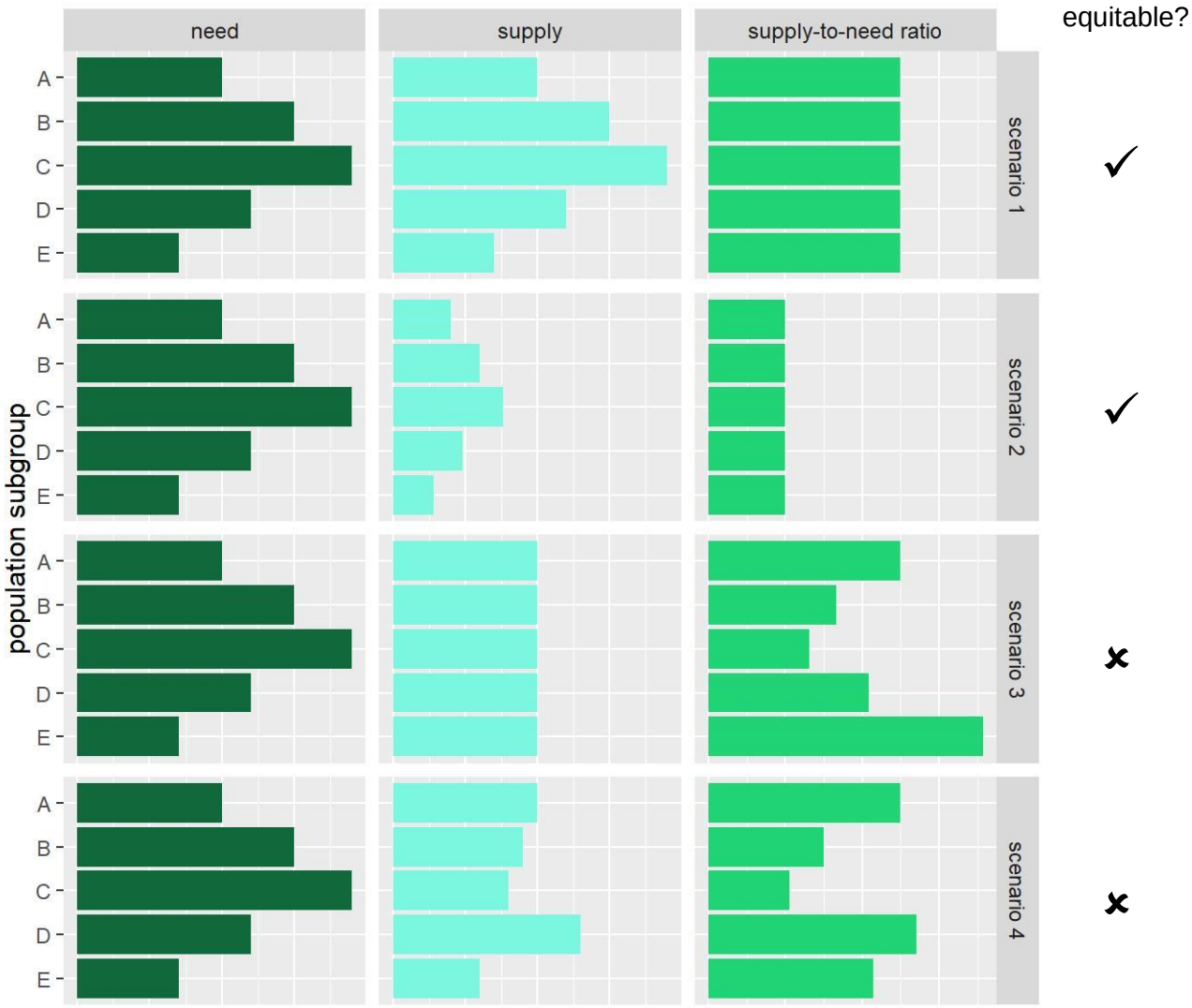


Whilst the step-change in equity associated with COVID-19 is troubling, the long run trend may be of greater concern. It is worth noting that these trends occurred despite health policies explicitly seeking to reduce inequities. Whatever interventions were put in place since 2000, it is clear that they were unable to reverse or even slow the long-term trend away from equity. More potent strategies will be required if equitable access to planned hospital procedures is to be realised.

1.3 What does equity look like?

An equitable distribution of services is one where rates across population subgroups follow the distribution of need, such that a patient with a given level of need in one subgroup has the same chance of accessing a service as their counterparts with a similar level of need in other subgroups. This is the standard that the NHS seeks to achieve.

Figure 3: Illustrative examples of equitable and inequitable distributions of a service



To assess whether a service is equitably distributed across a set of sub-populations, such as socio-economic groups, we need to understand both the level of service provision delivered to each subgroup, as well as the level of need for that service in each subgroup.

Need might be thought of as the number of people who have the potential to benefit from the service.

In the diagram above, scenarios 1 and 2 represent an equitable distribution of a service, since ratios of supply to need are equal across all population subgroups, A to E. Note that the distribution of supply is equitable in scenario 2, despite total supply levels being much lower than in scenario 1.

The distribution of the service in scenarios 3 and 4 however, is not equitable, since supply to need ratios vary between population subgroups. Although, in scenario 3, the level of supply is equal across the five population subgroups, levels of need and therefore supply-to-need ratios are not.

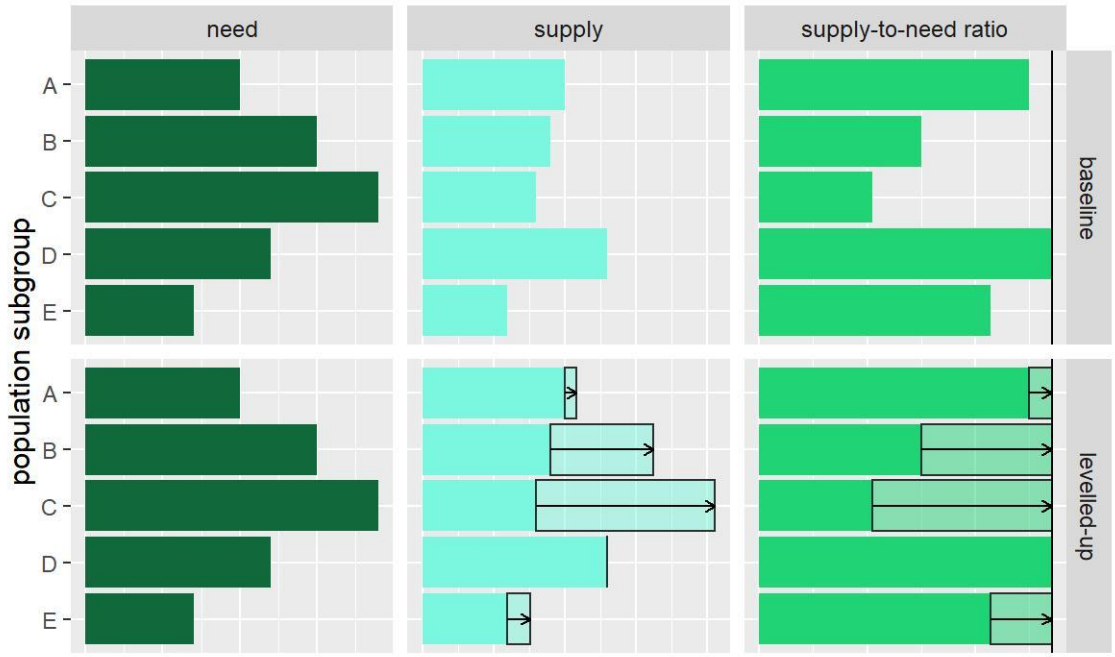
1.4 Three journeys to equity

There are many routes from inequity to equity. We highlight three such routes here to frame the debate: levelling-up, levelling-down and zero-sum redistribution.

1.4.1 Levelling-up

Levelling-up involves differentially increasing supply to population subgroups by just enough so that all subgroups have supply-to-need ratios equivalent to the population subgroups with the highest supply-to-need ratio at baseline. The amount of additional activity required to deliver the levelled-up scenario depends on the degree of inequity at baseline and the relative size of the sub-populations.

Figure 4: Levelling-up



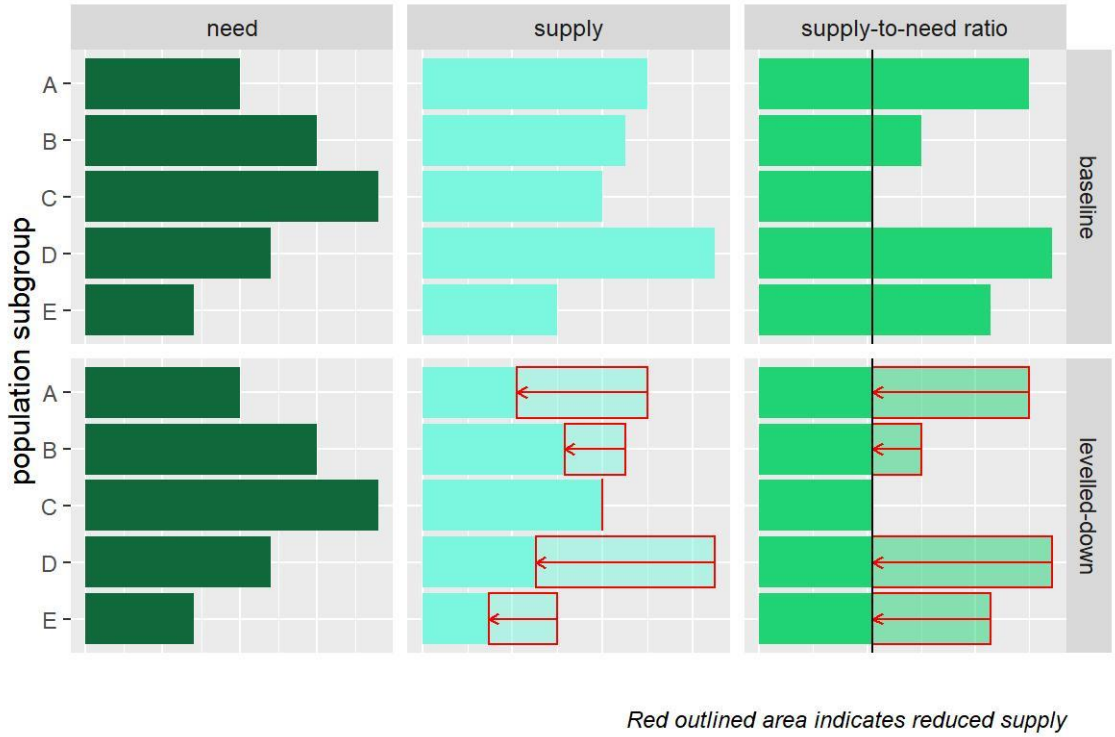
Levelling-up is politically attractive because no population sub-group receives a reduction in activity levels.[1] Activity increases in all but one subgroup, and the subgroup with the highest supply-to-need ratio at baseline sees its activity levels preserved. But levelling-up requires net increases in activity and capacity. Even if funding were immediately available to deliver this strategy, it would take some time to secure and mobilise the additional capacity required.

[1] Although increases in NHS spend can in practice mean lower levels of expenditure on other public services.

1.4.2 Levelling-down

The levelling-down route to equity involves differentially reducing supply to population subgroups by just enough so that all subgroups have supply-to-need ratios equal to the population subgroup with the lowest supply-to-need ratio at baseline. In this scenario, no population subgroup sees an increase in activity. The population subgroup with the lowest supply-to-need ratio at baseline sees no reduction in its activity levels.

Figure 5: Levelling-down



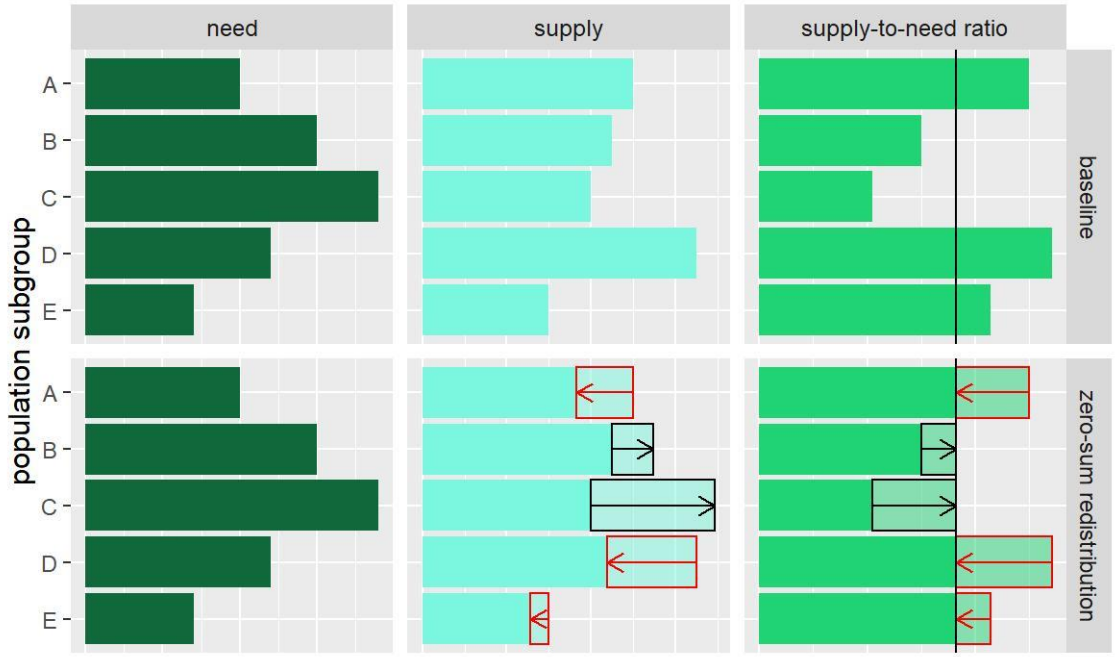
Levelling-down may appear an unlikely strategy. Why would the NHS seek to reduce activity? But during the COVID-19 pandemic, Government policy saw a substantial reduction in planned hospital procedures, and reductions of a smaller scale occur during most winters as medical emergencies take precedence. Furthermore, the NHS routinely seeks reductions in procedures that have limited clinical value. Unfortunately, reductions in activity, such as during the pandemic, often result in increases in inequity. If greater care were taken at these times to manage the relative rates of reduction between socio-economic groups, then equity could be a positive by-product.

Levelling-down would likely lead to increases in privately-funded planned hospital care for the wealthiest. It may lead to equity in NHS-funded care, but not to care in total. Given that staffing levels are the key constraint on healthcare provision, increasing privately-funded provision may prove counter-productive in the long-term. Levelling-down access to planned procedures may also lead to increases in the use of emergency care.

1.4.3 Zero-sum redistribution

The zero-sum redistribution route to equity sits between the levelling-up and levelling-down scenarios. Here the total level of activity is preserved, but the activity is redistributed across population subgroups so that all have the same supply-to-need ratios. This will mean reductions for those population subgroups with the highest supply-to-need ratios at baseline and increases for the population subgroups with the lowest ratios.

Figure 6: Zero-sum redistribution



Black outline area indicates increased supply, red outlined area indicates reduced supply

As in the levelling-down scenario, zero-sum redistribution requires a decrease in supply for some groups. However, most planned hospital procedures are singular events from a patient perspective. So, whilst population subgroups may experience reductions in activity when compared to earlier periods, no individual patient currently receiving care, need have this care withdrawn. Furthermore, those populations currently receiving higher levels of care relative to need, may be receiving more treatments of limited value or care at higher frequencies or lower thresholds than is clinically necessary.

1.5 Other routes

These three routes should be seen as useful, archetypal points on a continuum, rather than as discrete choices. Health systems may choose to achieve equity via any point on the continuum. It is possible, for example, to achieve equity by increasing activity levels for all groups; marginally for those population subgroups with the highest levels of activity relative to need and substantially for subgroups with lower supply-to-need ratios. Equity could also be achieved via a scenario that sits somewhere between levelling-up and zero-sum redistribution, by increasing supply in total, but at the same time marginally reducing the supply to those subgroups with the highest level of supply relative to need.

Figure 7: Other routes to equity: the contiuum

But any route to equity must lie on this continuum. To state the obvious, a health system starting with an inequitable distribution of services, cannot reach equity by increasing care for all groups equally.

The route to equity that a health system selects should be informed by realistic assessments about whether planned care activity might increase or decrease in the future. These assessments will in turn be influenced by expectations about the future availability of staffing, infrastructure and funding, the productivity of planned care services, and judgements about the merits of increasing planned care activity rather than some other form of health and social care. An ICB may also want to test the public's perspective on these issues.

Moreover, different routes may be selected for different forms of elective care. A health system may for example aim to level-up highly effective interventions, whilst levelling-down procedures of limited clinical value.

2. The scale of the challenge

Translating the concept of equity into quantified plans can be difficult. Measuring levels of equity requires estimates of both need for and supply of services. Estimating supply is usually straightforward, since routine hospital activity datasets contain information on both the level of service delivered and the distribution of the service across population subgroups. But estimating need is more complex. Levels of need within and across a population are not routinely or comprehensively measured. Instead, need estimates are usually obtained from infrequent surveys of a sample of the population. Note too that that the definition of need (the ability to benefit from a service or intervention), implies that levels of need are particular to a given service. The distribution of need with respect to one intervention may be different to the distribution of need for another.

In this report, we want to explore equity across planned inpatient and outpatient procedures between socioeconomic groups in 2018/19. We measure socio-economic deprivation using the 2019 Index of Deprivation.

Estimating the distinct distribution of need across each of the many forms of planned hospital procedures was not practical, so we have adopted a pragmatic simplification. Rather than estimate supply-to-need ratios for each form of planned care, we compare activity rates per head of population (sometimes referred to as crude rates) for planned care procedures defined by 3-digit OPCS4.7 codes.[2] We set out our rationale for this approach and its strengths and limitations in appendix A.

Using this approach, we estimate that levelling-up crude activity rates for each type of planned hospital procedure across deciles of deprivation within each ICB in England would require an additional 2 million procedures. This represents a 10.2 per cent increase over activity levels delivered in 2019. The levelling-down scenario would see activity levels reduce by 9.1 per cent. By definition the zero-sum redistribution scenario would not result in any change in activity levels in total, but does require five per cent of procedures to be shifted from the least to the most deprived communities.

To put these changes in context, elective spells fell by 31 per cent in 2020 when compared with 2019. Activity levels recovered somewhat in 2021, but remained 18 per cent lower than in 2019. The 'Delivery plan for tackling the COVID-19 backlog of elective care', recently published by NHS England, sets out an ambition to deliver 30 per cent

[2] OPCS4.7 is a classification of interventions and procedures commonly used to record inpatient and outpatient procedures in the NHS. We excluded procedure codes Y*, Z*, X62, X66-68. X70-71, C71, O11-14, O16, O28, O30-31, and O33.

more elective activity by 2024/25 than before the pandemic.[3] Taken together this information might suggest that, even if levelling-up were the preferred route, zero-sum redistribution may be required to deliver equity in the short term, until activity levels grow substantially beyond pre-pandemic levels.

Table 1: Change in procedures required to eliminate inequity in access to elective care between socio-economic groups in England, 2018/19 baseline

Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	+2.0 million	+10.2%	0%
Zero-sum redistribution	0	0%	5.0%
Levelling-down	-1.8 million	-9.1%	0%

The national strategy is framed in terms of managing down waiting lists and waiting times. Given that people living in more deprived areas are often underrepresented on the waiting list, this strategy may represent an additional obstacle to equity.

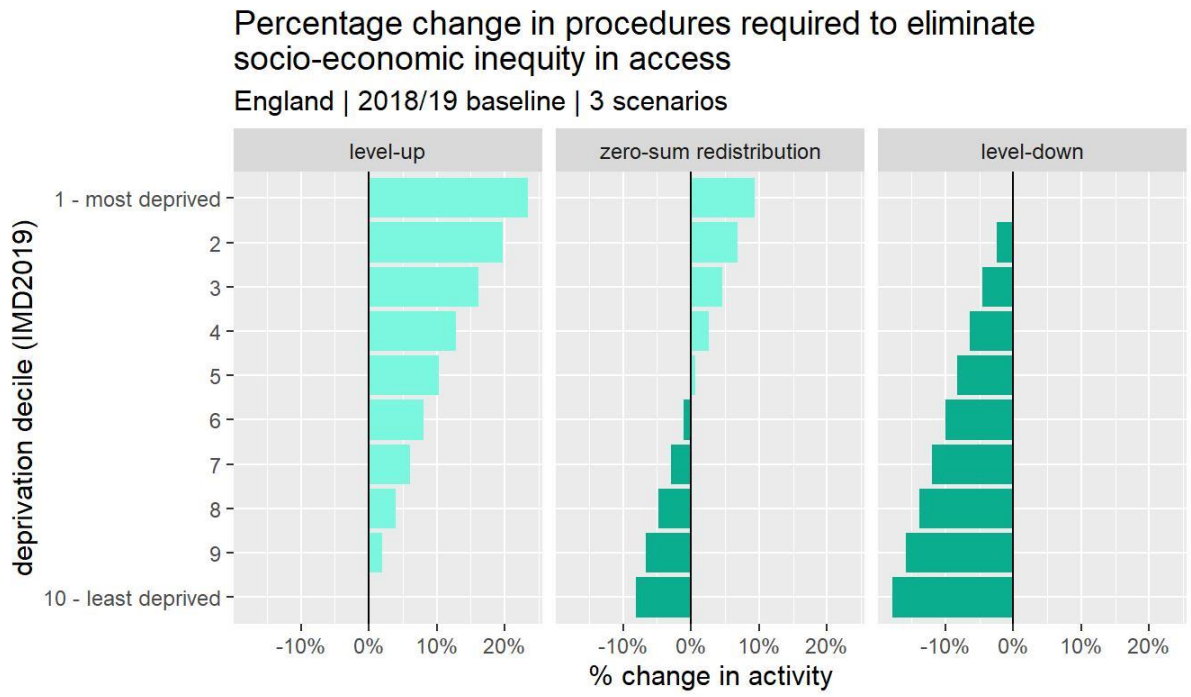
Whilst we have not estimated the cost consequences of these strategies, we note that the NHS spent £30bn on planned hospital services in 2019/20. As a rough guide, pending more detailed work, we might therefore expect that the levelling-up approach would require a recurrent annual investment of approximately £3bn. In our earlier report, we showed that increases in planned hospital care are likely to lead to reductions in the use of unplanned hospital services. This may offset a small proportion of these additional costs.

[3] Note that rates of elective procedures typically increase by approximately 10 per cent per annum. Health Foundation, The Bigger Picture, October 2020.

2.1 Changes in activity by deprivation

To deliver equity under any of these scenarios requires considerable differentiation in activity rate changes across deciles of deprivation. Whilst the levelling-up scenario sees activity rates increase by 10 per cent overall, these must increase by more than 20 per cent in the most deprived communities.

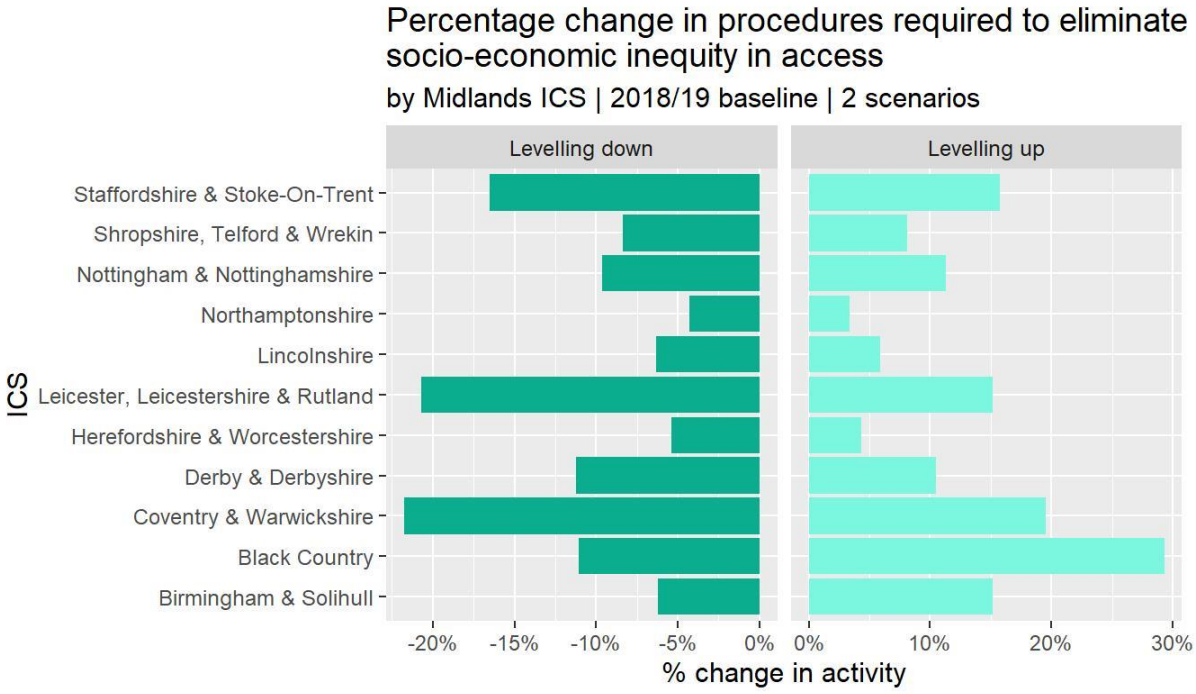
Figure 8: Changes in activity by deprivation decile under three scenarios



2.2 Changes in activity by ICB

The scale of the challenge varies considerably across the ICBs in the Midlands. In Northamptonshire, where inequities in access to planned hospital procedures are limited, equity can be achieved by increasing activity by three per cent, whereas in the Black Country, increases of 29 per cent would be required.

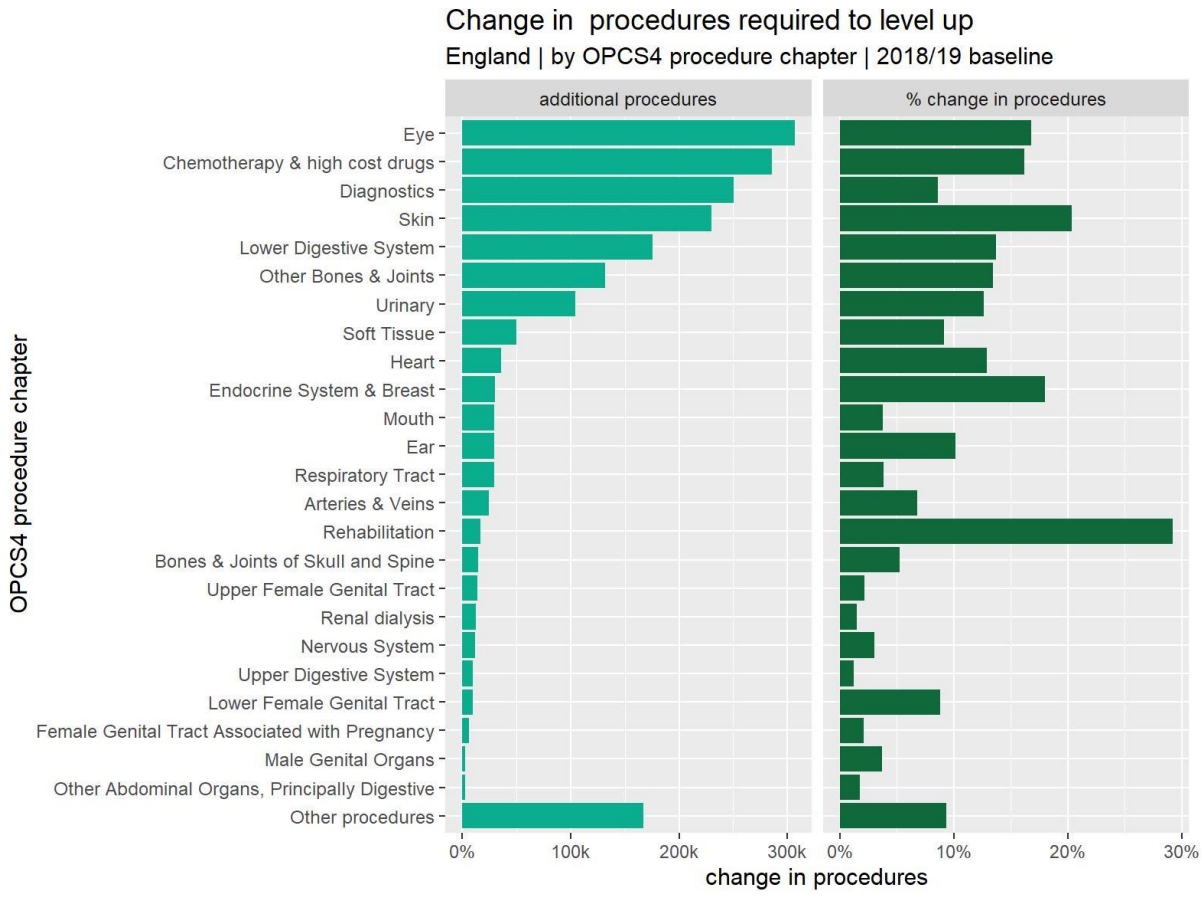
Figure 9: Changes in activity by ICB under two scenarios



2.3 Changes in activity by procedure category

Our analysis suggests that activity changes required to deliver equity will be greatest for procedures relating to the eye, chemotherapy and high-cost drugs and diagnostics. Taking account of the scale of activity in each of these procedure groups, the largest relative change in activity may be required for rehabilitation, and procedures of the skin, endocrine system, breast and eye.

Figure 10: Changes in activity by procedure type: levelling-up



ICB-level versions of the charts in this chapter can be found in appendix B.

3. Potential approaches to reduce inequities

Many approaches to reduce inequities in planned hospital care have been proposed and tested: waiting list prioritisation, targeted case-finding, decision coaches, transport support, to name but a few. Indeed, one of the challenges that health systems face, is knowing which approach or approaches to select. What are the theories that underpin these approaches? Which are most likely to work? How much might they cost? Is one approach compatible with another? In this chapter, we describe and categorise the various approaches that are available to health systems. In chapter 4, we go on to illustrate a method that health systems might use to select from these options to develop a coherent strategy.[4]

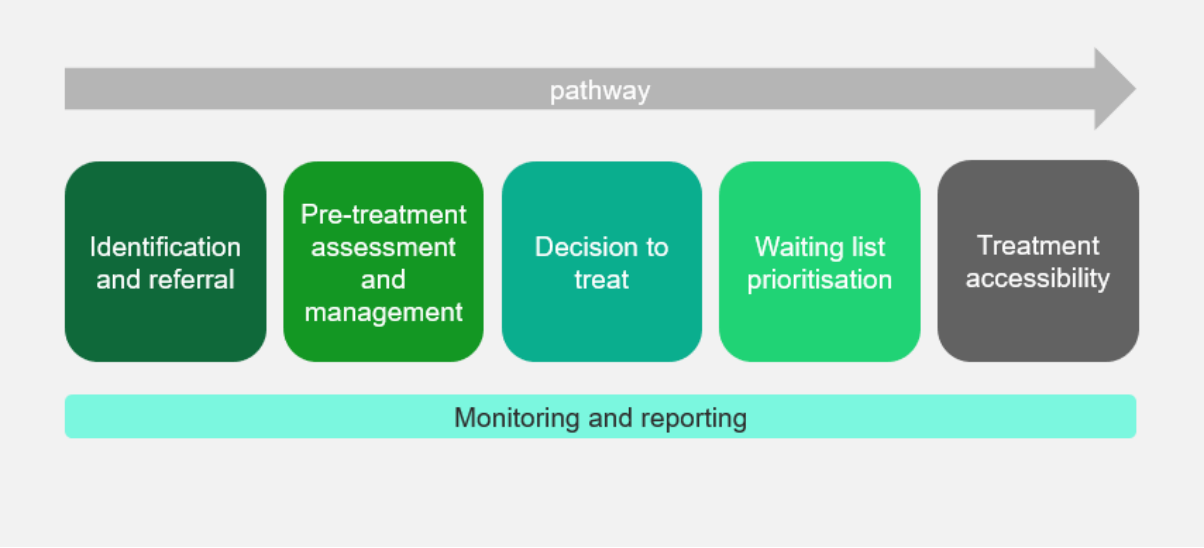
3.1 Approaches along the pathway

One way to categorise and conceptualise approaches to reduce inequities in planned hospital procedures is with respect to the planned care pathway. In our previous report, we explored inequities along four specific pathways: for heart failure, hip arthritis, chronic obstructive pulmonary disease and cataracts. The assessment indicated that for these conditions, inequities tend to emerge at the end of the pathway, from the point at which decisions to treat are taken. This might suggest that health systems should focus their efforts at the latter parts of the pathway. Nonetheless, for completeness we describe approaches to reduce inequities in planned hospital procedures, with respect to five stages on the care pathway: (1) identification and referral, (2) pre-treatment assessment and management, (3) decision to treat (4) waiting list prioritisation, and (5) treatment accessibility.

Some of these approaches will lend themselves more naturally to one of the three approaches outlined above: levelling-up, levelling-down and zero-sum redistribution.

[4] The list of interventions in this chapter is unlikely to be complete. Furthermore, there may be other ways to conceive of and group these interventions, which are more compatible with an ICB's service context. Even if this is the case, we hope that the information and frameworks we provide in the next three chapters will support ICBs on their journey towards a strategy.

Figure 11: Opportunities to intervene along with pathway



3.2 Identification and referral to secondary care

A planned care pathway starts with the identification of a condition that may require diagnosis, assessment or treatment in a hospital setting. Identification commonly takes place in the community by, for example, GPs or community optometrists, but on some occasions a hospital consultant who is treating a patient for one condition may be concerned that a patient has a second condition that is usually treated by a different specialty. Identification is usually followed by a discussion with the patient about the merits of referral to a consultant. Referral is the formal process by which one healthcare professional asks another with more relevant expertise to meet with the patient and agree whether treatment is necessary and what form it might take.

Differential rates of identification and referral may lead to inequities in planned hospital procedures. We set out below, approaches that might reduce inequalities at this early stage of the pathway.

3.2.1 Targeted case-finding and screening

The identification of a patient's condition is usually preceded by the patient presenting to a primary care professional with symptoms of concern. However, the thresholds at which patients present to primary care for support, are not consistent. Differences in pain perception, coping strategies, familial support, time availability, confidence, knowledge,

expectations about the health service, and accessibility of primary care can all give rise to differential presentation thresholds. And this in turn can mean that patients who may benefit from planned hospital procedures are not identified and referred to secondary care at the most appropriate time. Targeted case-finding reverses this paradigm and places the responsibility for initiating the care pathway with the health service. It involves selectively inviting patients with specific characteristics to be seen by a health service professional for initial assessment. The patient characteristics that determine invitation might include age, sex, ethnicity, family history, health conditions and prior health service use, where these are thought to be associated with an increased risk of a health condition or poor health outcome. These characteristics are sometimes combined into a single (risk) score.

The term screening is used to describe case-finding when applied to asymptomatic patients.

Targeted case-finding and screening strategies have been developed for many conditions including several forms of cancer, cardiovascular disease, diabetes, chronic obstructive pulmonary disease and dementia.

Because it is based on objective criteria, this proactive approach is thought to circumvent the problem of differential presentation thresholds and therefore lead to higher levels of equity. Differences in invitation take-up rates between population subgroups may, however, mean that inequities remain or even increase.

Several studies have shown that targeted case-finding can lead to increases in the number of cases detected, and in some cases the strategy has been shown to be cost effective.[1] [2] [3] [4] [5] Few studies, however, have explored the impact of targeted case-finding on equity.[6] Some cancer screening programmes have led to increases in inequity.[7] [8]

3.2.2 Public campaigns

Public awareness campaigns are an alternative approach to addressing the problem of differential presentation thresholds. These campaigns, operating over a variety of media, encourage patients to visit their GP when specific symptoms are noted. If poor health literacy is more prevalent in more deprived communities, then it might follow that increasing public awareness will lead to increased and earlier presentation at primary care of patients from these communities.

Several campaigns have sought to increase awareness of potential cancer symptoms. A synthesis of evaluations of these campaigns found that many led to increases in primary

care attendances, diagnostics tests and diagnosis for the targeted cancers, but not to improved survival.[9]

Historically, public campaigns have been delivered by broadcast media and so are largely untargeted, however the development of advertising channels via social media create the potential for more targeted campaigns.

3.2.3 Shared decision-making in primary care

Box 2: The structure of a GP consultation[10]

1 Establish relationship
2. Determine reason for attendance
3. Verbal/physical examination
4. Consider the condition
5. Details further management
6. Terminate consultation

Consultations in primary care tend to follow a common structure (see box opposite[10]). Having determined the reason for the consultation, conducted examinations and considered the results, a decision must be taken about the management of the condition. Shared decision-making processes seek to ensure that this decision is taken jointly, by the GP and patient. Evidence suggests that these processes lead to fewer referrals, diagnostic tests, greater adherence to interventions and improved outcomes.[11] To be effective, it is critical that these processes take account of the patients' characteristics and circumstances.

Greater patient involvement should reduce unwarranted variation in preference sensitive care choices. If these benefits are to lead to improved equity, then take-up of shared decision-making in deprived communities must be at least as great as in affluent communities. Time is seen as the biggest barrier to more extensive shared decision-making in primary care and yet research, including a very recent analysis, indicates that there are fewer GPs per head of weighted population in more deprived areas.[12]

3.2.4 Decision aids and decision coaches

One way to reduce the burden of shared decision-making on time-pressured GPs is to prepare patients for their GP consultation using decision aids and/or decision coaches. Decision aids are structured materials aimed to provide patients with information about the potential benefits and harms of interventions, the likelihood of these outcomes, the strength of the evidence and the significance of this information for the patient's context and values. Decision aids have been shown to improve patients' knowledge and risk perception, and there is growing evidence that decision aids lead to decisions that are more congruent with patient values.[13]

Decision coaching refers to the process by which a health professional[5] prepares a patient for a consultation by providing tailored, non-directive support. Decision coaching is often provided alongside decision aids and so identifying the contribution of decision coaching to patient outcomes is difficult. However, a few studies have suggested that decision coaching leads to improved knowledge with or without decision aids.[14] Moreover, decision coaches can increase the cost-effectiveness of decision aids.

In theory, one might expect decision coaches to be of greatest use when targeted at patients that have the most difficulty accessing care, including people from more deprived communities. And indeed, decision coaches can be targeted geographically in ways that mass media campaigns cannot. Further research is required to establish whether this theory holds up in practice.

3.2.5 Referral thresholds and eligibility criteria

If, having adjusted for need, patients from deprived communities are less likely to be referred to secondary care than their counterparts from more affluent areas, then a combination of shared decision-making, decision aids and decision coaches might be seen as one way to address this issue. This approach earnestly attempts to address the problem at source, but might be seen as a medium-term solution to the problem. A more direct, if somewhat blunt, short-term alternative or adjunct might involve adjusting referral thresholds downwards or loosening eligibility criteria as they apply to individuals living in more deprived areas. Such adjustments should only be made to those criteria that are used to ration treatments, rather than to those that relate to indications or risk. We are not aware of any research that has measured the impact of such changes on equity of access to planned hospital procedures.

[5] Decision coaches may be employed by the NHS, other statutory agencies or by independent sector organisations.

3.3 Pre-admission assessment and management

Having been referred to secondary care, the next stage in the journey involves one or more appointments with secondary care clinicians. These appointments are often used to assess the patient's condition, establish a diagnosis, and to manage the patient until a procedure is warranted and available. Differences in the waiting times, patient attendance rates, and the acceptability and perceived value of pre-admission management techniques might generate inequities at this stage of the pathway.

3.3.1 Outpatient appointment reminder systems

Patients cancel or do not attend (DNA) approximately one in every seven scheduled outpatient appointments. The total rate has changed little over the 10-year period to 2019-20, although there has been a steady fall in DNAs and a commensurate increase in patient cancellations.[15] Patients living in deprived areas are substantially more likely to DNA than their counterparts from more affluent areas, although this is offset somewhat by lower cancellation rates.

A DNAd appointment represents a missed opportunity to provide care and support that has been deemed necessary and appropriate at some earlier stage in the clinical pathway. This is true, too, of patient cancellations, although the immediate opportunity to reschedule the appointment represents a more straightforward mitigation in these cases. The development of patient-initiated follow-up pathways acknowledge that giving patients responsibility for determining outpatient attendance frequency may be clinically justified in some circumstances.

Various strategies have been adopted to reduce DNA rates, including reminder letters, telephone calls, automated calls, and (SMS) texts. Several studies have shown these reminder interventions reduce DNA rates, although they often increase patient cancellations. Personalised interventions, although more costly, often outperform automated approaches.[16] [17] [18] [19] A small number of studies have examined the gradient of this effect across socio-economic groups, concluding that reminder systems are equally effective across socio-economic groups.[20] [21]

Given the equity imperative, health systems might wish to consider adopting more costly, personalised reminder systems for deprived populations, and automated systems for others.

3.3.2 Telephone and video appointments

Several studies have reported that, when appropriately deployed, telephone and video outpatient consultations are acceptable to patients and clinicians, reducing unnecessary travel and tests.[22] [23] Remote, computer-assisted pre-screening for elective surgery was shown to be highly sensitive and specific.[24] With the COVID-19 pandemic came a step change in rate of virtual appointments. Immediately before the pandemic, four per cent of outpatient consultations were conducted remotely. This rose to 36 per cent in the months after the lockdown measures were introduced, before settling back to 21 per cent at the end of 2021.

The use of remote consultations might be seen to remove some of the barriers that result in higher DNA rates amongst more deprived communities, although the technological nature of the delivery mechanism may act in the opposite direction. Few studies have examined the differential take-up of telephone appointments by socio-economic group. In 2021, a marginally smaller, crude proportion of outpatient appointments were delivered by telephone to the most deprived decile of the English population when compared to the least deprived decile.

3.3.3 Transport systems and costs

Travel arrangements and costs may inhibit uptake of planned hospital services amongst people living in the most deprived areas.

Patient transport services provide free non-emergency transport to and from hospital for a subset of patients who find it difficult to walk or need medical support during their journey.[25] It is estimated that the NHS spends approximately £460 million per annum on non-emergency transport, and that just under half of journeys are for patients attending outpatient appointments. A recent review found that these services were highly-valued, but not sufficiently responsive, fair or environmentally sustainable. [26] The review called for greater clarity about eligibility criteria.

The Healthcare Travel Costs Scheme (HTCS), provides a mechanism to refund patients for their travel costs to hospital. The scheme is retrospective, means-tested, and the level of reimbursement varies with respect to geography and patient characteristics. Uptake and therefore expenditure on the scheme is low (£5-10 million per annum), implying poor awareness, acceptability, or barriers to access.

In the recently published 'Delivery plan for tackling the COVID-19 backlog of elective care', NHS England suggests that patients waiting a particularly long time for hospital care and treatment will be offered '*a comprehensive support package, including transport and*

accommodation where necessary' should they choose to take up appointments away from their local hospital.

Increasing the awareness of and access to patient transport services and HTCS may provide a means of reducing inequalities in access to planned hospital procedures.

Health systems might also want to consider the role of parking charges in reducing attendance at outpatient clinics. NHS England's guidance requires parking charge concessions for some patient groups and recommends them for others, but people on low income are not represented on these lists.[27]

3.3.4 Out-of-hours appointments

The majority of outpatient appointments are delivered during normal working hours. For patients in insecure employment or on zero-hours contracts, this may act as a barrier to access. A 2018 study found that uptake of access to out-of-hours GP appointments was higher amongst poorer patients.[28]

Until fairly recently, the use of out-of-hours outpatient appointments has been comparatively limited, with perhaps one per cent of appointments taking place during the evenings and two per cent at weekends. Weekend appointments have, however, increased in frequency since the pandemic and now make up four to five per cent of all attendances.

Use of evening outpatient appointments is substantially higher amongst patients from the most deprived communities. Uptake of weekend outpatient appointments is also higher amongst this group, but only marginally so.

3.3.5 Active waiting

The concept of active waiting involves supporting patients whilst they wait for planned hospital care. This might include providing self-care advice, support to prepare patients for their appointments and information on likely waiting times. The web-based platform, myplannedcare.nhs.uk was developed during the COVID-19 pandemic to provide these forms of support. We are not aware of any evaluations of its uptake or its impact on equity. We might anticipate however, that without targeted support, patients from deprived communities will be less able to derive benefit from such interventions.

3.4 Decision to treat

Our previous report suggested that inequities in planned care pathways first appear at the point when decisions to treat patients are taken. Health systems may wish to consider the processes and factors that might discourage patients from deprived communities or their clinicians from proceeding with treatment.

3.4.1 Shared decision-making and decision aids in secondary care

The underlying principles and processes for shared decision-making in secondary care are the same as in primary care (see section 3.2.3).

There is strong evidence that shared decision-making can improve decision quality.[29] There are concerns however that the availability and benefits of shared decision-making may not fall equally to all groups. A 2014 study explored deficits in shared decision-making before elective surgery. The authors found deficits in over a third of patients undergoing pre-operative decision-making. The patient subgroups at greatest risk of incomplete or ineffective decision-making processes were those who did not speak English as a first language and those with lower educational achievement.[30] A recent systematic review found that computer-based, interactive materials can enhance the decision-making process, and that decision aids can help surgeons to involve patients in decision-making processes.[31]

The challenge for health systems is clear. How can shared decision-making processes and decision aids be designed and delivered in ways that are compatible with ambitions to reduce inequities. A 2018 qualitative study points to the importance of inclusiveness in decision support materials, plain language communication and attention to potential bias in clinical encounters.[32]

3.4.2 Differential provider payments

The evidence in relation to financial incentive programmes for healthcare providers is mixed. Some studies have demonstrated that payment schemes can influence provider and clinician behaviour, [33] [34] [35] [36] whilst the impacts on quality of care are less clear.[37] One study found that the use of differential payments to providers of stop smoking services based on the characteristics of patients, resulted in an increased higher uptake rate amongst deprived communities.[38] The use of differential payments may be more

palatable when framed as calibrating payments to the investment required to achieve equitable outcomes. In other words, that a provider should be reimbursed at a higher rate to support patient A over patient B, if it costs the provider more to support patient A to achieve a given outcome than patient B. Indeed, it might be argued that failing to recognise these differential costs, and paying a flat fee for all patients, disincentivises providers from working with some population subgroups, and that this in turn gives rise to inequities.

3.4.3 Carer support

For individuals who care for young children or for family members with long term health issues or disabilities, the logistics of a planned hospital admission are complex. The 2014 Carers Act places some obligations on Local Authorities to assess and provide support to carers meeting certain eligibility criteria. In theory, a carer may be able to secure respite care so that the individuals that they care for, are looked after whilst the carer is in hospital, but reduced council budgets have led to tight eligibility. Between 2016/17 and 2020/21, the number of carers receiving financial support to pay for care or a commissioned care service fell by 5% from 114 to 109 thousand people. In the absence of council-funded support, patients must either rely on family and friends, or pay for respite care. It is likely that people living in more deprived communities, where time and disposable income is more highly constrained, will find these barriers are more difficult to overcome.

3.4.4 Patient payments

Many studies have sought to assess the impact of patient incentives on improving health behaviours, such as stopping smoking or reducing food or alcohol consumption. The economic theory underpinning these interventions is strong, and the empirical evidence suggests that when appropriately applied, these incentives can influence health behaviours, particularly in the short term.[39] [40] The level and timing of these incentives are critical to their success.

It might be argued that similar payment schemes could be used to increase the uptake of, and reduce late cancellations for, elective surgery. The strategy holds the potential to improve efficiency (by reducing late cancellations or DNAs) as well as equity. The framing of such as scheme would be critical to ensure public and professional credibility. The payment should be seen as enabling individuals to cover out-of-pocket expenses associated with undergoing a hospital procedure (respite care, travel, parking etc) rather

than as encouraging a patient to undergo surgery that they would not otherwise choose to receive.

3.5 Waiting list prioritisation

Whenever demand exceeds supply, some form of rationing must occur. Rationing can be deliberate and intentional, or it can emerge implicitly as a function of the wider system characteristics. For planned hospital procedures, rationing commonly manifests as patients waiting for treatment, and the duration of wait has been the metric most often used to determine which patients should be treated next. With some clinical exceptions, the objective of the rationing system has been to ensure that once referred, no-one waits substantially longer than anyone else for the treatment that they need.

Reducing waiting times for elective care has been a consistent feature of UK health policy since the late 1990s. Significant progress was made between early 2000 and the mid-2010s. Median waiting times fell to levels that were unimaginable only 20 years before, despite substantial growth in the volume of planned hospital procedures. Since the mid-2010s, waiting times have deteriorated. When the COVID-19 pandemic struck in the early months of 2020, the supply of planned hospital procedures reduced to negligible levels and recovered only slowly over the next two years. In 2022, waiting lists have reached record levels and look set to continue to grow.

In the early part of the COVID-19 pandemic, NHS England and the Royal College of Surgeons recognised that constraints on the supply of planned hospital procedures had become so acute that some consistent and clinically valid means of prioritising procedures was required to ensure that patients with the most pressing needs received care first. The bi-monthly *Clinical Guide to Surgical Prioritisation* assigns procedures into five classes, P1a, P1b, P2, P3 and P4, and sets out the maximum waiting time for procedures in each class. Classes P5 and P6 were subsequently added by NHS England to capture those patients who had elected to remain on the waiting list but defer treatment because of concerns relating to SARS-CoV-2 infection (P5) or for other reasons (P6). The guide was widely welcomed and has been adopted across the NHS.

Whilst the guide helps NHS trusts to order patients waiting for care between classes (P1 >> P6), it leaves open the question of how to order patients within a class. Which P3 patients should be treated first? It is likely that most NHS trusts are relying on the traditional metric, waiting time, to order these patients. That is to say that amongst patients waiting for a particular P3 procedure, the patient that will be treated next will be the patient who has waited longest since referral for that procedure. At face value this may seem fair. But our earlier report illustrated that people living in more affluent areas have seen the biggest improvements in waiting times in recent years. It is not entirely clear why this is the case, but we note that patients living in more affluent areas are more likely to elect to receive their NHS-funded treatment in private hospitals, where waiting lists are often shorter. It might also be the case that these patients have more time to exploit the

complexities of the NHS planned care system, taking advantage, for example, of slots that become available when treatments are cancelled.

Moreover, the approach of ordering patients by time waiting since referral does not take account of the fact that some patients may have waited longer to be referred, that some patients may be in more pain or discomfort than others, that there may be differences in the level of formal or informal support that patients receive whilst waiting or that the delay to treatment may impede some patients' caring or working responsibilities. Should health systems take account of these issues, and if so, how?

3.5.1 Prioritisation based on the clinical impacts of treatment

All surgical interventions represent a balance of benefits and risks. One way to prioritise patients waiting for treatment is to first treat those patients with the greatest potential to benefit and the lowest risk of harm. This will be a function of both patient characteristics before surgery and the treatment itself.

The Surgical Outcomes Risk Tool (SORT) was developed by the National Confidential Enquiry into Patient Outcome and Death (NCEPOD) to estimate the 30-day risk of mortality following a planned surgical procedure.[41] SORT takes account of the procedure being considered, urgency, disease severity, comorbidities, age, and clinical risk. Evaluations have shown that the tool has excellent discrimination and is well-calibrated. SORT is possible because the process of reporting and recording deaths is well-established and consistently implemented, and so the main outcome of interest is available for all historical cases. Whilst assessing risk of death is of critical importance, it is worth noting that death following planned surgery occurs infrequently. Readmission following surgery and admission whilst waiting for surgery are also routinely recorded and represent alternative and more frequent negative outcomes. Whilst tools, such as PARR30+ and LACE have been developed to assess the risk of readmission, these are designed to be used after a patient has been admitted and are not calibrated to the type of planned surgery being performed.[42] [43]

Measuring the benefits of treatment is more challenging, because, unlike death, positive outcomes are not consistently recorded for all forms of planned surgery. However, a national programme recording patient reported outcomes, PROMS, following four forms of planned surgery was initiated in 2009. Data on generic and condition specific measures of quality of life and functioning have been collected before and after surgery for patients receiving hip or knee replacement, inguinal hernia repair and varicose vein ligation. The Arthroplasty Candidacy Help Engine (ACHE) uses this data to estimate the probability that a patient will achieve a detectable gain in hip or knee function following planned joint

replacement surgery.[44] The tool takes account of pre-operative joint functioning, the patient's age, sex, and comorbidities.

It is important to note that both SORT and ACHE are designed to be used to support decisions about whether a patient should receive a planned surgical intervention, rather than to prioritise patients according to the likelihood of positive or negative outcomes. The legitimacy and appropriateness of using such tools to prioritise patients is unclear.

3.5.2 Taking account of non-clinical factors

An alternative or adjunct to prioritising based on clinical outcomes is to consider the patient's social, familial, educational and occupational context and the likely impact of surgery on these factors.

University Hospitals Coventry and Warwickshire NHS Trust (UHCW) have developed a Clinical Priority Tool to support clinicians to order waiting lists based on both clinical and non-clinical factors. The development of the tool was motivated by concerns that the rapid restoration of planned hospital care following the pandemic might further exacerbate health inequalities. Its objective is to ensure that as volumes of planned surgery return to and exceed pre-pandemic levels, the distribution of services across the population should reflect ambitions to reduce health inequalities. Rather than rely on waiting time to order patients within clinical priority tiers (P1-P6), the tool uses a blend of waiting times, clinical and non-clinical factors to automatically re-order weighting lists. This new, default ordering requires clinician sign-off and can if necessary be manually adjusted, but it is hoped that this deliberate nudge will lead to a fairer distribution of outcomes.

Commercial tools exist which seek the same objective. The Copeland Clinical AI (C2Ai) Patient Tracking List Triage system claims to reduce available harm, mortality, and variation in clinical outcomes from planned surgery. The detailed machine-learning or AI methods that underpin the tool are not published for others to assure and we are not aware of any peer-reviewed studies of the tool's efficacy. The Eastern Academic Health Science Network has recently commissioned an evaluation of the tool's impact on patient deterioration, health inequalities, efficiency, staff and patient acceptability at East Suffolk and North Essex NHS Foundation Trust.

Any tool which takes account of non-clinical factors when prioritising patients waiting for surgery must make non-clinical, social or societal value judgements. These may be explicit weightings, as in the UHCW Clinical Priority Tool or implicit weightings that emerge from machine learning methods, as in the case of C2Ai. Whilst clinicians have a substantial

stake in these judgements, the role of others - the public, local and national politicians, social scientists and social researchers - must also be recognised. No value judgement can be correct, in any objective sense, but some can carry greater legitimacy if they concord with public opinion and follow due consideration of the context and evidence.

Work carried out by Ipsos with members of the public in London indicated that although people want reassurance that clinical urgency is the primary determinant of treatment order, they are willing to engage in discussions about the relative importance of other factors that might be used to prioritise patients within tiers of urgency.[45] The Strategy Unit and Ipsos are working with UHCW to derive publicly-validated weightings for non-clinical factors, through a mix of deliberative events and conjoint analyses.

3.6 Treatment accessibility

Having referred a patient to secondary care and agreed that a hospital procedure is required, the final step is to deliver the treatment. Treatment inaccessibility is the key risk to equity at this stage of the care pathway. Site accessibility standards at NHS hospitals are usually high, but the timing of treatment and transport arrangements to the site may still present challenges for patients. Interventions that moderate these risks or otherwise increase the likelihood that a patient will attend for treatment should be considered.

3.6.1 Treatment reminder systems

DNA rates for planned surgery are somewhat lower than for outpatient appointments. Nonetheless interventions that reduce the risk of patient DNA or on-the-day cancellation are worthy of consideration since the implications for the patient and the efficiency of the health system are considerable.

The evidence base for interventions that reduce day-of-surgery cancellations mirrors and to some extent overlaps with the evidence about reducing outpatient attendance DNA and cancellation (see section 3.3.1). One notable study reported substantial reductions in day-of-surgery cancellation by arranging for a nurse to call a patient three working days before surgery, using a script to communicate important pre-operative information and to address any questions or concerns.[46] Studies of other similar interventions report more modest improvements.[47] A qualitative study examining patients' experience of interventions to reduce cancellations highlights the importance of involving patients in the scheduling process and individualised preparation for surgery.

3.6.2 Transport systems and support

See section 3.3.3.

3.6.3 Minor surgery in primary care

If proximity and convenience play a role in inequality of access to planned hospital procedures, then increasing the availability of minor surgery in primary care might be seen as a credible solution. Several studies have examined the quality and safety of minor surgery in primary care and comparatively few concerns have been raised that cannot be addressed through appropriate patient and procedure selection.[48] [49] [50] [51] The key

challenge here is the current capacity of primary care. Increasing the availability of minor surgery may take GPs and their staff away from other core functions including disease identification and referral. Decision-makers will need to consider this trade-off and explore whether it is possible to increase the availability of minor surgery in primary care without reducing capacity for other key functions.

3.6.4 Out-of-hours treatments

As with outpatient appointments, evening and weekend surgery may be an attractive option for some patients with inflexible employment arrangements. The proportion of elective surgery carried out at weekends has increased steadily in recent years from five per cent in 2011 to more than eight per cent in 2021. Planned weekend admissions are slightly more common for NHS-funded treatments taking place in independent sector hospitals, and the use of independent sector services is lower amongst people living in the most deprived areas. Despite this, uptake of planned weekend admissions is higher amongst deprived communities. This suggests that planned hospital procedures that are offered are valued by people living in deprived communities and that increasing the availability of these weekend slots may help to reduce inequities.

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4. Developing a strategy

The previous chapter illustrates the numerous clinical, tactical and strategic interventions which health systems might put in place to reduce inequalities in access to planned hospital procedures. Finite funding and limited management capacity mean that implementing all such interventions is simply not practical. In this chapter we set out how a health system might design a strategy by carefully selecting from the potential interventions.

4.1 The strategic frame

The process of developing a strategy must start with the members of the integrated care board. It must decide whether addressing inequalities in access to planned hospital procedures should be one of its priorities. This is no easy question. There will be many other issues of strategic importance that an ICB will need to consider, and to prioritise everything is to prioritise nothing. Nonetheless, it is critical that an ICB declares its stance on inequalities in access to planned hospital procedures, setting out its rationale, so that its staff are clear whether this issue requires their attention.

If the ICB chooses to prioritise this issue, then there is a further determination that they must make so that others can carry out the work required to develop a detailed and viable strategy. This determination relates to the overall approach that the board wishes to pursue (levelling-up, levelling-down, zero-sum redistribution etc) and to the level of transformation it wishes to sponsor to bring this about. It can be seen as selecting a point, or a region on the plain in figure 12.

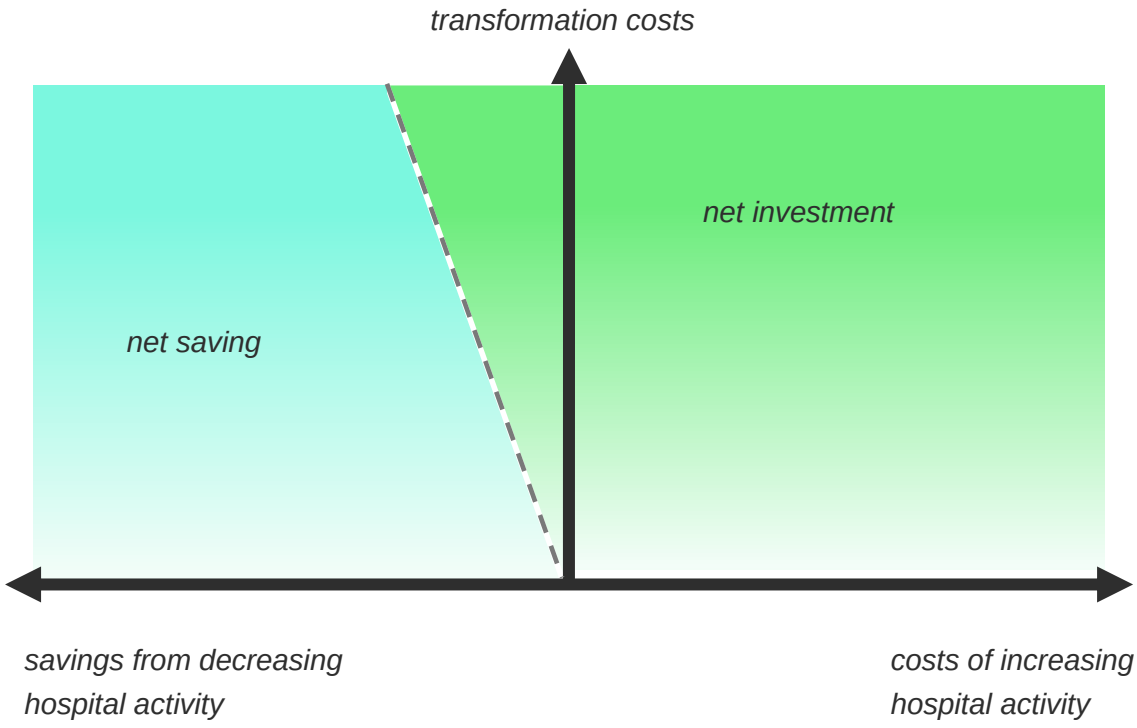
The horizontal axis of the plane encompasses the routes to equity described in section 1.4. Does the board wish to achieve equity by increasing activity (as would be required if levelling-up), by reducing activity (in order to level-down), or by redistributing activity? These choices have different cost consequences. And some are more politically tenable or aligned with national strategy.

The vertical axis of the plane, expresses the level of transformation funding that the ICB is prepared to invest to bring about these changes, incorporating both management time, and the costs of interventions (e.g., travel schemes, decision coaches, provider incentives etc. – see chapter 3). An ambitious, multi-faceted strategy will be substantially more expensive than a simple, single-intervention strategy, but may also offer the ICB a greater level of confidence. It might be tempting to think that reducing hospital activity requires

no transformation, but even increased surgical thresholds will require effort to agree, monitor and maintain.

Points in the green shaded area of figure 12 require net investment: transformation costs and/or additional activity costs. Points in the blue shaded area would result in net savings to the ICB, since the transformation costs are less than the avoided costs associated with activity reductions, particularly for the most affluent groups. Points on the diagonal line represent 'break-even' strategies where transformation costs net-off against modest reductions in hospital activity.

Figure 12: Setting the strategic frame



It is worth noting that, in itself, absence of additional funding is not necessarily incompatible with reducing inequalities in access to planned hospital procedures. Absence of funding simply limits the available routes to equity, that are available to an ICB.

4.2 Setting out the available options

Once the ICB has determined its target position on this plane and provided an indicative funding envelope (or savings target), then others can get on with the task of developing a strategy.

ICBs are complex entities made up of many organisations, professional alliances, interest groups and a very large number of individual staff members. At any point in time, there will be many strategic change programmes competing to mobilise these human and organisational components to achieve specific objectives. Successful change strategies are likely to be those that can be clearly communicated. A strategy to reduce inequalities in planned procedures that selects interventions in a haphazard and profligate manner is unlikely to provide the simplicity and coherence of message necessary for success.

We sketch out below an approach that health systems might follow to develop and agree a strategy to reduce inequalities in access to planned hospital procedures. The approach draws heavily on the work of Jennifer Meyer, Carl Speltzer, and Hannah Winter.[6]

The process starts by developing a strategy table. The table lists the possible intervention points, and for each of these describes the range of potential interventions, along a spectrum from minimal or no change (mild) through safe and feasible solutions, to more ambitious, expensive or experimental approaches (wild). A degree of simplification may be necessary to limit the size and complexity of the strategy table. We have drawn up a sample strategy table (figure 13), based on the interventions set out in chapter 3. Whilst this could be used in its current form, health systems may wish to redraw and repopulate the grid so that it more accurately reflects their conception of the challenges and opportunities and their local baseline conditions.

The process should be underpinned by an assessment of the local context. What are the scale of inequities in planned hospital care? In which service areas and localities are these inequities most strongly expressed? What interventions are already in place to address the issue, and how are they faring?

[6] Decision Quality: Value Creation from Better Business Decisions, April 2016.

Figure 13: A sample strategy table

		mild	→ → → → → →	wild
Identification & referral	targeted case-finding	status quo	selected conditions	comprehensive
	public campaign	status quo	small scale	substantial campaign
	shared decision-making in 1° care	status quo	process tweaks	guidelines and training
	decision aids	status quo	deploy existing tools	develop bespoke tools
	decision coaches	status quo	pilot	full-roll-out
	variable referral thresholds	status quo	selected conditions	comprehensive
Pre-admission assessment & management	appointment reminder systems	status quo	text / automated reminder	personal telephone reminder
	virtual appointments	status quo	telephone appointments	video appointments
	transport support	status quo	taxi fares	transport service
	out-of-hours appointments	status quo	early evening appointments	evening and weekend appointments
	active waiting	status quo	online tools	personalised support
Decision to treat	shared decision-making in 2° care	status quo	process tweaks	guidelines and training
	variable provider payments	status quo	modest adjustment	substantial adjustment
	carer support	status quo	support during hospital stay	support during and after hospital stay
	patient payments	status quo	vouchers	salary cover
Waiting list prioritisation	Based on clinical impacts	status quo	deploy existing tools	develop bespoke tool
	Taking account of non-clinical factors	status quo	simple weightings	public engagement
Treatment accessibility	treatment reminder systems	status quo	text / automated reminder	personal telephone reminder
	transport support	status quo	taxi fares	transport service
	local minor surgery	status quo	increase supply at GP surgeries	commission new, local minor surgery hubs
	out-of-hours treatment	status quo	early evening procedures	evening and weekend procedures

4.3 Identifying potential strategies

A strategy might be seen as a selection of one option from each of the rows of the table. Having drawn up the strategy table, it is clear how many potential strategies are available to a health system. In the table above, there are more than 10 billion (3^{21}) combinations of the three options across the 21 intervention points. Considering all such combinations is clearly not feasible. So how might a health system select a strategy? Given the importance of coherence, a health system may wish to identify a small number of potential strategies that draw together congruent interventions, underpinned by a common theory of change. We set out five such potential strategies below.

4.3.1 Sample strategy 1: Better decisions

Sample strategy 1 seeks to reduce inequalities in planned hospital procedures by improving the quality of patient-clinician decision-making. It does this by developing guidelines on shared decision-making in both primary and secondary care, by training staff in the principles and execution of shared decision-making, rolling out decision aids and by employing decision coaches.

The evidence base suggests that shared decision-making leads reliably to better decisions, but the impact of shared decision-making on health inequalities is less clear. So, any training or guidelines should emphasize the importance of equity, the risks of generic approaches and examples of specific tailoring of methods to ensure that individuals from deprived communities benefit. Targeting decision coaches at these communities may help to ensure that this strategy leads to increased equity.

4.3.2 Sample strategy 2: Full digital

Sample strategy 2 is underpinned by the theory that digital technologies hold the key to improving equity. It seeks to improve equity of access to planned hospital procedures by developing and rolling out patient-facing applications and reminder systems, enabling video consultations and using algorithms to prioritise patients waiting for treatment.

A strategy of this form must explicitly address the emerging evidence that digital technologies are not taken up equally across socio-economic groups. Algorithms to prioritise patients must take account of patients' wider social context either explicitly or by factoring in variables that implicitly prioritise people from deprived communities.

4.3.3 Sample strategy 3: Pull the financial levers

Sample strategy 3 puts its faith in financial incentives. It seeks to appropriately compensate providers by recognising the increased costs associated with working with more deprived communities and by removing the financial barriers to patients taking up treatment options (for example, loss of earnings whilst in hospital or recovering from surgery).

This strategy is underpinned by sound economic theory. Several empirical studies have found that provider output (if not outcomes) responds to financial incentives. Patient-facing incentives have also been shown to alter behaviour, although only in the short term.

The strategy, however, does carry risks. If financial incentives are too high, then they can distort clinical practice in ways that are contrary to patients' best interests. The strategy also risks reducing individuals and organisations to economic actors, commodifying actions that should be engendered by social norms as a function of their inherent goodness.

4.3.4 Sample strategy 4: Be practical

Sample strategy 4 seeks to remove the practical barriers that hold back some patients from seeking and undergoing planned hospital procedures. It does this by helpfully reminding patients about appointments, making appointments available in places and at times most convenient to patients, covering transport costs and losses in salary, and providing carer cover.

The success of this strategy will hinge on the extent to which it is able to target and tailor these interventions at patients from deprived communities whose decisions to take up offers of treatment are hindered by practical issues. If not well targeted, then the strategy might exacerbate existing inequalities.

4.3.5 Sample strategy 5: Get upstream

Sample strategy 5 believes that inequalities in access to planned care can be reduced by getting upstream of the problem, maximising condition identification, referrals and first outpatient attendance.

Whilst upstream interventions can certainly improve health outcomes, it is less clear whether they lead to reductions in health inequalities. Indeed, the uptake of many standardised screening programmes have shown them to be inequitable. Targeted upstream interventions are likely to be needed if equity is the aim.

Moreover, The Strategy Unit's previous report suggested that, for the four pathways assessed, inequities in access to planned hospital care tended to emerge later in the pathway, after referral and assessment in secondary care.

4.4 Selecting a preferred strategy

Having developed some potential strategies, health systems must next select their preferred strategy. We suggest that health systems select a strategy based on its performance against the following criteria:

- **Fidelity**: Is the strategy compatible with the strategic frame?
- **Coherence**: How clear is the strategy and how easy will it be to communicate to staff and stakeholders? How does the strategy fit with broader strategies to reduce health inequalities?
- **Theoretical effectiveness**: To what extent is the strategy underpinned by evidence and sound theory?
- **Feasibility**: How easy will the strategy be to implement: how much management time and coordination would be required, what are the political challenges that need to be overcome?
- **Public acceptability**: To what extent does the strategy align with the views and preferences of the local population?

Multi-criteria decision analysis (MCDA) may be useful in this process. MCDA is an established discipline that supports decision-makers to reach rational decisions given the options available to them, the performance of these options against a set of criteria, and weights designating the relative importance of each criterion.[7] MCDA may be particularly useful when choices are not obvious and incorporate complex trade-offs. One strategy might be expensive, but likely to succeed, another might be cheap but politically untenable. MCDA does not remove these difficulties, but can help decision-makers show that their choice emerged from a diligent and rational process.

How best to implement the selected strategy lies beyond the scope of this report, but visible leadership, clear communication, adequate investment, effective monitoring and programme management are likely to be required if the strategy is to succeed.

[7] http://eprints.lse.ac.uk/12761/1/Multi-criteria_Analysis.pdf

5. Measuring progress

Having settled on a strategy to reduce inequities in access to planned procedures, a health system will want some reassurance that it is having the desired impact and not generating adverse, unintended effects. Establishing causal consequences of multi-faceted interventions in complex health systems is not straightforward. Detailed exploration of the potential causal pathways from intervention to effect and carefully crafted experimental or quasi-experimental study designs would normally be required. Whilst invaluable, these approaches can take some time to design and implement. In the meantime, a health system will want to confirm that the strategy is being implemented as intended and to flag early if problems are emerging.

5.1 Monitoring inequality and inequity

Measuring impacts on inequality and inequity is a little more complicated than measuring impacts on a population as a whole. Measuring impacts on inequality and inequity, requires simultaneous assessments across several sub-populations. In the context of this report, the sub-populations are those defined by socio-economic status, such as quintiles or deciles of deprivation. Success can be thought of as reducing unwarranted differences in a quantity of interest between population subgroups. So, whereas a traditional programme might attempt to increase referral rates or reduce waiting times, a programme that seeks to address inequities, would attempt to reduce unwarranted differences in referral rates or waiting times. A difference can be thought of as unwarranted if it can't be explained by clinical need or informed preference.

5.1.1 The relative index of inequality

The challenge here is one of dimensionality. For each metric, 10 measures might be required, one for each decile of deprivation. Reporting and interpreting this amount of data can be challenging. The relative index of inequality (RII) provides a solution to this challenge. Rather than report, for example, waiting times for all 10 deciles of deprivation, a programme can simply report one figure, the relative index of inequality in waiting time. The RII is similar to the range (the difference between the highest and lowest rates), but takes into account the values for all deprivation deciles as well as the population size of each group, such that smaller groups do not unduly skew the results.

5.1.2 Casemix adjustment

There may be logical arguments for casemix adjusting the underlying rates, ratios and times that contribute to the RIIs. Casemix adjustment is a set of statistical methods that control for differences and changes in factors associated with the outcomes, such as age, ethnicity, or specialty. Whilst casemix adjustment might add precision, and sophistication of measurement, it also adds complexity, reduces transparency, and carries its own measurement risks. At least in the first instance, we suggest that these underlying components of the RII are not casemix adjusted, but that decision-makers are made aware of alternative potential explanations for changes and differences in RIIs that might emerge during the programme. When changes in RIIs are deemed to be due to special cause variation (see 5.3.2), the subsequent investigations should include an examination of the role of casemix changes in contributing to the signal.

5.2 Proposed metrics

We propose eight metrics (below) that health systems may wish to monitor to provide some indication of whether their programmes to reduce socio-economic inequities in access to planned hospital care are taking effect. We would suggest these metrics are reported on a monthly basis.

Table 2: Metrics for monitoring a strategy to reduce inequities in planned hospital procedures

Pathway stage	**Metric** (Relative index of inequality in…)
Identification and referral	1. Referral rates
Pre-treatment assessment	2. Outpatient DNA and cancellation rates
Decision to treat	3 Referral : Treatment conversion ratios 4 Pre-operative hip / knee function*
Waiting list prioritisation	5. Mean waiting times
Treatment accessibility	6. Treatment DNA and cancellation rates 7. Treatment rates 8. Emergency admissions whilst waiting

* Measured using the Oxford Hip and Knee Scores.

ICBs may wish to consider the value of including metrics relating to patient outcomes from planned hospital procedures such as readmission within 28 days, post-operative Oxford Hip or Knee scores or EQ5D.

5.3 Monitoring principles

We set out below, some general principles for monitoring programmes of this type and some suggested metrics.

5.3.1 Confirm governance arrangements

Monitoring only has value if it leads to appropriate action. It is all too easy for programme monitoring to become disconnected from the programme itself. Monitoring results can be produced to a regular schedule, but then are neither formally reviewed nor acted upon. To avoid this, health systems should confirm who is the recipient of the monitoring and that time is scheduled for the recipient(s) to review the results and determine any pursuant action. The most common and straightforward way to achieve this is to arrange for the monitoring results to be presented to a regular programme board that has delegated authority to act on the results.

In practice, debates at programme boards that follow presentations of monitoring reports can often concentrate on technical issues relating to the report itself: data quality, data definitions and so on. These debates can be important but should not be at the expense of agreeing actions that follow the monitoring results. Agenda time should be explicitly allotted to 1) presenting the findings, 2) taking questions on data definitions and data quality, 3) agreeing programme actions based on the results. The final of these agenda items should not wait until all data quality issues have been resolved. Data quality issues should be regarded as an endemic feature for real-world programmes that can be moderated and managed but never fully eradicated.

One practice that may help is for programme boards to set out in advance their actions in response to hypothetical changes in metric values. How will they act, for example, if inequalities in mean waiting times deteriorate? Agreeing a small set of decision rules in this way affords programme boards the space and time to think carefully about their plans. It can take the heat out of decisions that might otherwise be made in a rushed or politically fraught context.

5.3.2 Use statistical process control

Having reduced the risk of inaction, the next problem to avoid is over-reaction. Programme monitoring usually takes the form of tracking variables of interest over time or comparing metrics across organisations or populations. It is rarely the case that a metric takes the same value week after week or takes the same value for all organisations or

populations. This is because chance plays a part in determining a metric's value, as well as genuine differences or changes in the real world. But should a health system react when a metric changes or when differences between organisations or populations emerge? Statistical process control (SPC) is a set of methods that have been developed and defined over the last century to help decision-makers know when action is merited and if so what type. SPC's key contribution to management science is to distinguish between common cause variation, chance variation inherent in the system and monitoring process, and special cause variation, which is attributable to some real change or difference within the system. Decision-makers can reduce common-cause variation only by acting on the system as a whole. Where special cause variation is identified, a systematic investigation into its cause is required, and if addressed can lead to improvement. When adopted, SPC can help systems to understand which signals from the data warrant investigation, which require system change, and which can be safely ignored.

5.3.3 Be focused

It is unrealistic and unhelpful to monitor every aspect of a complex programme. Monitoring reports can become bloated and burdensome, with key messages lost amongst the detail. Instead, monitoring should be focused on reporting headline or sentinel metrics. This not only frees up decision-makers when reviewing reports, it also frees up business intelligence staff so that more of their time can be used to investigate specific findings of interest. As a rule of thumb, a monitoring report should not report more than 10 metrics, and breakdowns of headline metrics should be strictly limited. In larger programmes, reports may be required for several programme components or levels. But whenever an additional monitoring report is proposed, the associated review and action responsibilities should be agreed too (see section 5.1.1 above).

5.3.4 Targets? Caution

It is common practice for programmes to agree target levels for monitored metrics. Programmes should be clear what value targets might add. Targets in themselves do not change what is possible, or make the achievement of a metric value more likely. The value that a metric takes is a function of the system that programmes are seeking to improve. Programmes may therefore spend their time more profitably improving the system rather than setting targets. And on the downside, targets, when associated with performance management, can lead to distortions in the data. Managers, under pressure to deliver a target value, can lose sight of the real change that was intended, and instead subtly

change the way the data is reported. This can mean that decision-makers receive an unrealistic view of the improvements that have been made and miss opportunities to take corrective action.[8] On balance, targets have few direct benefits, but they do carry risks.

[8] As Goodhart's law states, '*Any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes*.'

6. Conclusion

In this report we have highlighted the enduring problem of socio-economic inequities in access to planned hospital procedures. These inequities grew during the COVID-19 pandemic and there is a real risk that efforts to reduce waiting times will make matters worse still. Something must be done, and there is no shortage of potential interventions. We hope this report will support ICBs to develop a robust and coherent strategy, taking deliberate and bold steps to address this long-standing issue.

A. Technical appendix

A.1 Estimating equity of planned hospital procedures in the absence of procedure specific need data

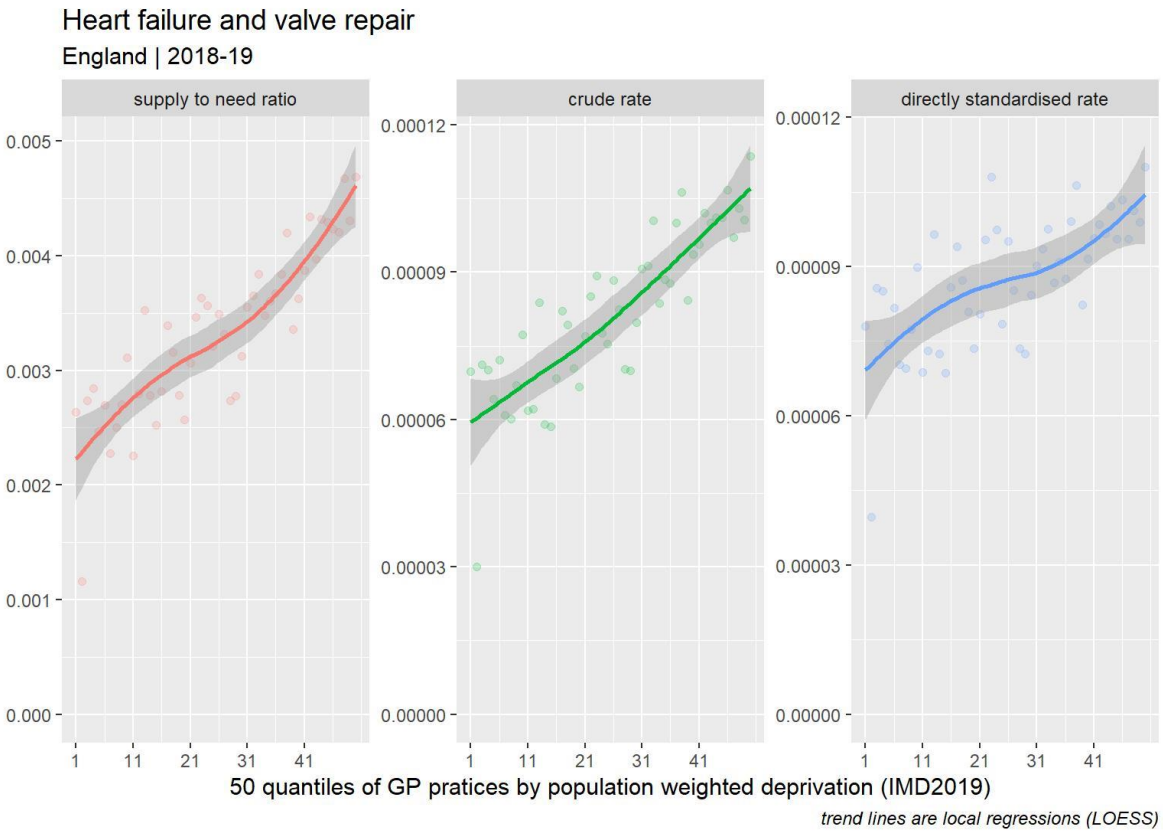
A precise assessment of equity relies on a sound measurement of both need for and supply of an intervention across a set of population subgroups of interest. Given the subject of this report, that requires measurements of need for and supply of each form of planned hospital procedure. Data on supply by socio-economic group can be readily extracted from Hospital Episode Statistics or the equivalent commissioning datasets. Data on need for each procedure by socio-economic group is somewhat more difficult to come by. Academic units have produced prevalence estimates for several common conditions, and these can be used as estimates of need for procedures that are closely and exclusively related to a particular condition. But these estimates cover only a very small proportion of all conditions. Over time, coverage of these prevalence estimates will improve, allowing for a robust assessment of equity over an increasing number of procedures. What, however, can analysts do in the meantime, to help decision makers get some broad assessment of equity in planned hospital procedures and the level of activity required to address inequities?

One option in the absence of comprehensive procedure specific need data is to use some general approximation of supply-to-need ratios, which may not be perfect but can be used for all procedures. Here we test two such measures, the crude population rate of a procedure and the directly age-sex standardised rate of a procedure. Both use the population size to proxy for need, but directly age-sex standardised rates also take account of the age and sex structure of the population.

In the charts below, we show how crude and directly age-sex standardised rates compare to supply-to-need ratios for three condition-procedure pairs where procedure specific need data is readily available: (1) heart failure and valve repair, (2) COPD and lung volume reduction, and (3) hip arthritis and hip replacement. Each chart shows how the two potential proxies compare to the true supply-to-need ratio. The comparison is made across 50 quantiles of GP practices by population weighted deprivation.[9] A good proxy would mirror the supply to need ratio.

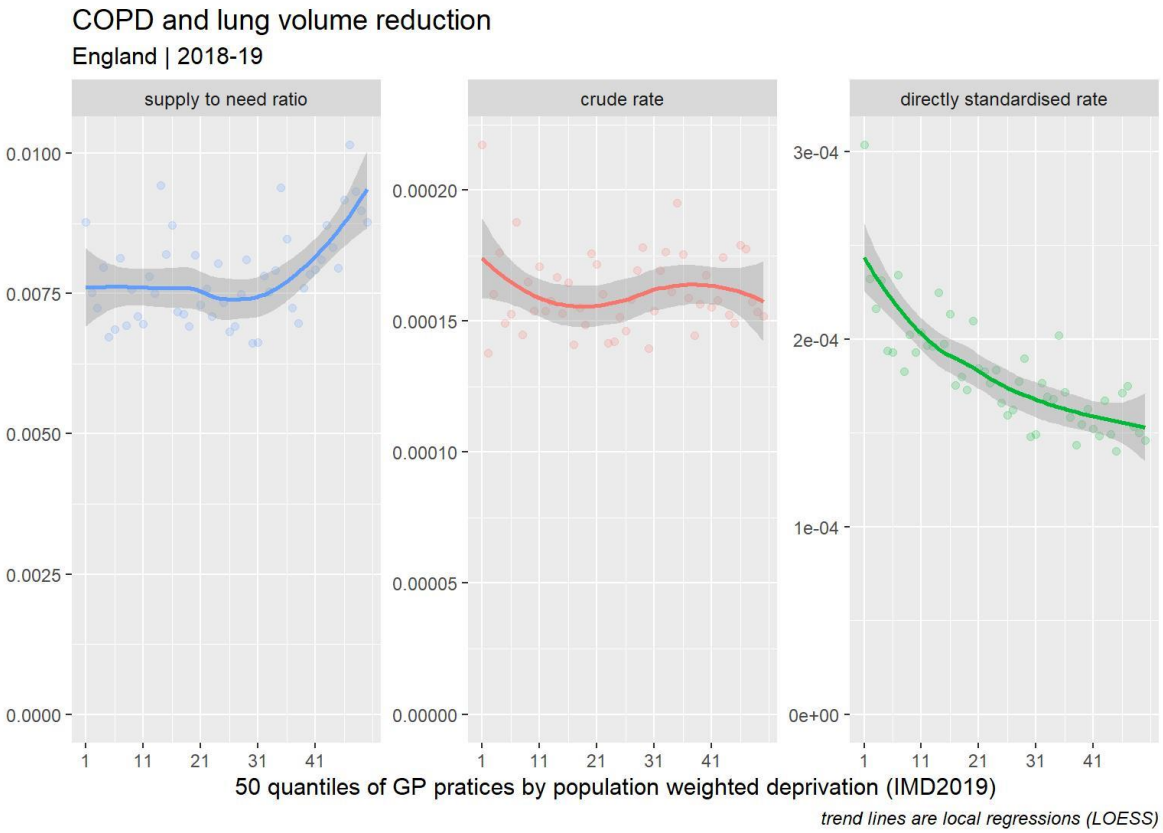
[9] Each quantile represents two per cent of the GP practices in England, ordered from the most deprived (quantile 1) to the least deprived (quantile 50). Deprivation is measured by taking the weighted average of deprivation (IMD 2019) of the LSOAs of the practice's resident population.

Figure A1: Comparison of supply-to-need ratio and the crude and directly age-sex standardised rate for heart failure and valve repair across 50 quantiles of deprivation



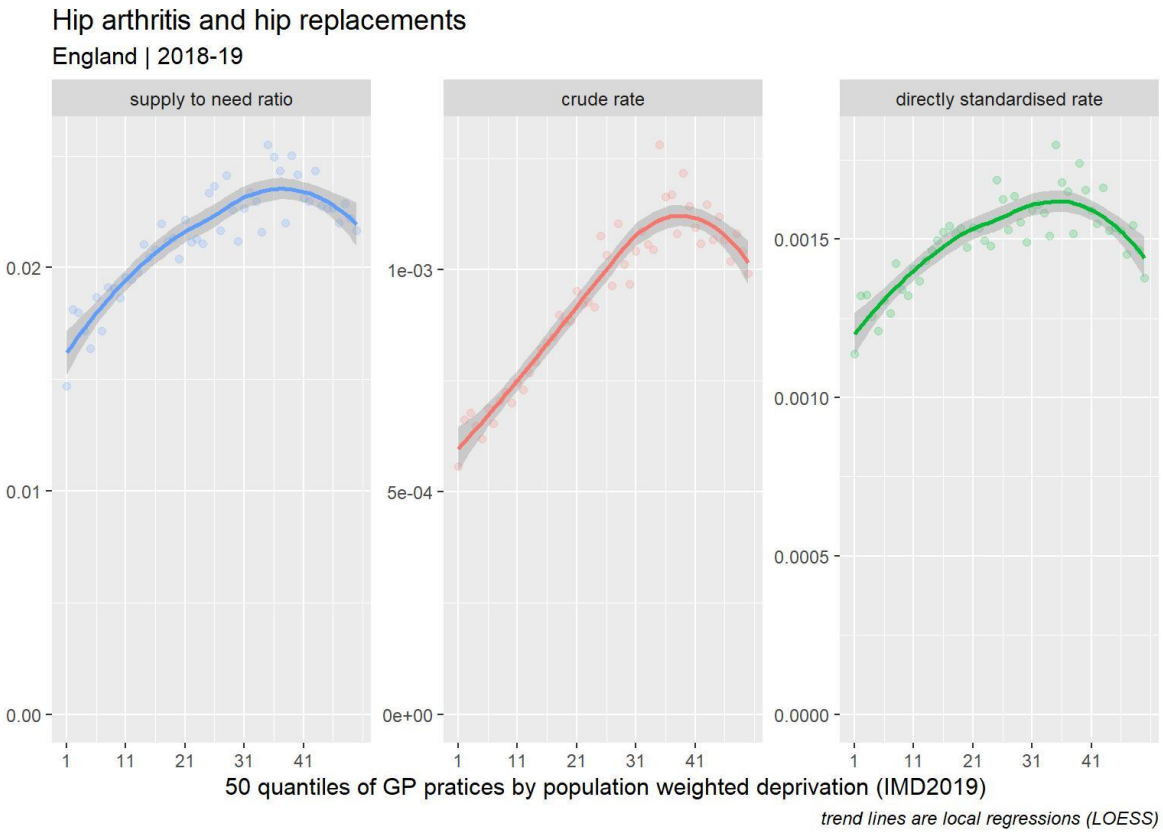
For heart failure and valve repair, both proxies perform well, but the crude rate is more closely correlated with the supply-to-need ratio (see table A1 below).

Figure A2: Comparison of supply-to-need ratio and the crude and directly age-sex standardised rate for COPD and lung volume reduction across 50 quantiles of deprivation



For COPD and lung volume reduction, the directly standardised rate performs poorly. Whilst the supply-to-need ratio is constant across most quantiles of deprivation before rising in the least deprived quantiles, the directly standardised rate decreases steadily across all quantiles. The crude rate mirrors the pattern across most quantiles but fails to mirror the uptick in supply-to-need ratios in the least deprived quantiles. On balance, the crude rate performs better as a proxy for the supply-to-need ratio.

Figure A3: Comparison of supply-to-need ratio and the crude and directly age-sex standardised rate for hip arthritis and hip replacement across 50 quantiles of deprivation



For hip arthritis and hip replacements, both the crude rate and directly standardised rate are able to mirror the characteristic shape of the supply-to-need ratio across quantiles of deprivation. There is no material difference in the correlation coefficients for these two proxies.

Table A1: Correlation between supply-to-need ratio and the crude and directly age-sex standardised rate for three condition-procedure pairs

	Correlation between crude rate and supply-to-need ratio	Correlation between directly age-sex standardised rate and supply-to-need ratio
Heart failure and valve repair	0.9706	0.9178
COPD and lung volume reduction	0.5264	0.1550
Hip arthritis and hip replacement	0.9598	0.9596

Pearson correlation coefficient measured across 50 quantiles of GP practices by population weighted deprivation

On balance, it appears that the crude rate is a more reliable and consistent proxy of the supply-to-need ratio than the directly age-sex standardised rate, at least with respect to these three condition-procedure pairs. On this basis, we have used crude rates to proxy supply-to-need ratios for all planned care procedures in chapter 2 of this report. We see this as a pragmatic decision required to provide an indication of the nature and distribution of inequities across the broad range of planned care procedures in the absence of comprehensive procedure specific need data. We acknowledge the limitations of this approach and welcome feedback on how these methods can be improved.

We note that this result may appear to be counter-intuitive. Why, having adjusted for the age structure of a population, does the directly standardised rate perform more poorly as a proxy for supply-to-need ratios than the crude rate? We suggest that this may be because age is one of the few risk factors that would tend to weight need in favour of the least deprived populations. Most other factors, in particular lifestyle, employment, educational and environmental risk factors, that are not adjusted for in the age-standardisation process are likely to weight need in favour of the most deprived populations. On balance it appears that these two sets of risk factors broadly balance out, leaving crude rates as a better proxy for supply-to-need ratios than directly age-sex standardised rates.

A.2 Estimating activity changes needed to level-up, -down or zero-sum redistribute

Having decided to use the crude population rate to proxy supply-to-need ratios, we set out below the steps we took to estimate activity changes required to deliver equity by levelling-up, levelling-down or zero-sum redistribution.

1. Count planned hospital procedures in both inpatient and outpatient settings, at 3-digit OPCS4 code level and across deciles of deprivation (IMD-2019) and ICB.

2. Discard data on procedures in OPCS4 chapters Y and Z and procedures starting X62, X66-68. X70-71, C71, O11-14, O16, O28, O30-31, and O33.

3. Assign each procedure code to an OPCS4 chapter, whilst disaggregating chemotherapy and high cost drugs (X72-74, X81-98), renal dialysis (X40-42), rehabilitation (U50-U54, X60), other surgical procedures (X01-14, X16-27, X53) and other medical procedures (X28-39, X44, X47, X52, X61, X65) and assigning codes O01-05, O15, and O20 to chapter L (other arteries and veins) and codes O06-10, O17-19, O21-27, O29, O32) to chapter W (other bones and joints).

4. Within each chapter or disaggregated chapter, combine those procedures where there was less than 10 such procedures carried out each day in England during the year.

5. Calculate the crude population rate for each procedure or procedure group by deprivation decile within each ICB.

6. Linearly regress the crude rates across deciles of deprivation for each procedure and ICB having weighted for the population size in each decile and ICB, noting the model coefficient of deprivation and its statistical significance.

7. Where the model coefficient was significant ($p < 0.05$) and negative, calculate the difference between

a) the model predicted rate for each decile and maximum predicted rate across all deciles
b) the model predicted rate for each decile and minimum predicted rate across all deciles
c) the model predicted rate for each decile and ICB predicted rate

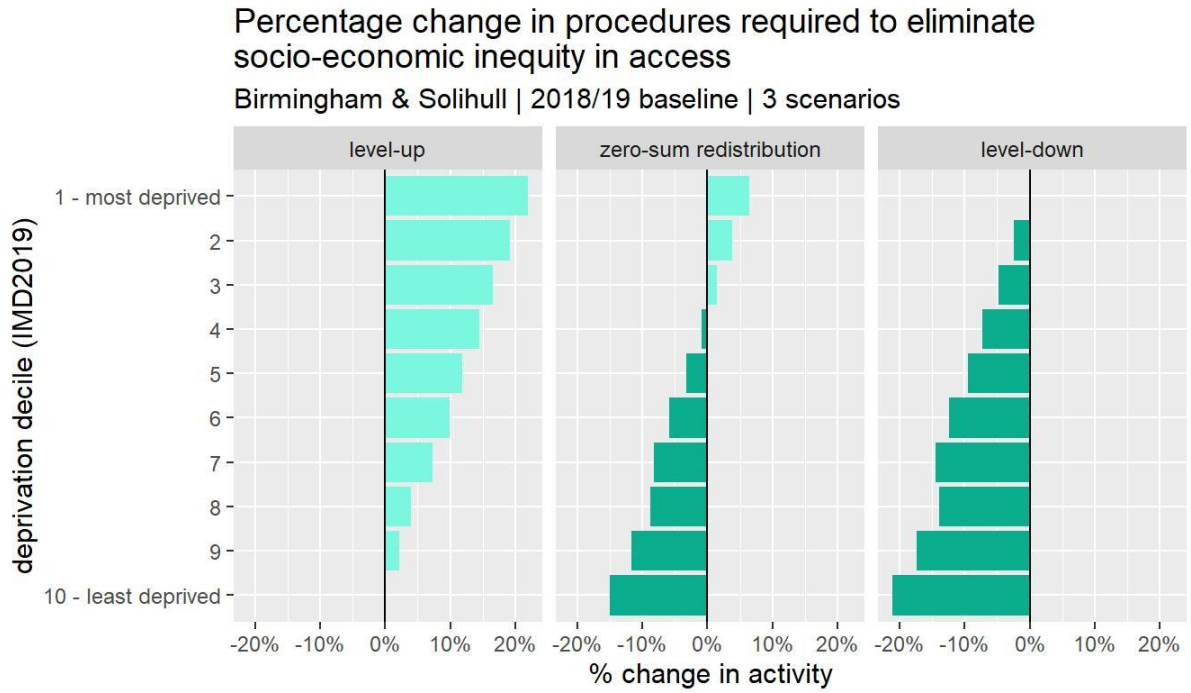
and multiply these by the population for each included procedure and ICB pair.

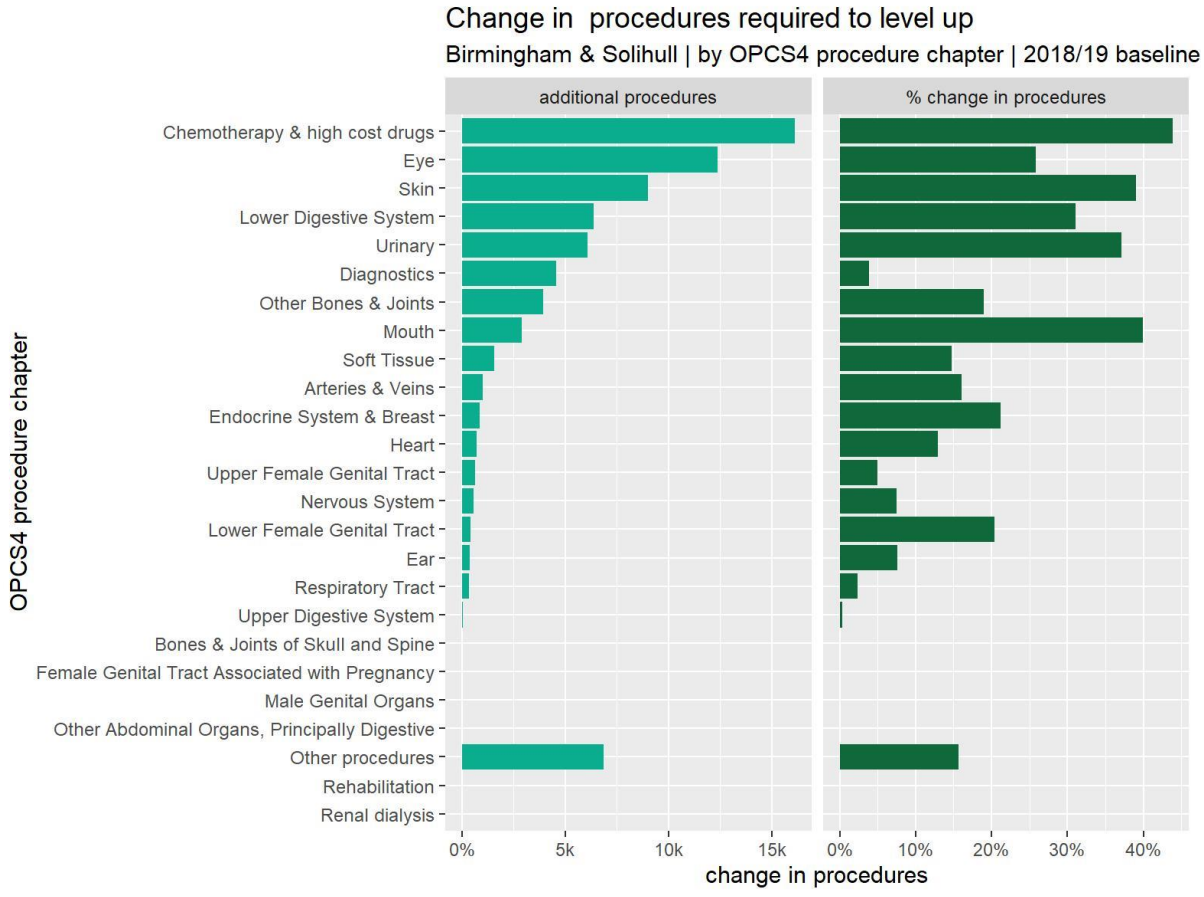
These quantities indicate the level of activity required to a) level-up, b) level-down and c) zero-sum redistribute activity within each decile of deprivation, ICB and procedure.

B. ICB-level analysis

B.1 Birmingham and Solihull

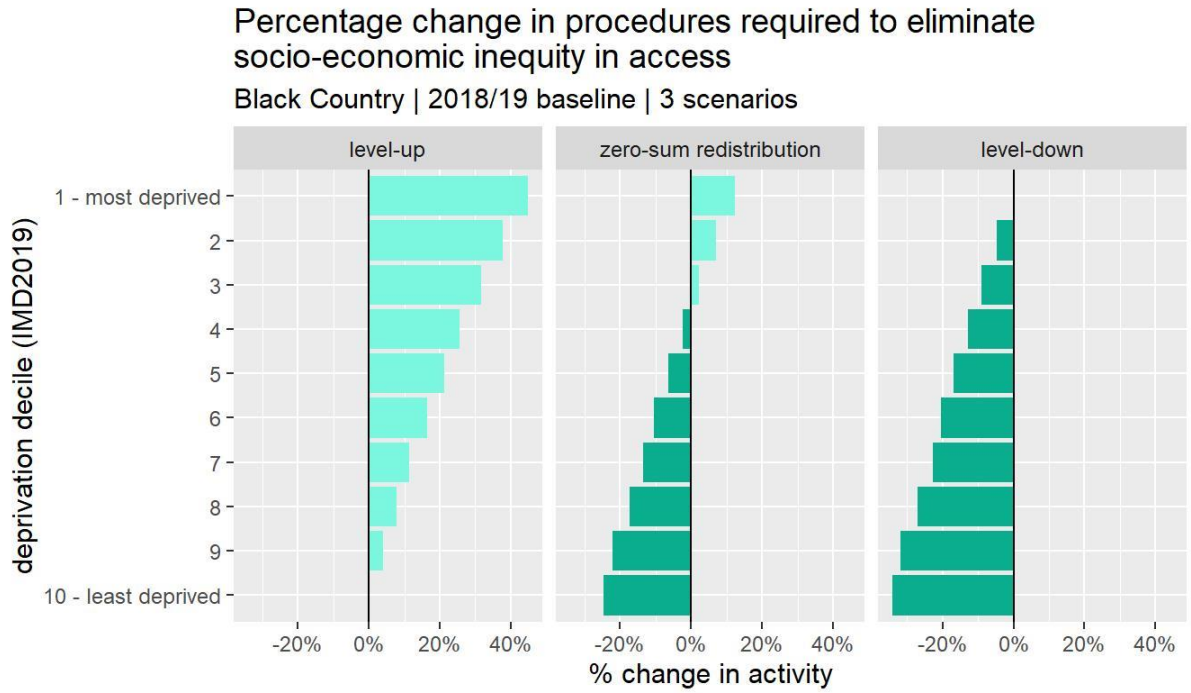
Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	74,714	15.2%	0.0%
Zero-sum redistribution	0	0.0%	5.7%
Levelling-down	-30,610	-6.2%	0.0%

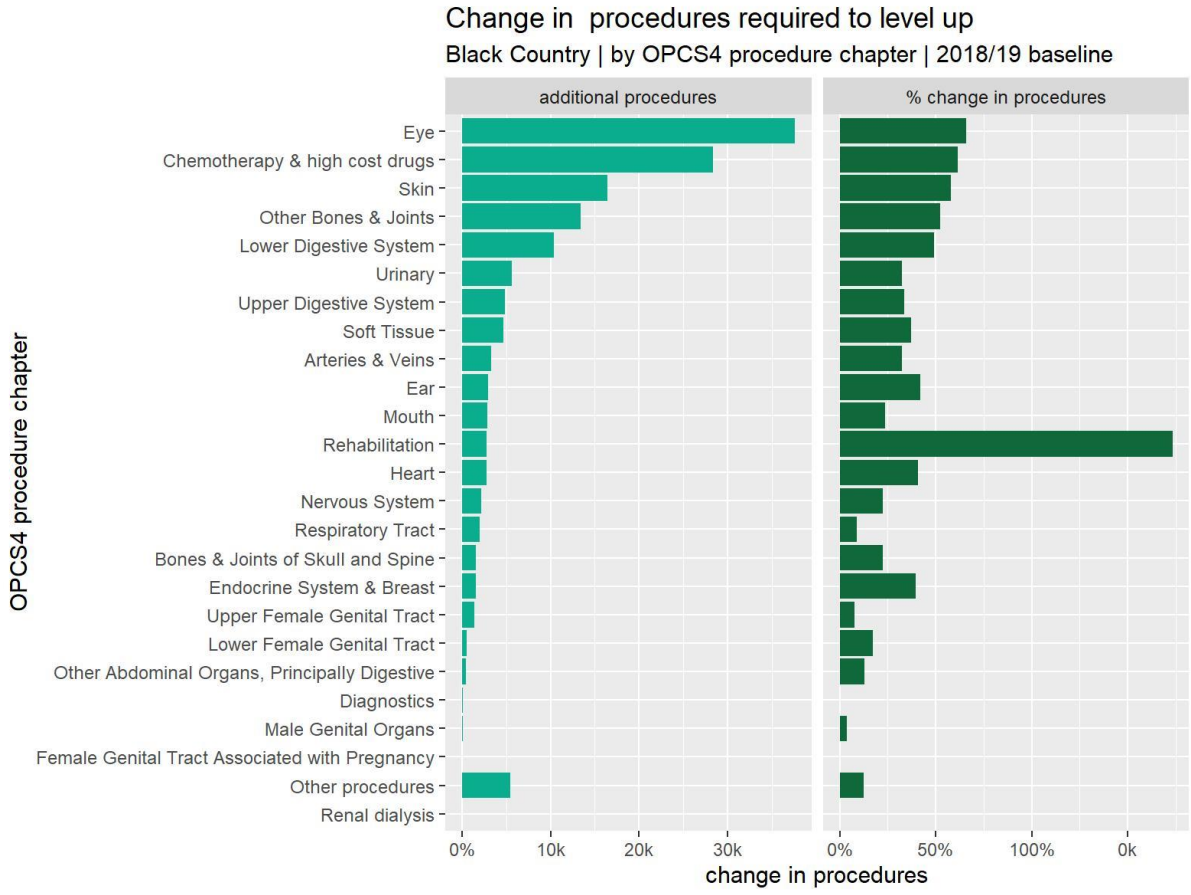

Percentage change in procedures required to eliminate socio-economic inequity in access
Birmingham & Solihull | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-20% -10% 0% 10% 20%
% change in activity


Change in procedures required to level up
Birmingham & Solihull | by OPCS4 procedure chapter | 2018/19 baseline
additional procedures
% change in procedures
OPCS4 procedure chapter
Chemotherapy & high cost drugs
Eye
Skin
Lower Digestive System
Urinary
Diagnostics
Other Bones & Joints
Mouth
Soft Tissue
Arteries & Veins
Endocrine System & Breast
Heart
Upper Female Genital Tract
Nervous System
Lower Female Genital Tract
Ear
Respiratory Tract
Upper Digestive System
Bones & Joints of Skull and Spine
Female Genital Tract Associated with Pregnancy
Male Genital Organs
Other Abdominal Organs, Principally Digestive
Other procedures
Rehabilitation
Renal dialysis
0% 5k 10k 15k
0% 10% 20% 30% 40%
change in procedures

B.2 The Black Country

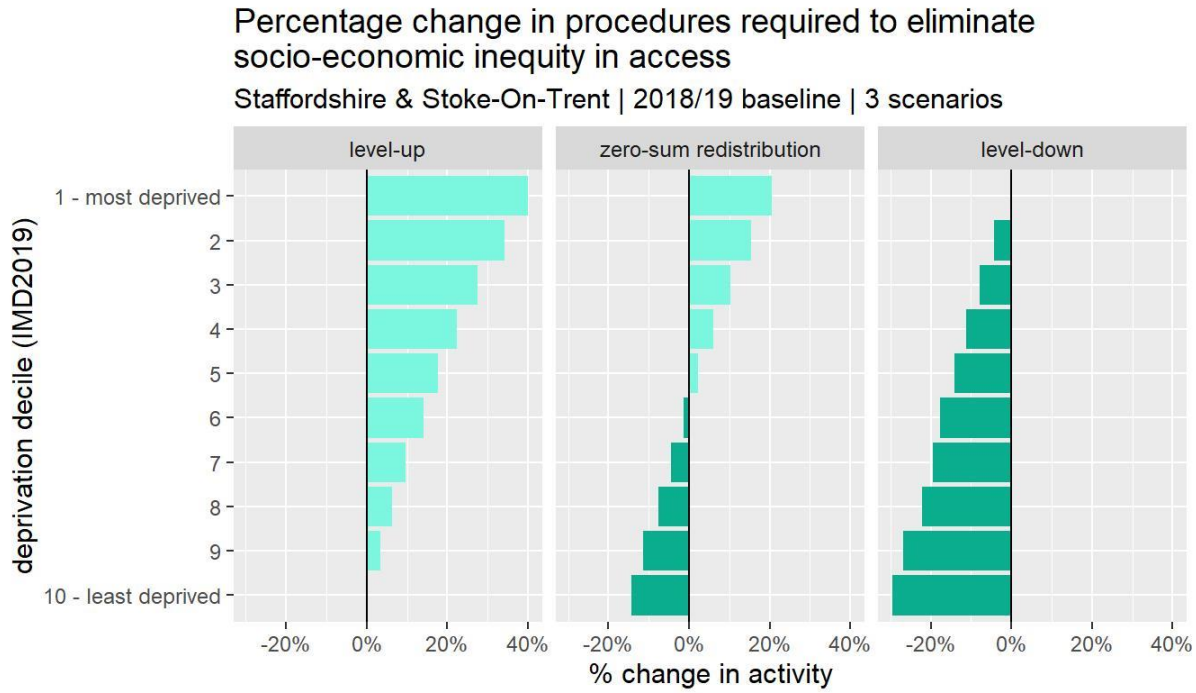
Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	151,101	29.3%	0.0%
Zero-sum redistribution	0	0.0%	9.6%
Levelling-down	-56,951	-11.0%	0.0%

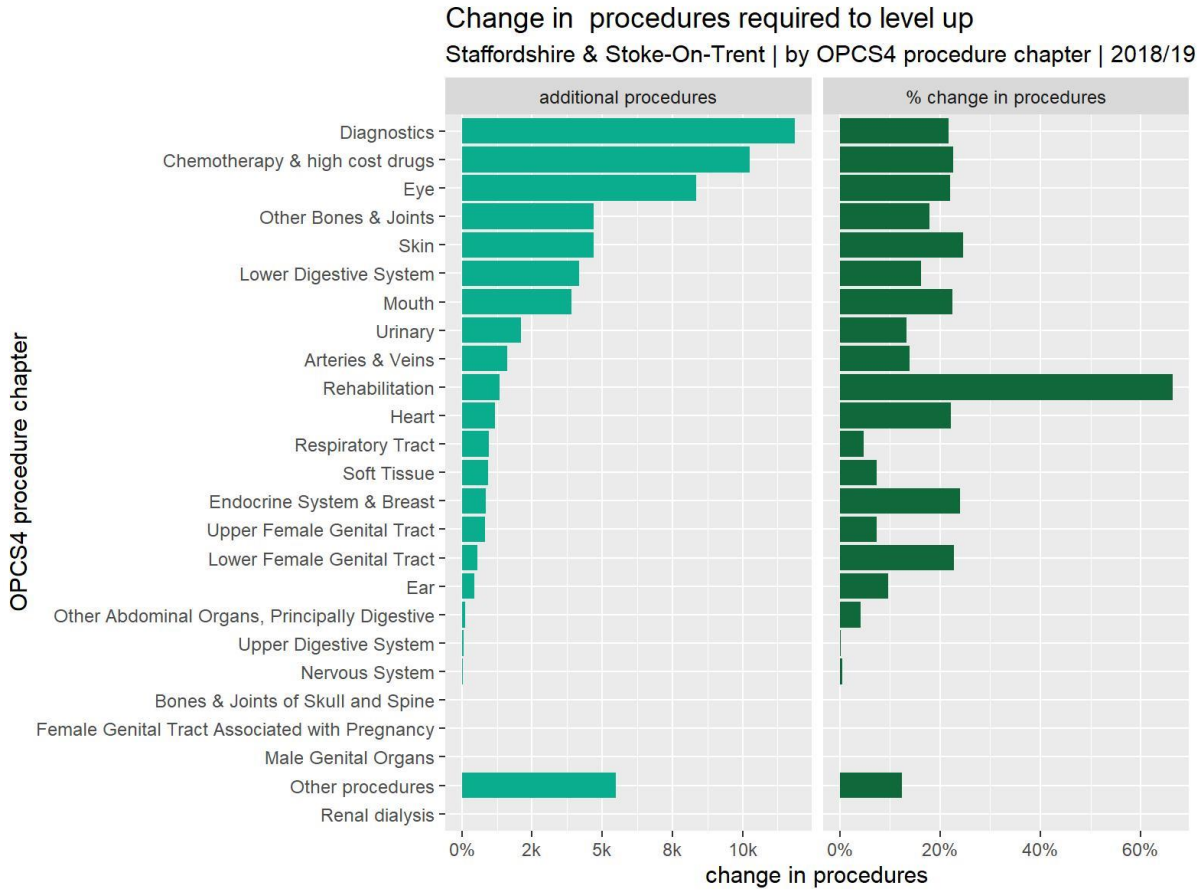

Percentage change in procedures required to eliminate socio-economic inequity in access
Black Country | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-20%
0%
20%
40%
% change in activity


Change in procedures required to level up
Black Country | by OPCS4 procedure chapter | 2018/19 baseline
additional procedures
% change in procedures
OPCS4 procedure chapter
Eye
Chemotherapy & high cost drugs
Skin
Other Bones & Joints
Lower Digestive System
Urinary
Upper Digestive System
Soft Tissue
Arteries & Veins
Ear
Mouth
Rehabilitation
Heart
Nervous System
Respiratory Tract
Bones & Joints of Skull and Spine
Endocrine System & Breast
Upper Female Genital Tract
Lower Female Genital Tract
Other Abdominal Organs, Principally Digestive
Diagnostics
Male Genital Organs
Female Genital Tract Associated with Pregnancy
Other procedures
Renal dialysis
0%
10k
20k
30k
0%
50%
100%
0k
change in procedures

B.3 Staffordshire and Stoke-on-Trent

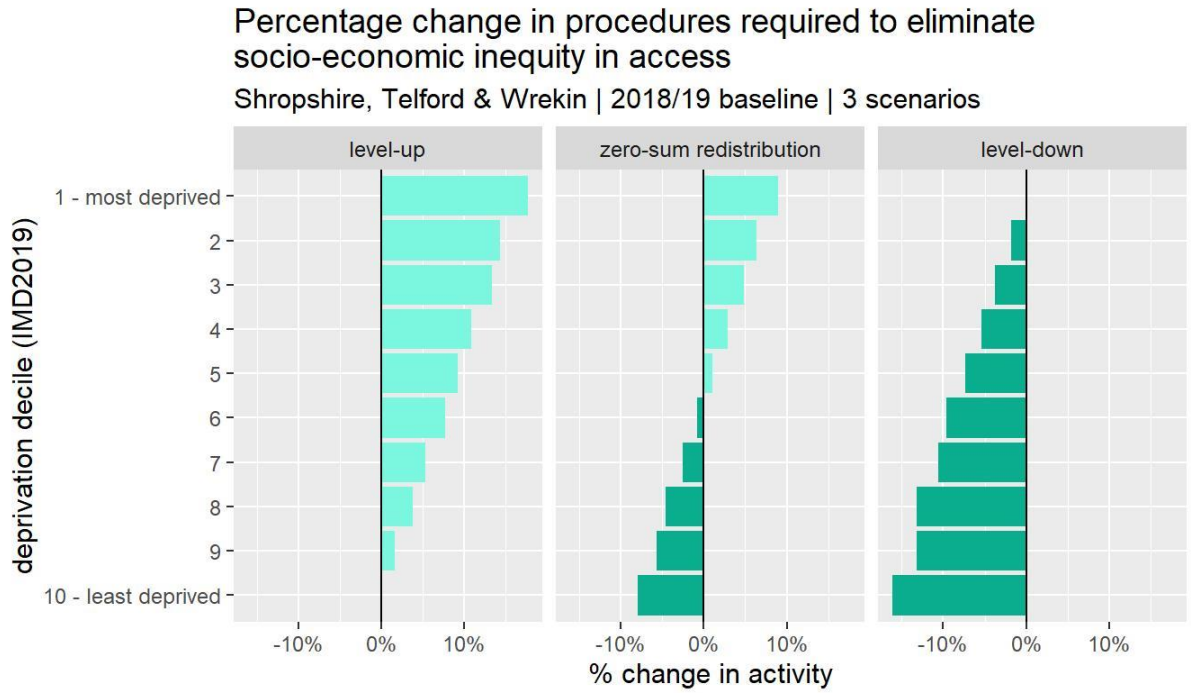
Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	64,345	15.7%	0.0%
Zero-sum redistribution	0	0.0%	8.8%
Levelling-down	-67,641	-16.5%	0.0%

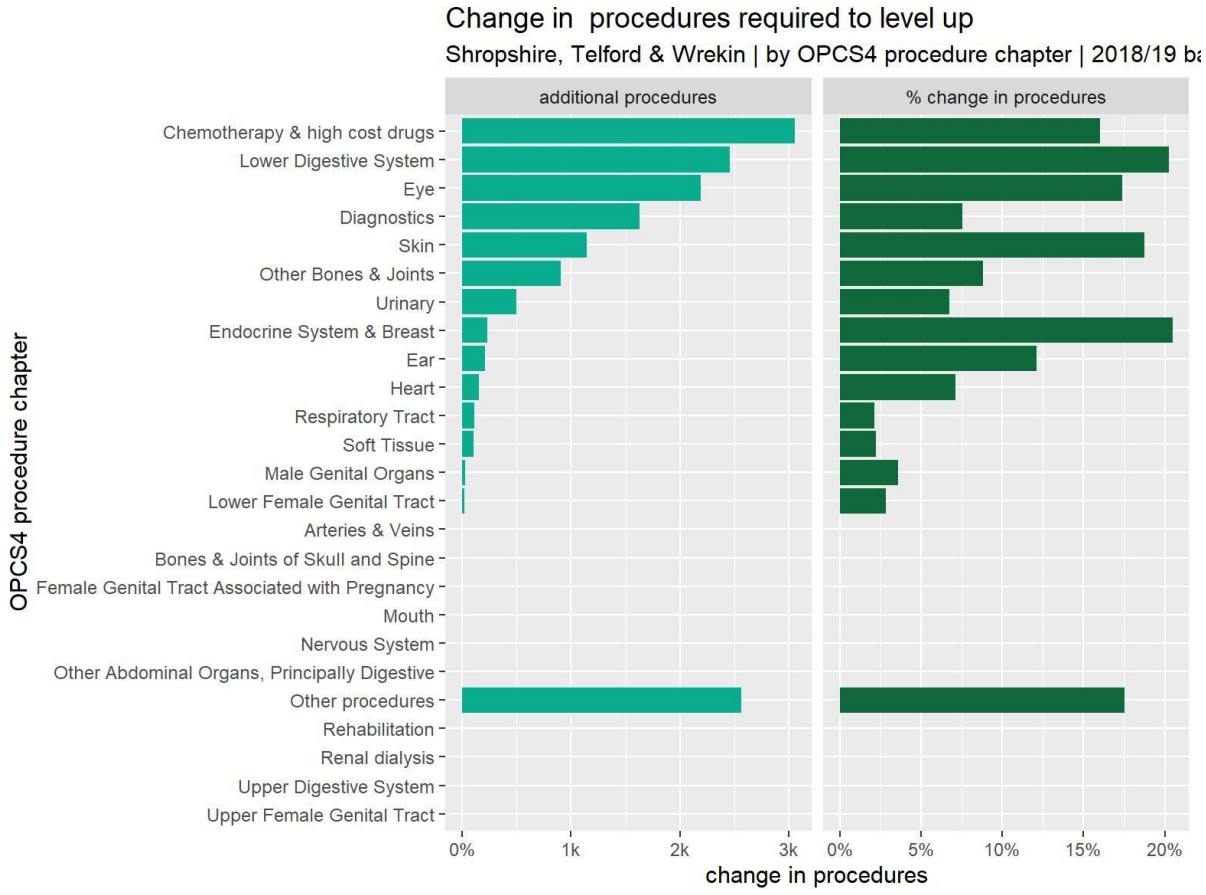

Percentage change in procedures required to eliminate socio-economic inequity in access
Staffordshire & Stoke-On-Trent | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-20%
0%
20%
40%
% change in activity


Change in procedures required to level up
Staffordshire & Stoke-On-Trent | by OPCS4 procedure chapter | 2018/19
additional procedures
% change in procedures
OPCS4 procedure chapter
Diagnostics
Chemotherapy & high cost drugs
Eye
Other Bones & Joints
Skin
Lower Digestive System
Mouth
Urinary
Arteries & Veins
Rehabilitation
Heart
Respiratory Tract
Soft Tissue
Endocrine System & Breast
Upper Female Genital Tract
Lower Female Genital Tract
Ear
Other Abdominal Organs, Principally Digestive
Upper Digestive System
Nervous System
Bones & Joints of Skull and Spine
Female Genital Tract Associated with Pregnancy
Male Genital Organs
Other procedures
Renal dialysis
0%
2k
5k
8k
10k
0%
20%
40%
60%
change in procedures

B.4 Shropshire, Telford and Wrekin

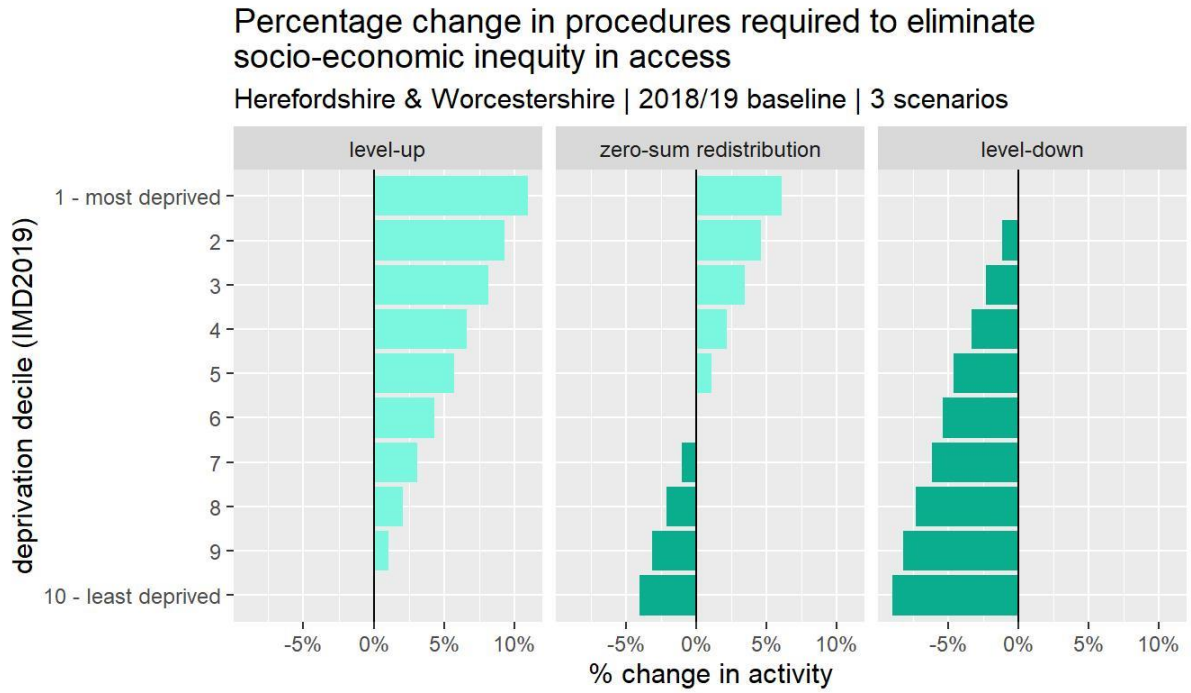
Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	15,316	8.1%	0.0%
Zero-sum redistribution	0	0.0%	3.6%
Levelling-down	-15,790	-8.4%	0.0%

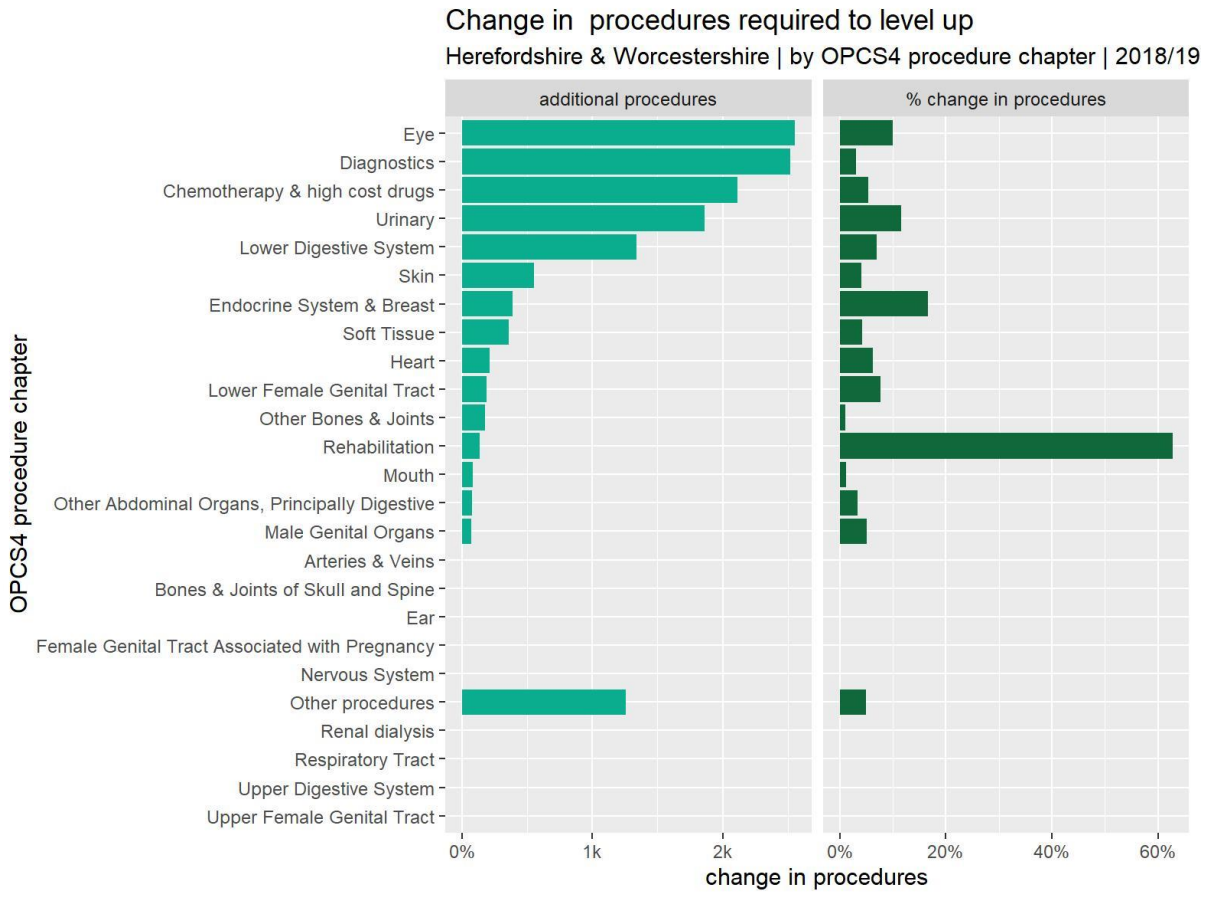

Percentage change in procedures required to eliminate socio-economic inequity in access
Shropshire, Telford & Wrekin | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-10%
0%
10%
% change in activity


Change in procedures required to level up
Shropshire, Telford & Wrekin | by OPCS4 procedure chapter | 2018/19 ba
additional procedures
% change in procedures
OPCS4 procedure chapter
Chemotherapy & high cost drugs
Lower Digestive System
Eye
Diagnostics
Skin
Other Bones & Joints
Urinary
Endocrine System & Breast
Ear
Heart
Respiratory Tract
Soft Tissue
Male Genital Organs
Lower Female Genital Tract
Arteries & Veins
Bones & Joints of Skull and Spine
Female Genital Tract Associated with Pregnancy
Mouth
Nervous System
Other Abdominal Organs, Principally Digestive
Other procedures
Rehabilitation
Renal dialysis
Upper Digestive System
Upper Female Genital Tract
0%
1k
2k
3k
0%
5%
10%
15%
20%
change in procedures

B.5 Worcestershire and Herefordshire

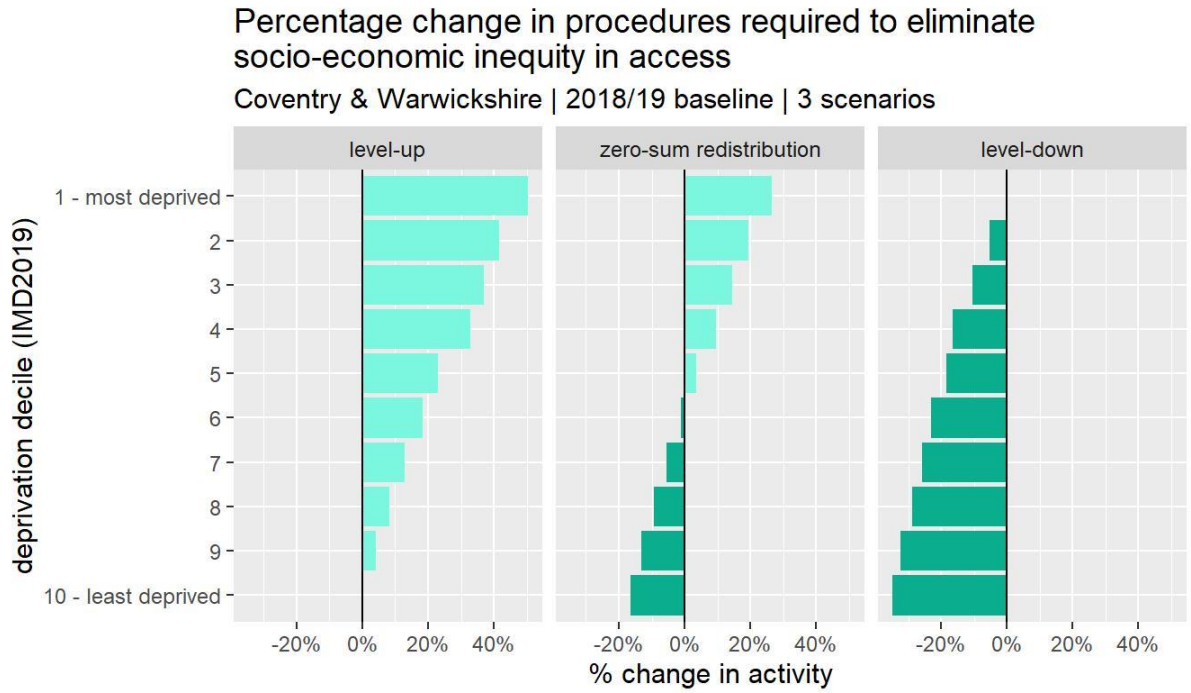
Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	13,898	4.3%	0.0%
Zero-sum redistribution	0	0.0%	2.3%
Levelling-down	-17,237	-5.4%	0.0%

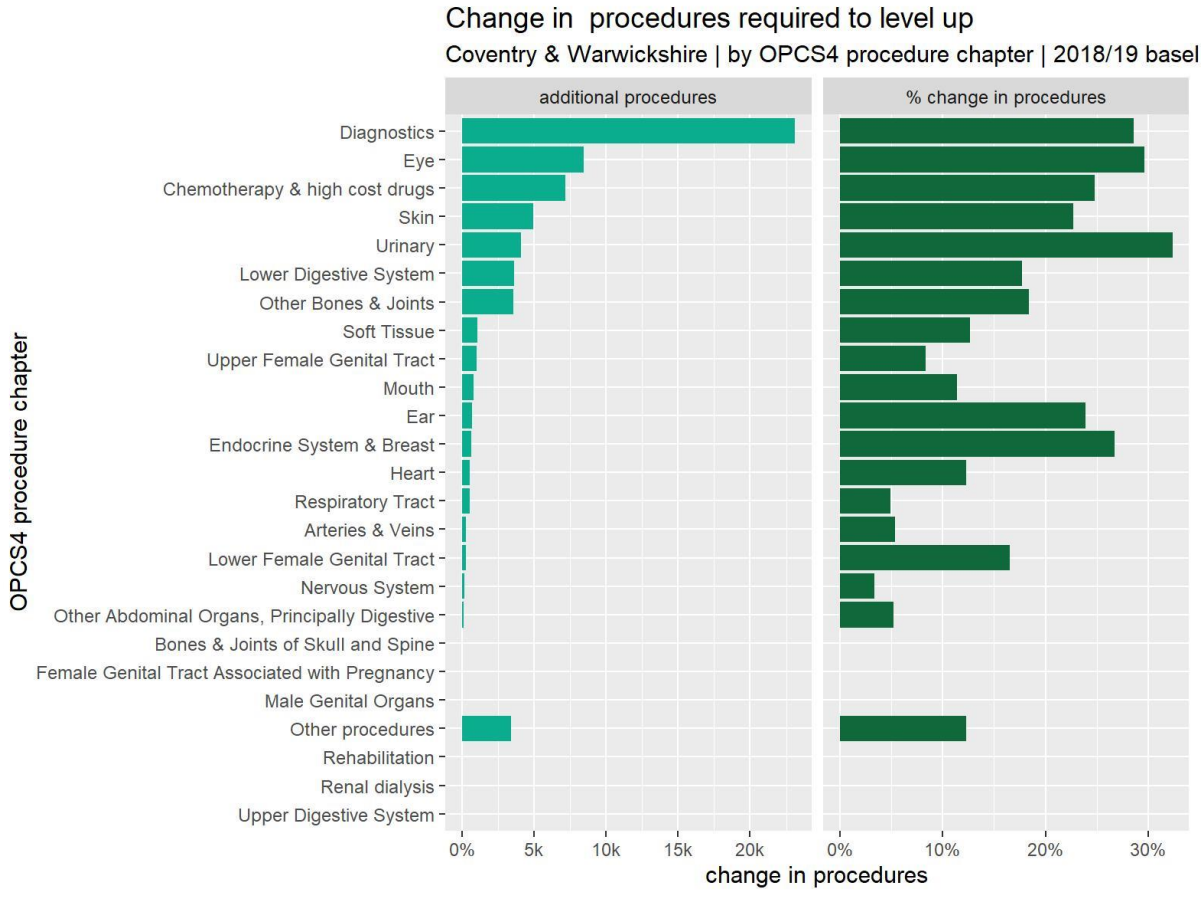

Percentage change in procedures required to eliminate socio-economic inequity in access
Herefordshire & Worcestershire | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-5%
0%
5%
10%
% change in activity


Change in procedures required to level up
Herefordshire & Worcestershire | by OPCS4 procedure chapter | 2018/19
additional procedures
% change in procedures
OPCS4 procedure chapter
Eye
Diagnostics
Chemotherapy & high cost drugs
Urinary
Lower Digestive System
Skin
Endocrine System & Breast
Soft Tissue
Heart
Lower Female Genital Tract
Other Bones & Joints
Rehabilitation
Mouth
Other Abdominal Organs, Principally Digestive
Male Genital Organs
Arteries & Veins
Bones & Joints of Skull and Spine
Ear
Female Genital Tract Associated with Pregnancy
Nervous System
Other procedures
Renal dialysis
Respiratory Tract
Upper Digestive System
Upper Female Genital Tract
0%
1k
2k
0%
20%
40%
60%
change in procedures

B.6 Coventry and Warwickshire

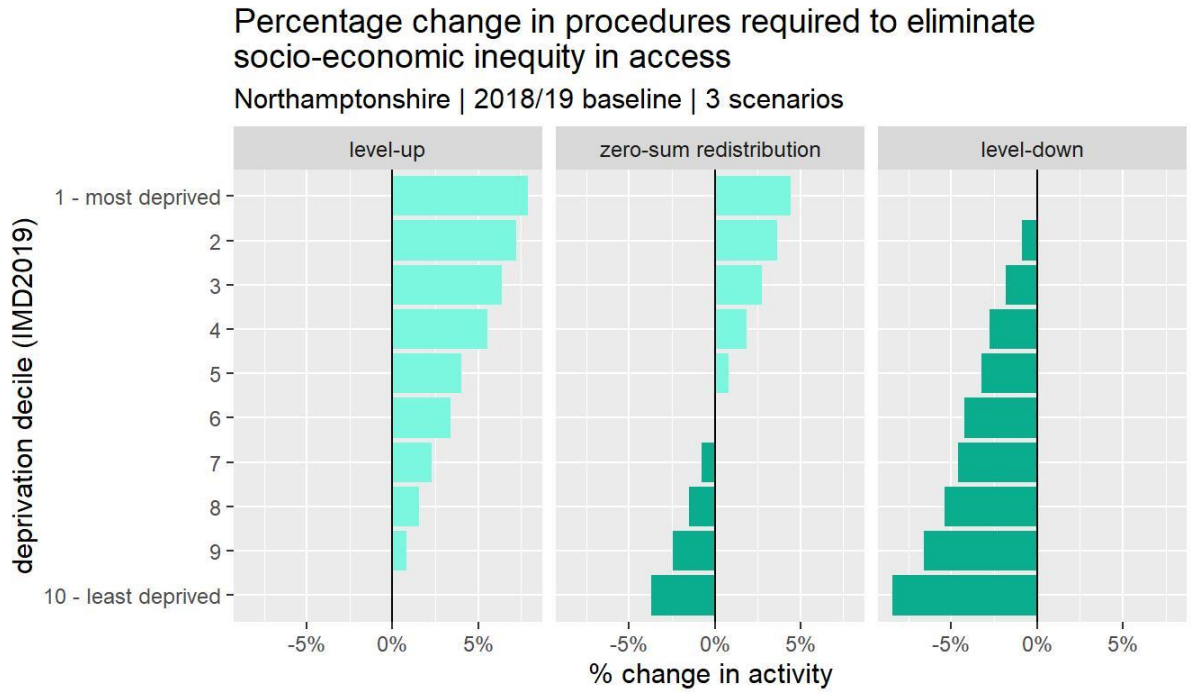
Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	64,602	19.5%	0.0%
Zero-sum redistribution	0	0.0%	10.5%
Levelling-down	-71,985	-21.8%	0.0%

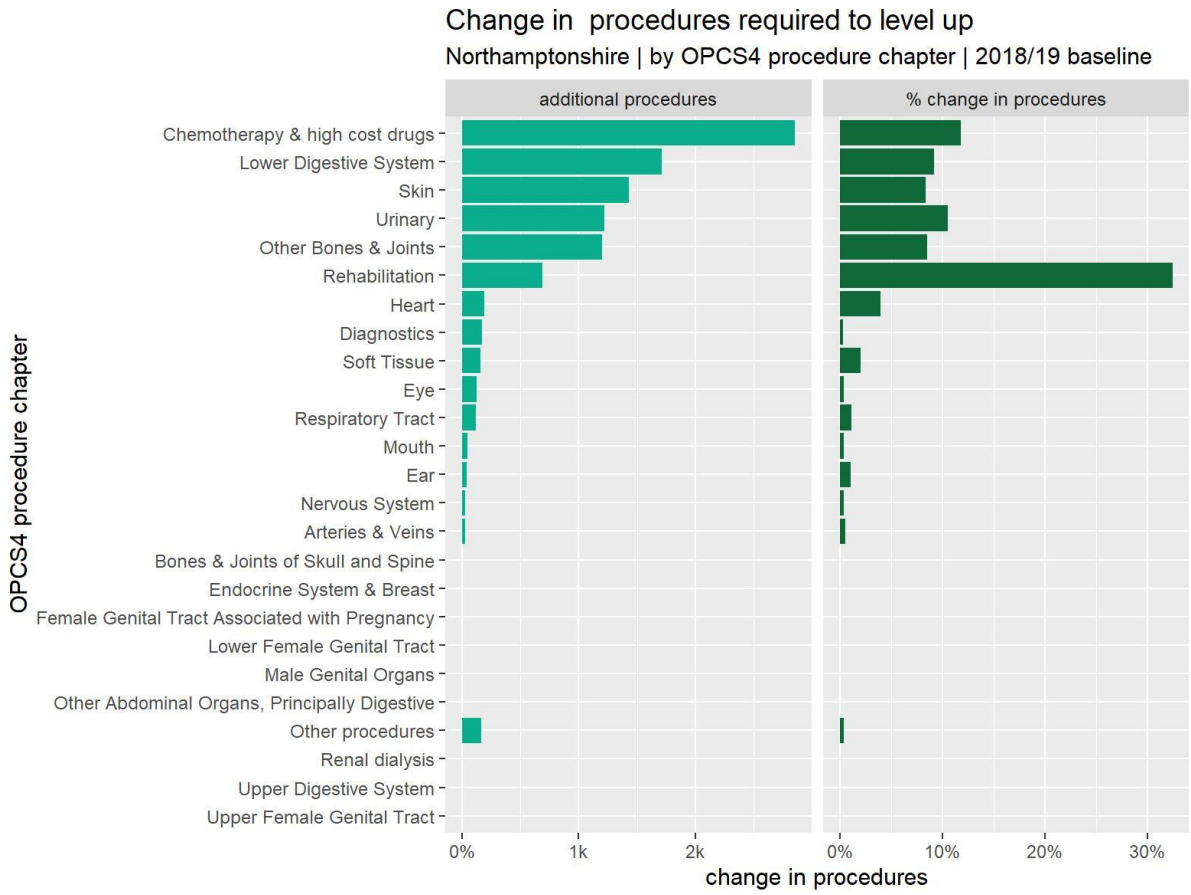

Percentage change in procedures required to eliminate socio-economic inequity in access
Coventry & Warwickshire | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-20%
0%
20%
40%
% change in activity


Change in procedures required to level up
Coventry & Warwickshire | by OPCS4 procedure chapter | 2018/19 basel
additional procedures
% change in procedures
OPCS4 procedure chapter
Diagnostics
Eye
Chemotherapy & high cost drugs
Skin
Urinary
Lower Digestive System
Other Bones & Joints
Soft Tissue
Upper Female Genital Tract
Mouth
Ear
Endocrine System & Breast
Heart
Respiratory Tract
Arteries & Veins
Lower Female Genital Tract
Nervous System
Other Abdominal Organs, Principally Digestive
Bones & Joints of Skull and Spine
Female Genital Tract Associated with Pregnancy
Male Genital Organs
Other procedures
Rehabilitation
Renal dialysis
Upper Digestive System
0%
5k
10k
15k
20k
0%
10%
20%
30%
change in procedures

B.7 Northamptonshire

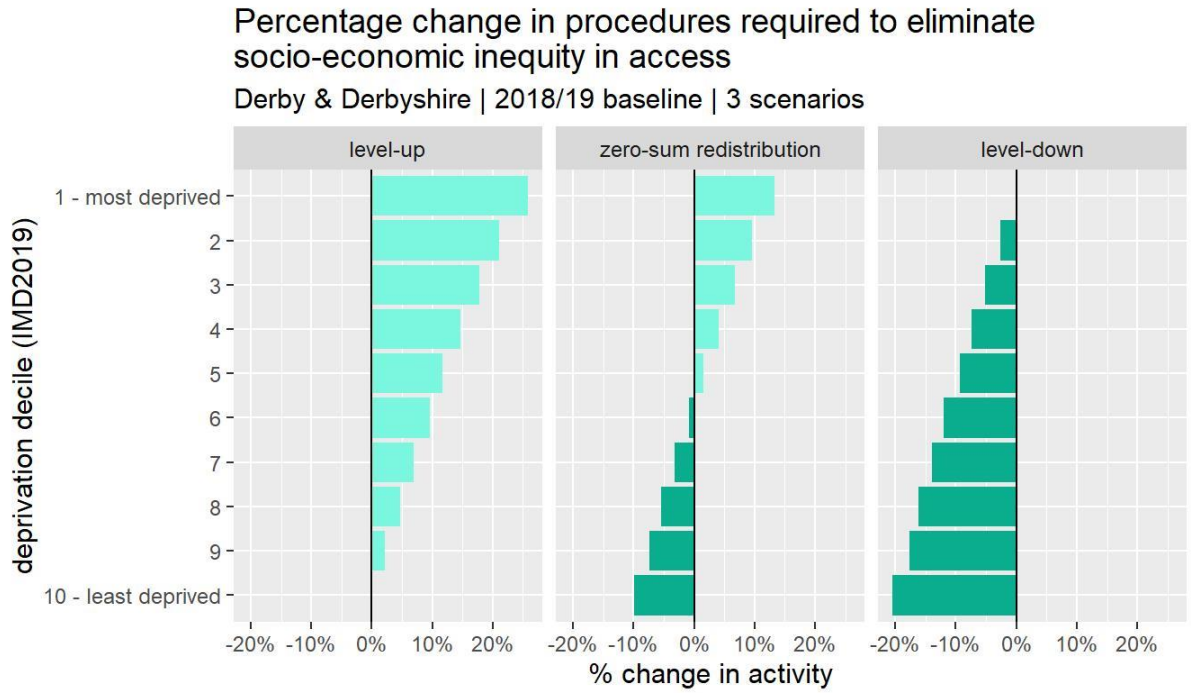
Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	10,186	3.4%	0.0%
Zero-sum redistribution	0	0.0%	2.1%
Levelling-down	-12,931	-4.3%	0.0%

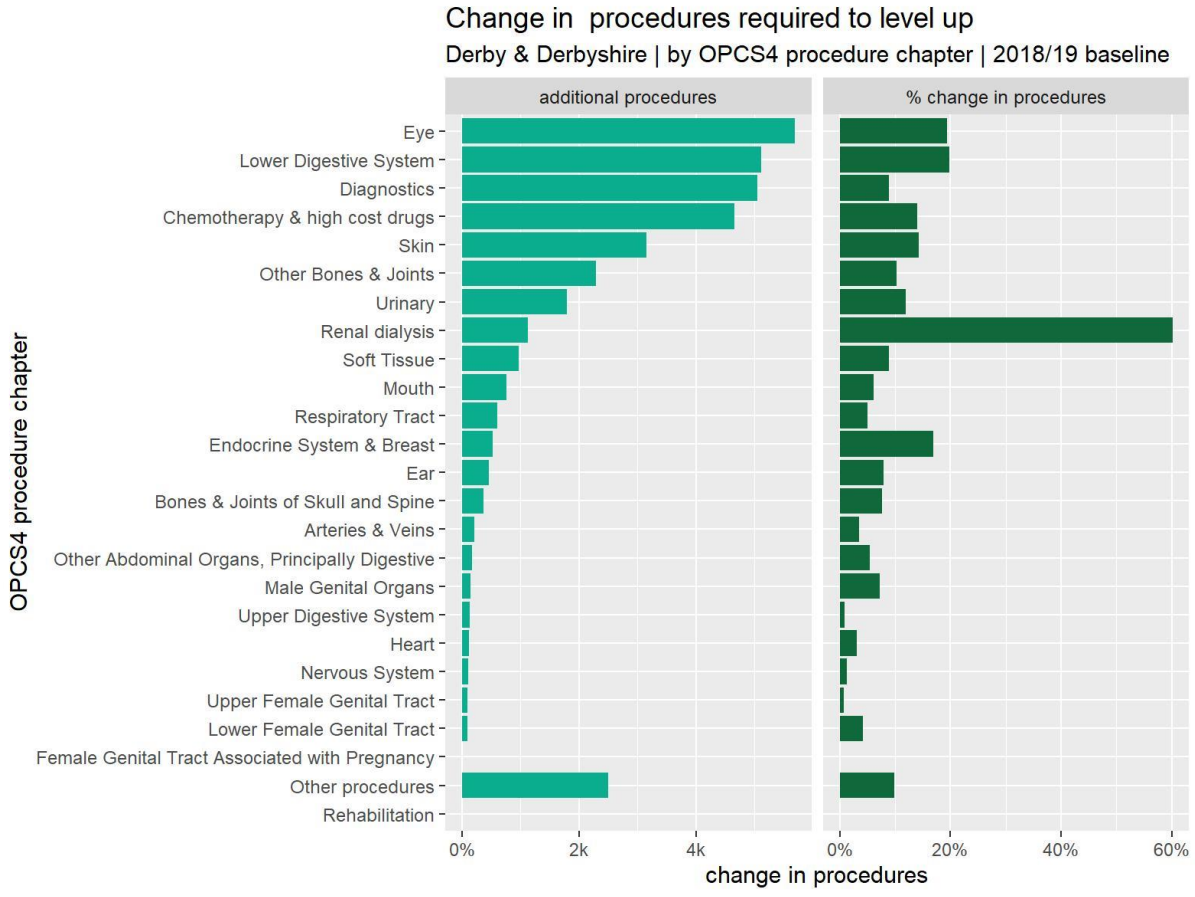

Percentage change in procedures required to eliminate socio-economic inequity in access
Northamptonshire | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-5%
0%
5%
% change in activity


Change in procedures required to level up
Northamptonshire | by OPCS4 procedure chapter | 2018/19 baseline
additional procedures
% change in procedures
OPCS4 procedure chapter
Chemotherapy & high cost drugs
Lower Digestive System
Skin
Urinary
Other Bones & Joints
Rehabilitation
Heart
Diagnostics
Soft Tissue
Eye
Respiratory Tract
Mouth
Ear
Nervous System
Arteries & Veins
Bones & Joints of Skull and Spine
Endocrine System & Breast
Female Genital Tract Associated with Pregnancy
Lower Female Genital Tract
Male Genital Organs
Other Abdominal Organs, Principally Digestive
Other procedures
Renal dialysis
Upper Digestive System
Upper Female Genital Tract
0%
1k
2k
0%
10%
20%
30%
change in procedures

B.8 Derby and Derbyshire

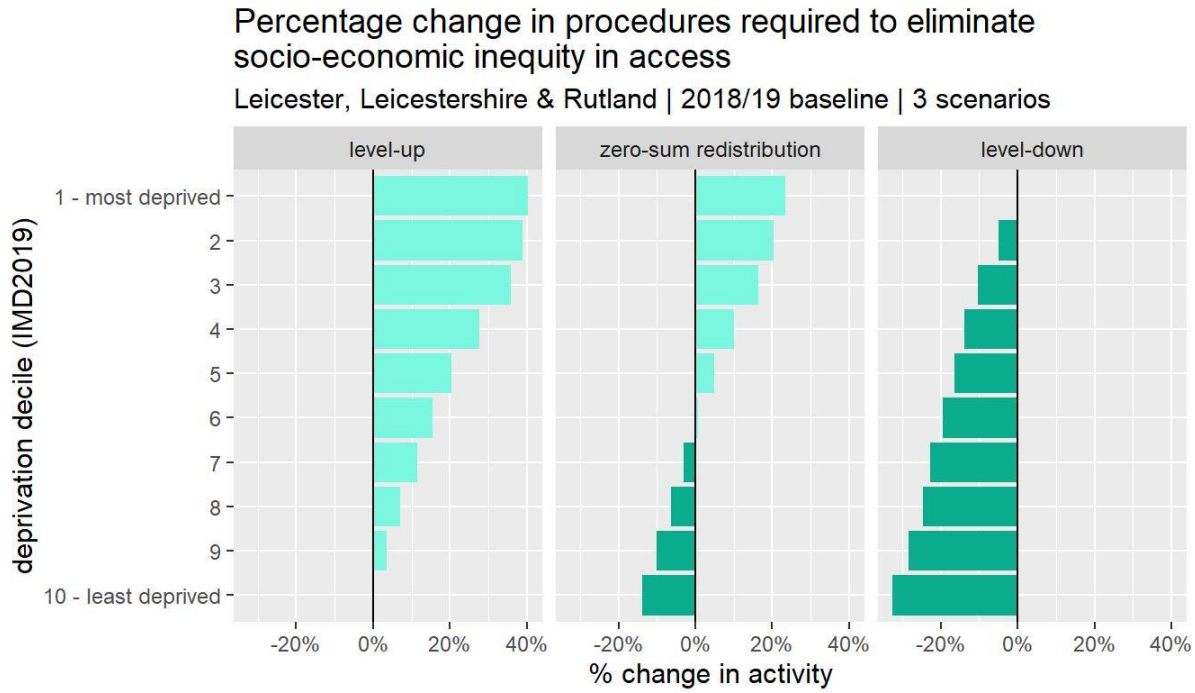
Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	36,164	10.5%	0.0%
Zero-sum redistribution	0	0.0%	6.0%
Levelling-down	-38,573	-11.2%	0.0%

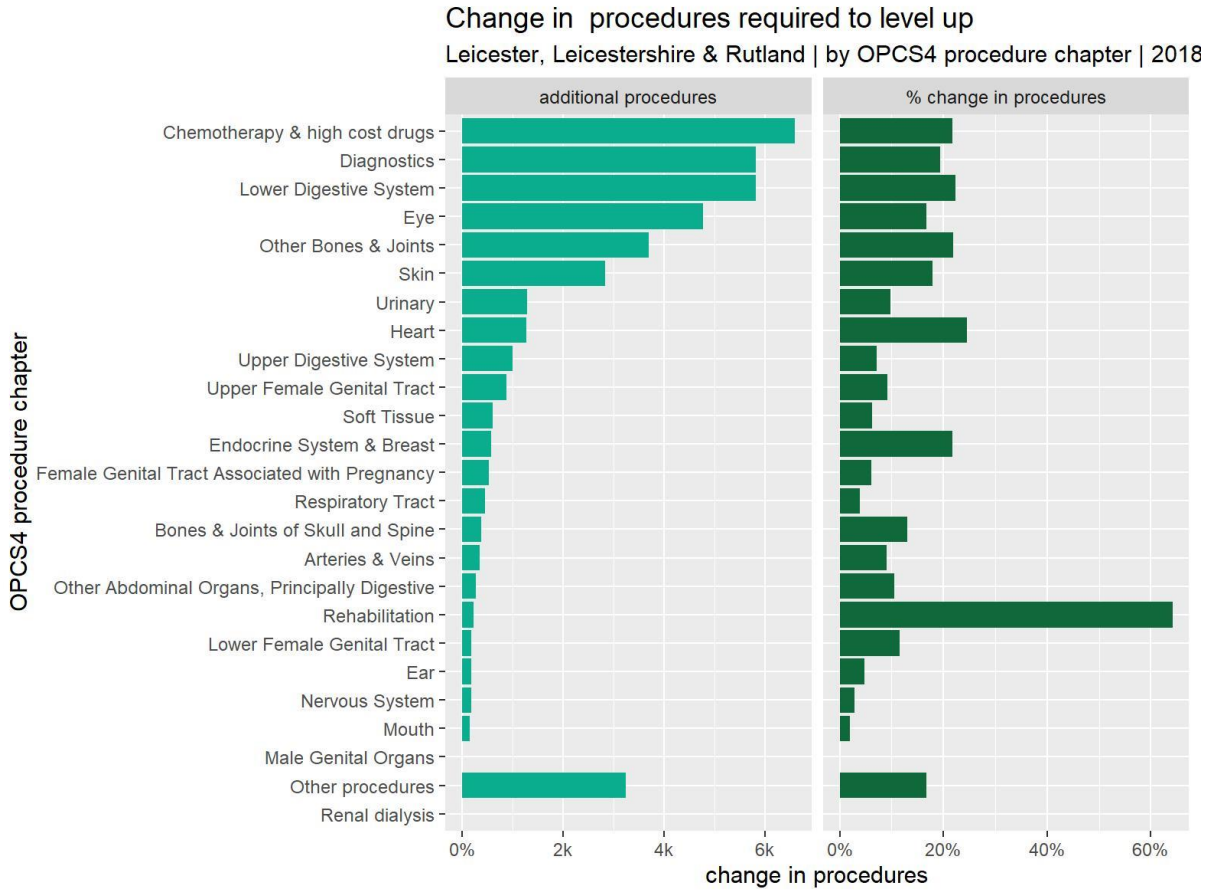

Percentage change in procedures required to eliminate socio-economic inequity in access
Derby & Derbyshire | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-20% -10% 0% 10% 20%
% change in activity


Change in procedures required to level up
Derby & Derbyshire | by OPCS4 procedure chapter | 2018/19 baseline
additional procedures
% change in procedures
OPCS4 procedure chapter
Eye
Lower Digestive System
Diagnostics
Chemotherapy & high cost drugs
Skin
Other Bones & Joints
Urinary
Renal dialysis
Soft Tissue
Mouth
Respiratory Tract
Endocrine System & Breast
Ear
Bones & Joints of Skull and Spine
Arteries & Veins
Other Abdominal Organs, Principally Digestive
Male Genital Organs
Upper Digestive System
Heart
Nervous System
Upper Female Genital Tract
Lower Female Genital Tract
Female Genital Tract Associated with Pregnancy
Other procedures
Rehabilitation
0% 2k 4k
0% 20% 40% 60%
change in procedures

B.9 Leicester, Leicestershire and Rutland

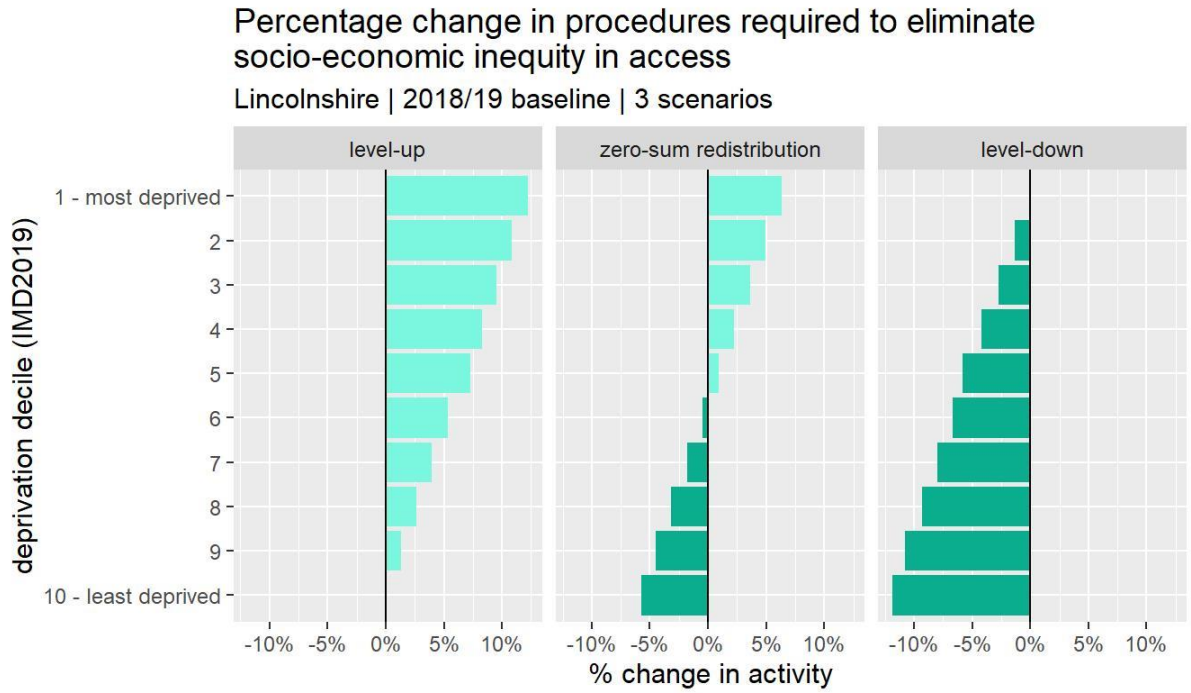
Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	41,370	15.1%	0.0%
Zero-sum redistribution	0	0.0%	9.8%
Levelling-down	-56,529	-20.7%	0.0%

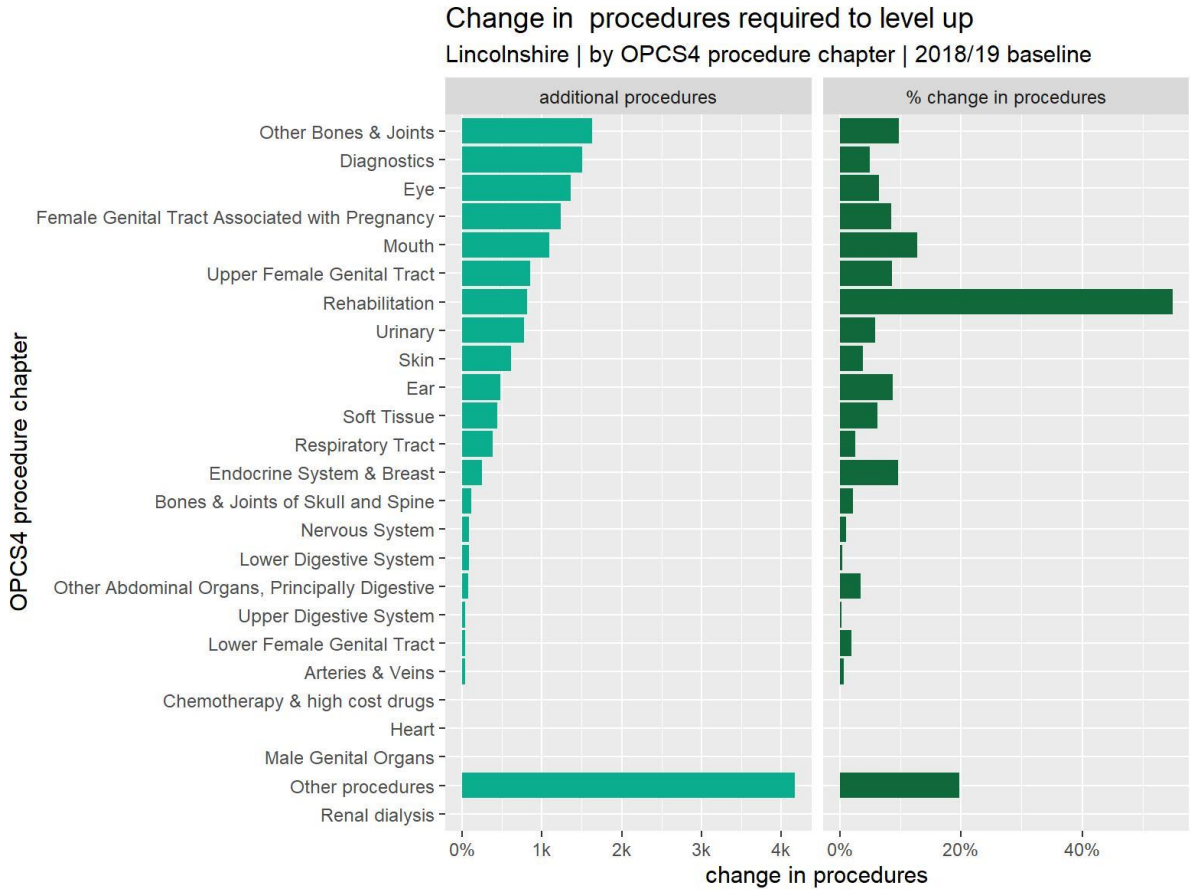

Percentage change in procedures required to eliminate socio-economic inequity in access
Leicester, Leicestershire & Rutland | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-20%
0%
20%
40%
% change in activity


Change in procedures required to level up
Leicester, Leicestershire & Rutland | by OPCS4 procedure chapter | 2018
additional procedures
% change in procedures
OPCS4 procedure chapter
Chemotherapy & high cost drugs
Diagnostics
Lower Digestive System
Eye
Other Bones & Joints
Skin
Urinary
Heart
Upper Digestive System
Upper Female Genital Tract
Soft Tissue
Endocrine System & Breast
Female Genital Tract Associated with Pregnancy
Respiratory Tract
Bones & Joints of Skull and Spine
Arteries & Veins
Other Abdominal Organs, Principally Digestive
Rehabilitation
Lower Female Genital Tract
Ear
Nervous System
Mouth
Male Genital Organs
Other procedures
Renal dialysis
0%
2k
4k
6k
0%
20%
40%
60%
change in procedures

B.10 Lincolnshire

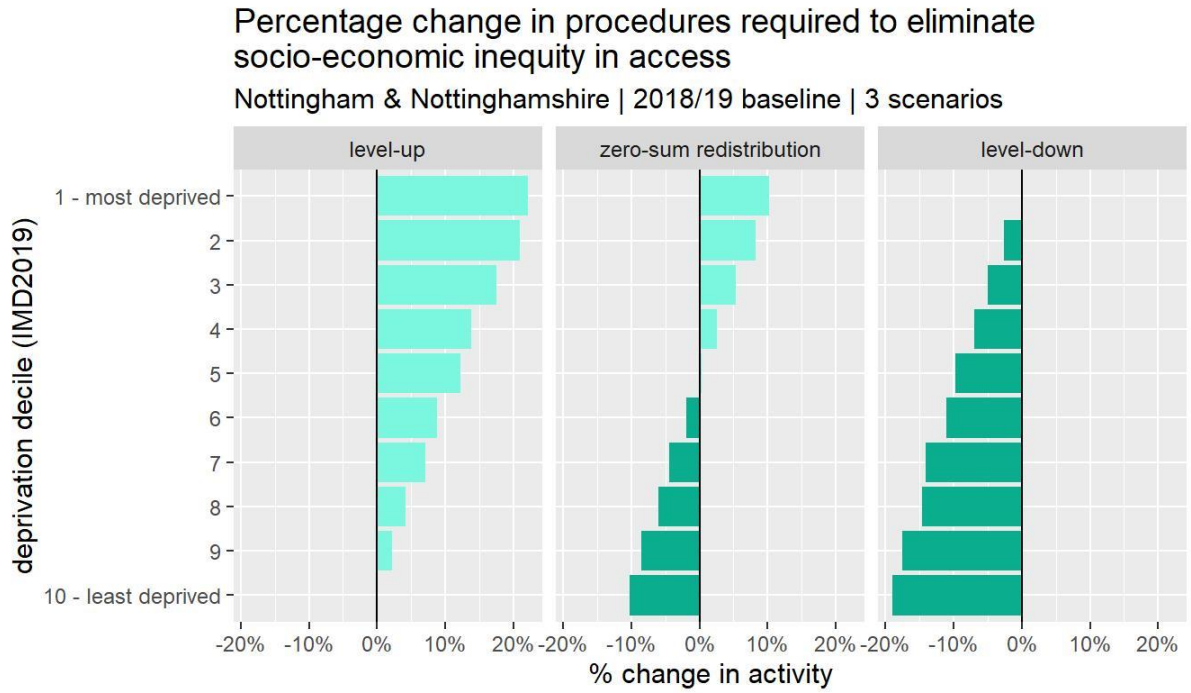
Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	16,103	5.9%	0.0%
Zero-sum redistribution	0	0.0%	3.1%
Levelling-down	-17,134	-6.3%	0.0%

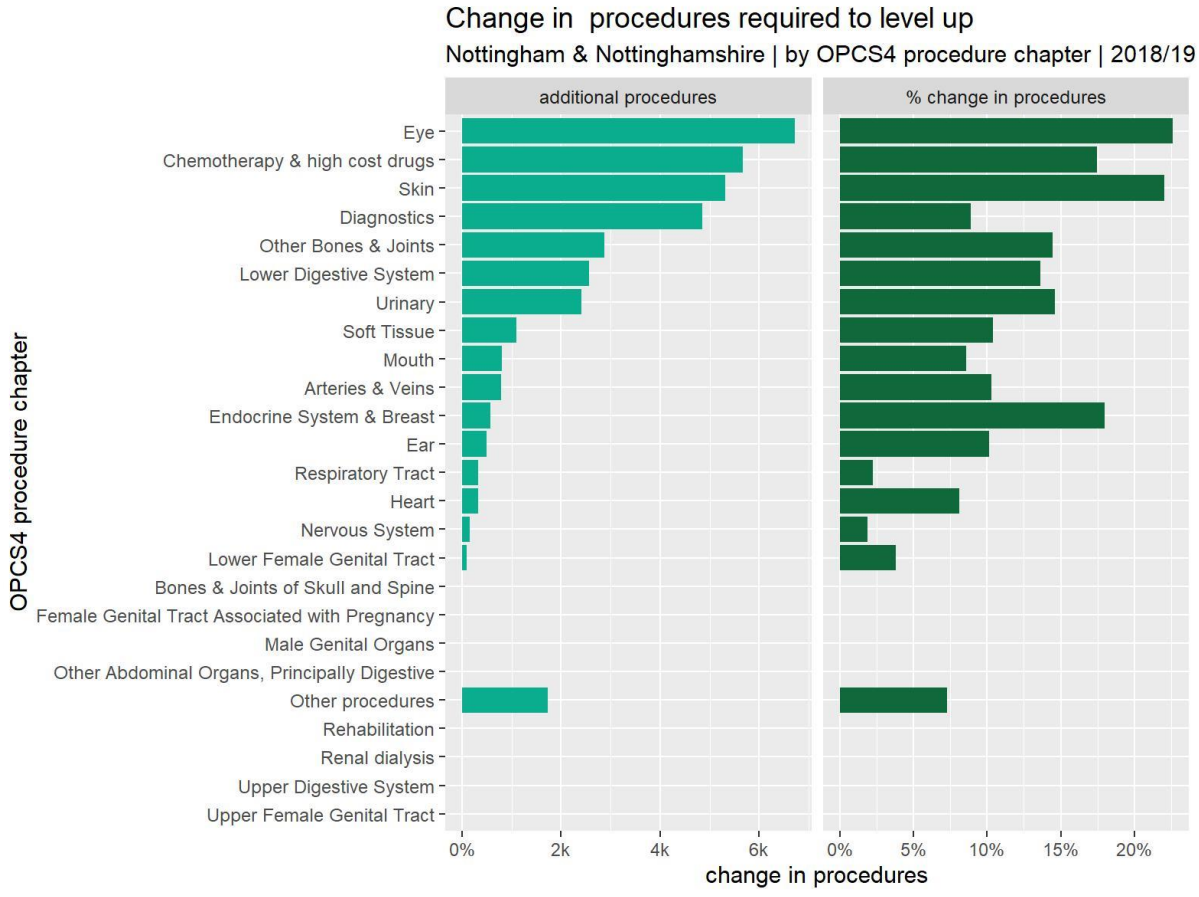

Percentage change in procedures required to eliminate socio-economic inequity in access
Lincolnshire | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-10% -5% 0% 5% 10%
% change in activity


Change in procedures required to level up
Lincolnshire | by OPCS4 procedure chapter | 2018/19 baseline
additional procedures
% change in procedures
OPCS4 procedure chapter
Other Bones & Joints
Diagnostics
Eye
Female Genital Tract Associated with Pregnancy
Mouth
Upper Female Genital Tract
Rehabilitation
Urinary
Skin
Ear
Soft Tissue
Respiratory Tract
Endocrine System & Breast
Bones & Joints of Skull and Spine
Nervous System
Lower Digestive System
Other Abdominal Organs, Principally Digestive
Upper Digestive System
Lower Female Genital Tract
Arteries & Veins
Chemotherapy & high cost drugs
Heart
Male Genital Organs
Other procedures
Renal dialysis
0% 1k 2k 3k 4k
0% 20% 40%
change in procedures

B.11 Nottingham and Nottinghamshire

Scenario	Change in procedures	% change in procedures	% procedures redistributed
Levelling-up	36,799	11.3%	0.0%
Zero-sum redistribution	0	0.0%	6.1%
Levelling-down	-31,218	-9.6%	0.0%


Percentage change in procedures required to eliminate socio-economic inequity in access
Nottingham & Nottinghamshire | 2018/19 baseline | 3 scenarios
level-up
zero-sum redistribution
level-down
deprivation decile (IMD2019)
1 - most deprived
2
3
4
5
6
7
8
9
10 - least deprived
-20% -10% 0% 10% 20%
% change in activity


Change in procedures required to level up
Nottingham & Nottinghamshire | by OPCS4 procedure chapter | 2018/19
additional procedures
% change in procedures
OPCS4 procedure chapter
Eye
Chemotherapy & high cost drugs
Skin
Diagnostics
Other Bones & Joints
Lower Digestive System
Urinary
Soft Tissue
Mouth
Arteries & Veins
Endocrine System & Breast
Ear
Respiratory Tract
Heart
Nervous System
Lower Female Genital Tract
Bones & Joints of Skull and Spine
Female Genital Tract Associated with Pregnancy
Male Genital Organs
Other Abdominal Organs, Principally Digestive
Other procedures
Rehabilitation
Renal dialysis
Upper Digestive System
Upper Female Genital Tract
0% 2k 4k 6k
0% 5% 10% 15% 20%
change in procedures

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The Strategy Unit.

Midlands Decision Support Network