



**Inequality**

The IFS Deaton Review

# The distribution of public service spending

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## Executive summary

In 2019–20, a total of £509 billion (that is, 22.5% of GDP or £7,600 per person) was spent on providing public services and infrastructure by the various tiers of government in the UK. Unlike spending on cash benefits, the primary aim of this spending is not a general redistribution of resources among households. But spending on this scale does have big direct distributional effects – even before considering impacts of the services themselves on other dimensions of inequality, such as in educational, health and labour market outcomes.

While less studied than the distributional effects of the tax and cash benefit systems, there has been a long tradition of analysis of how public service spending is distributed across the population in the UK. This commentary has three main aims. First, to explain the key conceptual and methodological issues involved in such analysis. Second, to set out what we know about the distribution of spending on major public services, and how and why this changed over time. And third, to identify key lessons for policy and avenues for future research.

## It is important to look beyond summary estimates of the amount spent on different population groups

- **Analysis of the distribution of public service spending needs to be supplemented with analysis of service access, use and quality.** The amount spent on a service – the focus of most empirical analyses – is not the same as the value of a service to a household. And the value placed on a given level of spending is likely to vary systematically across households, according to both their income and their need for particular services. This means that while the distribution of public service spending itself is not uninteresting, especially given its scale, one must be careful about drawing strong policy conclusions from such figures in isolation. Information on how much people value the services themselves is ultimately what is required to properly integrate analysis of public service spending with analysis of tax and cash benefit systems, although this is difficult to obtain in a reliable way. But evidence on service access, use and quality, preferably adjusted for differences in need, can also help build a fuller picture than looking at the distribution of spending alone.
- **Existing analyses covering multiple services, such as that produced by the Office for National Statistics, can give a misleading impression of distributional patterns and changes.** Such analyses look at spending and income in a snapshot, which may not reflect longer-run or lifetime distributional patterns. The survey data they rely on also generally do not allow for such detailed modelling of specific services as in analyses focused on those services.

## Public service spending is highly redistributive – and has become more so over the last 35 years

- **Public services spending is highly redistributive.** Even if spending was flat in cash terms across the income distribution, the amount spent on low-income people and households would be

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much larger relative to their incomes, and even higher relative to how much they contribute to the funding of services via the UK's progressive tax system. In fact, evidence suggests that spending per person is higher in cash terms for low-income households than for richer households. At any given snapshot in time, this is driven by the pattern of education spending. But when considering longer-run or lifetime incomes, it is driven by patterns of health spending.

- **The overall redistributive impact of public service spending has increased significantly over the last 35 years.** This partly reflects the large increase in spending on healthcare, from under 4% of GDP in the 1980s to over 7% of GDP by the 2010s, which low-income and ill people benefit most from. But it also reflects changes in the progressivity of a range of services including education, social housing and social care services.

### **Health spending is progressive, but needs are also much higher among low-income households**

- **Health spending is concentrated on older adults, whose position in the income distribution markedly improved between the mid-1990s and early 2010s.** Published estimates therefore suggest that health spending appears to have become less progressive over the last two decades, but this likely gives a misleading impression of changes in how progressive health spending is, relative to lifetime incomes.
- **Health spending is higher on those with low incomes and from deprived areas, reflecting patterns of ill health.** As of the early 2010s, spending on hospital treatment among those receiving any treatment was almost a quarter higher for people aged under 65 living in the most-deprived fifth of areas in England relative to those living in the least-deprived fifth of areas. For the over-65s, the gap was more than a third. Controlling for differences in age and sex, the rates of any elective inpatient admissions were 20% higher in the most-deprived fifth of areas than in the least-deprived fifth, while rates of A&E visits were 70% higher.
- **Low-income and less-educated people make use of less specialist and preventative care conditional upon their healthcare needs.** There is also some evidence that residents of poorer areas face longer waiting times for some treatments. However, the socio-economic inequalities in service usage conditional upon health needs, and the barriers to accessing healthcare services, appear to be lower in the UK than in most other countries.
- **There is some evidence that low-income and less-educated people struggle to access health services when funding is constrained.** Recent research suggests that, controlling for health status, the over-65s with low levels of education had 17% fewer outpatient appointments than those with high education levels during the early to mid-2010s at the height of post-financial-crisis austerity. There had been no gap in the mid- to late 2000s when funding was increasing rapidly, and indeed gaps in some measures of quality and access narrowed during this period. Difficulty in accessing elective care may have led to more use of emergency care, with visits to A&E increasing most among those with low levels of education during the early to mid-2010s.

### **Education spending has become more progressive, reflecting increases in further and higher education participation and funding policies**

- **Education spending has become more progressive in the last two decades.** Historically, the much higher rate at which children from richer backgrounds continued in education post-16, combined with high levels of funding per student for further and higher education, meant that education spending was significantly higher in cash terms for children from high socio-economic status (SES) families than for children from low SES families. Increases in educational participation, and a reduction in the extent to which funding per student increases by education level narrowed these gaps over time. IFS research suggests that spending across all levels of education was, on average, roughly equal for children from low SES families and high SES families for the cohort taking their GCSEs in 2009–10, for example.
- **The extent to which school spending is targeted at schools with the most-deprived intakes has moved up and down over time as political priorities and narratives changed.** It rose between the 1970s and mid-1980s, then fell until the mid-1990s, before rising during the 2000s and

falling again from the mid-2010s. For example, in 1999, spending per pupil was approximately 18% higher in the fifth of primary schools with the highest share of students in receipt of free school meals than in the fifth with the lowest share. This increased to 35% higher between 2008 and 2013, as governments prioritised improving attainment in inner city schools and among deprived pupils. However, it had fallen back to 23% higher by 2019, partly as a result of failing to update funding to account for changes in patterns of deprivation but also because of the introduction of minimum per-pupil funding levels for schools, which in effect redistributed funding away from schools with deprived intakes to schools with more affluent intakes.

- **Further education spending is no longer regressive.** As recently as 2003, there was an 11 percentage-point gap in post-16 participation rates between children from low SES families and those from high SES families, but this gap has now virtually been eliminated. Moreover, per student spending by further education colleges (attended by relatively more children from low SES backgrounds) fell by much less during the 2010s than spending by school sixth forms (attended by relatively more children from high SES backgrounds). This means that it is likely that more is now spent on further education for children from low SES backgrounds than for those from high SES backgrounds.
- **Higher education spending is less regressive than historically, especially when taking account of student loan repayments.** Participation in higher education has expanded massively in recent decades for children from both low and high SES backgrounds. The absolute gap in participation rates initially increased, but was stable or even falling during the 2000s and 2010s, depending on which proxy for SES was used. The relative gap in participation rates fell more steadily over time, although it has stopped falling in the last few years. When combined with a shift in funding from grants to tuition fees, and the income-based repayment of the loans students use to cover these fees, this has reduced the extent to which higher education spending disproportionately benefits children from high SES families and/or those who go on to have high earnings themselves. Over their lifetimes, low-earning graduates will receive the most benefit-in-kind from spending on higher education as they repay a smaller proportion of the cost of their tuition via the income-based loan repayment system. Amongst recent cohorts, the highest-earning graduates could expect to repay *more* than they borrowed, although recent changes to loan repayment terms that made the loan system somewhat less progressive mean that this will no longer be the case for future cohorts.
- **Accounting for differences in quality is likely to make education spending more pro-rich.** High-income parents are likely to be able to get their children into better-performing schools, and are willing to pay for perceived quality, as reflected in house prices. Disadvantaged students remain less likely to attend the most selective universities, where average wage returns are highest.

### **Social care and social housing are subject to greater rationing, but are focused more on the poor**

- **Adult social care spending has become increasingly targeted at those with the highest care needs and lowest wealth – but planned reforms in England will benefit mid- to high-wealth households the most.** Unlike health and (most) education services, the majority of adult social care services are subject to financial means-testing. Freezes in the thresholds used in these means-tests, combined with increases in wealth among the over-65s (who have the highest rates of use of these services), mean that public funding has become increasingly targeted at low-income, low-wealth people. Funding cuts also mean that care needs assessments became more stringent during the early to mid-2010s, leading to big reductions in the numbers of people receiving care, particularly among the over-65s, and an increased targeting of remaining spending on those with the highest care needs. The planned relaxation in 2025 of financial means-tests and the introduction of a lifetime cap on the amount people have to pay privately will benefit mostly mid- to high-wealth people. But most spending will still be concentrated on low-wealth people.
- **Subsidised social housing is available to far fewer people and is more focused on those with the lowest incomes.** Social housing fell from 31% of the stock of housing in England in the late 1970s to 21% by the late 1990s and under 17% by the late 2010s. This was driven to a large extent by the Right to Buy Scheme, which allowed residents of social housing to purchase it at a discount. Beneficiaries of this scheme were concentrated in the middle and upper-middle

parts of the income distribution. And as the social housing sector shrunk, the employment rate and income of tenants fell relative to the population as a whole between the 1980s and early 2010s. However, while social housing is more targeted at poorer households than previously, falls in the amount of social housing mean the fraction of poorer households living in social housing has also fallen, with limited availability leading to big waiting lists. Impacts on household incomes have been cushioned by cash housing benefits available to private as well as social sector tenants.

- **The amount spent on transport is greater for high-income households than low-income households, although this is a long-standing pattern.** This reflects the greater use of transport services, and particularly rail services, by high-income households. Low-income households make more use of bus services, for which general subsidies have fallen, especially outside London. Half of all bus subsidies in England now relate to concessionary travel schemes, mostly for those over the state pension age, whereas 20 years ago this was less than 30%.

### Key issues for policy and future research

- **Changes in the level of spending, as opposed to changes in the progressivity of spending are generally the biggest driver of changes in the redistributive impact of public service spending in the medium term.** Thus, the large increases in public service spending during the 2000s, particularly for healthcare and education, drove a big increase in the amount of redistribution during that decade. The austerity of the 2010s, particularly outside of healthcare, then reduced the scale of redistribution relative to incomes. Subsequent spending (and tax) increases will have since increased the scale of redistribution again. A key driver of the redistributive impact of public service spending will be in future is therefore whether the government increases spending as the population ages – and demands and costs rise – or pares back service provision. But changes in the progressivity of spending – due to both changes in policy and other factors affecting service access and use – can still be important.
- **Times of austerity and plenty can have complex effects on the progressivity of public service spending.** On the one hand, one response to limited funding is to target resources at those with the most acute needs and/or limited resources to pay for services themselves. On the other hand, greater rationing of services when funding is limited can also disproportionately affect people from low SES backgrounds if they find it more difficult to navigate systems and lobby service providers for the support they need. If funding does not keep pace with future demands and costs, efforts will be needed to monitor and potentially support access to services by low SES people.
- **The way funding is allocated between people and places can play a significant role in changing how progressive a given level of spending is.** School funding reform and higher education tuition fee and loan policies are a case in point, increasing the degree of progressivity of education spending during the 2000s and early 2010s, but more recently reducing it. This is a reminder that the allocation of funding between more-deprived and more-prosperous people and places is one of the most direct levers the government has to effect the 'levelling up' agenda.
- **Further research is needed to address gaps in our knowledge** on the long-run/lifetime distribution of public service spending, on the value people place on public services, and on the differences in quality and access to services across the population. Most existing empirical analysis is often focused on how public service spending at a point in time varies across income levels at that point in time – which can give a misleading picture of how redistributive spending really is. Comparisons between different services, and between public service spending and cash benefits are also problematic if we do not know how much people actually value services. And without evidence on how differences in spending translate into differences in the quality of and access to services that different population groups face, it is hard to judge whether relative spending allocations are appropriate or should be adjusted. Such evidence should be more systematically collected across services and over time.

## Introduction

In 2019–20, a total of £509 billion (equivalent to 22.5% of GDP or £7,600 per person) was spent on providing public services and infrastructure by the various tiers of government in the UK. A near-decade of austerity to address the fiscal deficits that arose after the late 2000s recession means that spending on public services on the eve of the COVID-19 crisis was lower per person in real terms than in 2009–10. But it was still around 50% higher per person than in 1999–2000, before the big increases in spending under the Blair and Brown governments. And despite the cuts that took place during the 2010s, it remained 2.2 times bigger than the £229 billion – or £3,400 per person – spent on the benefits and tax credits that provide cash directly to households.

Unlike these cash transfers, the primary aim of spending on public services and associated infrastructure is not a general redistribution of resources among households. Instead, public service provision is intended to ensure everyone has access to certain key services, and to address the fact that reliance on private provision may lead to an undersupply of those services that have positive externalities (such as expenditure on public health) or which have the characteristics of public goods that one cannot stop non-contributors from benefiting from (such as national defence). Nevertheless, spending £7,600 per person on public services does have significant consequences for the distribution of resources across households, even before one starts thinking about the causal effects of public service provision on other dimensions of inequality (such as educational and health outcomes, and, in turn, employment and earnings outcomes).

While less studied than the distributional effects of the tax and cash benefit systems, there has been a long tradition of analysis of how public service spending is distributed across the population in the UK. Early work emphasised how much of the benefits of public service spending went to the middle classes – potentially to the detriment of lower-income households.

Ground-breaking work by Le Grand (1978, 1982a) claimed that, in the 1970s, while health expenditure was broadly similar across socio-economic groups, those in typically poorer socio-economic groups tended to have higher health needs. This meant that, conditional on need, spending per person was estimated to be around 30% lower for the poorest socio-economic groups than for the richest. Le Grand linked this to lower likelihood of referral on to secondary care and less intensive use of such services.

Turning to education, Goodin and Le Grand (1987) found that, as of the early 1980s, children from high-income backgrounds benefited from higher levels of expenditure compared with children from low-income backgrounds, due to two factors. First, children from high-income backgrounds were much more likely to stay in education after the compulsory school leaving age and especially continue into higher education. Second, levels of spending per student increased with education level, with the lowest spending per student for primary schools and the highest for universities. However, this work did not account for differences in per-pupil school spending amongst those who attended, and there is suggestive evidence that spending was targeted towards more-deprived areas to a significant degree in the early 1980s.

The subsequent decades have seen a range of papers provide updated analysis of health, education and other public services. There has been a particular interest in the topic over the last decade, prompted by concern about the effects of austerity, and newly available data. Using linked pupil–school data, for example, recent IFS research shows that changes in education participation and funding policies led to the differences in education spending by parental income being eliminated for the cohort of children turning 16 in 2010 (Belfield, Goll and Sibieta, 2018). Research following Le Grand suggested that health spending was not as inequitable in the 1970s as he suggested (Propper and Upward, 1992), but confirmed a pattern of less use of specialist and preventative services, particularly during times of austerity (Stoye et al., 2020).

The last decade has also seen a growing body of work internationally, with a focus on the lessons that can be drawn from cross-country comparisons of the distribution of public service spending. For example, Verbist, Förster and Vaalavuo (2012) examine the distribution of public service spending for OECD countries, finding, for example, that what has typically mattered most for changes in the degree of redistribution undertaken is changes in the level of spending rather than in its progressivity. Also, the Commitment to Equity Institute and World Bank have analysed the

distribution of mainly education and health spending in 62 mostly low- and middle-income countries, finding that in contrast to high-income countries, it is public service spending rather than the cash benefits system that does the most redistribution in most of these countries (Lustig, 2018). Quantification of the distribution of public service spending is also a key element of recent work on Distributional National Accounts (Piketty, Saez and Zucman, 2018), which attempts to trace through all of national income to households; however, so far, the assumptions employed in such analyses have been rather crude.

What unites the UK and international empirical literature is a focus on quantifying the amount spent on – or spent on insuring – different population groups. This is insufficient to discuss the welfare implications of public service spending or to make normative comparisons of different distributions of spending on public services and cash benefits (O'Dea and Preston, 2012). To do that, information is also needed on the value placed on the services by the households benefiting from them – and on how much it would cost to procure those services from the market – information that is sorely lacking. However, estimating the distribution of spending is a vital first stage of answering the broader question of the impact of that spending on welfare and the wider economic and social outcomes of different population groups. Analysis of the use of services conditional upon observable need for those services can also provide useful information on whether the distribution of spending across the population is appropriate given the distribution of needs.

The aim of this commentary is therefore threefold.

- First, to set out clearly the conceptual and measurement issues inherent in the analysis of the distribution of public service spending. How can – and should – observed spending on different services be distributed across individuals and households, and in what ways does this depend upon the nature of the service in question?
- Second, to summarise existing evidence on the distribution of public service spending across socio-economic groups or across the income distribution in the UK, and often more specifically in England. How and why does this distribution vary across services, and how and why has it changed over time?
- Third, to discuss the implications of our review of the evidence for policy and future research.

Our focus is on the distribution of spending rather than the outcomes achieved from that spending – although we do briefly discuss the evidence that the level of spending on different public services matters for outcomes. We also discuss the evidence of how the use of services conditional upon need and service quality varies across the population.

The rest of this commentary proceeds as follows. First, we briefly discuss some of the conceptual and methodological issues involved in measuring the distributional effects of public service spending – an appendix provides fuller details. Next, we provide an overview of how much is spent on different services and how this spending has changed over time, which is at least as important as the distribution of spending for understanding how much redistribution is undertaken via public services. In the subsequent two sections, we look in more detail at the distribution of health and education spending in the UK and how this has changed over time, drawing on both existing research and new empirical analysis. The latter explores two key issues: the role of changes in the income distribution (rather than public service spending per se) in explaining changing patterns of public service spending; and how utilising more disaggregated spending data affects estimates of the distribution of public service spending. We then look at a range of smaller service areas that are nonetheless important for subgroups of the population, such as social care services, social housing, childcare and transport subsidies. Finally, we draw our findings together, providing an assessment of what we know of the overall distributional effect of public service spending in the UK, as well as the implications for policy, and for future research.

## Conceptual and measurement issues

What is the distributional impact of public service spending? When one starts to think about how one can answer that question, it quickly becomes clear that it is not simply one question, with one answer. There are at least three interrelated but separate questions.

1. What is the effect of service provision on both targeted and other outcomes, such as health, education and labour market performance, and how does this differ across the population?
2. What is the value of the services provided to the beneficiaries, and how does this differ across the population?
3. How much is spent on the provision of services, and how does this differ across the population?

From a public policy perspective, the first question is probably the most important. If public service spending did not improve health, educational and other targeted outcomes, it would be hard to justify such spending irrespective of how it was distributed across the population. And if it does affect outcomes, it is important to understand whether the effects are larger or smaller for those with initially the worst outcomes and/or more generally disadvantaged backgrounds. Recent years have seen a growing body of research more convincingly address these questions, using novel approaches to disentangle the effect of spending on outcomes, from the role of outcomes in determining funding allocations.

While it has long been recognised that the private and social returns to education are substantial,<sup>2</sup> until relatively recently the consensus was that spending on education (conditional upon participation in education) did not matter greatly for outcomes. For example, in a highly cited paper reviewing evidence up until the mid-1990s, Hanushek (2003) argued that provision of additional funding for schools was 'an ineffective way to improve quality'. However, more recently, this conclusion has been challenged by a reappraisal of that evidence and a range of new studies. These find that in both the US and the UK, higher school spending is associated with higher attainment, with effects concentrated among children from low-income backgrounds (Holmlund, McNally and Viarengo, 2010; Gibbons, McNally and Viarengo, 2018), and potentially on the more able pupils among this group (Machin, McNally and Meghir, 2010). Such effects seem likely to be sustained into adulthood in the form of higher wages, lower poverty and greater social mobility (Jackson, Johnson and Persico, 2016; Biasi, 2023).

Research in the UK also suggests that higher health spending facilitated reductions in deaths from circulatory and respiratory problems, cancer, gastro-intestinal problems and diabetes, albeit with impacts differing by disease (Martin, Rice and Smith, 2008). A study exploiting formulas for allocating spend across local areas estimated that between 2003–04 and 2012–13, an additional £5,000 to £10,000 of NHS spending generated an improvement of one Quality-Adjusted Life Year, suggesting significant returns to health spending at the margin (Martin et al., 2021). Spending on adult social care services and the Sure Start Children's Centres programme has also been shown to improve the health of older adults and children, respectively (Cattan et al., 2021; Crawford, Stoye and Zaranko, 2021). Evidence from the US is more mixed, although this may reflect the private healthcare market that operates there, which may both incentivise inefficient 'gold-plating' of services, and make it more difficult to disentangle the effect of spending on healthcare from the impact of health on spending. A long-term evaluation of an experiment in the 1970s that provided healthcare free at the point of delivery (similar to the UK's NHS) did find

<sup>2</sup> For a review of this evidence, see Psacharopoulos and Patrinos (2018). Research in the UK shows that returns to higher attainment in GCSEs, and participation in further and higher education, are positive but vary across population groups and across subject choices. For example, at both GCSE level and degree level, returns to studying and attainment in maths are much higher than for arts subjects such as music and performing arts (Britton, Dearden and Waltmann, 2021; Hodge, Little and Weldon 2021). Returns are higher for women than for men, and higher for people from Asian backgrounds than from white backgrounds, in part reflecting the low earnings and employment rates faced by non-graduates in these groups (Belfield, Goll and Sibieta, 2018). And returns are more generally very variable across individuals – with one in ten graduates estimated to gain £500,000 or more as a result of their degree, while one in five are estimated to see a negative net return.



positive effects on health, particularly for those with chronic conditions and the lowest incomes (RAND Corporation, 2016).

These findings are important. However, most empirical analyses of the distribution of public service spending tend to start with the objective of analysing the value placed on services by different beneficiaries (question 2) and end up analysing the amount spent on different beneficiaries (question 3), given limitations in the data available.

An appendix to this commentary provides an in-depth discussion of the conceptual and measurement issues that need to be carefully considered when undertaking and interpreting analysis of the distributional effects of public service spending. This includes: the limitations imposed by considering the cost as opposed to the value of services; whether to use actual or expected use of services; the importance of accounting for differing needs; difficulties in identifying the beneficiaries of spending on some public services; the importance of considering how incomes and service-use vary over time and across cohorts; and the fact that analysis of capital spending and ex ante analysis of changes in public service spending are particularly challenging to do well.

Based on the discussion in this appendix, there are several key lessons for the remaining sections of this commentary, which review the empirical evidence on the distribution of public service spending, and draw tentative policy conclusions.

- First is that analysis which focuses on how spending is distributed across households is not sufficient to draw strong conclusions about the effects of public service spending on the distribution of households' welfare. The cost of providing a service and the benefit to households are not the same thing. And the monetary value of benefits from a given level of spending are likely to vary systematically across households, both according to their income, and according to their need for particular services. Analysis of the distribution of spending itself is not uninteresting but needs to be supplemented with other analysis of, for example, service access, use and quality conditional on need.
- Second, the best approach for distributing spending across households likely differs by service area. For some services, such as education or transport services, actual use and spending may be appropriate. For others, such as health and long-term care, ex ante expected service usage may be more appropriate, as a key aspect of these services is the provision of insurance against adverse events that *might* happen.
- Third is that different people may benefit from the same service – for example, children benefit from the education provided by schools, but parents also benefit from the childcare services provided and from not having to pay privately for schooling. When looking at impacts across households at a snapshot in time, this particular example would not matter, but when thinking about longer-run or life-cycle impacts, these factors matter more.
- Fourth is that more generally, the snapshot and longer-run distribution of public service spending may differ considerably. The former is easier to estimate and not uninteresting, especially if one looks at a broader range of socio-economic indicators rather than just income. But the latter is also important to distinguish between redistribution across people and redistribution within a person's own life cycle, and is particularly important for services strongly linked to age, such as education, health and social care.
- Fifth is that changes in where different types of households are in the income distribution can drive changes in the distribution of public spending across the income distribution, particularly when focusing on a snapshot of service usage and income. It may therefore be worthwhile controlling for changes in the incomes of different population groups (e.g. pensioners versus working-age adults) to see the extent to which this is the case. And again it emphasises the need to consider how access and use conditional upon need vary and change over time.
- Sixth, it is important to be more cautious about extending analysis beyond current resource expenditure to consider capital expenditure, and planned changes in expenditure. Of course, policymakers and wider society want to know how big new investments or cuts in spending will

have impacts across the population – but the data and policy detail needed to do this convincingly are usually lacking.

In addition, when measuring the distribution of public service spending, it is important to distinguish between the progressivity of spending and the redistributive impact of that spending.<sup>3</sup>

Progressivity relates to how the relative amount spent on a public service varies across the income distribution. Spending is said to be progressive in absolute terms or 'pro poor' if the cash amount of spending per person or household declines along the income distribution. Spending is said to be progressive in relative terms or 'equalising' if the amount of spending per person or household declines as a share of income along the income distribution. Given how unequal household incomes are – the top 10% of households have at least four times as much income after tax and cash benefits as the bottom 10% – even if the amount spent on public services was flat in cash terms across the income distribution, it would be very strongly progressive in relative terms.

The redistributive impact of public service spending does not just depend on its progressivity though – it also depends upon the level of spending. Redistribution is a function of both spending and the taxation used to fund it. However, here we use the term 'redistributive impact' to describe the overall effect of public service spending itself on the distribution of resources across households. This reflects both the progressivity (or gradient) of spending across the income distribution, and the level of spending. Notably, a particular service may redistribute more to poor households than another service, even if spending on it is less progressive, if more is spent on it. This means that the level of spending on public services is an important determinant of how redistributive public service spending is. Indeed, Verbist, Förster and Vaalavuo (2012) find that it was changes in the level of spending rather than changes in the progressivity of spending that had the biggest impact on the scale of redistribution undertaken by public service spending in OECD countries during the 2000s.

Based on these key takeaway lessons, rather than rely on a single study such as those carried out annually by the Office for National Statistics (ONS), we therefore draw on a range of different studies and evidence for different service areas to build up a fuller and more meaningful picture of the distributional effects of public service spending. In particular, we consider the distribution of spending on different services in turn, before drawing together a tentative picture for public service spending more generally. First though, we set out the level of spending on different services, and how this has changed over time.

## Public service spending trends

In 2019–20, an estimated £509 billion was spent on the provision of public services across the UK. Current expenditure on the day-to-day management and provision of services amounted to £427 billion, while capital expenditure, such as on new infrastructure and equipment, totalled £82 billion.<sup>4</sup> This is a very significant amount of money, equivalent to 2.2 times what the government spends on cash benefits and tax credits, 53% of households' aggregate post tax and cash benefits income, and 22.5% of overall GDP.<sup>5</sup>

Figure 1 shows how this spending has evolved in real terms and as a percentage of GDP since the late 1980s. It shows that spending on public services approximately doubled in real terms between 1988–89 and 2019–20, with most of this growth taking place in the 11 years between 1998–99 and 2009–10, when public service spending increased by an average of 5% per year in real terms. In contrast, in both the mid-1990s and early 2010s there were a number of years where spending was reduced in real terms, as part of efforts to reduce structural budget deficits that resulted from recessions.

Measured as a share of GDP, public service spending increased from just over 20% of GDP in 1988–89 to 22.5% of GDP in 2019–20. After rising and then falling during the 1990s, public service spending rose from 19% of GDP in 1998–99 to 23% in 2006–07, and to almost 27% of GDP in

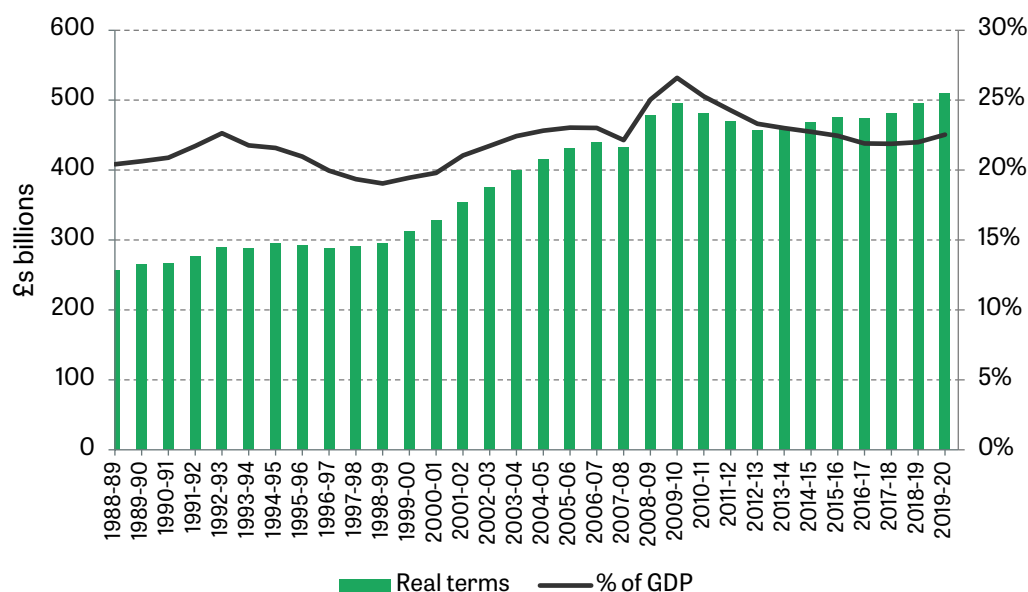
<sup>3</sup> For a fuller discussion of these issues, see Enami, Lustig and Aranda (2018).

<sup>4</sup> See note to Figure 1 for our definition of public service spending.

<sup>5</sup> Household disposable income was £954 billion in 2019–20 according to the Family Resources Survey.

2009–10. Again, austerity after the financial crisis reduced this back to 22% of GDP in 2017–18, since when a loosening of the purse strings has seen spending start to increase as a share of GDP. Similarly, public service spending reached a low of 46% of household income in the late 1990s, rose to a high of 60% in 2009–10, and had fallen back to 53% by 2019–20.

**Figure 1. Public service spending in the UK, £s billions (2019–20 prices) and percentage of GDP**



Note: Public service spending defined as expenditure on services less spending on social security benefits, debt interest and net transfers to the EU budget. This definition also excludes depreciation and a number of accounting adjustments, most notably the expected cost of writing off unpaid student loans. Real-terms adjustment undertaken using the GDP deflator.

Source: Authors' calculations using HM Treasury (2021b, and previous releases), and Department for Work and Pensions (2022).

Table 1 shows that health and education spending are the two single largest components of public service spending, at £164 billion and £91 billion, respectively, in 2019–20.<sup>6</sup> Taken together they therefore account for half of overall public service spending across the UK. Other large areas of expenditure include defence (£42 billion or 8% of the total), transport (£35 billion or 7%), public order and safety (£35 billion or 7%) and personal social services (£36 billion or 7%).

The table also shows how the composition of public service spending has changed over time. It shows clearly the very substantial increases in health spending over the last three decades – up over threefold in real terms and from 3.9% of GDP to 7.3% of GDP between 1988–89 and 2019–20. Less than one in five pounds spent on public services was spent on health services in 1988–89, but this had risen to almost one in three pounds by 2019–20. In contrast, defence spending has halved as a share of public service spending (from 16.7% in 1988–89 to 8.3% in 2019–20), and was no higher in real terms in 2019–20 than 30 years earlier.

Education spending rose significantly until the start of the 2010s, but official estimates show it subsequently falling from 21.2% of spending and 5.6% of GDP in 2009–10 to 17.8% of spending and 4.0% of GDP in 2019–20. This overstates the true fall in government spending on education services as official estimates ignore the expected cost of writing off student loans that are not repaid – which is much greater since tuition fees were increased in 2012. But there was a genuine fall in education spending during the 2010s, as we discuss in the section on education spending.

<sup>6</sup> The education spending figure (and hence the total public service spending figure) excludes the expected cost of writing off loans to students that are not repaid by the end of the repayment term. Including these costs, education spending amounted to £97 billion in 2019–20.

**Table 1. Spending by public service in the UK, £s billions (2019–20 prices), % of GDP and % of public service spending**

Service	1988-89			1998-99			2009-10			2019-20		
	£s billions	% of GDP	% of total	£s billions	% of GDP	% of total	£s billions	% of GDP	% of total	£s billions	% of GDP	% of total
Health		3.9%	19.2%	71.7	4.6%	24.3%	138.9	7.5%	28.0%	164.1	7.3%	32.2%
Education	50.9	4.0%	19.8%	61.2	4.0%	20.7%	105.2	5.6%	21.2%	90.6	4.0%	17.8%
Defence	42.7	3.4%	16.7%	37.5	2.4%	12.7%	44.8	2.4%	9.0%	42.2	1.9%	8.3%
Public order and safety	19.8	1.6%	7.7%	27.5	1.8%	9.3%	40.5	2.2%	8.2%	34.5	1.5%	6.8%
49.4 Transport	13.9	1.1%	5.4%	11.9	0.8%	4.0%	27.3	1.5%	5.5%	34.6	1.5%	6.8%
Other	79.9	6.4%	31.1%	85.1	5.5%	28.8%	138.6	7.4%	28.0%	143.3	6.3%	28.1%
<i>Of which personal social services</i>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	33.2	1.8%	6.7%	35.7	1.6%	7.0%
Total	256.6	20.4%	100%	294.9	19.0%	100%	495.4	26.6%	100%	509.3	22.5%	100%
<i>Total per person (£s)</i>	4,510			5,040			7,960			7,620		

Note: Public service spending defined as expenditure on services less spending on social security benefits, debt interest and net transfers to the EU budget. This definition also excludes depreciation and a number of accounting adjustments, most notably the expected cost of writing off unpaid student loans. 'Other' includes a range of smaller service areas including general administration, foreign affairs and overseas aid, economic development, agricultural support, environmental protection, housing and community services and social protection, excluding social security benefits and tax credits (which includes personal social services and pensions for public sector workers). Personal social services spending is available from 2009–10 onwards and is constructed from overlapping five-year periods of data reported in various *Public Expenditure Statistical Analyses* publications.

Source: Authors' calculations using HM Treasury (2021b, and previous releases), Department for Work and Pensions (2022), and ONS mid-year population estimates.

Public service spending therefore represents a sizeable share of the economy and is equivalent to a large fraction of households' net incomes. Spending on this scale would be highly redistributive even if it were allocated equally across the population: the £509 billion spent in 2019–20 amounted to £7,624 per person, which equates to 161% of after-tax-and-benefits income per person for the lowest-income tenth of households and 20% for the highest-income tenth of households. As we show in the rest of this commentary, spending is not distributed equally in cash terms across the income distribution: it is higher for low-income households than for high-income households in both a snapshot and life-cycle sense.

The increase in the scale of public service spending – and especially non-defence spending – relative to the economy and household incomes between the late 1980s and late 2000s, only partially undone since then, means that, all else equal, the scale of redistribution would also have increased over time, even if the progressivity of spending had not changed over the last 30 years. However, as the next three sections show, a number of factors have acted to increase the progressivity of public service spending, at least when measured over people's life cycles. This includes a growth in health expenditure relative to other areas of public service expenditure; the expansion of further and, at least more recently, higher education, and reforms to the funding of each level of education; and the more stringent means- and needs-testing of social housing and social care services.

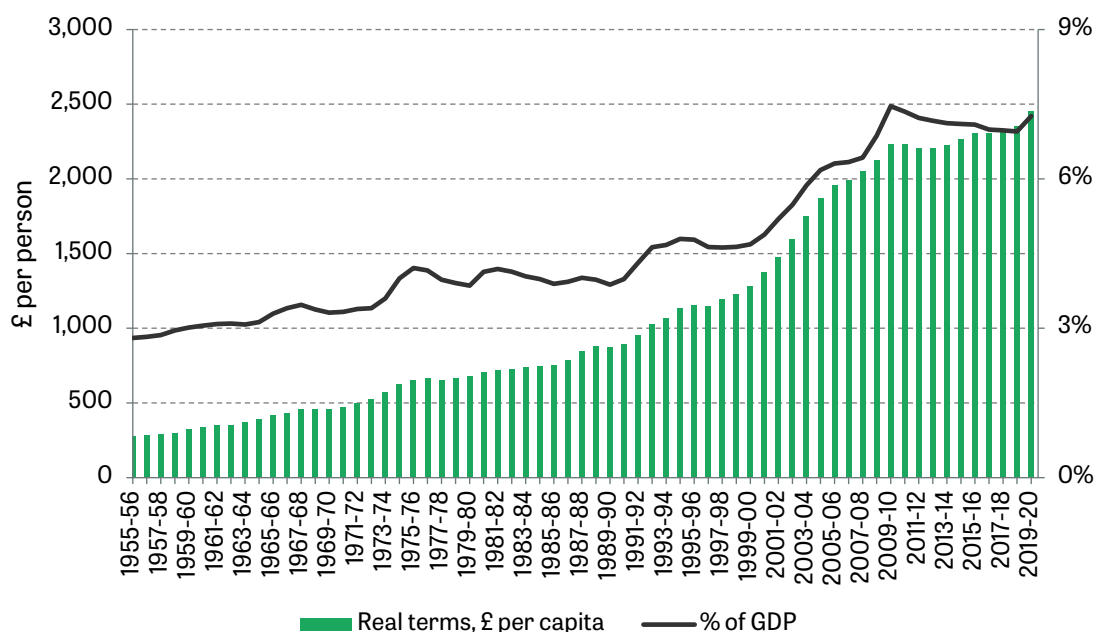
Reforms to higher education and social care funding are set to reduce the progressivity of public service spending during the first half of the 2020s. But the level of public service spending is also increasing, funded by higher taxation. As we discuss further in the final section, the scale of redistribution undertaken by public service spending is therefore likely to increase further, despite these 'regressive' changes to two key areas of spending.

## The distribution of health spending

Publicly funded health services are provided on a universal basis to the entire population of the UK. The National Health Service (NHS) – in reality largely operated by different organisations in different local areas – was set up in 1948 to provide comprehensive health coverage for the entire population, irrespective of ability to pay and free at the point of use. Bar a few relatively small exceptions (general practice prescriptions, and dental and opticians' services, for which free provision is restricted to certain population groups, including those with low incomes), it continues to operate on this basis. More recently, the NHS Constitution states that the health service should aim to reduce health inequalities, and therefore pay particular attention to groups whose health and life expectancy are below average (Department of Health and Social Care, 2012).

Providing a comprehensive and free service does not come cheap. As highlighted in the last section, health is the largest single area of public service spending in the UK, amounting to £164 billion or £2,457 per person in 2019–20. Figure 2, extending the time period covered in Table 1, shows that since the NHS was founded in 1948, spending per person has increased more than tenfold in real terms. Measured relative to the size of the economy, spending increased from 2.8% of GDP in 1955–56 to 7.3% of GDP in 2019–20. As discussed above, spending growth was particularly rapid in the 2000s, when it increased from 4.7% to 7.5% of GDP, and per person spending increased by almost 6% a year in real terms. Growth was slow in the 2010s: spending ended the decade little changed as a share of GDP and rose by an average of 1.0% per person per year.

The level of and trend in health spending implies that it has a large and increasing redistributive potential. But how is health spending distributed across different income and socio-economic groups? And how has this changed over time?

**Figure 2. UK health spending, £ per person (2019–20 prices) and as a percentage of GDP**

Note: Real-terms adjustment undertaken using the GDP deflator.

Source: See sources to Table 1.

### Conceptual and measurement issues

Assessing how health spending is distributed across the population requires data on service usage and the cost of different services. The latter can be estimated from administrative data. The former can be sourced from either administrative data or survey data, with both having strengths and weaknesses, as discussed in Box 1. Overall, administrative data typically contain better information on usage, expenditure and clinical need for those who are utilising the services to which the data relate. However, survey data typically provide more individual and household characteristics (such as income or education), and include those not making use of services (who may have unmet needs). Using evidence from both types of data can therefore provide a fuller picture of how health service usage, expenditure and needs vary across the population.

#### Box 1. Measuring the distribution of health spending

As discussed earlier, health spending can be allocated either on an 'actual use' or an 'insurance' basis. In both cases, data on healthcare use are needed: either to measure each person's actual usage; or to estimate the average use of people with different sets of characteristics that insurers are assumed to be able to take account of when determining insurance premia. To do either, two broad sources of data can be used: surveys of people's health service usage and socio-economic characteristics; or data collected as part of administering services, such as from hospital or primary care health records.

**Survey data**, such as from the Health Survey for England or the Family Resources Survey, include self-reported measures of usage of healthcare services, such as the number of GP appointments, outpatient visits or overnight stays in hospital an individual recalls over a given period. Using this information, individuals can be assigned an amount of health spending based on, for instance, the average cost of a GP or outpatient appointment, and the number of appointments they reported attending in a year. These data also include measures of household income and living standards, allowing us to look at differences in reported usage across income groups directly.

However, the relatively blunt measures of healthcare usage mean analyses using only survey data are not able to reflect variation in the costliness of providing a 'unit' of care to different people. If these costs vary systematically between people – for instance, if the typical cost for an outpatient appointment was higher for older patients, those with more complex conditions or comorbidities – then using survey data would likely mean understating differences in health spending across people.

Further, these surveys usually only include private households and so miss health spending on those in institutional settings, such as nursing and care homes. The English Longitudinal Study of Ageing (ELSA) does attempt to follow existing survey participants if they enter a residential care home, but they are still an under-researched group.

Alternatively, **administrative data** – such as from Hospital Episode Statistics, covering hospitals in England – includes very detailed information on care journeys and treatments. This allows for much more precise estimates of spending on specific individuals and for detailed descriptions of how spend varies across the population based on characteristics available in hospital records, such as age, sex and usual place of residence. It will also include those who do not live in private households.

However, analysis is commonly restricted to secondary (hospital) care, as fewer data are routinely collected from primary care providers. Administrative data also have very limited direct measures of individuals' socio-economic status (SES) or circumstances. It may be possible to proxy these based on observed characteristics and, for instance, average income levels or deprivation in a local area, although this will not recover all variation in health spending across income levels.

As well as measuring the distribution of spending across income groups, we may be particularly interested in measuring spending on different groups **conditional on health needs**. One interpretation of equality in healthcare provision, and a stated ambition of the NHS, is equality of treatment conditional on need. Survey data may include self-reported measures of overall health, or of how far certain conditions limit their daily activities. However, these are subjective, and individuals may have different perceptions of what 'good health' means. Administrative data from health records generally include much more reliable measures of health status and needs, so can be used to examine differences in treatment and spending amongst those with the same level of needs. However, these data will only include individuals who have accessed health services. If some individuals are less likely to seek treatment – if they struggle to take time off work or travel to appointments, or accept a lower level of health as being 'normal' – administrative data will not include them, so will not be able to speak to some of these inequities in access, and therefore any resulting differences in spending conditional on health status.

It is also important to bear in mind the conceptual issues discussed in the second section. In particular:

- The fact that health services provide insurance, benefiting not just those who actually use a service but those who *might* have used a service *if* they had become ill. This means averaging usage and expenditure over the sorts of characteristics that insurers could potentially take account of – such as age, sex, and SES – can make sense.
- The fact that snapshot estimates of the distribution of health spending are strongly affected by how income varies over the life cycle, and how this pattern changes over time.
- The fact that it is important to consider how usage and expenditure vary conditional upon need, not just absolutely, and whether quality of service provision varies systematically across the population.

Two further issues are also particularly relevant for analysing the distribution of health spending.

First, poorer people, and those living in poorer areas, die younger (Health Foundation, 2022). The lower life expectancy of poorer people means that they are likely to receive a lower share of health spending over their lifetimes than in a 'snapshot' of their lifetime, because they benefit from fewer years of spending. The fact that lower-income people are less likely to live to the oldest ages will also mean that they are under-represented among the oldest groups where, as we see below, spending is highest. This reduces the progressivity of spend in a snapshot analysis of the distribution of spending too.

Second, there is a complex relationship between health status and income: evidence suggests that income affects health, and health affects income. Therefore, when examining the distribution of health spending across income distribution, one must bear in mind that people's positions in the income distribution may be affected by their access to and use of health services.

### **Age and sex are strong predictors of use of healthcare, and in turn health spending**

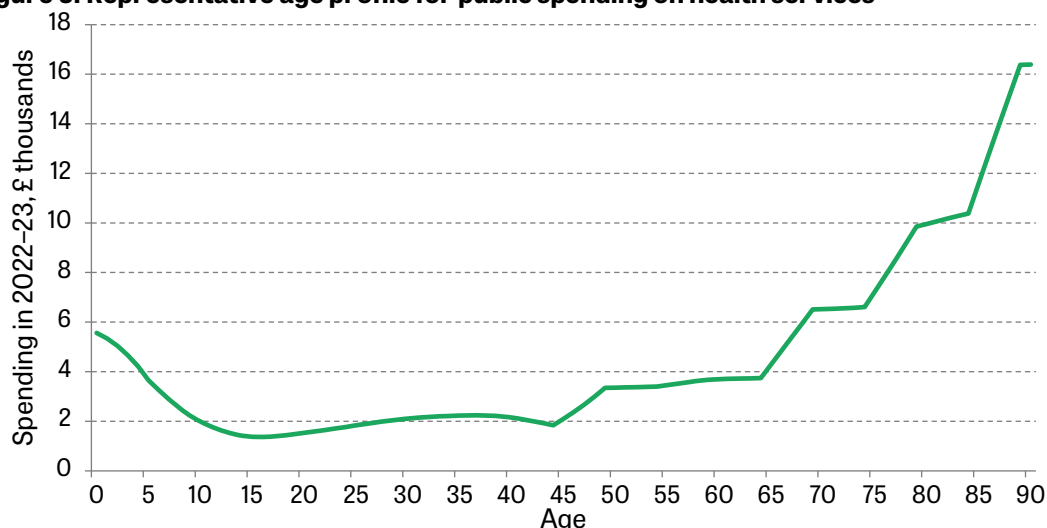
We now turn to examining the empirical evidence on how healthcare use and spending vary across the population.

There are large differences in the use of health services by age and sex, and these vary across different types of care. In primary care, consultation rates between 2007 and 2013 were highest for children aged under 5, decreasing to the lowest levels in adolescence, before rising again with age (Hobbs et al., 2016). Consultation rates were significantly higher in women than men between 15 and 44 years, likely due at least in part to consultations regarding contraception, maternal and pre-natal health, confirming patterns described in earlier work covering the years 1995–2008 (NHS Information Centre, 2008). Using NHS Hospital Episode Statistics to look at secondary care, similarly strong age gradients can be seen in the proportion of people with at least one hospital inpatient admission and, amongst patients, the average number of admissions. Emergency admissions were much more concentrated amongst the very young and the very old than elective care (Charlesworth et al., 2018).

Combining these data on service usage with the cost of delivering services provides estimates of how health spending varies by age and sex. Spending will, of course, vary considerably within age–sex groups but these group average spend figures can be thought of as the cost of insurance, if insurers could discriminate only on the basis of age and sex. It is also a practical approach, as age and sex are easily observed in both administrative and survey data.

Figure 3 shows estimates from Office for Budget Responsibility (2018) of average health spending by age. In line with the usage patterns discussed above, this shows spending is higher among young children and among the over-65s and especially the oldest adults, than among adolescents and working-age adults.



**Figure 3. Representative age profile for public spending on health services**

Source: Office for Budget Responsibility (2018, Chart 3.10).

Using administrative data covering the years 2010–11 to 2014–15 to estimate the precise spending on inpatient and outpatient hospital care across individuals, Kelly, Stoye and Vera-Hernández (2016) find a similar pattern by age. They also split their results by sex, finding that average spending on women exceeds that on men through the child-bearing years, especially around age 30, reflecting at least in part their decision to assign the cost of maternity care to mothers (rather than babies). From people's mid-50s onwards, average hospital spending was higher on men than women.

### These demographic patterns drive much of the overall distribution of health spending across households...

Individuals of different ages are not spread evenly across the income distribution. This means that the age profile in health spending leads to differences in average health spending across the distribution of household income.

Until recently, the ONS' annual analyses of the distribution of taxes, cash benefits, and benefits-in-kind assigned health spending to individuals based only on their age and sex, ignoring any variation in expected service usage based on other characteristics they observed (including income). In the last year that this simple method was used (2015–16), they estimated that the distribution of health spending was slightly pro-poor, with the highest spend on those in the second and third deciles of the distribution of equivalised household income, and the lowest average spending on households in the top two deciles. As shown in Figure 4, this is starker when expressed relative to households' post tax and cash benefit income, with average benefits-in-kind from health spending worth more than 40% of disposable income for households in the bottom decile of equivalised household income, but less than 5% for those in the top decile.

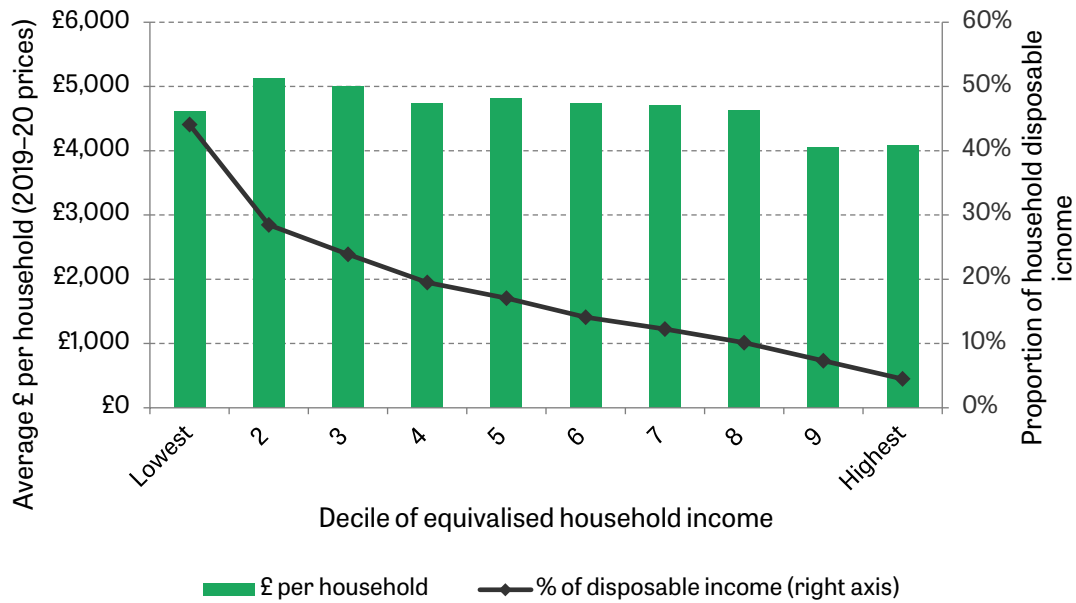
Given that average health spending is much higher at older ages, this pattern is driven largely by the position of households containing older people in the income distribution in 2015–16.

### ... and mean that the 'snapshot' distribution of spending has become less progressive over time, as pensioners have become less poor

Comparing repeated snapshots from the ONS's annual analyses suggests that the distribution of health spending on this measure has become less progressive over time.

Panel (a) of Figure 5 shows the share of health spending going to households in each decile group of the income distribution: if the distribution was entirely flat with respect to income in each decade, households in each decile would receive 10% of health spending on average in each decade. In fact, the proportion of health spending assigned to the lower-income deciles fell between the 1990s and 2010s, while the proportion of spending that benefited those in the top deciles increased sharply. On average, households in the bottom half of the income distribution

**Figure 4. Average benefits-in-kind from NHS spending across deciles of equivalised household income in 2015-16, £ per household (2019-20 prices) and as a % of disposable income**



Source: ONS dataset, Effects of taxes and benefits on household income, 2015-16, and HM Treasury (2022).

received 29% more health spending than those in the top half in 1999-2000; this had fallen to 9% by 2015-16.

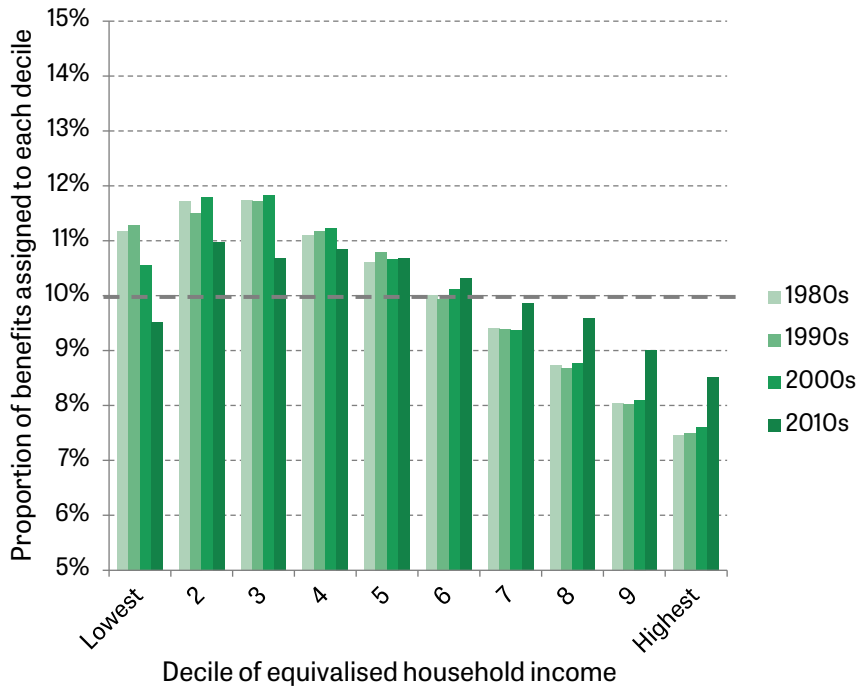
Given that the ONS assigned spending to individuals based only on their age and sex over these years, there are two possible explanations: the relative positions of different types of households in the income distribution has changed, or the age profile of spending has changed.

The former has certainly taken place, as the relative incomes of pensioners – who have much higher than average health spending – have increased over time. Panel (b) of Figure 5 shows that whereas in the 1980s, 73% of pensioners lived in the bottom half of the income distribution, this had fallen to 65% by the 2000s and 58% by the 2010s. The share in the bottom fifth fell from 36% to 22% over the same period. This change reflects growth in the income pensioners receive from private pensions and investments, a partial reversal of long-term declines in pensioner employment rates, and an increase in the value of pensioner benefits. There is also some evidence to suggest that, despite significant changes in overall spending, the shape of the age profile – the ratio of spending between different age groups – has remained relatively stable at least over the last few decades, with similar patterns estimated in different studies in the late 1990s and in 2016-17 (Charlesworth et al., 2018).

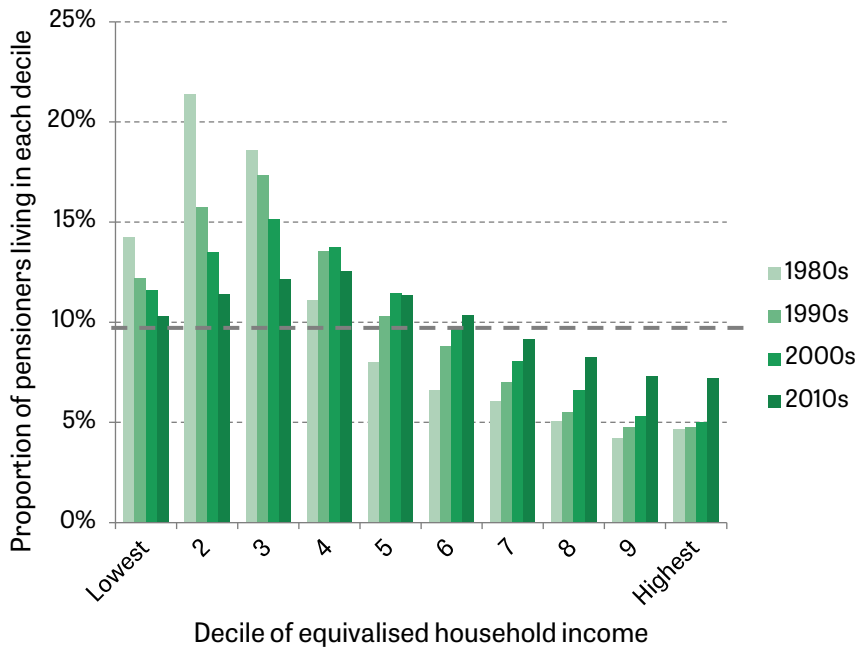
This does not explain why there was little change in the measured distribution of spending by the ONS between the 1980s and 2000s, even as the proportion of pensioners in the bottom three deciles of the income distribution fell substantially. This may be because the number of pensioners was relatively stable until around 2000, before beginning to rise. Even if relative per person spending on individuals of different ages changed little, this would mean the improving position of pensioners would be expected to have more impact on ONS estimates of the distribution of spending in later decades. Alternatively, it may be that the shape of the age profile of spending did change over earlier decades, or that the ONS's methodology for incorporating age and sex changed between releases.

**Figure 5. (a) Proportion of benefits-in-kind from NHS spending assigned to households in each decile of equivalised household income, each decade from 1980–81 and (b) proportion of pensioners in each decile of the income distribution**

(a)



(b)



Note: Different scales are used on the y-axes in the two panels. The dashed line shows the patterns if the distribution of benefits-in-kind were entirely flat with respect to income or if pensioners were spread evenly across the income distribution. (a) Proportion of the total value of benefits-in-kind from NHS spending assigned to households in each decile of the income distribution (all households). Households are ranked by decile of equivalised household disposable income, using the modified OECD scale. Figures are averages over 10 consecutive annual analyses. There have been changes in the ONS's methodology for assigning benefits to households across the years. (b) Pensioners are men aged over 65, and women aged over 60. Figures are the proportion of the total number of pensioners belonging to households in each decile of the income distribution and are averages over 10 years of data.

Source: (a) ONS dataset, Effects of taxes and benefits on household income (various years); (b) IFS analysis of Households Below Average Income (HBAI) data.

While not conclusive, these factors suggest that the changes in the distribution of spending estimated by the ONS, at least over recent decades, were driven predominantly by changes in the age and sex composition of each decile of the income distribution. As pensioners have moved up the income distribution, so has the health spending they receive, making health spending look less progressive over time.

While the change in these repeated annual measures do reflect an important, real shift in the relative annual incomes of different household types, these snapshot measures of income may be poor measures of a household's relative living standards over the longer term. As such, it does not follow that there have necessarily been changes in how spending is distributed across people according to their lifetime incomes. Evidence on this measure, and how it may have changed, is sorely lacking.

The rise in the snapshot incomes of pensioners relative to working-age households may also reflect a change in how lifetime incomes are growing *between cohorts*. Historically, each cohort had higher median incomes than their predecessors did at the same age throughout their working lives, and so could expect higher lifetime incomes. Those born in the 1980s have seen relatively little income growth as they have aged, and are the first post-war cohort to have median incomes no higher – and lower wealth – than those born a decade earlier did at the same age (Cribb, 2019). These intergenerational differences complicate distributional analysis relative to lifetime income.

Furthermore, estimates based solely on age and sex miss important aspects of the distribution of spending revealed by an actual usage approach, or indeed by an insurance approach if insurers were assumed to be able to take account of further observable characteristics. These differences must be reflected if the distribution of health benefits-in-kind is to reflect more than the relative positions in the income distribution of different age groups.

### Poorer people – and people living in more-deprived areas – use health services more than other people of the same age

There is significant variation in ill health, even among people of the same age and sex. Indeed spending is highly concentrated on particular individuals, and relatively persistent over time, as discussed in Box 2.

In addition, there are systematic differences in health status and spending by SES. Differences in mortality rates across social classes were documented by the Registrar General from 1911, and persisted through the twentieth century. As described by Le Grand (1982a), various studies using household survey data and medical records in the 1970s showed substantial class gradients in health across different measures, from mortality to self-reported health to sick-days. More recent work finds that there remain large differences in health across groups, and in mortality rates between less- and more-educated adults, and less- and more-deprived places.<sup>7</sup> Narrowing these gaps between local areas is a key priority for the government's levelling up agenda.

If individuals receive equal treatment conditional on health needs, we would expect these differences to drive higher usage of health services amongst poorer individuals, even within age-sex groupings. Indeed, several studies have used self-reported measures of healthcare utilisation in survey data – typically the number of GP and outpatient appointments and inpatient days – to estimate the distribution of health spending based on actual usage of publicly funded healthcare across income deciles. For example, Sefton (2002) estimated spending on individual healthcare services in proportion to people's use of these services, using micro-data from various household surveys. This found that, between 1996 and 2001, health spending was pro-poor, although usage of all major services (inpatient, outpatient, GP and prescriptions) was highest in the second lowest quintile of the income distribution, not the lowest. Horton and Reed (2010) estimated a similar distribution of health spending in 2007–08 using reported usage of publicly funded hospital services in the General Household Survey, with the highest spend on those in the third to fifth deciles of the income distribution. Similar analysis based on Understanding Society: The UK Household Longitudinal Study (UKHLS) suggests that these patterns remained similar in 2018–19, as shown in Figure 6(a).

<sup>7</sup> For a discussion of health inequalities in the UK, see Case and Kraftman (2022).

## Box 2. How concentrated and persistent is health spending?

For many people, periods of ill health are intermittent, and their interactions with health services in a given year are very limited. For others, chronic or life-limiting conditions may mean much more substantial use of health services over longer periods of time.

Is it the case that very few people benefit from significant health spending, including across their lifetime, while others benefit from relatively little spend? This would not imply the *benefits* of spend are as concentrated – especially if we consider health spending as providing insurance to even those who do not receive treatment – but it *is* informative as to the extent that the NHS is insuring people against very high health costs (in a way that the current social care system does not offer similar protection for all individuals against catastrophic costs).

A large fraction of the population does not benefit directly from any hospital spending at all in a given year – more than 80% of all adults aged under 65, falling to 70% for those aged 75 (Charlesworth et al., 2018). Given some conditions are costlier to treat than others, we might expect spending to be more concentrated than this. Kelly et al. (2016) find that, amongst patients, the top 20% account for three-quarters of all inpatient hospital spending. Amongst those aged over 65, the top 10% of spenders accounted for 77% of spend in a given year. Over three years, the same group of people accounted for 35% of spending (although some of this original 10% will have seen lower spending in the latter two years because they died, so this is likely to underestimate persistence).

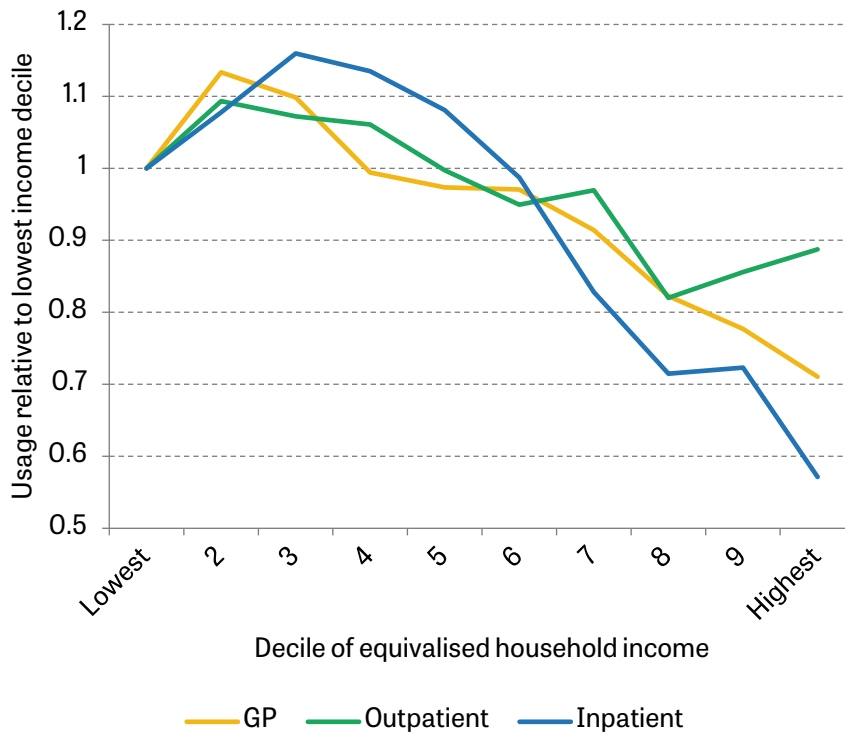
Spend seems to be relatively persistent over time, even at younger ages. Ill health exhibits strong state dependence – past health status is a good predictor of current health – so this persistence is not surprising. Still, three years is a relatively short period of time, and may be misleading over the life cycle. For instance, education spending over three years is even more persistent – most children at school in one year will still be at school in the next year – but most people attended school, so that spend is much less concentrated over the life cycle.

Importantly, accounting for actual usage makes the measured distribution of spending *more* pro-poor than accounting for only differences in usage by age and sex. Sefton (2002) found that individuals in the bottom quintile of the income distribution benefited from 1.8 times the health spending of those in the top quintile; adjusting this for demographic differences – stripping out the part that is explained by differences in average spending by age and sex – they still benefited from 1.5 times more spending. The same is shown in Figure 6 in relation to usage of different services. Patterns of actual usage (panel (a)) are much more pro-poor than if each individual is instead assumed to have the same usage as the average amongst people of the same age group (panel (b)).

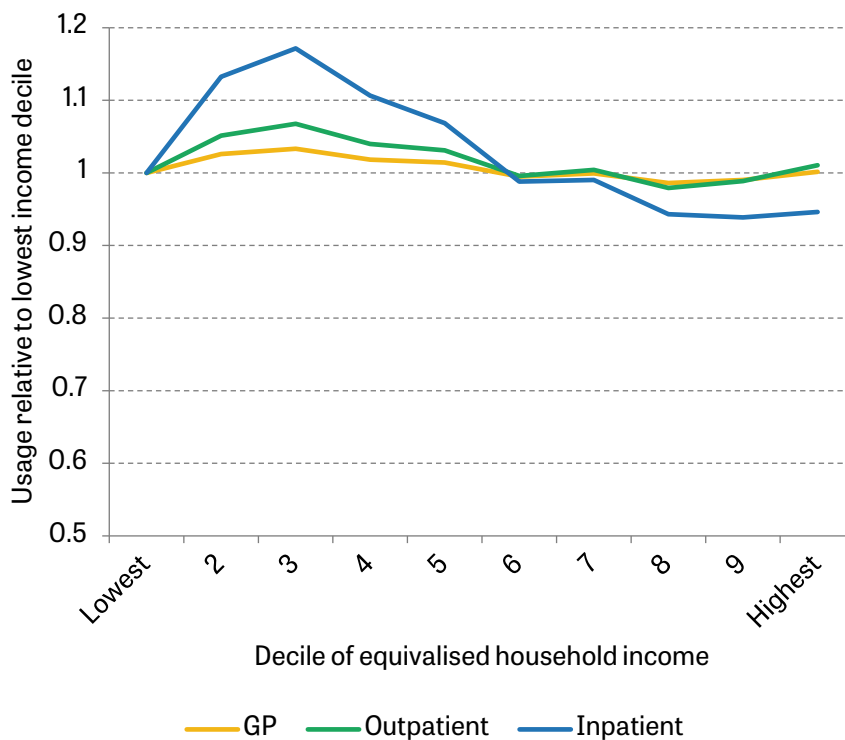
To some extent, lower actual usage of NHS services amongst those in higher-income groups may be explained by them instead opting to use private healthcare (as is the case for school spending), despite having the same healthcare needs. As noted by O'Dea and Preston (2012), two-thirds of those with private health insurance in 2008 were in the top three income deciles, which likely makes public spending as measured by these studies more pro-poor than overall (public and private) usage. However, private health insurance coverage is relatively low, at around 12% of the population, and such insurance also typically excludes some types of treatment, such as emergency care. This means private health insurance can be seen as a supplement to, rather than a full replacement for, NHS services. Indeed, Sefton (2002) finds that opting into private healthcare explains a very small amount of the pro-poor distribution in spending on public healthcare, with any effect concentrated at the very top. Evidence from ELSA suggests that rates of private health insurance fall sharply at older ages (Stoye et al., 2020), when spending is highest, suggesting that the impact of this on the overall distribution of public health spending is

**Figure 6. Average usage of health services across deciles of household income, 2018–19**

**(a) Reported actual usage amongst each decile**



**(b) Average usage based only on 10-year age band**



Note: (a) Average reported usage of different health services (GP and outpatient appointments and inpatient days, by adults aged 16+), compared to the average amongst those in the lowest decile of equivalent household income. Inpatient days capped at 30, and exclude those paid for privately. (b) Each individual is assigned average usage within their age band: these are under 25, 10-year age bands to 75, then aged 75 and over. Individual cross-sectional weights applied.

Source: Authors' analysis using UKHLS, wave 10 (covering 2018–19).

still likely to be small. Differences in self-reported health status seem to be much more important in explaining why higher-income groups use less publicly funded healthcare.

Sefton (2002) also documented different gradients in health spending amongst age groups, with a pro-poor gradient amongst working-age people, but an almost flat distribution amongst children, and highest use amongst pensioners in the middle of the income distribution. This corresponded with the distribution of self-reported morbidity within each of these age groups. The same patterns of self-reported morbidity across income quintiles and age groups can also be observed in more recent survey data.<sup>8</sup> It is not clear whether this strong gradient in health status by current income for working-age adults reflects the manifestation of health risks associated with low incomes, or the impact of long-standing and limiting illnesses on a working-age adult's ability to work and earn in a given year.

### Spending on hospital services is higher amongst people living in more-deprived areas

Still, as discussed in Box 1, we might worry that these quite blunt measures of healthcare utilisation from survey data miss significant variation in actual spending across people. Instead, Kelly et al. (2016) used administrative data on episodes in NHS hospitals, with very detailed data on the precise costs of treatments covered by payment-by-results, covering inpatient and outpatient care. In the absence of individual-level income data, they use the income dimension of the index of multiple deprivation for the small area (lower super output area or LSOA) in which an individual lives as a proxy for their income.<sup>9</sup> They find that average hospital spending amongst patients increases with local area deprivation, and that gaps are steepest in older age groups; under 25s in the most-deprived quintile of areas benefited from 22% more spending than in the least-deprived quintile; rising to 25% amongst those aged 25–64, and 35% for those aged 65 and over. Importantly, this reflects only the distribution of spending *amongst patients*, and not any differences in the probabilities of different groups receiving no hospital care (and so zero expenditure). Conditional on receiving at least some hospital care, more is spent on patients in more-deprived areas.

Another study by Asaria, Doran and Cookson (2016a) took a very similar approach, using administrative data to estimate spending on inpatient care in 2011–12, by age, sex and a measure of local area deprivation. This used data on the population of each small area to estimate usage and spending amongst the *whole population*, not just those appearing in hospital data. This found substantial differences in rates of hospital episodes across areas. Those in the most-deprived fifth of areas had a 20% higher rate of elective admissions and a 71% higher rate of emergency episodes than in the least-deprived fifth, conditional on age and sex. Patterns of estimated spending were very similar to patterns in admissions and episodes, suggesting that differences in costs between groups were driven primarily by differences in volumes of usage, instead of differences in the costliness of treatments for different groups.

One concern with studies of this type, which rely on proxies for individual characteristics based on local areas instead of individual data, is that they risk falling into the 'ecological fallacy'. Even averaging socio-economic characteristics over quite small geographic areas – the average LSOA has a population of 1,500, or 650 households – care needs to be taken in interpreting results. Higher spending on those in more-deprived areas does not necessarily imply that the same relationship holds between spending and more-deprived *people*. As shown in Figure 7, there was some relationship between area deprivation and income levels around 2011, but this was far from one-to-one; for instance, around 30% of the poorest fifth of households lived in the most-deprived fifth of areas, but around 12% lived in the least-deprived fifth.

Place of residence may reveal information about people's longer-run incomes and living standards that is not captured by their current incomes. However, at least for families with children, Jerrim (2020) has shown that income measured in a single year is much more strongly correlated with permanent household income than is local area deprivation. This suggests that

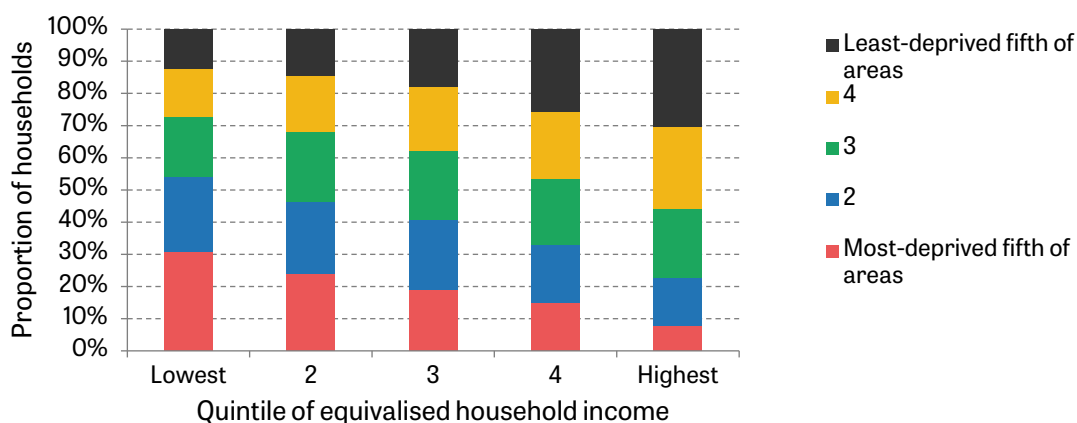
<sup>8</sup> Authors' analysis of UKHLS, wave 10, suggests a much stronger pro-poor gradient for working people on two measures of self-reported health: health limiting moderate daily activities, and reporting general health as fair or poor. Amongst over-65s, self-reported morbidity was highest in the second income quintile.

<sup>9</sup> They establish that this proxy for relative incomes is correlated as expected with wealth measures available in ELSA.

local area deprivation is less useful in identifying disadvantaged households than a snapshot measure of income, although the former may be all that is available in administrative data.<sup>10</sup>

Since 2016–17, the ONS has incorporated gradients in health spending by local area deprivation into its annual estimates of the distribution of benefits-in-kind. This appears to have made very little difference to the estimates of the progressivity of health spending, perhaps because, as just discussed, not all poor people live in poor areas, and vice versa. Hence, first accounting for spending by area deprivation and then allocating this across households based on the areas they live in will attenuate variation in spending across the income distribution.

**Figure 7. Proportion of households in each quintile of area deprivation across quintiles of the distribution of household income in England, 2010–11**



Note: Proportion of households within each equivalised household income quintile that live in LSOAs in each quintile of area deprivation, based on the Index of Multiple Deprivation 2007. Analysis is restricted to households resident in England, and uses cross-sectional household weights.

Source: Authors' analysis of UKHLS, wave 2 (covering 2010–11) and Department for Communities and Local Government (2007).

Given substantial differences in life expectancy, and the concentration of health spending at older ages, it is still possible that people in poorer areas could benefit from higher average spending at each age, but less spending across their lifetimes because of differences in mortality. Asaria, Doran and Cookson (2016a) explicitly considered the impact of differential mortality by estimating cumulative lifetime healthcare costs for individuals, assuming that the patterns of spend by age and mortality in a given year (2011) had persisted over their lifetimes, and adjusting for the probability of an individual surviving to each age, conditional on their age, sex and quintile of area deprivation. They found that average lifetime costs on this basis were still higher in more-deprived areas; lifetime costs were 15% higher amongst men in the most-deprived fifth of areas compared to the least-deprived fifth, and 22% higher amongst women.<sup>11</sup> These should be not understood as estimates of actual cumulative spending on these individuals; average spending, patterns of spending and mortality rates will have changed over their lifetimes. However, this does suggest that lower average life expectancies in poorer areas *reduce but do not overturn* the pro-poor gradient in spending by area deprivation once looking over people's lifetimes.

### Lower-income people make less use of specialist and some preventative services, once one controls for differences in health needs

Given that lower-income people are more likely to have health problems, one would expect them to make more use of health services, and for health spending to be pro-poor. Therefore, when thinking about whether health spending is equitable or not, more important than how much is spent on different population groups, is how much is spent on them *conditional* on their health

<sup>10</sup> For further discussion of the limitation of the index of multiple deprivation for the study of both health and healthcare inequality, see Case and Kraftman (2022).

<sup>11</sup> It also estimated that women had, on average, 14% higher lifetime hospital costs than men, due both to higher costs associated with their reproductive years, and longer average life expectancies.



needs.<sup>12</sup> If health service usage is higher for low-income people than for high-income people, but lower once one controls for low-income people's worse average health status, then while health spending would be pro-poor, barriers to using health services might be higher for low-income people.

Evidence suggests that there are long-standing differences in the use of healthcare services conditional upon health needs, although these differ by service, and by disease (Cookson et al., 2015). People with low incomes, low levels of education and/or working in manual or unskilled occupations make similar and perhaps even greater use of GP services and hospital in-patient services compared with their better-off, better-educated, higher-skilled counterparts. However, they have slightly fewer specialist outpatient appointments and make less use of a range of preventative services (such as dental check-ups, eye tests and disease screening).

For example, Stoye et al. (2020) use matched administrative and survey data, which combine information on older adults' use of hospital services with their socio-economic characteristics, and look at how use of services varies by education level. This is of interest in itself – for example, education may affect how easy people find it to engage with health services – but will also be correlated with people's long-run income levels. They find that after controlling for measures of physical and mental health, there is no relationship between use of *in-patient* services and education between 2004 and 2015. However, people with low levels of education had 11% fewer *outpatient* appointments than those with high education (2.44 versus 2.73 annually), driven by lower numbers of routine follow-up appointments.

OECD (2019) finds a qualitatively similar pattern using survey data that are representative of the entire population of the UK, but which cannot distinguish between public and private provision. It finds that after controlling for differences in health status, the probability of attending at least one GP appointment in the last year is flat across the income distribution (at around 75%), while the average number of appointments in the last four weeks is around 25% higher for the lowest-income quintile relative to the highest-income quintile. In contrast, the probability of having attended a specialist appointment in the last year is estimated to be around 25% lower for the lowest-income quintile than the highest-income quintile, and the number of appointments in the last four weeks around 20% lower. The OECD also found lower rates of cervical and breast (but not colorectal) cancer screening, as well as dental check-ups, among low-income people compared with high-income people.

Importantly though, inequalities in health service usage conditional on need are found to be lower in the UK than in most other OECD countries: the OECD defines the UK as being among the 'lowest inequalities' group that includes countries such as Denmark, Germany and Sweden, which for income and educational attainment generally have significantly lower inequality than the UK. OECD (2019) also finds that the UK has among the lowest gaps between low- and high-income people in the share reporting that they have unmet care needs due to the cost of care, travel problems and, indeed, waiting times. As of 2016, the UK also had a smaller gap between the share of people below and above the poverty line reporting difficulty in paying for healthcare than any EU country (while the overall share of people reporting difficulty was around one-third of the EU average). This may reflect the comprehensive free provision offered by the NHS.

Observed socio-economic differences in service usage also do not necessarily mean differences in service access – they may reflect different preferences for using healthcare services given the same health status (Katz, 2001). If that is the case, policymakers may still be concerned if different socio-economic groups have very different expectations of 'good health'. Informational and cultural barriers may also explain part of the observed differences in healthcare use. For example, medical professionals may interact with different groups differently, and/or poorer people may find explaining their issues and navigating a complex system more difficult (van Ryn and Burke, 2000; Willems, et al., 2005).

Finally, research suggests that lower-income people in the UK receive somewhat lower-quality care for some health services. For example, the Department of Health (2015) found that patients living in deprived neighbourhoods reported feeling less supported in managing their health conditions, and that it was more difficult to access GP and dental services, than those living in

<sup>12</sup> For a discussion of the difficulty in adjusting for differences in healthcare 'needs', see Propper (2022).

more affluent neighbourhoods. Waiting times for certain treatments including heart surgery have also historically been higher – and onward referrals for hip pain lower – for those living in poorer areas (McBride et al, 2010; Moscelli et al, 2018). And late diagnoses and presentation at accident and emergency (A&E) are both higher for cancer patients from poorer neighbourhoods.

Summarising this evidence, Cookson et al. (2015) conclude that poorer people tend to present to healthcare providers at a later stage of disease progression, make use of fewer specialist outpatient services and preventative services, may receive slightly lower quality of NHS care for some conditions, and report slightly poorer patient experiences. While there is a 'pro-rich' distribution of quality, experience and access to services including waits for treatment, gaps are generally slight, and it is unusual to find a need- or risk-adjusted gap of greater than 10% in use of healthcare between the richest and poorest fifth of the distribution of deprivation.

### **It is unclear how these patterns have changed over time – but funding levels do appear to matter**

While there is evidence that the qualitative patterns described above have been persistent over time, evidence on the scale of inequalities in use of services conditional upon need is more limited, particularly over longer time horizons.

Le Grand (1978), an influential study cited in the introduction to this commentary that contributed to the idea that the middle class benefited most in cash terms from public services, found larger gaps in use of health services conditional upon need than work that covers more recent decades. Using data from the 1972 General Household Survey, Le Grand found that health spending per person did not vary systematically across different socio-economic groups (defined by occupation), assuming the same cost per observed unit of healthcare received. However, controlling for the proportion reporting ill health, spending per person was around 40% higher for those in the top group ('professionals, employers and managers') than those in the bottom group ('semi and unskilled manual'). He suggested this was more likely to be an underestimate rather than an overestimate in the inequality of expenditure conditional upon need, given evidence that those from high SES backgrounds benefited from longer (and hence costlier) consultations.

This is much larger than the generally small inequalities in use conditional upon need found by more recent evidence, which would suggest a reduction in inequalities in health usage since the 1970s. However, other evidence from the 1970s and 1980s suggests rather less unequal access during that period. Propper and Upward (1992), for instance, use the 1974 version of the same survey, and find little relationship between SES defined by occupation and use of health services conditional upon ill health. When looking at income rather than occupational status, they in fact find a pro-poor bias. Applying the same methods to data from the 1980s, they find this pattern holds during that decade too. They conclude that the strikingly different results found by Le Grand (1978) are likely to be due at least in part to the specific sample drawn for the 1972 version of the General Household Survey.

Over the long term then, it does not seem that there has been either a big narrowing or widening in socio-economic gaps in health service usage conditional upon need. However, there is some evidence that the funding environment matters for these gaps, with service use and quality for low-income people relatively higher when funding is less constrained and provision expanding. For example, evidence suggests that access to GP services improved more in poor neighbourhoods than more-affluent neighbourhoods during the mid- to late 2000s (Asaria et al., 2016b), as did GP service quality (Doran et al., 2008). Gaps in waiting times for cardiac treatments also narrowed substantially during the 2000s (Moscelli et al., 2018), as did those for hip and knee replacements (Cooper et al., 2009). This may reflect the fact that, as waiting times more generally fell, it may have become less worthwhile for higher-income people to invest time and effort in actions to move up the queue, such that lower-income people benefited most from the fall in waiting times.

Conversely, there is evidence that when funding became more constrained during the 2010s, those from poorer backgrounds suffered more. When splitting their results into pre-austerity (2004–05 to 2008–09) and post-austerity (2010–11 to 2014–15) periods, Stoye et al. (2020) found no statistically significant difference in use of outpatient appointments conditional on health status in the first period. However, during the second period, they found that over-65s with low

levels of education had around 15% fewer outpatient appointments than those with high levels of education. This may reflect greater difficulties in having their needs recognised and acted upon in a system subject to greater rationing. At the same time, this group began to use A&E departments more – 13% on average – than those with high levels of education, which Stoye et al. suggest may reflect their reduced access to primary and outpatient appointments.

Funding remained constrained for much of the rest of the 2010s. While funding is now increasing much more quickly again, the NHS is struggling to recover from the impacts of the COVID-19 pandemic, with much longer waiting lists. We may expect poorer, less-educated people to suffer more from this than their better-off, better-educated counterparts. Indeed, early evidence suggested that waiting lists had increased by more for providers serving the most-deprived places than for those serving the least-deprived places (Mahase, 2021). Given the large pre-pandemic inequalities in health, and government targets to reduce health inequalities, this trend, if sustained, is worrying.

### Summary

Overall, health spending is higher on those lower in the income distribution. If spending is allocated only on the basis of age and sex – a proxy for the 'insurance value' the NHS provides to all households – then the pro-poor distribution of spend reflects the position of older households in the income distribution. The improvement in the relative position of older households, especially between the mid-1990s and mid-2010s, suggests spending has become less progressive, although this may give a misleading impression of changes in how progressive health spending is relative to lifetime incomes.

Health spending is also pro-poor over the life cycle, with higher usage of services and spending on those with low incomes and from deprived areas. This reflects patterns of ill health, which mean more-deprived groups have greater need for healthcare services. The choice of richer people to opt instead for private healthcare plays some role, but this is much less significant than private schooling is for education.

Conditional on their higher healthcare needs, there is some evidence that low-income and less-educated people make less use of some forms of specialist and preventative care. They may also face additional barriers to accessing services, with residents of poorer areas facing longer waiting times. There is also some evidence that differences in usage conditional on needs widen during austerity, suggesting changes in the scale of spend and greater rationing may have exacerbated existing inequities.

It is not yet clear which drivers of differences in treatment and access to services are most significant, but understanding this will be crucial if policymakers are to reduce health inequalities, an important stated aim of the levelling up agenda. It will matter a lot whether differences stem from informational and cultural barriers, or from differences in tastes and preferences – although the latter may still be concerning if different socio-economic groups have very different expectations of good health. Ultimately, the principal determinants of health are largely beyond the control of the health service. Significantly reducing health inequalities will depend on a much wider set of policies.

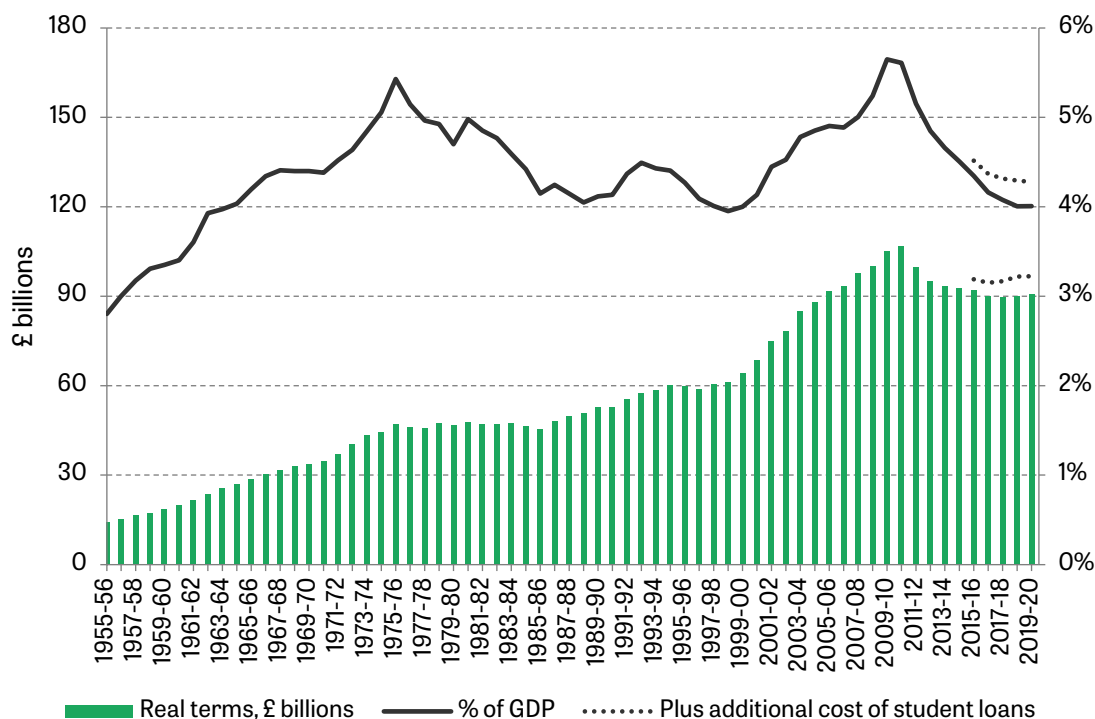
## The distribution of education spending

Education spending is the second-largest area of public spending after health, with spend amounting to £91 billion in 2019–20, or £1,356 per person. The inclusion of the eventual expected cost to the government of writing off student loans issued in 2019–20 increases estimated spending to £97 billion.

Spending on education services has risen significantly in real terms over the longer term, with especially fast growth averaging 5% a year from the late 1990s through to the late 2000s. Since then, as shown in Figure 8, officially reported education spending fell by 14% in real terms during the 2010s as spending cuts took effect from 2010 onwards. Part of this fall reflects the shift in higher education funding in England from teaching grants to tuition fees, a large part of which are funded by loans that will go un-repaid and eventually be written off. Adding in estimates of the cost of writing off student loans to make figures more comparable over time, Britton et al. (2020)

find that spending instead fell by 8% in real terms during the 2010s. Measured as a share of national income, spending fell steeply from 5.7% in 2009–10 to around 4.0% excluding the expected cost of writing off student loans – and to 4.4% including this – by 2019–20. Over the longer term, education spending as a share of national income is now similar to what it was in the early 1970s – a starkly different pattern to that for health spending, which has more than doubled as a share of national income since 1970.

**Figure 8. UK education spending each year, £ billions (2019–20 prices) and as a percentage of GDP**



Note: Estimated cost of student loans from Britton et al. (2020, Figure 1.1), expressed in 2019–20 prices. This does not reflect changes to student loan repayments of past cohorts as a result of subsequent student loan reforms. Real-terms adjustment undertaken using the GDP deflator.

Source: See sources to Table 1.

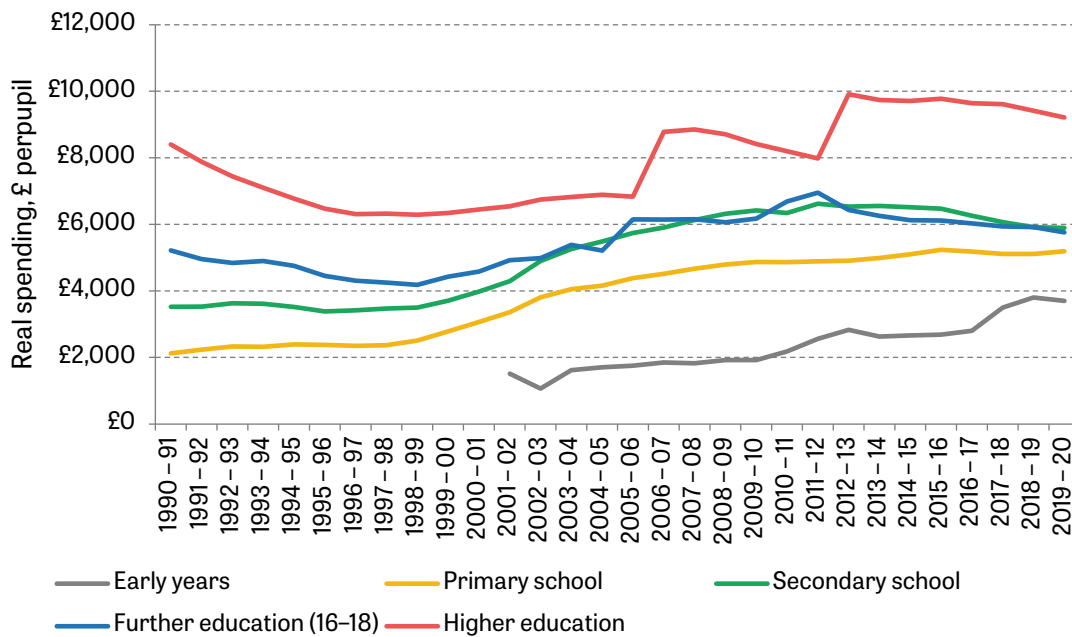
In considering spending on education provided to specific individuals, this section will focus on day-to-day public spending on nurseries, schools, colleges and universities. Changes in the overall scale of spending will be driven partly by demographic trends such as changes in the birth rate, which affect the size of different age cohorts as they move through the stages of education; these are largely out of the control of the government. The proportion of eligible pupils of each age who participate in state-funded education will also be relevant, especially in non-compulsory stages of education, where changes in participation have had a significant impact on the distribution of spending.

Under the more immediate control of government is the level of spending per pupil, which varies significantly across the stages of education. In particular, children aged 3 and 4 benefited from an average of £3,700 of spending per pupil on early years education and childcare in 2019–20, while averages of £5,189 and £5,890 were spent, respectively, per pupil in primary and secondary schools. Those aged 16–18 at further education and sixth-form colleges benefited from average spending per pupil of £5,756. For higher education, £9,210 per pupil was available for upfront teaching resources (including through tuition fee loans), with around a further £6,000 spent on

support for living costs per student.<sup>13</sup> Importantly, this is likely to overstate the eventual subsidy for higher education, as around 60% of these loans are expected to be repaid by graduates.

There have been big changes in the relative spending on pupils at different stages of education over the last 30 years, as shown in Figure 9. All stages saw falls in real-terms spending per pupil between 1990–91 and 1997–98, with further and higher education experiencing the largest real-terms falls. From then until 2010–11, spending increased across all stages of education, and more quickly for younger pupils; real-terms spending per pupil grew by 6% on average per year in primary schools, 5% in secondary schools and 4% in further education. Resources for higher education increased with rises in the value of teaching grants, and then increased sharply when the tuition fee cap increased by £3,000 in 2005.

**Figure 9. Spending per pupil each year at different stages of education, real terms (2019–20 prices)**



Note: Secondary school spending per pupil includes spending on school sixth forms. Further education figures represent spending per student aged 16–18 in further education and sixth-form colleges. Higher education figures are cohort-based numbers divided by 3 – an approximate course length – and reflect upfront resources for teaching, including any expected graduate contributions.

Source: Farquharson et al. (2021a, Figure 4.1).

Different stages of education enjoyed differential protection from spending cuts during the 2010s. School spending per pupil was largely protected in real terms up to 2015, before falling by about 5% in real terms between 2015–16 and 2019–20, by 1% in primary schools and 9% in secondary schools (the latter reflecting large cuts to school sixth-form funding). However, this excludes central spending by local authorities, and responsibilities have shifted from authorities to schools over recent years; a more comprehensive measure of total school spending per pupil fell by 9% in real terms in the decade between 2009–10 and 2019–20 (Farquharson et al., 2021a).

There were much larger falls in further education spending per student, which fell by 14% in real terms between 2010–11 and 2019–20. For higher education, resources per student increased by 24% in 2012, when the tuition fee cap increased to £9,000 (again, including a large increase in the expected graduate contributions to the cost of fees). Resources per student have since fallen gradually, to be around 7% lower in real terms than in 2012–13.

<sup>13</sup> The average value of maintenance loans for full-time students in 2019–20 was £6,740, and 91% of eligible students took them up, implying average upfront spending on maintenance loans of £6,130 per student.

### The position of households with children in the income distribution determines much of the snapshot distribution of education spending

Education spending is very strongly related to age, so that the number of children in a household is the most significant determinant of the amount spent on educating members of a household in a given year. Household composition varies across the distribution of current income, with more children on average in lower-income households. This is especially evident once household incomes are equivalised to account for the additional income required to deliver the same standard of living for larger households. For instance, as shown in Figure 10, over 1.9 million children (around 14% of the total) lived in households in the second-lowest decile of the income distribution in 2019–20, compared to 1.1 million (8%) in the highest decile. This alone will mean that in a snapshot of a single year, education spending will be skewed towards poorer households.

**Figure 10. Estimated fraction of children living in households in each decile of equivalised household income in 2019–20**



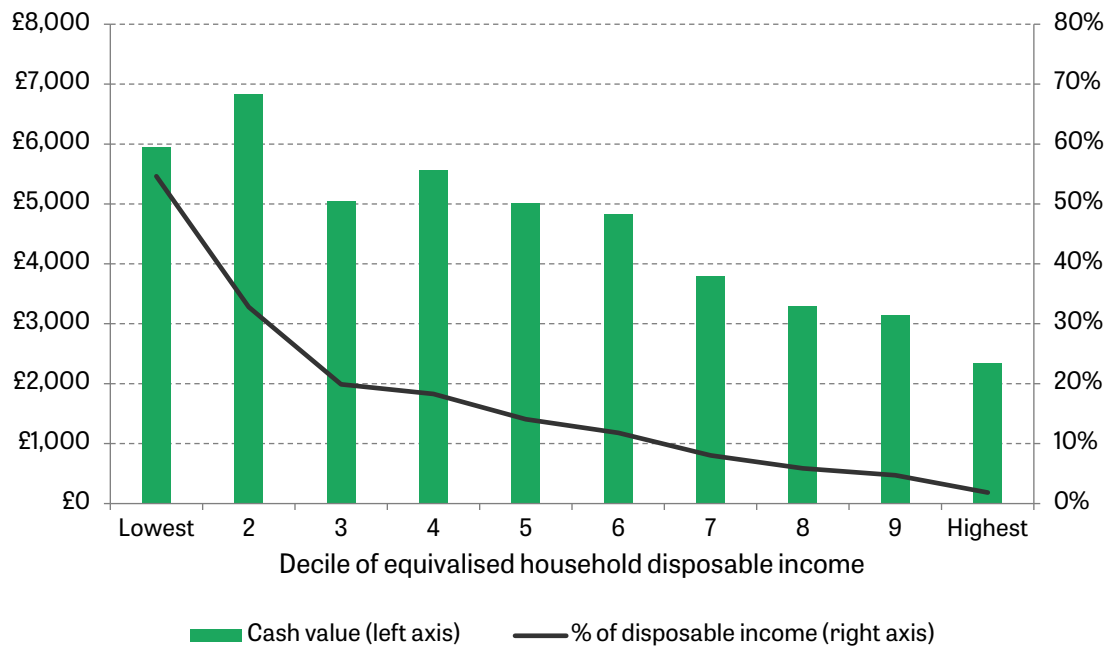
Source: IFS analysis of HBAI data. Children are defined as all those aged under 16, or aged between 16 and 19 and in full-time education.

Indeed, the ONS's annual analysis shows just this pattern. This uses the Living Costs and Food Survey, which includes good measures of household income, as well as each child's age and whether they are participating in state education. Spending on each stage of education (maintained special schools, nursery, primary and secondary schools, universities, and other further education establishments) is assigned to households based on the number of children attending at each stage, and the national average spend per full-time equivalent pupil.

The average value of education benefits-in-kind is estimated to be £4,580 on average across all households, including those with no children in state education.<sup>14</sup> The distribution of this is very pro-poor, as shown in Figure 11. Households in the bottom decile of equivalised disposable household income benefited on average from education spending of £5,945, compared to £2,347 for households in the top decile (that is, 2.5 times as much). The difference is much starker when measured as a proportion of income; education spending was equivalent to 55% of disposable income for those in the bottom decile, compared to 2% for those in the top.

<sup>14</sup> This per-household figure implies a higher total for spending on education services in 2019–20 (around £130 billion) than HM Treasury's Public Expenditure Statistical Analysis publications (£91 billion). The latter does not include spending on student loans, and may not include some aspects of further education, but this does not seem to fully explain the difference.

**Figure 11. Benefits-in-kind from UK education spending in 2019–20 by decile of equivalised household disposable income, average £ per household (2019–20 prices) and as a percentage of disposable income**



Note: All households, including those with no children.

Source: ONS dataset, Effects of taxes and benefits on household income, 2019-20, Table 2a.

This pattern largely reflects the location of children in the income distribution, as well as any differences in participation in state education among children. Across developed countries, spending on *compulsory* stages of education typically appears pro-poor in a snapshot, given the concentration of children in poorer households. On average across OECD countries in 2006, households in the bottom quintile of disposable income received 23% of total expenditures on compulsory education, compared to only 14% for the top quintile (Verbist et al., 2012).

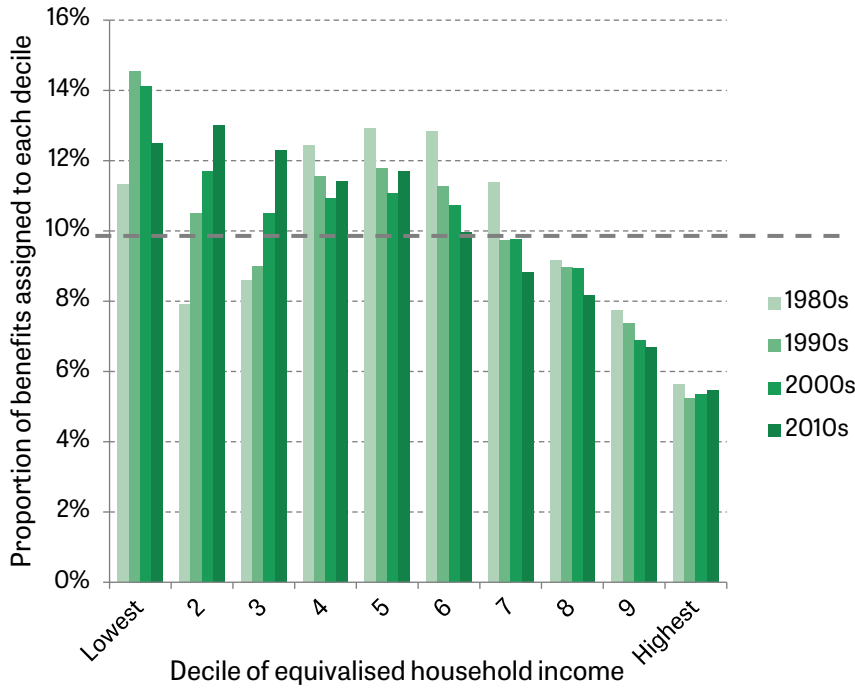
Comparing repeated snapshots from the ONS's annual analysis shows no clear trend in the proportion of education benefits-in-kind spending received by each decile of the household income distribution in the last two decades – although estimates fluctuate slightly year-on-year, likely due to sampling variability. However, over a much longer time period, there has been a clear shift in the distribution of spending, with the largest falls in the middle of the income distribution, and the largest gains in the second and third poorest deciles, as shown in panel (a) of Figure 12.

It is not possible to fully determine what is driving these changes in the distribution as measured by the ONS over time. The published figures combine spending across all stages of education, and the ONS has made some methodological changes between years to how it allocates education spending to households, which may be playing some role.

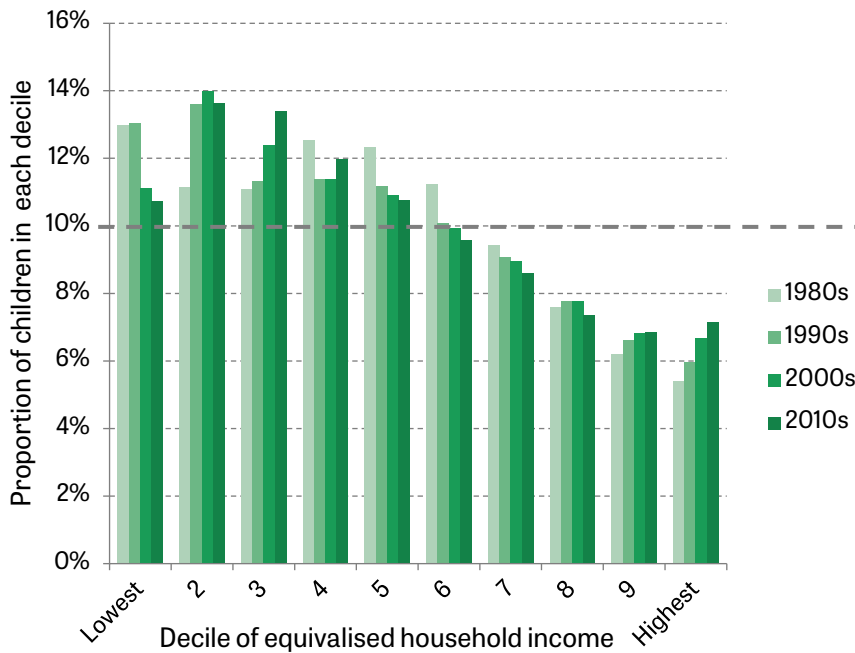
However, several factors appear to be important. First, the position of households with children in the income distribution has changed over time. As shown in panel (b), the proportion of children living in households in the second and third poorest deciles increased between the 1980s and the 2010s, and a lower proportion of children lived in households in the middle of the income distribution; this shift will have made the distribution of benefits-in-kind from *compulsory* stages of education appear more pro-poor in the way observed in panel (a). Second, the faster growth in spending per pupil at earlier stages of education than at later stages, as described in Figure 9, will have shifted spend towards households with younger children. Again, these tend to be lower down the income distribution than households with older children. Finally, the ONS figures will reflect any changes in the rates of participation in state education across groups; as discussed below, this likely plays a bigger role in further and higher education than for school-age children.

**Figure 12. (a) Proportion of benefits-in-kind from education spending assigned to households in each decile of equivalised household income, each decade from 1980-81, and (b) proportion of children in each decile of the income distribution**

(a)



(b)



Note: (a) Proportion of the total value of education benefits-in-kind assigned to households in each decile of the income distribution (all households, including those with no children). Households are ranked by decile of equivalised household disposable income, using the modified OECD scale. Figures are averages over 10 consecutive annual analyses. There have been changes in the ONS's methodology for assigning benefits to households across years. (b) Children are defined as all those aged under 16, or aged between 16 and 19 and in full-time education. Figures are the proportion of the total number of children that live in each decile of the household income distribution, and are averages over 10 years of data.

Source: (a) ONS dataset, Effects of taxes and benefits on household income (various years); (b) IFS analysis of HBAI data.



### The choice of some parents to opt out of state schooling makes public spending on schools more pro-poor

For school-age children, participation in some form of education is compulsory, so that the location of children in the income distribution determines much of the distribution of school spending across households. However, taking up *state-funded* education is not compulsory, as children can be educated privately instead. In most analyses, pupils who are privately educated in a given year are treated as receiving no public subsidy. This zero spending reflects that those families educating children privately choose to forego significant state spending, and has a significant impact on the distribution of school spending amongst children.

On average, 6.6% of school pupils in England attended independent (not state-funded) schools between 2015–16 and 2020–21 (Department for Education, 2021); this saved the public sector around £3.5 billion in school spending in 2019–20. Analysis of household survey data shows that these pupils come disproportionately from households in the top three deciles of household income. Based on the Family Resources Survey, Green et al. (2017) estimate that between 2001–02 and 2016–17, amongst families with children, around 45% of those in the top decile of the income distribution had at least one child at a private school, whilst 22% of households in the eighth and ninth deciles did.

Analysis of another household survey – the UKHLS – shows the same qualitative pattern. Between 2011–12 and 2019–20, on average nearly a quarter of pupils whose household equivalised income was in the top decile attended a private school, compared to 11% of pupils in the ninth highest decile, and 7% in the eighth, as shown by the yellow line in Figure 13. Across the bottom seven deciles of the household income distribution, private schooling take-up was fairly flat, at around 2.5%. Non-zero participation in the lower deciles may reflect access to means-tested bursaries, financial contributions from family members outside the immediate household, or that income in a year is a poor measure of household resources and living standards. Indeed, Henseke et al. (2021) provide evidence that a majority of private-school pupils from low-income families do not receive bursaries, but that their families have much greater housing wealth than similar owner-occupier, low-income families, suggesting longer-term family resources play an important role.

Amongst children, the impact of this skew in private schooling *alone* would reduce the proportion of school spending benefiting those in the top decile of the income distribution from 10% to 8% (as shown in blue). The choice of some parents to opt out of the state education system therefore reinforces the pro-poorness in state-school spending, which results from the location of children in the income distribution.

Of course, pupils educated privately instead benefit from substantial private spending on education.<sup>15</sup> The average day fee at private schools in 2019–20 was around £13,700, compared to total state-school spending per pupil in England (including capital spending) of around £6,900 (Sibieta, 2021a), suggesting the state sector had around half the resources per pupil as the private sector. If education spending does matter for children's outcomes, this difference in resources is likely to drive substantial differences in educational attainment between children.<sup>16</sup>

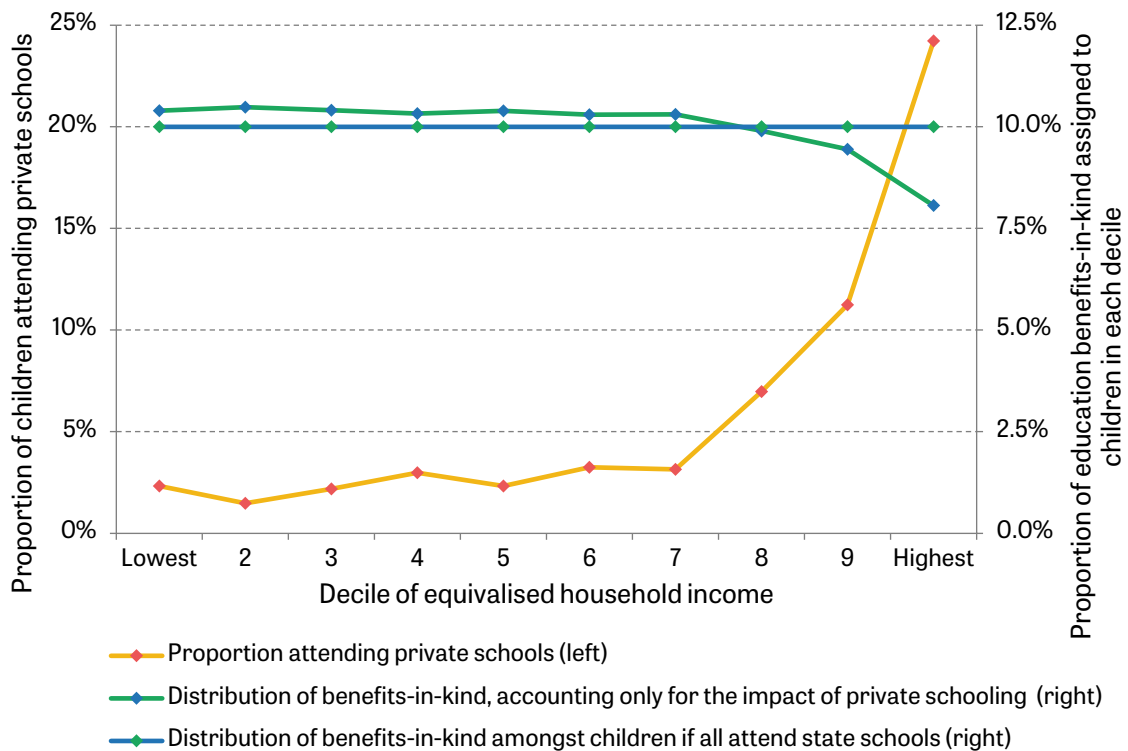
Changes in the numbers or background of private-school pupils offer another potential driver of changes in the distribution of state-school spending over time. The proportion of students attending private schools in a given year has been remarkably stable over the last 60 years, from 7.5% in 1965 (Bolton, 2012), to between 6% and 7% from the early 1980s to 2016–17.<sup>17</sup> Green et al. (2017) show that the family backgrounds of private-school pupils have not changed significantly since the early 1980s. Administrative data does show there was a slight decline between 2009–10 and 2020–21 in the proportion of full-time equivalent pupils attending private schools, from 7.2% to 6.4% (Department for Education, 2021). Still, analysis of household survey data suggests that

<sup>15</sup> Even for those in state education (and so excluding school fees), family investments in children's education are substantial and have large impacts on outcomes, as discussed in Farquharson, McNally and Tahir (2022).

<sup>16</sup> For a broader discussion of private schools and inequalities in educational, economic and social outcomes, see Green (2022).

<sup>17</sup> Although a higher proportion of pupils will attend a private school at some point, with switching between private and state schools relatively common, especially at ages 11 and 16.

**Figure 13. Proportion of those in school attending a private school and implied distribution of state-school spending amongst children, by decile of equivalised household income**



Note: Proportion of children aged up to 16 and resident in England attending private schools, average across UKHLS waves 3, 5, 7, 8 and 9. Household income is deflated within waves using monthly growth in average earnings, and deciles based on cross-sectional within-wave household weights. Distribution of spend is amongst children, removing the impact of the location of households with children in the income distribution, and is restricted to households in England.

Source: Authors' calculations using UKHLS, waves 3, 5, 7, 8 and 9 (covering 2011-18).

the position of private-school pupils in the household income distribution has not changed significantly.<sup>18</sup> This implies that while private schooling is important for the distribution of spend, its impact on that distribution has not *changed* significantly over recent decades.

A further group of students do receive state-funded education: the home-schooled. One estimate placed the number of home-schooled pupils at around 60,000 in 2018-19 (Office of the Schools Adjudicator, 2020), which is between 0.5% and 1.0% of the school-age population. There is some suggestive evidence that pupils with Special Educational Needs or known to care services are slightly over-represented among this group (Long and Danechi, 2022). However, the lack of data on these children – who are not captured in school censuses, do not need to be officially registered, and are picked up only in very small numbers in household surveys – makes it difficult to say anything about how the likelihood of home-schooling varies with family incomes. We may expect the welfare implications for children of being home-schooled to be starkly different depending on the reason: home-schooling may be a parental choice, given preferences over the type of quality of education their child receives, or a child may have been ‘off-rolled’ (i.e. removed from school rolls primarily in the interests of other pupils, rather than the pupil in question). While potentially very significant for these children, the relatively small numbers affected mean this is unlikely to have any significant impact on the overall distribution of school spending.

<sup>18</sup> Authors' analysis of UKHLS data, comparing the distribution of children reported to attend private schools across the household income distribution between waves 3, 5, 7 and 9.

### Per-pupil spending is higher at schools with more deprived intakes, although the degree of targeting of spend towards deprived schools has changed over time

Of course, even amongst children in state education, there will be differences in the resources they benefit from as a result of which schools they attend. Schools receive different levels of per-pupil funding from government, and spend different amounts.

In general, a school's funding reflects the number and age of its pupils, and their characteristics, such as whether they receive free school meals (FSM), experience of the care system, prior attainment and whether English is their first language. This is to recognise that children may need different amounts of resources to reach the same level of attainment, or to make the same progress, although it is difficult to quantify the degree of difference (if any) that would be sufficient to close attainment gaps. Some individual children also receive additional spending – in mainstream or other provision – to recognise their significantly higher levels of individual needs; this is discussed separately in Box 3.

#### Box 3. Special Educational Needs and Disabilities

Special educational needs and disabilities (SEND) are relatively common. Additional support to pupils may be provided in mainstream settings with additional targeted funding, for instance to pay for one-on-one support from a teaching assistant. Some pupils are instead taught in alternative settings; in 2019–20, 128,000 full-time equivalent pupils attended special schools (1.4%), which have much higher staff-to-pupil ratios.<sup>19</sup> Average per-pupil spending is considerable higher in these settings: around £24,000 per pupil in 2018–19, or four times that in mainstream schools.<sup>20</sup>

This clearly means resources are targeted towards individual pupils with higher-than-average needs. It is not clear whether this has a significant impact on the distribution of spending across the income distribution, which will depend on the prevalence of additional needs amongst different groups, and their propensity (conditional on needs) to access additional support.

If middle-class parents have an advantage in navigating complicated bureaucracies and adversarial systems – if 'sharp elbows' are helpful – then we may be concerned that access to support may, in practice, be affected by parental SES. Unfortunately, this may operate through a differential ability to get additional needs officially recognised (and recorded) by a school or local authority. This makes it very difficult to distinguish empirically between differences in actual needs, and in measured needs across groups in administrative data, or to assess whether all children have equal access to support, conditional on their actual level of need. There is some evidence that which school a child attends affects how likely they are to be identified as having SEND, suggesting that differences in practices between schools are important in determining which children receive additional support (Hutchinson, 2021). The same study found that children who lived in more-deprived neighbourhoods were more likely to be identified as having SEND, but also that this effect was greatest for the *least-disadvantaged* children, suggesting some 'capture' of resources by more affluent families living in deprived neighbourhoods.

<sup>19</sup> A further 15,000 (0.2%) attended pupil referral units, catering for those who would otherwise not receive suitable education due to, for example, exclusion or illness (Department for Education, 2021).

<sup>20</sup> Authors' calculations based on schools' Consistent Financial Reporting (CFR 2018–19) returns for local authority maintained schools, and academies' accounting returns (AAR 2018/19), accessed at <https://schools-financial-benchmarking.service.gov.uk/Help/DataSources>.

Funding also reflects 'school-led' factors, such as higher costs of provision for small or remote schools. Higher average wages and living costs mean that teacher pay is higher in London, and school funding more generally is subject to 'area cost adjustments' to reflect differences in the costs to schools of recruiting and retaining teachers. This is intended to ensure their pupils can benefit from the same quality and quantity of education as others studying in less costly areas, rather than bringing disproportionate benefits. However, most distributional analyses do not adjust for these higher costs, reflecting the distribution of spending rather than of benefits to the students. Indeed, in a counterfactual world without state provision, we might expect parents in high-cost areas to find educating their children more expensive, so that they do indeed benefit more from state spending.

Further features of the system, such as guaranteed minimum per-pupil funding levels, or caps on year-on-year changes in school-level funding, also have important consequences. Local authorities have historically had discretion over the weight placed on different factors when distributing funding amongst maintained school within their areas, although the government plans to move to a 'hard' National Funding Formula soon, which will determine each school's budgets directly.<sup>21</sup> Beyond core schools funding, schools also receive additional grants, such as the Pupil Premium, discussed in Box 4.

These policies mean that there are substantial differences in per-pupil spending across schools. For instance, amongst primary schools in 2018–19, a tenth of schools spent less than £4,250 per pupil, while the tenth of schools with the highest levels of spending spent more than £6,550 per pupil – 55% more.<sup>22</sup> The equivalent figures for secondary schools were £5,100 and £7,600 – around a 50% difference. Failing to account for these differences between schools when estimating the distribution of spending would mean ignoring the impact of the very government policies that are designed to have an impact on the distribution of school spending across groups of pupils – a significant shortcoming. It also limits the ability of much analysis – such as that by the ONS – to speak to changes in the targeting of school funding over time as a result of policy changes.

One approach to measuring the degree of targeting is to consider differences in spending across schools with more- or less-deprived intakes. For instance, Sibieta (2021b) uses administrative data on school-level spending and characteristics to estimate average school-level spend per pupil by schools grouped into quintiles based on the proportion of their pupils that are eligible for FSM in a given year. Sibieta finds that there is a 'deprivation funding premium' with higher per-pupil spending at schools with a greater proportion of FSM pupils, although the size of this premium has changed over time.

During the 2000s, per-pupil spending at primary schools grew rapidly, and more quickly for those with the most disadvantaged intakes, as shown in Figure 14(a). This meant the 'deprivation funding premium' grew from £650 per pupil (23%) in 2000, to £1,500 per pupil (34%) in 2009. Similarly, there was a substantial increase in the degree of targeting of secondary school funding to deprived schools, as shown in Figure 14(b). In earlier work, Belfield and Sibieta (2016) showed that this was largely driven by specific grants or payments from central government to more disadvantaged schools. When these were folded into the main schools grant in 2011, local authorities were allowed to consider previous allocations when distributing funding amongst schools in their areas, preserving the higher funding for more-deprived schools.

Trends over the following decade were more complex. Between 2010 and 2015, core per-pupil school spending remained flat in cash terms, but the Pupil Premium was introduced, and was significantly extended. Despite this, it was schools in the third and fourth quintiles of the FSM measure that experienced the largest increases in per-pupil spending; the 'deprivation funding premium', the difference between the most- and least-deprived schools, remained at around

<sup>21</sup> See Education and Skills Funding Agency (2019) for a description of local authorities' schools block funding formulae in 2019–20.

<sup>22</sup> Authors' calculations based on schools' Consistent Financial Reporting (CFR 2018–19) returns for local authority maintained schools, and academies' accounting returns (AAR 2018/19), accessed at <https://schools-financial-benchmarking.service.gov.uk/Help/DataSources>. Per-pupil academy spending includes a per-pupil share of spending on central services by academy trusts.

30%–35% over these years. After 2014–15, average per-pupil spending fell in real terms, with more-deprived schools seeing the largest falls.

Overall, between 2009–10 and 2019–20, spending per pupil fell by 13% in the most-deprived quintile of secondary schools, but by only 8% in the least-deprived; spending per pupil fell by 1% in real terms amongst the most-deprived primary schools, but rose by 7% amongst the least-deprived (Ogden et al., 2022). Despite the substantial changes during the 2000s, and the introduction of the Pupil Premium, the 'deprivation funding premium' was 23% in 2019–20, very similar to what it had been in 2000. School funding was no more targeted towards schools with disadvantaged intakes than it had been 20 years earlier.

#### Box 4. Pupil premium funding

Introduced in 2011, this additional funding is an attempt to specifically target resources to improve the educational outcomes of disadvantaged students. It is paid to English schools based on the number of eligible children they have enrolled. In 2020–21:

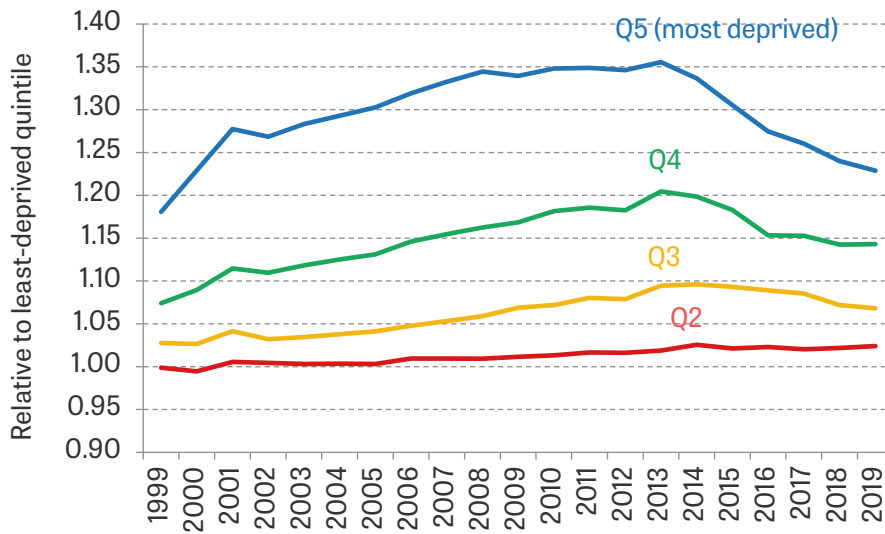
- disadvantaged pupils, who were known to be eligible for FSM at any point in the last six years (which requires their parent or carer to be in receipt of a qualifying benefit, and to have registered for FSM), attracted £1,345 each at primary school, and £955 at secondary school (this group accounted for 88% of eligible pupils);
- looked after and previously looked after children – those who were or had been in the care of a local authority – attracted £2,345 per pupil;
- service children, who had had a parent serving in the armed forces within the last six years, attracted a Service Premium of £310 per pupil.

Funding for the Pupil Premium increased from £623 million in 2011–12 to £2.4 billion 2014–15, as eligibility criteria were widened and per-pupil rates increased. A freeze in per-pupil rates means total spending has remained roughly flat in cash terms since then, meaning it fell by 9% in real terms between 2014–15 and 2019–20.

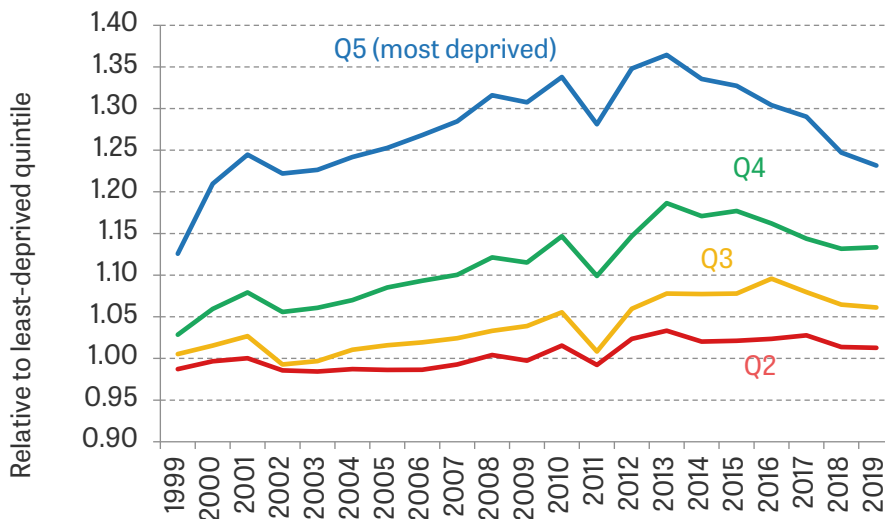
If this spending only benefited the quarter of pupils on which allocations were based, it would imply around 20% more per pupil was spent on them than other pupils, even if all other school funding was distributed equally across schools on a per-pupil basis. However, while it is individual pupils who 'attract' the funding, schools are not obliged to spend the funding only on eligible pupils. Indeed, the government expects some of the funding to be used to improve whole-class teaching, and to benefit non-eligible pupils. This means assigning all the benefits to eligible pupils overstates the case. Given that it is difficult to observe which pupils in a school benefit from specific elements of spending, a common approach is to assume all pupils within a school benefit from the same average per-pupil spending; this is relatively straightforward and reflects the greater funding for schools with more disadvantaged intakes, though may slightly underestimate the amount actually spent on eligible pupils if schools use Pupil Premium funding for targeted interventions.

**Figure 14. Spending per pupil by quintile of eligibility for FSM, relative to least-deprived quintile**

**(a) Primary schools**



**(b) Secondary schools**



Source: Sibieta (2021b, Figure 3.1).

What explains this reversal in the targeting of spend? Britton et al. (2020) argue that the cash freeze in the Pupil Premium after 2015 explains a relatively small part. Similarly, it does not seem to be due to changes in how local authorities allocated the funding between schools within their areas; there is no evidence that the overall share of funding they allocated to schools on the basis of deprivation changed over time. Two main factors seem important.

First, the geography of deprivation has shifted. However, the funding system did not respond to this: the funding per pupil provided to each local authority was until 2018–19 simply rolled forward each year, irrespective of changes in deprivation. This meant funding was not reallocated from those areas becoming less deprived to those becoming more deprived. Related to this, deprivation fell most significantly in London, where funding levels are high (partly due to the London weighting of staff salaries), while rising elsewhere.

Second, while the shift to a National Funding Formula will mean funding across areas now does respond to changes in deprivation over time, reductions in the level of targeting of funding towards deprivation have continued in notional allocations under the new formulas. Between 2017–18 and 2022–23, the formula provided bigger real-terms increases for the least-deprived schools (9%) than for the most-deprived ones (5%). This is partly due to the increasingly important role of per-pupil minimum funding levels, which now stand at £4,265 for primary schools and £5,525 for secondary schools. These changes have been framed by the government as 'reduc[ing] disparities in school spending across England', and so contributing to the levelling up agenda (Department for Levelling Up, Housing and Communities, 2022). However, while differences in per-pupil spending across schools may have been reduced, funding floors have disproportionately benefited schools serving less-deprived intakes (National Audit Office, 2021).

Data limitations make it difficult to look further back in time. Belfield and Sibieta (2016) construct a series of school spending per pupil back to the late 1970s. Without a consistent measure of deprivation over time, they proxy local authority deprivation using quintiles of the proportion of individuals in each area living in subsidised social housing as measured in the nearest census year. They find the same trend as described above between the mid-1990s and 2013, with increasing targeting of school spending towards the most-deprived quintile of areas. However, they find that differences in per-pupil spending between the areas with the highest and lowest share of social housing were the same in 2013 as in the early 1980s; this difference was around 20% in the early 1980s, then shrank to around 5% in the mid-1990s before rising back to around 20% by 2013. It is unclear what drove these earlier trends; they could reflect decisions by central government or by local authorities, or changes in the composition of the population. However, this suggests that the highest degree of targeting spend achieved around 2013 was not unprecedented, but represented a return to the patterns seen in the early 1980s.

### Accounting for school-level funding differences makes a modest difference to patterns of spending across the income distribution

There is a subtle but important distinction between measuring spending at schools with more-disadvantaged intakes or in more-deprived areas, and measuring spend on pupils from disadvantaged backgrounds. How much overlap there is between these will depend on both how schools target spending amongst their pupils, and how good a proxy school-level deprivation is for individual disadvantage, or parental income.

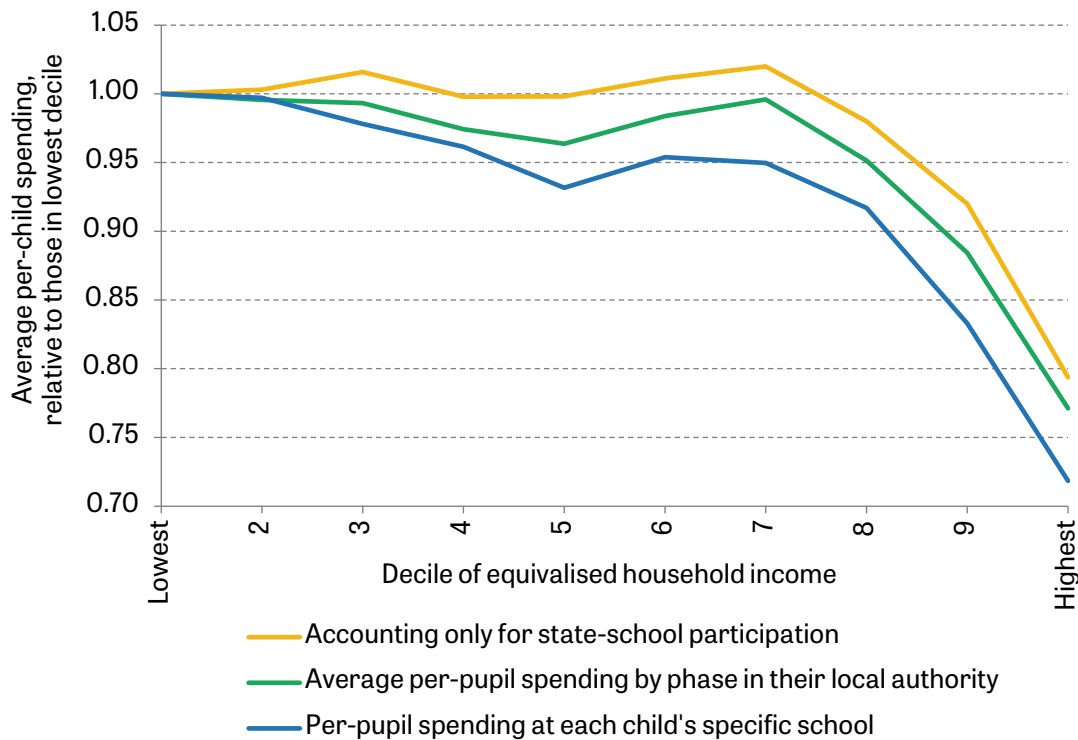
Analysis of household survey data confirms that, on average, a higher proportion of pupils were eligible for FSM at schools attended by children from lower-income households between 2015 and 2018. Amongst the state schools attended by children in the lowest quintile of the household income distribution, on average 17% of pupils were eligible for FSM, compared to 8% in the schools attended by children in the highest quintile of the income distribution.<sup>23</sup> The two are related, but definitely do not perfectly overlap – it is far from the case that all deprived children attend schools with deprived intakes, and vice versa.

Using household survey data, which include direct measures of parental income as well as identifiers for specific schools, we can show how the estimated distribution of spending across children by parental income depends on the how precisely we estimate school spending on each child. If we allocate the same average level of spending to all pupils who attend state schools, estimated average spending is roughly equal across children in the bottom seven deciles of household income, as shown in Figure 15. The impact of private schooling means lower average spending on the top few deciles, as discussed above.

If we also account for the local authority a child lives in, assigning them the average per-pupil spending amongst schools located in the same area, spending appears to be slightly more skewed towards the children from lower-income households, who receive more per-pupil spending than those from households in the middle of the income distribution despite similarly low levels of private schooling. Assigning to each child the average per-pupil spend at the *specific school* they attended makes even more of a difference; on this measure, the average child in the

<sup>23</sup> Authors' analysis based on UKHLS waves 7, 8 and 9, and Department for Education school-level administrative data.

**Figure 15. Estimated average per-child school spending amongst children, by decile of equivalised household income, using different methods to assign spending to individual children**



Note: Differences in average per-child spending on children across household income deciles, accounting for: (1) average spending by phase of education for all those attending a state school; (2) assigning all children attending a state school the average spending for their phase amongst schools in their local authority; (3) assigning all state-school pupils the average per-pupil spending at their specific school (excluding those attending special schools or pupil referral units).

Source: Authors' calculations using UKHLS, waves 7, 8 and 9 (covering 2015–18), Consistent Financial Reporting returns for local authority maintained schools, and academies' accounting returns (for academic years 2014–15 to 2018–19), accessed at <https://schools-financial-benchmarking.service.gov.uk/Help/DataSources>.

lowest income decile is estimated to benefit from 28% more school spending than the average child in the highest decile, and around 6% more than those in the middle of the income distribution.

Differences in per-pupil funding across schools, even within the same local authorities, do mean spending is targeted towards children from lower-income households. Amongst only state-school pupils – and so focusing on differences driven by school funding policies, rather than parental choices around private schooling – those in the lowest household income *quintile* benefited from around 10% more per-pupil spending than those in the highest income *quintile*. During the same period, the most-deprived fifth of *schools* benefited from around 25% higher spend than the least-deprived fifth. This suggests that higher spending on schools with more deprived intakes does increase spending on children from lower-income households, but this targeting is imperfect if schools themselves do not target additional spending on the more disadvantaged amongst their own intakes.

**Changes over time mean that some cohorts of children have benefited from much more school spending than others over their school careers**

Substantial changes in the level of average per-pupil spending over time mean that cohorts of pupils entering and leaving the school system in different years have benefited from very different amounts of spending.

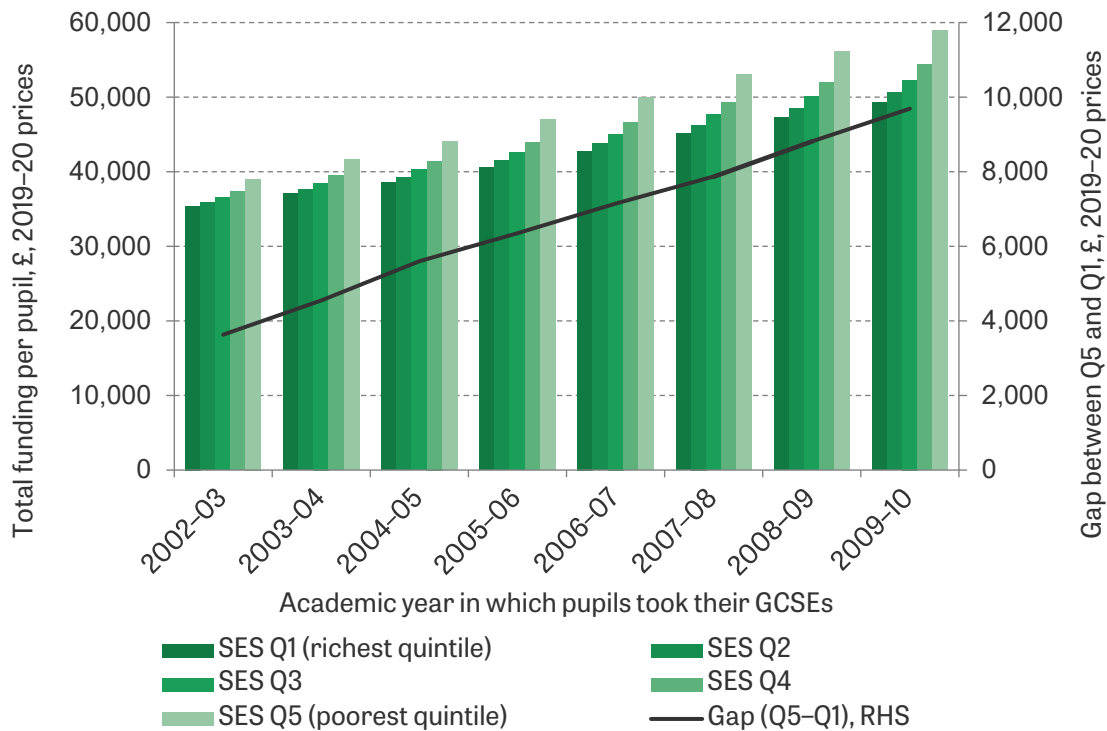
Belfield and Sibieta (2016) estimate the total public spending on an average student over their whole school career, for 30 consecutive school cohorts between 1990 and 2020, based on



average levels of per-pupil funding for primary and secondary school pupils each year.<sup>24</sup> They estimate that those taking their GCSEs between 1990 and 2000 (who are currently in their 40s) benefited on average from around £33,000 in total school spending in 2019–20 prices; there was very little real-terms growth between cohorts for a decade. In line with the steady real-terms increase in average per-pupil spending from the late 1990s, each subsequent cohort benefited from greater real total spending. Those taking their GCSEs in 2015–16 will on average have benefited from twice the spending of those in education 20 years earlier – around £62,000. The distribution of education spend *across cohorts* appears to be very unequal.

Of course, targeting of spending means that there will also be differences in this longer-run measure of school spending *within cohorts*. Belfield, Goll and Sibieta (2018) used educational records to estimate total state spending on pupils over their whole school careers, using per-pupil spending at the specific schools they attended, and focusing only on pupils who attended a state school in every year. While they do not observe parental income directly, they create a measure of parental socio-economic background.<sup>25</sup> They find that for the cohorts taking their GCSEs between 2002–03 and 2009–10, spending on pupils over their school careers was higher on more-deprived pupils within every cohort, and higher on every cohort (on average) than the previous cohort. They also find that the difference in spending between pupils based on their SES increased over time, as shown in Figure 16. For those taking GCSEs in 2002–03, those in the

**Figure 16. Total school funding per pupil by year in which pupils took their GCSEs, by quintile of SES (2019–20 prices)**



Note: Total represents the sum of contemporaneous funding per pupil across all years in primary and secondary schools. Includes only pupils observed in all years in state-funded primary and secondary schools.

Source: Belfield, Goll and Sibieta (2018, Figure 2) and HM Treasury (2022).

<sup>24</sup> For instance, the total spent on pupils taking their GCSEs in 2010 would be the sum of average per-pupil primary school spending in England between 1998–99 and 2004–05 and the average level of per-pupil secondary school spending in England between 2005–06 and 2009–10.

<sup>25</sup> This 'material deprivation index' combines information on whether a child was eligible for FSM at age 16, with the relative deprivation of the very small area in which they lived, to create a continuous measure of socio-economic background. For further detail, and discussion of this as a proxy for parental income, see Chowdry et al. (2013).

poorest quintile could expect to receive 10% more spending (around £3,600) over their school careers than those in the richest quintile. By 2009–10, this gap had increased to 20%, and the growth in overall spending meant the absolute gap was much larger (around £9,700). This is the result of increasing targeting of spending towards schools with more-deprived intakes during the 2000s.

Based on the change in per-pupil spending at primary and secondary schools, as described in Figure 9, we can examine what has happened to average spending per pupil over their school careers for later cohorts. Those taking GCSEs in the years after 2009–10 will have benefited from earlier rises in spend for more years of their schooling, so that average cumulative spend will have continued to increase in real terms for future cohorts. Those taking GCSEs in 2017–18 will have benefited from the greatest amount of real-terms spending over their school careers (17% more than those taking GCSEs in 2009–10). The slowing of spending growth, and real-terms falls after 2015–16, mean that subsequent cohorts (taking GCSEs after 2017–18) will have benefited from less spending than their predecessors. The decline in the targeting of funding towards schools with more-deprived intakes after 2013 means that we might expect the relative gaps between spending on socio-economic quintiles, as well as the absolute gaps, to have started narrowing again.

### **Growing participation in further education has reduced the extent to which spending is concentrated on the better-off**

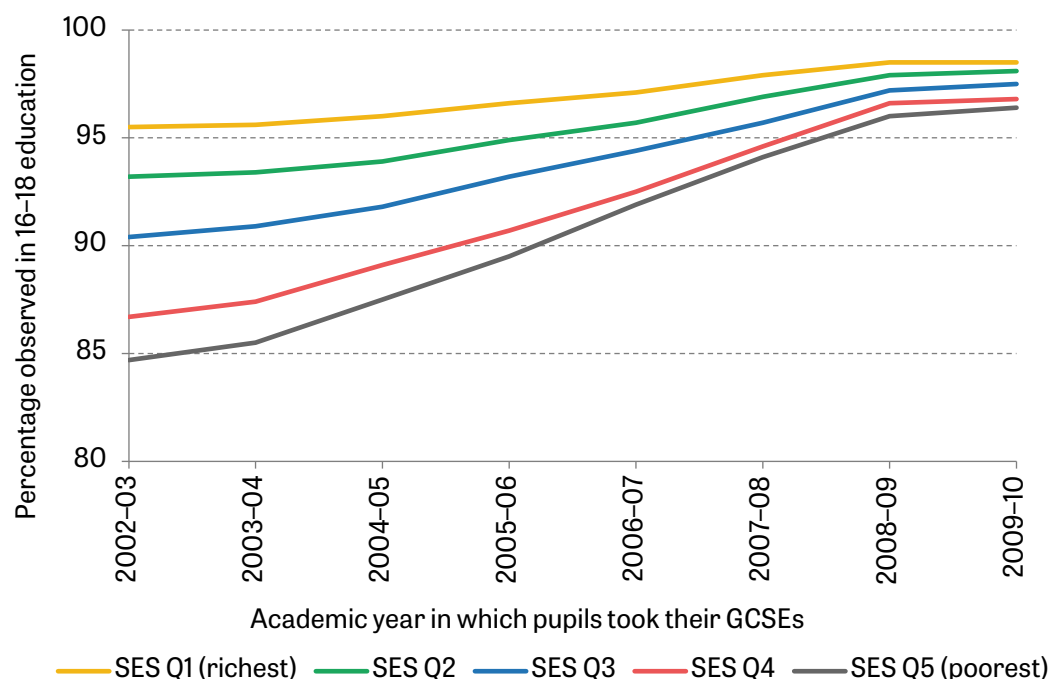
The decision of some parents to opt for private schooling has a notable effect on the distribution of public spending on school-age children. At non-compulsory stages of education, differences in participation play a similar role, and were historically much more significant. Only around 40% of young people went on to full-time post-16 education in the mid-1980s and even fewer in earlier decades.

Le Grand (1982b) used household survey data to consider participation in state education in 1973–74 by socio-economic group (defined by the occupation of the father, or head of household). Compared to the mean attendance of those of the appropriate age range, those whose household was in the top group ('professional, employers and managers') were 1.5 times more likely to attend further education, and 3.5 times more likely than those in the lowest group ('semi and unskilled manual'). This means that spending on further education was very skewed towards young people from richer households.

Over recent decades, overall participation has increased significantly, and socio-economic gaps in participation have narrowed. According to Department for Education statistics, two-thirds of 16- and 17-year-olds were in full-time education in 1993–94. This rose more steadily to reach 78% in 2009–10 (with a further 12% participating in some part-time education or training).

Belfield, Goll and Sibieta (2018) used administrative data to classify whether an individual did at *least some* post-16 education (including part-time study). They found that amongst those taking GCSEs in 2002–03, 96% of those in the highest quintile of socio-economic background participated in post-16 education, compared to only 85% of the poorest, as shown in Figure 17. By the 2009–10 cohort, that gap had closed substantially, so that 99% in the richest quintile and 96% in the poorest received at least some post-16 education. This will have significantly reduced differences in per-person spending on further education across the income distribution.

However, it did not entirely close the gap in spending. Amongst the 2009–10 GCSE cohort, Belfield, Goll and Sibieta (2018) find that those from the highest quintile benefited from around £10,900 in total funding over their time in further education, compared with around £9,700 for those in the lowest. Around 60% of this gap is explained by remaining differences in participation. Two further factors were important. First, pupils in poorer quintiles on average spent fewer years in post-16 education – they were more likely to leave at 17 than better-off pupils. Second, there were significant differences in the types of institutions attended; those in the richest quintile were about 5 percentage points more likely to attend a school sixth form than a college, while those in the poorest quintile were 37 percentage points more likely to attend a college. School sixth forms historically benefited from higher per-pupil funding, adding to the funding gaps.

**Figure 17. Participation in 16–18 education by year in which pupils took GCSEs, by quintile of SES**

Note: Individuals are classed as participating in 16–18 education if they are observed as having completed a Key Stage 5 qualification or have been recorded as having a learning aim in the Individual Learner Records in one of the three years after they take their GCSEs. This includes those at private schools or Independent Training Providers.

Source: Belfield, Goll and Sibieta (2018, Figure 4).

Since 2010, participation rates have continued to rise, although more slowly. By 2020–21, 85% of 16- and 17-year-olds were in full-time education, with a further 9% in part-time education or training (Department for Education, 2022a). Given the already near-universal participation amongst the highest quintile in at least some further education, as shown in Figure 17, we might expect this to have been driven by further rises in participation amongst poorer students. Participation rates now appear to be very similar across income groups; there is no longer clear evidence that those from better-off households are any more likely to report being full-time students than their peers at age 17. We would expect this to have narrowed gaps in spending on further education across groups.

This is likely to have been accelerated by trends in relative funding levels for different types of institution. Over the last decade, colleges have seen smaller falls in per-pupil funding than school sixth forms, so that since 2010–11, they have received *more* per-pupil funding. In 2019–20, further education colleges spent around £5,700 per pupil, compared to £4,600 in school sixth forms (Sibieta and Tahir, 2021). This is because pupils in further education colleges are more likely to come from deprived backgrounds, and to study vocational programmes, which are more complex and expensive to deliver, both of which attract higher levels of funding. Given that poorer pupils remain relatively more likely to attend colleges than school sixth forms, the gap in further education funding across quintiles of socio-economic background has almost certainly further narrowed and potentially reversed.

### Students from poorer backgrounds are now more likely to go to university than in the past, although participation gaps remain, even conditional on prior attainment

Differences in participation rates have also historically driven substantial differences in benefits-in-kind from higher education spending across households. While these have also narrowed in recent years, significant gaps remain, unlike for further education.

Some issues are particular to higher education though. The circumstances of university students make assigning spending and measuring living standards more complicated for higher education

than for many other public services. This, and the nature of the different forms of state spending, mean that estimating the distribution of spending on higher education brings some specific conceptual and measurement issues, as discussed in Box 5.

### Box 5. Measuring the distribution of higher education spending

University students often live away from the parental home, so that spending on higher education could be assigned to students themselves, or to their parental household. Some studies have allocated benefits to the parents of students on the basis that without public funding, 'they [the parents] would pay for it' (Sefton, 2002). However, unlike school-age children, university students are theoretically able to borrow against their own future earnings to pay for tuition; this is what they currently do under the income-contingent government loan schemes operating across the UK. The subsidisation of higher education in the form of loan write-offs therefore arguably benefits students, rather than their parents.

A further issue is how to think about the position of students in the distribution of living standards. Some analyses treat students living away from the parental home as a separate household, which, given that students are often foregoing work to study, makes the distribution of spending appear very pro-poor. For instance, in Denmark, the poorest 20% of the population appear to receive more than half of higher education services (Verbist et al., 2012). This may be misleading in two important ways.

- If students in fact receive financial support from their parents, such an approach will underestimate students' **actual living standards** while studying, and make spending appear more progressive than it is. Maintenance loans for students' living costs in England are means-tested on the basis of parental income. Implicit in this is the assumption that parents who can afford to will contribute towards students' living costs.
- Because they are foregoing income to study, students are a group for whom current income is likely to be a particularly poor measure of their incomes and living standards over a longer time period – they are often only **temporarily poor**.

An appealing alternative to students' current income is to instead look at measures of **socio-economic background, or parental income**; these capture the intuition that we might care how far an individual's early circumstances affect their access to higher education. Parental income may be misleading in a snapshot if parents are typically at the peak of their life-cycle earnings profile when their children are university-aged; this would make them appear relatively higher up the income distribution than they would be over a longer time period. Still, parental income at a point in time may be a useful way to measure relative living standards *within* cohorts.

Another alternative is to consider the distribution of spending in relation to each individual's **own future earnings**. These determine the loan repayments a university graduate makes, and so how much subsidy they receive. This may also better capture the student's own position in the distribution of lifetime income, and so how progressive the student loan system is across the life cycle.

Determining **which higher education spending** to include is also not straightforward. It may include: grants paid from the government to institutions; loans to students to cover the cost of tuition fees; and maintenance loans and grants, to support students' living costs. The first two – the upfront spending on higher education – determine the resources available for teaching, and so would be expected to affect quality and outcomes. However, some of the value of tuition fee loans will be met from graduate contributions (loan repayments), so that the eventual public subsidy will be lower than upfront spending. Accounting for this, and instead considering the value of direct grants plus the value of loans written off by the government, will reduce the size of estimated benefits-in-kind *and* affect the measured distribution of spending across students. Maintenance loans and grants also relate to the use of a public service and help to make up for the opportunity costs of attending university (i.e. foregone earnings). However, they are intended to support consumption of private goods, and so are more like a benefit than a benefit-in-kind.

The overall increase in participation in higher education over several decades has been stark. In the early 1960s, only one young person in 18 entered full-time higher education straight from school. The number of full-time UK students in higher education more than doubled during the 1960s, grew more steadily for several decades, and then grew much more rapidly during the 1990s. By 2010–11, 37% of state-funded pupils had started studying for a degree by age 20, and this rose to 46% by 2020–21. People starting degrees later in life means eventual participation rates will be even higher; official statistics suggest more than half of the latest cohort can expect to have participated in higher education by age 30 (Department for Education, 2023).

Historically, university attendance was much higher amongst those from more-affluent backgrounds. Amongst men born between 1913 and 1922, 7% of those from the highest socio-economic group (by father's occupation, 'professionals, employers and managers') attended university, compared to only 1% of men from the lowest group ('semi and unskilled manual'; Le Grand, 1982a, Table 4.2). Amongst the cohort of men born 30 years later, between 1943 and 1952, participation had increased substantially overall, but stark differences remained: 26% of those from the highest socio-economic group attended, compared to only 3% for the lowest. This means any public subsidy was heavily skewed towards more-affluent households.

There is some evidence that socio-economic differences in participation in higher education *widened* in the UK during the 1980s and early 1990s. Blanden and Machin (2004) used longitudinal data to estimate the proportion of young people who had acquired a degree by age 23 for three cohorts (those aged 23 in 1981, 1993 and 1999), splitting young people into groups based on their parent's income when they were 16. In 1981, 20% of children from the top income quintile had a degree by age 23, compared to 6% for the bottom. While overall participation increased sharply over the next 20 years, this was fastest in relative terms for the middle 60% of the income distribution, and greatest in absolute terms for the richest quintile. By 1999, 46% of children from the top income quintile had a degree by age 23, whereas the figure for the bottom quintile had increased only very slightly from 6% to 9%. The absolute difference between top and bottom had grown from 14 to 37 percentage points, and the richest quintile had gone from being three times to five times more likely to acquire a degree. Children from richer families were more likely to benefit from the expansion of higher education, so that both absolute and relative participation gaps between rich and poor children widened.

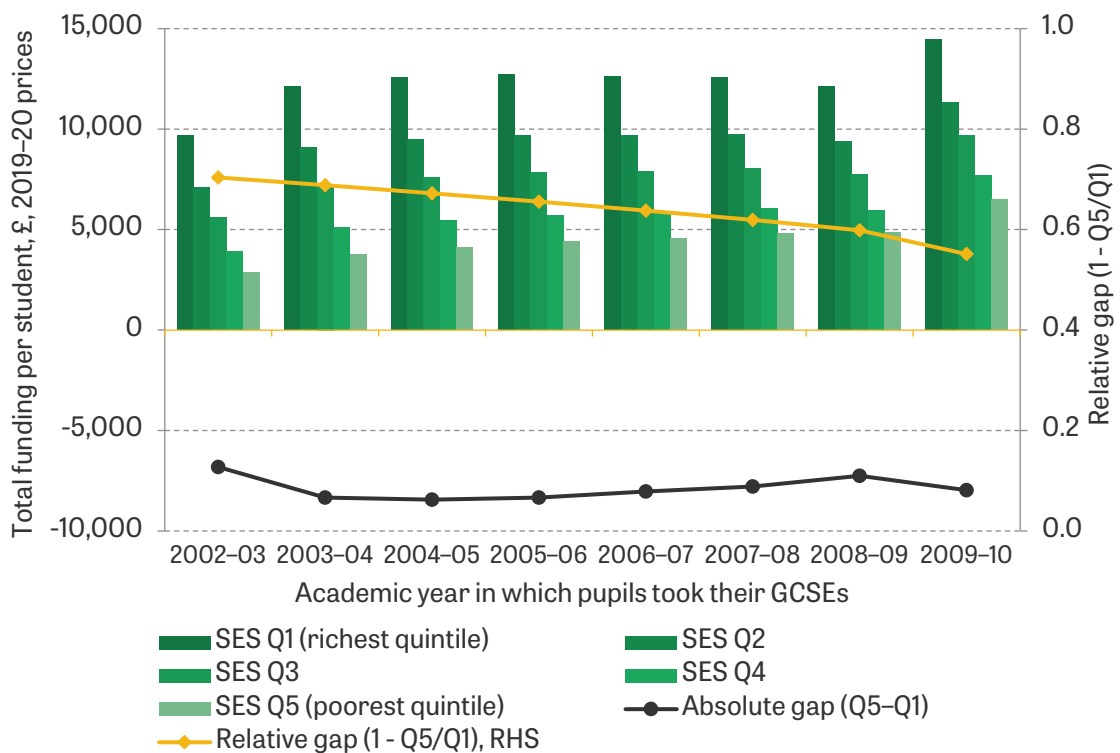
Since then, participation has continued to increase, but gaps in participation by socio-economic background have instead been *narrowing*, as attendance has increased more quickly amongst those from lower socio-economic groups. Belfield, Goll and Sibieta (2018) categorise students by the same index of parental socio-economic background as discussed above, and measure the proportion observed in administrative (Higher Education Statistics Agency, HESA) data participating at university at age 19. Among pupils taking their GCSEs in 2002–03, around 47% of those in the richest quintile went on to higher education compared to 14% in the poorest quintile. By the 2009–10 cohort, participation had increased only slightly to 50% amongst the richest quintile, but much more quickly for lower socio-economic groups, reaching 22% for young people

in the poorest quintile.<sup>26</sup> In contrast to the 1980s, it was children from poorer families who were more likely to benefit from the expansion of higher education.<sup>27</sup>

What does this imply about distribution of benefits-in-kind from higher education spending across socio-economic groups? Belfield, Goll and Sibieta (2018) estimate the average total resources available for teaching each year – the sum of teaching grants and tuition fees, but not maintenance loans – and consider the public spending on the upfront delivery of teaching to groups of students. Differences in participation mean that amongst all people aged 19 who did their GCSEs in 2002–03, those in the bottom quintile benefited on average from around 70% less higher education spending than those in the top, as shown in Figure 18. Shrinking gaps in participation rates across groups means that the *relative* gap in spending fell, with poorer students receiving 55% less than the richest, seven years later. At the same time, the average resources available for teaching increased, as increases in tuition fees were not matched by equivalent cuts in teaching grants. As students from richer families remained much more likely to go on to higher education, this means the *absolute* gap in spending by socio-economic quintile actually increased slightly, from £6,800 to £8,000.

Amongst later cohorts, there is likely to have been a slight reduction in the socio-economic gap in resources per pupil for higher education. This is not because there have been significant further reductions in participation gaps. As shown in Figure 19, pupils eligible for FSM remain around 20 percentage points less likely to start a degree by age 19 than other pupils, and the relative gaps in

**Figure 18. Total higher education funding for teaching by year in which pupils took GCSEs, by quintile of socio-economic status (2019–20 prices)**



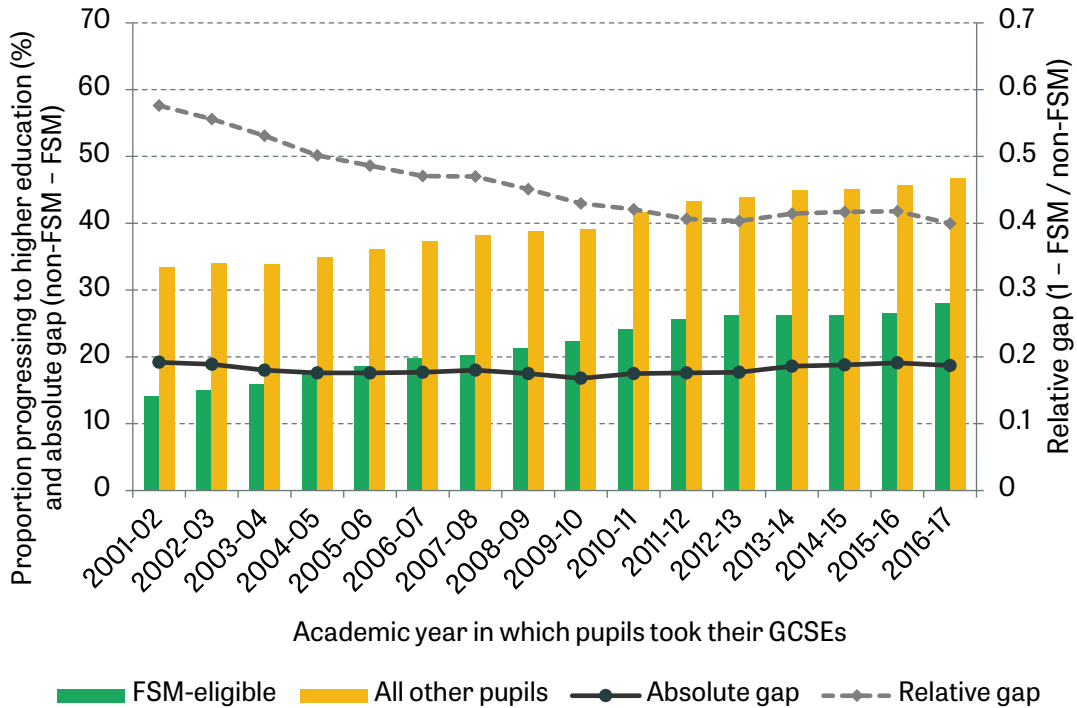
Source: Belfield, Goll and Sibieta (2018, Figure 8) and HM Treasury (2022).

<sup>26</sup> Remaining differences in participation were partly – but not fully – explained by differences in prior attainment (Chowdry et al., 2012; Crawford et al., 2016). For a discussion of inequalities in educational attainment and participation at different levels, as well as differences in the expected returns to higher education across groups, see Farquharson et al. (2022).

<sup>27</sup> There are also significant gaps in higher education participation by ethnicity, with White British pupils less likely to progress to university by age 19 than most minority ethnic groups. Bangladeshi, Pakistani and Black African students are disproportionately concentrated in lower quintiles of socio-economic status, and have seen especially rapid improvements in GCSE attainment over the past two decades. See Mirza and Warwick (2022) for further discussion.

participation have stopped narrowing in recent years.<sup>28</sup> However, average upfront spending on teaching per student fell by around 7% in real terms between 2012–13 and 2019–20, as shown in Figure 9. This will have reduced the difference in spending between those who do and do not attend university amongst later cohorts. Given that young people from richer families remain much more likely to attend university, this will have reduced the absolute difference in spending across socio-economic groups, making it less pro-rich.

**Figure 19. Progression to higher education at age 19, by receipt of FSM**



Note: Progression to higher education by age 19 for state-funded pupils by whether in receipt of free school meals at age 15. For each cohort, progression is measured 4 years after the year in which they would typically take their GCSEs.

Source: Authors' analysis of Department for Education (2022b) Widening participation in higher education

**Loan repayments mean that the eventual public subsidy to higher education is lower, with poor graduates receiving significant benefits-in-kind relative to non-graduates**

Of course, upfront teaching resources are not a good measure of the long-run public subsidy to higher education teaching if students are expected to meet some of the costs themselves through loan repayments. Between 1962 and 1998, students did not pay tuition fees, which were instead publicly funded; this meant upfront teaching resources (through fees and grants to universities) were a good measure of the public subsidy to higher education teaching. Tuition fees for students were introduced in 1998, and were means-tested based on parental income, with poorer students not expected to pay. While initially modest at £1,000, fees in most of the UK were repeatedly increased over time, and extended to all students. Loan repayments are not directly linked to parental income, but depend on a student's own earnings after graduation. See Box 6 for a discussion of higher education in Scotland, where policy on tuition fees has diverged significantly from the rest of the UK.

<sup>28</sup> On another measure of disadvantage – historical participation rates in small areas, POLAR4 – gaps have continued to narrow. Amongst the 2016–17 GCSE cohort, those from the lowest participation neighbourhoods were 50% as likely to start studying for a degree by age 19 as those in the highest participation areas, compared to 40% for the 2009–10 GCSE cohort (Department for Education, 2022b). However, Jerrim (2020) has shown that POLAR is only weakly correlated with permanent household income.

## Box 6. Higher education in Scotland

In Scotland, tuition fees (and a short-lived 'endowment system' which replaced them) were abolished in 2008. Since then, the government has paid the teaching costs of Scottish students attending universities in Scotland, with student numbers capped.<sup>29</sup> While per-student upfront funding for teaching may be slightly lower in Scotland than in England, the absence of loan repayments for tuition means the eventual public subsidy to higher education per student is *much* higher.

It is difficult to compare higher education participation on a like-for-like basis across England and Scotland, particularly as sub-degree qualifications in colleges are a much more important feature of the Scottish system, and those from disadvantaged backgrounds are more likely than their more affluent peers to begin their higher education in college rather than university. Nonetheless, higher education participation in Scotland remains skewed towards students from more advantaged backgrounds. Those from the most-deprived fifth of areas made up only 16.7% of Scottish-domiciled entrants to full-time undergraduate courses in 2020–21 (Scottish Funding Council, 2022), while a study by Duta, Iannelli and Breen (2021) used data on siblings to show that family background is important for higher education attainment in Scotland, with those whose parents were in higher-class occupations much more likely to attain a degree.

This suggests that the substantial *benefits-in-kind* from higher education, which result from free tuition, are also likely to be skewed towards students from more-affluent backgrounds. Higher-earning graduates do not pay more towards their tuition than lower-earning graduates, or those who did not attend university, suggesting that the distribution of higher education spending is likely to be pro-rich with regards to lifetime earnings.

Similarly, public funding for the *opportunity costs* of attending higher education in the form of maintenance grants and loans has become less generous over time. Between 1962 and 1990, students received maintenance grants to cover living costs, and these were means-tested on the basis of parental income.<sup>30</sup> Over the following decade, loans gradually replaced grants as the main form of public support. Some means-tested grants were reintroduced alongside loans in 2003–04, but these were fully abolished in 2016–17. Students from England are now eligible only for loans, which, like borrowing to cover tuition fees, are repaid after graduation on the basis of students' own earnings. Moving from grants to loans has shifted the public subsidy of students' living costs from a large subsidy benefiting students with low parental income, to a less generous subsidy benefiting students who go on to have low lifetime earnings themselves. Remaining participation gaps mean this decline in generosity is likely to have made spending less pro-rich amongst all young people.

Amongst graduates, those with higher lifetime earnings will repay more towards their loans. Repayments are made only from earnings above an income threshold, with any outstanding amount cancelled after 30 years. As shown in Figure 20, amongst those who took out a loan in 2022–23, the highest-earning fifth of graduates can expect to repay more than £70,000 over their lifetimes, compared with less than £20,000 amongst the lowest-earning fifth.<sup>31</sup> For cohorts who started university between 2012–13 and 2022–23, the system is very progressive with respect to lifetime earnings, with accrued interest meaning that the highest-earning graduates are expected to pay back substantially more than they borrowed. Accounting fully for loan

<sup>29</sup> Scottish-domiciled students are eligible for maintenance loans, and for tuition fee loans if they are not eligible for free tuition, which includes those who study at universities elsewhere in the UK.

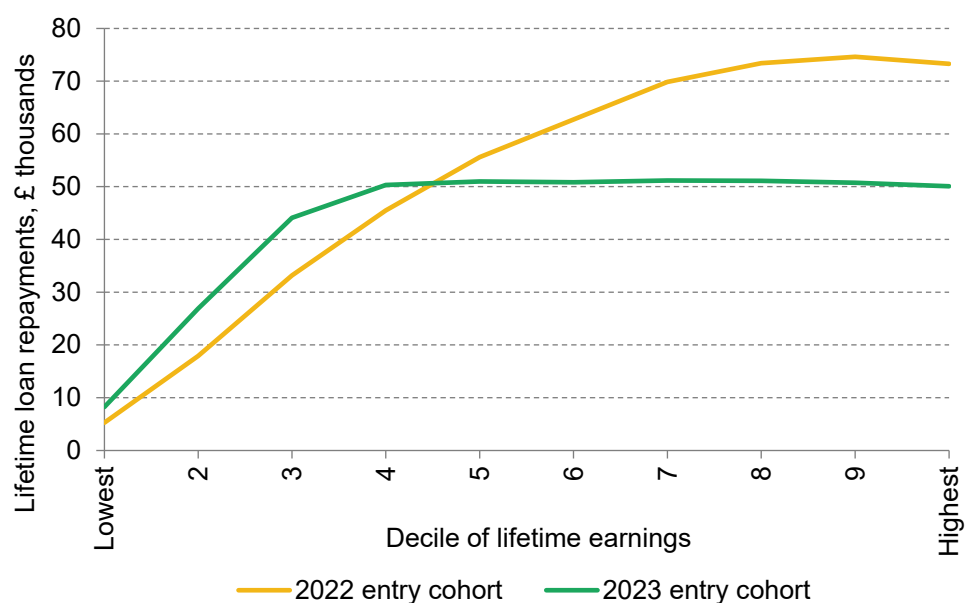
<sup>30</sup> Many students were also eligible for housing benefit, as well as unemployment benefit outside of term times, but eligibility was removed in the late 1980s. See Bolton (2023) for a discussion of the changing maintenance support package provided to students in England.

<sup>31</sup> This assumes that all students take out their full loan entitlement, complete their degrees, repay according to schedule and have low unearned income (see <https://ifs.org.uk/education-spending/higher-education>).



repayments suggests that over their lifetimes, higher education will have been a negative benefit-in-kind for the highest earners, although they may still have derived significant returns from attending university.

**Figure 20. Student loan repayments, by decile of student's own lifetime earnings**



Note: Repayments of loans in relation to undergraduate study of English-domiciled students, in undiscounted CPI real terms (2022 prices).

Source: <https://ifs.org.uk/education-spending/higher-education>.

Recently announced reforms will mean loan repayments are much less progressive for the cohorts starting university from 2023–24 onwards, as discussed by Waltmann (2022). These students will face a lower repayment threshold, a longer repayment period of 40 years and a lower inflation rate. Together, these changes will mean that the top half of earners will repay less and low earners more under the reformed system. Overall, 70% of future graduates can expect to repay in full, receiving no eventual public subsidy for their tuition or maintenance. The eventual benefits-in-kind from higher education spending will be concentrated amongst the lowest-earning graduates.

What about relative to parental income? Students from richer families are only eligible for the minimum level of maintenance loan, so are likely to borrow less in total, even with full take-up. Official statistics (Department for Education, 2022c) suggest that those reporting the highest parental incomes borrowed around 25% less than those with the lowest parental incomes, and those who did not submit parental income figures (who were likely to be ineligible for means-tested elements) borrowed a third less. However, they are also expected to earn more on average, so are likely to repay a higher fraction of any loans over their lifetimes.<sup>32</sup> Under the 2022 system, those in the top half of the parental income distribution are expected to repay most, around £50,000, compared to £34,000 amongst those in the lowest decile.<sup>33</sup> In contrast, under the 2023 system, lifetime repayments are likely to be relatively flat across the parental income distribution, with slightly lower repayments amongst those in the highest deciles (who are eligible for the minimum level of maintenance loan) and in the lowest deciles (who are still likely to see around a third of their loan value written off).

<sup>32</sup> Amongst the 2001–02 GCSE cohort, median earnings at age 30 amongst male graduates who were in the highest SES quintile at age 16 were around £33,000, compared to £25,000 for the lowest quintile (Britton, Dearden and Waltmann, 2021, Figures 3 and 4).

<sup>33</sup> Authors' calculations using the IFS student finance calculator (<https://ifs.org.uk/student-finance-calculator>), which assumes an intergenerational correlation of earnings ranks of 0.32. It assumes full take-up of loan entitlements, and that the vast majority of students attend for the intended course length. Average loans and lifetime repayments are in undiscounted RPI real terms (2022 prices).

Within a cohort, including those who did not attend higher education, the biggest differences in benefits-in-kind from higher education under the 2022 system are between low-earning graduates with low parental income (who borrow the most and repay the least), and the highest-earning graduates (who will typically repay *more* than they borrowed). From 2023, the biggest difference is likely to be between low-earning graduates with low parental income, and those who do not attend university at all, and so do not directly benefit from any higher education spending.

### Spending on postgraduate education is likely to disproportionately benefit students from richer families, but eventual subsidies remain small

Postgraduate study is also becoming more common, and a master's degree is increasingly required for progression in professional occupations. There were 386,000 UK-domiciled students studying at a postgraduate level in 2019–20, around a quarter as many as were enrolled on undergraduate courses (HESA, 2022a).

- Historically, there have been large socio-economic gaps in participation in postgraduate study. Britton and van de Erve (2020) used linked administrative school and university records to investigate rates of postgraduate study amongst those who took their GCSEs in 2002–03. They document substantial gaps in participation by parental SES; 4% of state-school pupils in the bottom quintile of SES had started a postgraduate degree by age 30, compared to 18% in the top quintile (and 27% amongst private-school pupils). These are wider gaps than at undergraduate level, as poorer students are less likely to progress from undergraduate to postgraduate study: around 20% of the poorest undergraduate students had done so by age 30, compared to 30% of the richest.<sup>34</sup>
- Until recently, there was relatively little public funding available for postgraduate study. Students did not have access to government-backed income-contingent loans to cover the costs of postgraduate qualifications or living costs. From 2016–17, English-domiciled students on eligible master's courses were able to borrow up to £10,000 per year towards tuition fees or living costs, rising to £10,906 by 2019–20. This significantly increased the upfront public subsidy for postgraduate education.
- Despite widening participation, these loans are likely to have disproportionately benefited better-off students. There is some suggestive evidence that the availability of loans may have widened participation (House, 2020), and that there was higher loan take-up amongst more disadvantaged students, those whose parents had not studied at university or who came from lower-participation areas (Office for Students, 2018; Department for Education, 2019). Still, given the remaining wide differences in participation by socio-economic background, this (largely new) benefit-in-kind is likely to be skewed towards those from more advantaged backgrounds, as they remain much more likely to progress to postgraduate education.
- The eventual public subsidy is likely to be small. Awards of postgraduate loans to students from England amounted to £0.7 billion in 2019–20, which is 20 times less than what was awarded in fee and maintenance loans for undergraduate study (Bolton, 2022). More importantly, unlike undergraduate loans under the 2022 system, individuals are on average expected to repay the vast majority of the value of their postgraduate loans in the long run. This is because postgraduates borrow lower amounts and earn more, on average, over their lifetimes than undergraduates, meaning that they will repay more quickly. They also face a higher interest rate. This means that much of the cost of postgraduate study will eventually be met by students themselves, and the benefits-in-kind from this spending over a lifetime perspective will be very small.

<sup>34</sup> Although conditional on prior attainment, undergraduate subject, university and degree class, students from the poorest families were marginally more likely to do postgraduate degrees. Amongst the 2002–03 GCSE cohort, 18% of those in the bottom quintile had started an undergraduate degree by age 30, compared to 58% of those in the top quintile. This compares to 14% and 47% starting an undergraduate degree by age 19.

### **Other post-18 education has declined in relative importance over time, and the distributional impacts of this spending have been under-studied**

To some extent, these trends – of increasing participation, and narrowing socio-economic gaps, in further and higher education – will have been offset by falling spending on other post-18 education over recent decades.

Spending on classroom-based adult education fell by nearly two-thirds in real terms between 2002–03 and 2019–20, from £4.4 billion to £1.6 billion in 2022 prices.<sup>35</sup> This spending typically benefits those aged 19 and over, who are studying for qualifications equivalent to A levels, or below, who are likely to be lower-skilled and lower-earning than others of the same age.

Participation in education at Levels 4 and 5 has also declined relative to Level 6 (full degree) over the last 50 years. In the early 1960s, those studying for 'sub-degree' qualifications accounted for more than half of those studying at Level 4 and above. This share fell to one-third by the late 1980s, and to one-quarter by the mid-1990s (as growth was slower than for undergraduate and postgraduate degrees) and is now less than one-seventh.<sup>36</sup> Current learners at Levels 4 and 5 are much more likely than undergraduate students to be over 25, with many studying part-time alongside work (Department for Education, 2018). Some will be eligible for public support, with others partly or fully funded by learners or their employers.

Adult education has usually been neglected by analyses of the distribution of public service spending. It is less reliably observed in survey data, making it more difficult to assign this spending to individuals. A more complex landscape of qualifications and funding arrangements makes it harder to estimate public spending per student. Placing part-time, mature learners in the income distribution in a meaningful way is also more difficult.

However, adult education may affect the overall distribution of education benefits-in-kind. Over the longer term, the decrease in numbers studying below degree level means that focusing solely on higher education may overstate the increase in participation (and potentially the decrease in participation gaps) across all post-18 education. The decline in spend in classroom-based adult education may suggest there is now greater unmet need for study at lower levels across the population. Given the policy focus on retraining and lifelong learning, not knowing who benefits from spending on adult education is an important gap in our understanding.

### **Accounting for differences in quality is likely to make education spending more pro-rich, although poorer students still benefit from large returns**

Schools and universities differ in the quality of the education they provide, such that pupils attending different institutions may receive different benefits-in-kind from the same level of per-pupil spending. This will be particularly important to the distribution of benefits-in-kind if quality is related systematically to a household's position in the income distribution. For instance, if higher-income parents are more able to get their children into 'good' schools, then failing to adjust for quality would overestimate the pro-poorness of spending.

Households do have some influence over the school a child attends, particularly through choosing to live in the catchment area of a 'better' school. Francis and Hutchings (2013) found that 'middle-class' parents (based on the work of the main earner) were significantly more likely to report having moved to live in an area thought to have good schools, to have employed a private tutor to help a child pass an entrance test, and to have appealed against an admissions decision. To the extent that households expend resources to access better schools, they may find the benefits gained from moving are 'capitalised' as demand from richer households drives up house prices near the best schools. In equilibrium, economic theory suggests richer households will consume higher-quality public services but will not be achieving any net welfare gain because of the extra housing expenses incurred in order to do so; in a perfectly competitive housing market, prices would rise until the marginal willingness to pay for school quality was fully

<sup>35</sup> See <https://ifs.org.uk/education-spending/adult-education-and-skills>.

<sup>36</sup> For a discussion of the changes to the landscape of Level 4 and 5 qualifications in the UK, see Parry, Saraswat and Thompson (2017). These qualifications include, for instance, the Higher National Diploma, the Higher National Certificate and the Foundation Degree, and have variously been called sub-degree, intermediate or higher technical qualifications.

reflected in higher housing costs. This may reveal how much people value a given increase in quality.

Several analyses have shown that average house prices are indeed higher near the best-performing schools. Department for Education (2017) estimated that house prices near a primary (secondary) school in the top decile of attainment were 8.0% (6.8%) higher in 2013–15 than prices in the surrounding area. Similarly, PwC (2019) found that houses near a primary (secondary) school in the top decile of attainment cost £27,000 (£25,000) more in 2017–18 than the average for properties in the wider postcode area. These analyses did not control for other factors that affect house price, such as house condition and local amenities, which may also be better in postcode areas containing 'better' schools. One study (Gibbons, Machin and Silva, 2013) was able to make causal estimates by comparing prices paid for otherwise-equivalent properties on either side of school admissions boundaries. They showed that in the early 2000s, households paid a significant house price premium to gain access to high 'value-added' schools, based on the increase in their test scores at ages 7 and 11. A one standard deviation increase in a school's value-added increased house prices by 3%. It may be possible to use estimates such as these to consider the distribution of quality-adjusted school spending, although we are not aware of any attempts to do this.

The lack of consistent final exams in many subjects means it is harder to measure 'value-added' in higher education. Belfield et al. (2021) used linked education and tax records to estimate the returns to attaining a degree for those who took GCSEs in 2002. They showed that there are different wage returns to different subject–institution combinations – one measure of the private financial 'benefit' from higher education – controlling for a rich set of student characteristics. In particular, there are higher average returns at the most selective universities. In the latest year, those eligible for FSM were 60% as likely to progress to higher education as other pupils, but were only 36% as likely to progress to a 'high tariff' university (one in the top third based on average UCAS point scores for those admitted). The small minority of students who attended private schools are still over-represented at the universities with the very highest returns.<sup>37</sup> This suggests that amongst students, those from better-off families are more likely to attend universities associated with higher returns, and that may be perceived as higher-quality.

Importantly, returns to education need to be seen in context. Britton, Dearden and Waltmann (2021) showed that, controlling for background characteristics and prior attainment, amongst state-educated students, average earnings returns at age 30 were around 6% for men and 27% women. There was very little variation in returns across SES at age 16, although privately educated students attained much higher returns (29% for men, and 36% for women). Importantly, these returns by socio-economic group are relative to earnings of non-graduates from *the same group*. Despite going on to earn less on average than graduates from wealthier backgrounds, students from poorer backgrounds still achieve high *returns* given their alternatives – the earnings of non-graduates from similar backgrounds, conditional on attainment – are poor.

### **The distribution of education spending with respect to an individual's own lifetime earnings is less informative than the distribution with respect to family background**

Most analyses of the distribution of education spending focus on the distribution of spend across children from different family backgrounds. This may use average household income earnings over several years as a proxy for parents' position in the lifetime income distribution, or child-level measures of socio-economic background, such as the IFS measure which combines information on FSM eligibility (indicating low household income) and local area deprivation. Comparing spending on children amongst the same cohort across these measures is informative as to the resources society chooses to devote to the education of different groups, and to equalising opportunities for children from different family backgrounds. This is particularly important given the role education plays in social mobility.

An alternative is to consider the distribution of spending with respect to the student's *own* lifetime income. The returns to education mean that over the life cycle, we would expect to see a strong association between an individual's educational attainment and their *own* earnings. As

<sup>37</sup> In 2020–21, less than 70% of full-time undergraduate entrants at each of the four 'elite Russell' group universities identified by Belfield et al. (2021) were from state schools or colleges (HESA, 2022b). These were Oxford, Cambridge, Imperial College London and the London School of Economics.

highlighted in Farquharson, McNally and Tahir (2022), educational attainment and, especially, more years of education (and so, more years of spending) are strongly associated with higher earnings. Indeed, Stichnoth and Riedel (2021) use household survey data in the US to estimate each adult's years of education based on their final educational attainment, and measure their incomes at ages 40–45. They find that those with relatively high mid-life incomes benefited from more education spending in their lifetimes (or, rather, spent more years in education), with those in the top income decile receiving 1.5 times the education spending of those in the bottom decile. In the UK, this is likely to be attenuated by the pro-poorness of school spending, and the design of the higher education loan system.

For most stages of education, this is more informative about the joint determination of educational attainment and income than it is the distribution of actual education spending. The exception is higher education, where it is a student's future earnings that are relevant for their loan repayments, and where it is more obvious that it is students themselves who choose to participate and would otherwise face the costs of education in the absence of state funding.

### Summary

The distribution of education spending across the snapshot distribution of household income has long been strongly pro-poor, driven by the position of families with children in the income distribution. However, such analysis can give a misleading impression of how spending is distributed among families with children with differing long-run income levels and/or individuals with differing lifetime incomes.

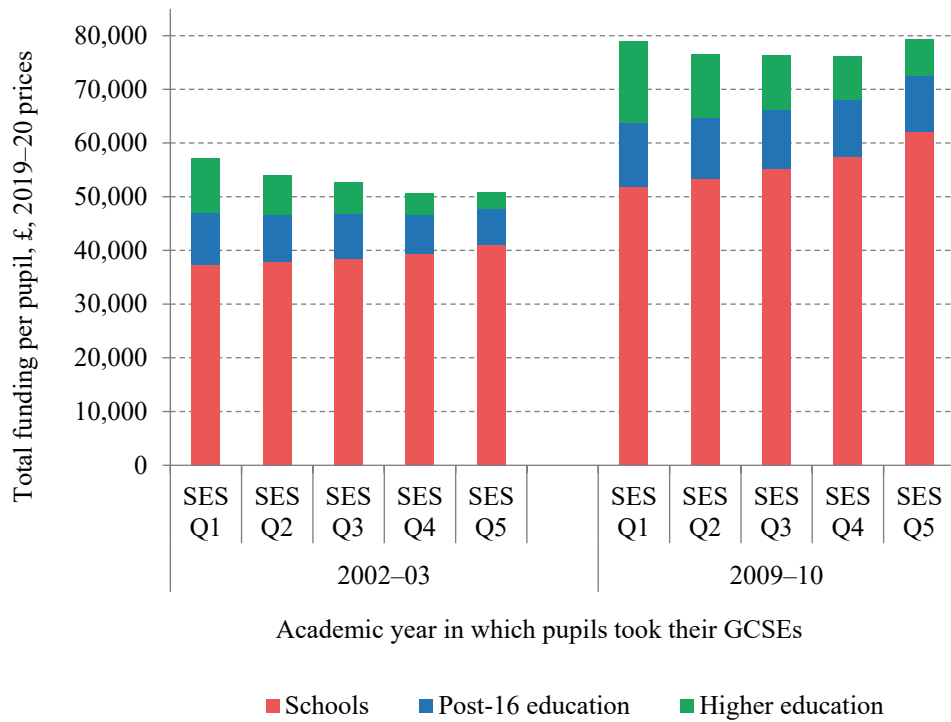
Focusing on the distribution of spending across children according to their families' longer-run incomes, changes in educational participation and the education funding system mean that spending has become notably more progressive over time. In the early 1980s, children from high-income backgrounds benefited from significantly more education spending than children from low-income backgrounds, as they were more likely to stay in education after the school leaving age and much more likely to attend university. Since then, the increase in participation after age 16 has been much larger amongst poorer children. They are now almost as likely to stay on into further education, and after initially growing, relative gaps in university attendance shrank during the 2000s and the first half of the 2010s.

Changes in per-pupil spending at different stages have also narrowed gaps in spending across socio-economic groups. In the 1980s, levels of spending per pupil were higher at higher education levels, but spending on schools has grown relative to later stages. Per-pupil spending by further education colleges fell less during the 2010s than spending by school sixth forms, which means it is likely that more is now spent on further education for children from low than high SES backgrounds. The shift to income-based repayment of loans by graduates and the gradual real-terms decline in upfront higher education funding since 2012 have reduced the extent to which higher education spending disproportionately benefits children from high SES families, or those who go on to have high earnings themselves. Indeed, graduate contributions are very progressive with respect to the student's own lifetime earnings.

The extent to which school spending is targeted towards schools with more-deprived intakes has ebbed and flowed over time. The degree of targeting appears to have been increasing between the mid-1970s and mid-1980s, before falling through the 1990s, and then growing again to the early 2010s.

Overall, these trends mean recent IFS research found that differences in education spending by parental income had been eliminated for the cohort of children turning 16 in 2010 – a remarkable reversal. Significant differences remained amongst the cohort that turned 16 in 2002, with those among the highest fifth of the SES distribution benefiting from 13% more spending than the poorest, as shown in Figure 21. Just seven years later, the pro-poor distribution of school spending outweighed remaining gaps in higher education participation.

**Figure 21. Total education spending by year in which pupils took GCSEs, by quintile of socio-economic status (2019–20 prices)**



Source: Belfield, Goll and Sibieta (2018, Figure 10) and HM Treasury (2022).

This trend is likely to have continued for a few more years, but the trend in the second half of the 2010s is less clear. The targeting of funding towards deprived schools appears to have peaked in around 2013, with differences in per-pupil funding between the schools with the most- and least-deprived intakes since falling back to around a quarter, the same as in 2000. The narrowing of gaps in higher education participation seems to have stalled in recent years. Recent reforms will make repayments less progressive with respect to graduate earnings, but will also lower the public subsidy to higher education – a subsidy that still disproportionately benefits those from better-off families.

There remain substantial inequalities in school and university quality, and in educational attainment. The distribution of public education spending is particularly relevant to debates around education funding policies, and the role of funding in narrowing attainment gaps. Estimating the benefits an individual receives from their education (including through higher wages) is much harder, but necessary for understanding the distribution of education benefits-in-kind.

### The distribution of other public service spending

Health and education are the two largest areas of public service spending, accounting for around half of the £509 billion spent in total in 2019–20. But that still means around £3,800 per person was spent on other public services in the UK in that year.

Much of this was spent on services such as general administration, foreign affairs, defence, policing, justice and environmental protection, which can be considered true ‘public goods’ and which are therefore particularly hard both to attribute to individual beneficiaries and to value. For example, no one has to benefit less from the security provided by the UK’s army, air force and navy if the population increases by one million, even though the amount spent per person will be lower. In addition, the lack of a private market for comparable services makes it especially difficult to estimate the value of defence services via people’s willingness to pay privately. And different ad hoc assumptions, such as distributing spending on these services equally in cash

terms or proportional to households' net incomes would result in very different distributional patterns for spending. For these and related reasons, there are no particularly convincing estimates of how spending on these 'protective' services varies across households in the UK.

However, estimates do exist for a range of other non-health, non-education services. This includes adult social care services, subsidised social housing, transport, childcare, and a number of in-kind transfers. For several of these categories, government support takes the form of both free or directly subsidised provision *and* cash benefits or tax credits linked to the amount households spent on these services.

### Adult social care services

Adult social care spending is estimated to have been £24 billion in 2019–20, or around £360 per person. In contrast to health and (most) education services, most publicly funded adult social care services are provided on a financial means-tested as well as needs-tested basis, with the exception of Scotland (where 'personal care' is free for all with sufficiently high care needs). This targets a greater share of expenditure on those with low income and low wealth than would otherwise be the case. The rules differ between the different nations of the UK, with England having the least generous provision, and Scotland the most generous provision.

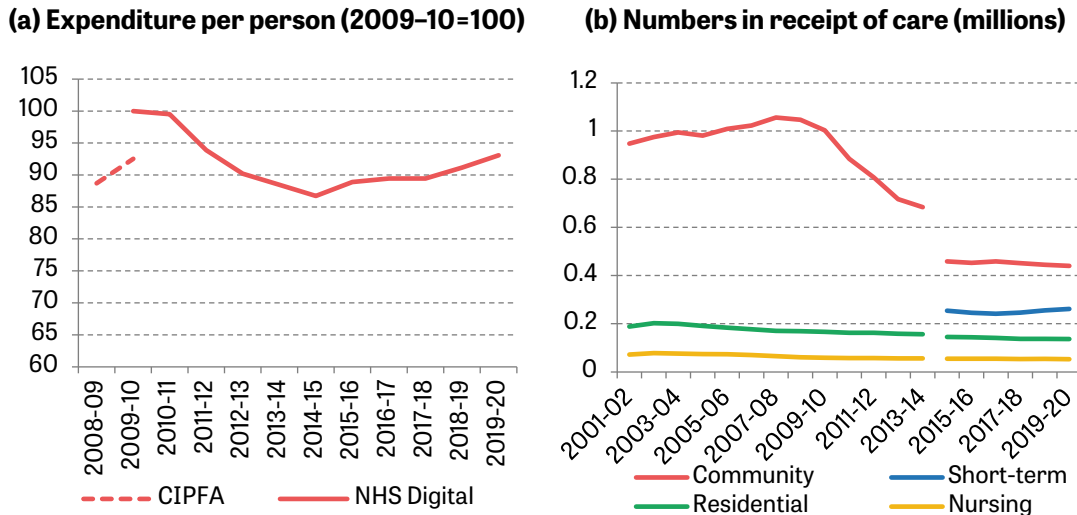
In England, those with assets of more than £23,250 are ineligible for publicly funded care irrespective of their level of income, although the value of their main residence is excluded from the means-test if they, their partner or a dependent is still living in that residence. Those with assets of between £14,250 and £23,250 are required to make some contribution to their care costs from their assets as well as their income, while those with assets below £14,250 are only required to contribute from their income, in both cases subject to minimum income floors that they must be left with after paying their contribution. The level of the asset thresholds has been frozen since 2010–11, and the level of the floors has been frozen since 2015–16, meaning that their real-terms value has fallen significantly. Combined with real-terms increases in the wealth of older adults, this will have led to a significant reduction in the share of older adults eligible for means-tested publicly funded care over the last decade or so.

Needs tests also became more stringent during the first half of the 2010s, as English local authorities (which are responsible for most publicly funded adult social care spending) responded to reductions in central government grant funding by targeting support at those with the greatest care needs. Alongside the real-terms tightening of the means-testing, and some reductions in the amount of support received by those still deemed eligible for it, this contributed to a 7% real-terms reduction in adult social care spending per person between 2009–10 and 2019–20, and falls in the numbers in receipt of care, as illustrated in Figure 22.

These cuts have fallen most heavily on services for adults aged over 65, with spending per person falling by approximately 27% during the 2010s. This led to a fall of around 40% in the numbers receiving community care services, despite a 20% increase in the number aged 65 or over during the decade. In contrast, both spending and client numbers have increased for younger adults with learning disabilities, potentially reflecting improvements in survival and life-expectancy.

Adult social care spending has been relatively more protected in both Scotland and Wales, in part reflecting less relative protection for health spending in these countries (Harris, Hodge and Phillips, 2019; Farquharson, Phillips and Zaranko, 2021b).

**Figure 22. Expenditure and numbers in receipt of care, earliest available year to 2019–20**



Note: NHS Digital expenditure per person from 2009–10 to 2019–20 is based on outturns data and adjusts for funding transfers from the NHS to support social care services. The Chartered Institute of Public Finance and Accountancy (CIPFA) expenditure per person from 2008–09 to 2009–10 is based on budgets and includes councils’ net expenditure only. Numbers in receipt of care are measured at year end. The break in the series between 2013–14 and 2014–15 reflects changes to data collection.

Source: CIPFA (2009), NHS Digital (2016, and earlier editions), and NHS Digital (2020, and earlier editions).

**Access to publicly funded adult social care services varies geographically**

In addition to becoming more stringent, the process for assessing needs in England has been reformed, with two objectives: first, to focus on the potential care recipient’s capabilities and well-being, as opposed to whether they have a particular diagnosis or condition; and second, to provide greater consistency in how care needs are assessed, and eligibility defined, across local authorities. Nevertheless, the somewhat subjective nature of these criteria means that, in practice, different councils may interpret and implement these centrally determined rules in different ways, leading to differing degrees of stringency across England. As an illustration of this, data from 2019–20 suggest that whereas one in ten local authorities report providing at least some short- or long-term support to fewer than 30% of people aged 65 or over who request support, another one in ten local authorities report providing support to at least 70% of those requesting support (NHS Digital, 2020).

Alongside the main adult social care systems funded by local authorities, the government provides support for care needs in two further ways: NHS-funded care, which is subject to even bigger geographic differences in funding and availability than local authority funded care; and cash benefits for those with care needs (Personal Independence Payments for those of working age and Attendance Allowance for those over the state pension age) or providing informal care (Carer’s Allowance), which notionally at least are provided on a consistent basis across the country.

NHS-funded care is provided by the Continuing Healthcare programme on a non-means-tested basis for those whose social care needs arise from a ‘primary health need’. There is no legal definition of what constitutes a primary health need, but guidance states that ‘an individual has a primary health need if, having taken account of all their needs..., it can be said that the main aspects or majority part of the care they require is focused on addressing and/or preventing health needs’ (Department of Health and Social Care, 2022a). Differing interpretations of this guidance likely explain part of the very wide variation in the numbers deemed eligible for such care across England. For example, as of December 2019, whereas across England as a whole, 28.7 people per 100,000 were in receipt of Continuing Healthcare packages, this varies from at least 58.2 in the ten clinical commissioning group (CCG) areas with the highest rates of receipt, to less than 15.0 per 100,000 in the ten CCG areas with the lowest rates of receipt (NHS England, 2022). Unless this reflects differences in need for care, this scale of variation would suggest that



access to NHS funded social care services for people with a given level of need (and financial means) varies substantially geographically across England.

### Expenditure is concentrated among lower-income, lower-wealth households

Estimating how the benefits of public spending on adult social care services are distributed across the income and wealth distributions is challenging for a number of reasons.

- First, the main surveys that are used in most analyses of the distribution of public service spending cover those living in private households only: those living in care and nursing homes are excluded by design. Administrative data on the use of adult social care services are also sorely lacking.
- Second, both care needs and the financial means-test are dynamic, with people becoming potentially eligible for publicly funded support as their care needs, assets and incomes change over time. For example, someone initially ineligible for support may become eligible as their assets are drawn down and fall below the means-test thresholds.

Most studies that have examined the distribution of adult social care spending look at a snapshot in time, and either focus on community/domiciliary care only, or make use of assumptions or estimates of the likelihood of different types of people requiring residential care in the immediate future.

For example, the ONS's analysis covers community/domiciliary care only, and allocates 20% of expenditure on a pure per-capita basis (to capture the insurance value of provision) and 80% to households in receipt of a range of disabilities benefits (used as a proxy for care needs). In neither case is the financial means-test taken account of, which is a further important drawback of the ONS's estimates. However, given that most recipients of disability benefits are in the lower-middle and middle parts of the income distribution, the ONS estimates the majority of adult social care expenditure to go to households to the lower-middle and middle parts of the income distribution. In 2019–20, for example, 21% of expenditure was estimated to go to the lowest-income fifth, 64% to the lowest-income half, and 86% to the lowest-income seven-tenths of households.<sup>38</sup>

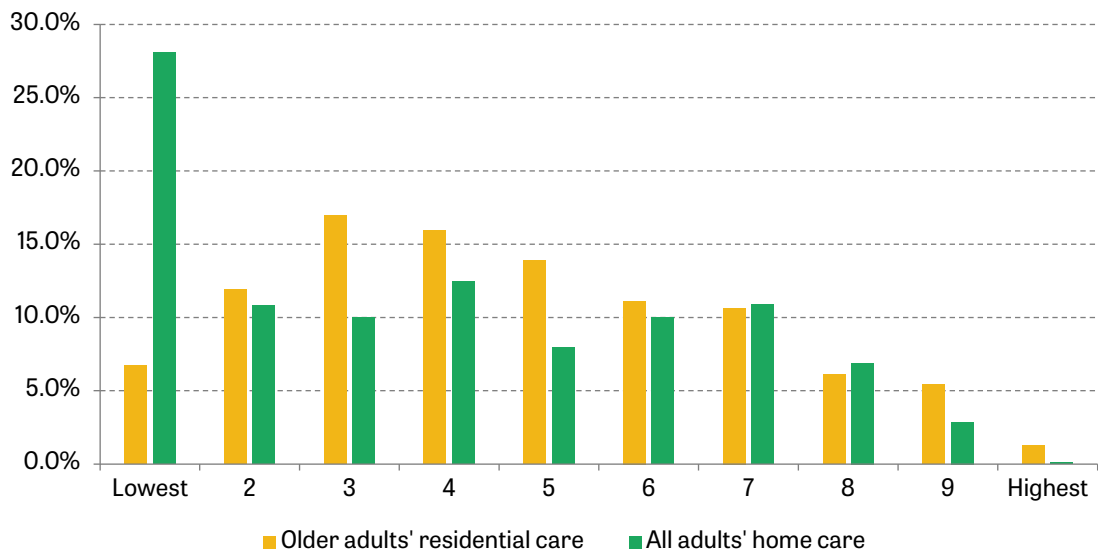
Reed and Portes (2018) improve on the ONS's analysis in three main ways. First, rather than use proxies for receipt of care, they use a survey (the Family Resources Survey), which includes information on receipt of care for those receiving care in their own home. Second, they account for the financial means-test, using information on income and assets as recorded in the same survey. And third, they use a second survey (ELSA) to estimate the relationship between the characteristics of older adults and their probability of moving into residential care, to allocate spending for residential care.

Figure 23 applies the same approach to the UKHLS, for the survey round covering 2018 and 2019. It shows that spending on residential adult social care for older adults is estimated to be concentrated in the lower and particularly the middle parts of the income distribution. Spending on care received at home is estimated to be particularly concentrated at the very bottom of the income distribution.

The Department of Health and Social Care (2022b) has recently published projections of how adult social care spending is distributed across the income distribution for the over-65s. Illustrated by the blue sections of the bars in Figure 24, the concentration among low- and middle-income households is broadly similar to our estimates for residential care based on the approach taken by Reed and Portes (2018). The analysis finds that spending is very concentrated at the bottom of the wealth distribution though – with around 70% of all spending estimated to go to pensioners in the bottom fifth of the pensioner wealth distribution.

<sup>38</sup> ONS dataset, Effects of taxes and benefits on household income, 2019–20.

**Figure 23. Proportion of adult social care spend for older adults' residential care and all adults' home care by income decile, 2018–19**

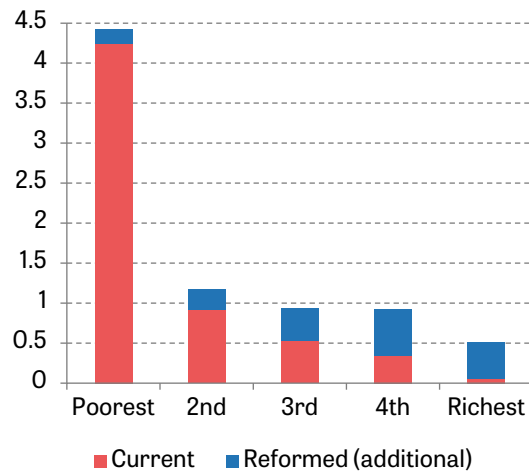


Note: Approach based on Reed and Portes (2018). Use of care at home is based on reported use of social care services. Probability of using residential care is estimated for individuals aged 65 and over, using coefficients estimated in ELSA, and reflects: sex, age, housing tenure, receipt of Disability Living Allowance, Attendance Allowance or Personal Independence Payments, whether health limits daily activities, and household composition. Income and asset tests are modelled based on gross income and reported income from savings and investments for each benefit unit.

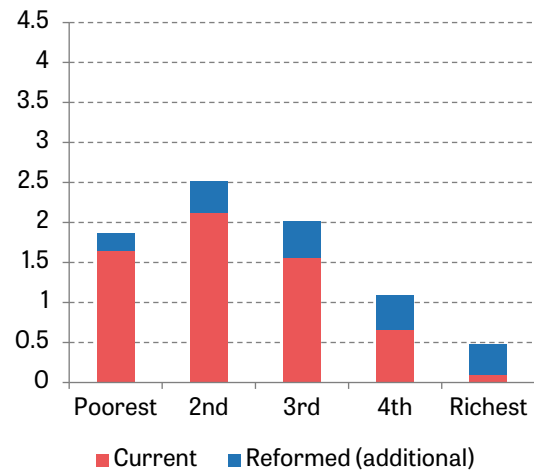
Source: Authors' calculations using UKHLS, wave 10 (covering 2018–19).

**Figure 24. Estimated annual net social care spending on adults aged 65 or over by wealth and income quintile, steady state based on 2021–22 population**

**(a) Wealth distribution**



**(b) Income distribution**



Note: The estimated additional spending under the proposed reforms is based on 'steady-state' costs of the reforms to the financial means-test and the introduction of a care cost cap only. It excludes the costs associated with planned increases in fee rates paid to providers to offset the reduction in opportunities for cross-subsidy from people paying for care privately.

Source: Department of Health and Social Care (2022b).

### Upcoming reforms will expand coverage up the income and wealth distribution

While publicly funded adult social care services have been largely means-tested since their inception, this has been subject to significant policy debate over at least the last 25 years.

As already highlighted, there is no means-test (although there are needs-tests) for publicly funded personal care services in Scotland, with the test abolished for older adults in 2002, and younger adults in 2019. But such an approach was recommended for the UK as a whole by a Royal Commission on Long Term Care in 1999, which felt it was difficult to justify means-testing personal care while providing universal free healthcare, given the importance of both to health and well-being. Few changes were made in the rest of the UK at that time though.

The subsequent Dilnot Commission proposed an alternative approach. Rather than make personal care free, it proposed a significant relaxation of the financial means-test, and a cap on the total costs that could be incurred, above which local authorities would pay for all further costs (Dilnot, 2011). These plans were accepted by the government but delayed and then shelved, until a revised version was announced for implementation in England from October 2023 in the UK government's plan for health and social care (HM Government, 2021). This has since been pushed back to 2025 in order to free up funding in the short term for additional care packages for those that meet the existing means-testing thresholds.

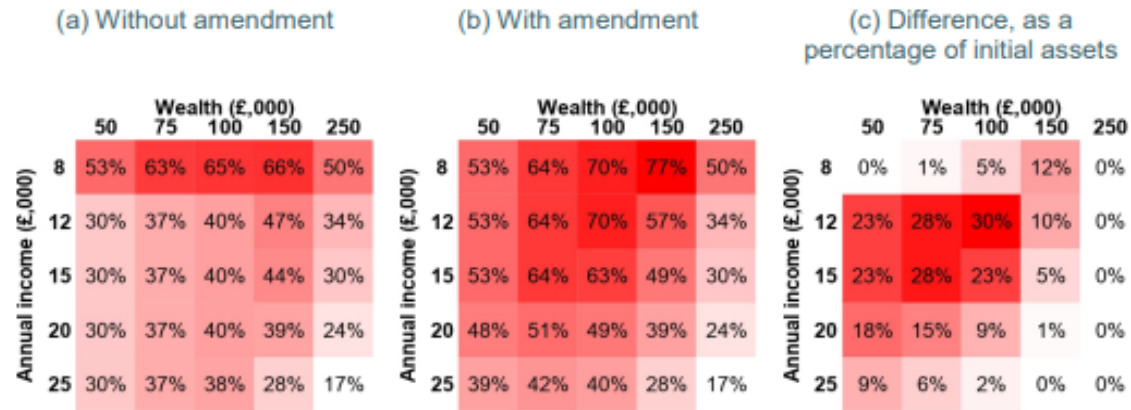
The proposed relaxation of the means-test (increasing the upper capital limit to £100,000) will substantially increase the numbers eligible for at least some means-tested financial support with their care costs. The cap will address the issue that except for those with modest levels of income and assets, a means-tested system provides very little insurance against even very high care costs. The official impact assessment estimates that approximately 50,000 older adults will become eligible for publicly funded care as a result of the relaxed financial means-test. And, after five years, approximately 60,000 older adults will be benefiting from the care cost cap, increasing the share of older adults with care needs who receive financial support from around half to around two-thirds (Department of Health and Social Care, 2022a). Overall, approximately 20,000 younger adults are estimated to become entitled to publicly funded care as a result of both reforms together, increasing the share receiving financial support from around 90% to over 95%.<sup>39</sup>

Figure 24 shows that the reforms are expected to financially benefit those older adults in the middle and upper parts of the wealth and income distributions by more than households in the lower parts of these distributions. Over half of overall expenditure under the reformed system is still set to go towards older adults in the lowest fifth of the wealth distribution and lowest two-fifths of the income distribution though. The system is not as generous to those with low to moderate levels of assets as that originally envisioned by the Dilnot Commission and as initially legislated for following the Commission. In particular, whereas all costs, including those covered by means-tested support from local authorities, were envisioned as counting towards the care cost cap, the new proposals are that only costs paid by individuals themselves will count towards the cap. This will significantly reduce the extent to which households with chargeable assets of between approximately £30,000 and £150,000 and moderate levels of income are protected by the cap.

This is illustrated in Figure 25, taken from Sturrock and Tallack (2022), which shows the percentage of assets depleted in the extreme case of someone requiring 10 years of residential care under the reformed system as originally envisioned, and as revised in the latest proposals. It shows, for example, that someone with an income of £12,000 a year and chargeable assets of £100,000 faces losing 70% of their assets under the new proposals, compared to 40% as originally proposed. In contrast, those either with low incomes and low assets or with higher asset levels are unaffected by the amendments to the reforms.

<sup>39</sup> These figures assume that the reform will be implemented in 2023, although this has since been pushed back until at least October 2025. The distributional effects of the policy would be broadly unchanged.

**Figure 25. Depletion of assets for a 10-year residential care journey, under reforms without and with the amendments to the way the cap works, by level of income and initial assets**



Note: Assumes a 10-year residential care journey costing £700 per week, of which £200 is assumed to be for living or 'hotel' costs. Costs are assumed to be first met from income (as far as the income floors used in the social care means-tests) and then any remaining costs are met from assets or government funding, as per the relevant system rules. Panels (a) and (b) show the fraction of assets depleted as a percentage of initial assets under the initial proposals for reform and amended proposals for reform, respectively. Panel (c) shows the change in asset depletion as a result of the amendments to the proposed reforms, again expressed as a percentage of initial assets.

Source: Sturrock and Tallack (2022).

It remains the case that the reformed system will be at least as generous (and sometimes much more generous) as the current system, for all adults requiring social care services. However, the reforms will not undo the tightening of needs-tests seen during the 2010s; indeed, local authorities could respond to a shortfall in funding, if it arises, by further tightening needs-tests. If this were to happen, while more people with higher income and higher wealth would become eligible for publicly funded care, this would be paid for in part by withdrawing public funding for some lower-income and lower-wealth people close to current needs-test cut-offs.

### Social housing

Social housing is rented housing provided by local authorities, and increasingly in recent years, not-for-profit housing associations, typically at sub-market rents. Historically, it has served three inter-related functions, with the priority placed on these differing over time (Adam et al., 2015):

- to ensure sufficient aggregate housing supply, through direct or subsidised construction of housing;
- to allow the government to directly provide and hence strictly regulate the provision of housing, with a focus on security of tenancy, space standards and basic maintenance, reflecting concerns about each of these in the private market;
- to ensure that families with low incomes and particular needs have access to housing of at least a basic standard, including in areas with high housing costs.

It is not the only way in which the housing costs of low-income families are subsidised: universal credit (and its predecessor benefits) provides cash payments to low-income families in rented accommodation based on their rent, subject to local and national caps, that vary by family size. The importance of housing benefit relative to social housing in subsidising the housing costs of low-income families has increased in recent decades, as the fraction of families renting privately has increased relative to those renting from social landlords (see Figure 26).

The relative priority placed on the different roles of social housing has changed over time: following World War I and particularly World War II, improving the quantity and quality of the housing stock was a prominent objective of social housing, and there was a significant increase in the share of housing provided by social landlords. From the 1980s onwards, reductions in the stock of social housing (driven by the Right to Buy scheme, allowing tenants to purchase

properties with substantial discounts compared to market values) has seen a shift towards ensuring affordable housing for those with low incomes, and particularly those with other needs (such as families with children, people with disabilities, etc.).

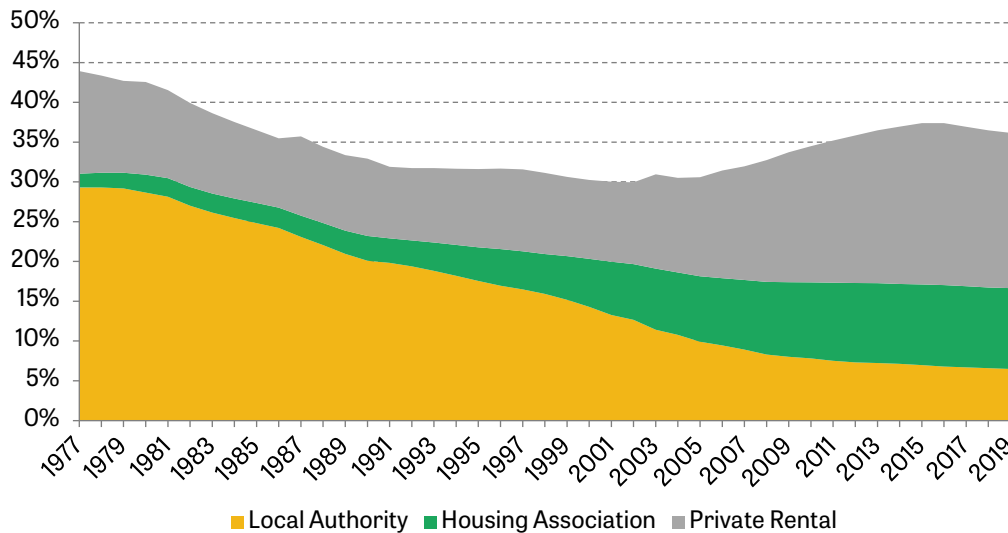
Access to social housing is determined by local authorities and housing associations primarily on the basis of applicants' assessed need. Legislation requires that certain groups are given 'reasonable preference' in local authorities' assessments including: the homeless, those living in overcrowded or unsanitary conditions, and those who need to move for medical reasons. However, beyond this, local authorities and housing associations have considerable discretion to design their own needs-assessment processes. Priority is often given to those already living or working in an area, caring for someone in the area, and/or with low income.

Until 2012, social housing was let on lifetime tenancies. Since then, social housing providers are able to offer fixed-term tenancies, with the aim of ensuring that the limited social housing stock was 'focused on those who need it most, for as long as they need it' (Department for Communities and Local Government, 2010). However, in 2019–20, only 15% of properties were let on a fixed-term basis, with the vast majority of these being for five years or more – much longer than in the private market (Ministry of Housing, Communities & Local Government, 2020a). This security of tenancy, combined with the large rent subsidy conferred by social housing, means there are often long waiting lists for social housing, even for those deemed to be high priority. At the end of 2019–20, for example, 1.15 million households were on the waiting list for social housing in England, while there were just 0.2 million lettings by local authorities or housing associations from these lists (Ministry of Housing, Communities & Local Government, 2020b).

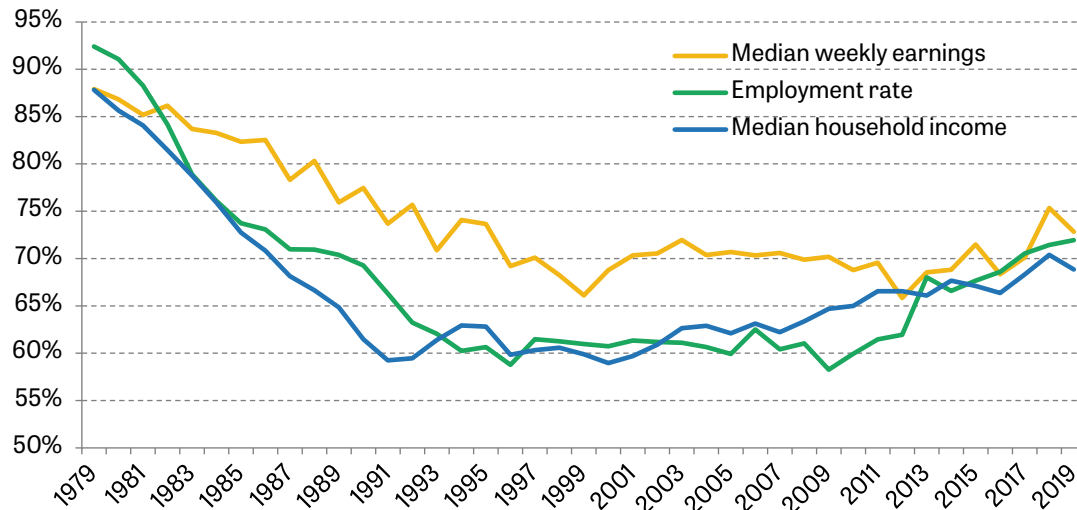
**Social housing is scarcer and its tenants poorer than historically**

The size of the social housing sector increased substantially between World War I and the 1970s: from 1% of the housing stock in 1918, to 10% in 1939, 23% in 1961 and 32% in 1981. However, since then, there has been a significant fall in the size of the sector as properties were sold via the Right to Buy scheme, and the rate of new dwelling construction fell. Figure 26 shows that the share of social housing in England fell to 20% by 2000 and to 17% by 2010, since when the decline has slowed significantly. This figure also shows that within the social housing sector, there has also been a shift from properties being owned by local authorities to properties being owned by housing associations.

**Figure 26. Share of housing that is social or private rental housing, in England, 1977–2020**



Source: Ministry of Housing, Communities & Local Government (2021).

**Figure 27. Employment, incomes and earnings of social housing tenants relative to the population as a whole, Great Britain, 1979 to 2019–20**

Source: Adam et al. (2015) until 2013–14, and IFS analysis of Family Resources Survey data from 2014–15 to 2019–20.

As better-off social housing tenants purchased their properties under the Right to Buy scheme, and new lettings of (increasingly scarcer) social housing have been focused on those with particularly high needs, the employment rate, and the average earnings and overall incomes of social housing tenants have fallen relative to the population as a whole. Figure 27 shows that in 1979, the employment rate and both median weekly earnings and household income for social tenants were around 90% of the figures for the population as a whole across Great Britain. But median earnings levels have been around 70% of the population average since the 1990s, and both employment rates and median household income fell to around 60% of the population average by the 1990s, although both have subsequently recovered to the around 70% since – likely reflecting the increases in the generosity of benefits during the 2000s and strong employment growth during the 2010s.

### The social housing subsidy is large and concentrated among low-income households

The first stage to assessing the distributional effects of social housing is to estimate the value of social housing to those benefiting from it.

The ONS estimates are based on the cost of social housing to the government. This includes grants paid to housing associations (including for the construction of new homes) and an imputed value for subsidy to local authorities Housing Revenue Accounts (the ring-fenced accounts into which rents are paid and from which the cost of housing debt servicing and maintenance are met). On this basis, spending on social housing is estimated to have been £2.3 billion in 2019–20, up from £0.1 billion in 2013–14.<sup>40</sup>

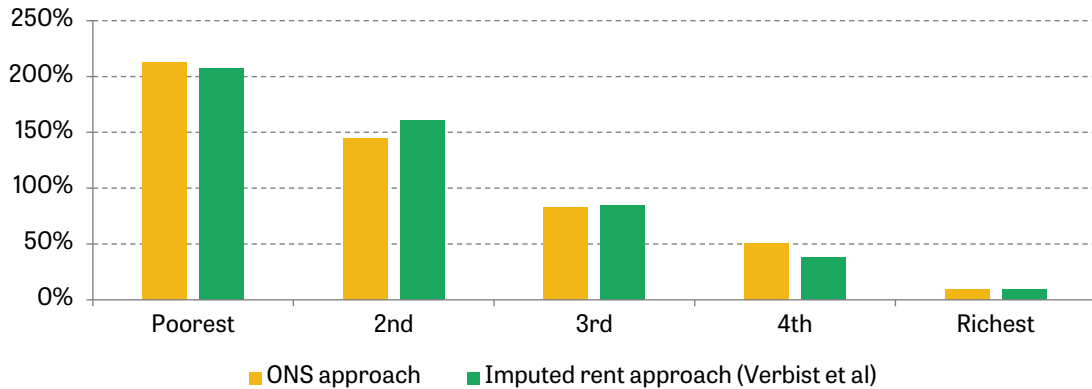
When considering the benefits of social housing to the tenants, a more economically meaningful approach is to consider the difference between the rent they pay and the market rent of the property. This is the approach taken in other studies, including in Sefton (2002), Verbist et al. (2012) and Reed and Portes (2018), although typically for specific years only. Market rents are imputed for social housing based on the rents of similar private sector rental property – based on factors such as location, property size and type, and the council tax band a property is in (an indicator of its approximate value as of 1991). These approaches typically yield substantially larger values for the social housing subsidy: an average of £40 per week for the average social housing tenant in England as of 2015–16, equivalent to £8.4 billion in aggregate across the four million social tenants that year.

Expenditure on or benefits to existing social tenants are allocated to households reported as living in social housing. Under both approaches, expenditure/benefits are highly concentrated at

<sup>40</sup> Figures for years prior to 2013–14 were calculated on a different basis using actual government subsidies for Housing Revenue Accounts.

the bottom of the income distribution, as shown in Figure 28. The trends in the employment, earnings and incomes of social housing tenants shown in Figure 27 also strongly suggest that expenditure/benefits became increasingly concentrated on lower-income households during the 1980s and 1990s, but that since then there is likely to have been much less change. Verbist et al. (2012) also highlights how social housing in the UK is much more targeted at low-income households than in most other OECD countries, potentially reflecting a greater emphasis on social housing as a redistributive tool (as opposed to a tool to increase overall supply or regulate quality).

**Figure 28. Average benefit from social housing by income quintile group relative to the population as a whole, ONS and imputed rents approaches**



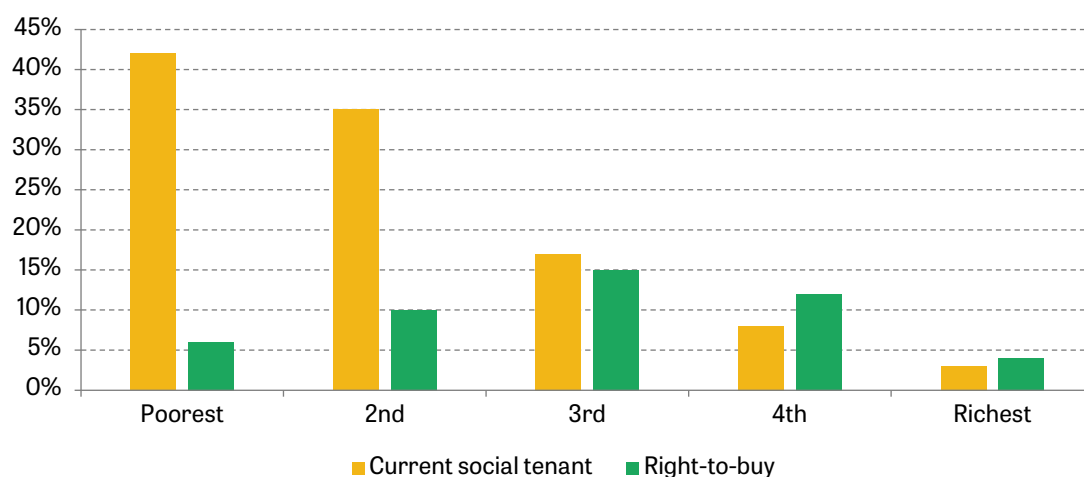
Note: ONS analysis relates to 2019–20 and Verbist et al. (2012) analysis relates to 2008.

Source: ONS dataset, Effects of taxes and benefits on household income, 2019–20 and Verbist et al. (2012).

### Beneficiaries of the Right to Buy scheme have historically been much better off

In addition to considering the benefits accruing to those living in socially rented accommodation, Sefton (2002) provides estimates of the benefits accruing to those purchasing discounted social housing under the Right to Buy scheme. To do this, he utilises information in the Family Resources Survey on households that have exercised their 'right to buy' and still live in the property purchased. He imputes both the market rent for the property and the social sector rent they would have paid if they had not exercised their right to buy: the difference between the two is used as an estimate of the annual benefit of exercising right to buy. He then utilises information on the total number of right to buy sales by region to gross up benefits to account for those who have moved house since exercising their right to buy, implicitly assuming that those who are still in the property purchased are representative of those who have moved in terms of their position in the income distribution (controlling for region of residence). Doing this, he finds that households that had benefited from the Right to Buy scheme were, as of 2000, concentrated in the middle and upper-middle parts of the income distribution, in stark contrast to contemporaneous social housing tenants who were concentrated in the low and lower-middle parts of the income distribution, as shown in Figure 29.

More than 40 years after the Right to Buy scheme was launched, the share of properties bought by the scheme that are still lived in by the original purchasers will have fallen significantly; indeed, many of the original purchasers will have died, either spending or passing on their windfall gains to their children or other beneficiaries. This means Sefton's method for assessing the distributional effects of the Right to Buy scheme is not suitable for producing an updated estimate of the scheme's distributional impact.

**Figure 29. Fraction of individuals benefiting from social housing by income quintile, 2000–01**

Note: The share of households estimated to have benefited from the Right to Buy scheme by quintile is based on the fraction of households in that quintile reporting that they purchased their property from the local authority, scaled up so that the total across all quintiles matches the share of all properties estimated to have been purchased under the Right to Buy scheme. This assumes that those still living in a property bought under the scheme are representative in terms of income levels of those who have subsequently sold their 'Right to Buy' property and moved to another property.

Source: Sefton (2002).

It seems unlikely that this pattern would have changed in a quantitatively important way, although the last two decades have seen changes in both the scheme's rules and its popularity. For example, the then Labour government reduced the maximum discounts, and increased both the time people had to live in social housing before purchasing it and before they could sell it on to qualify for the maximum discounts during the 2000s. The 2010s saw maximum discounts raised and minimum qualifying residency periods reduced in an effort to increase take-up of the scheme. However, the numbers taking advantage of the scheme, while above their early-2010s lows, remain a fraction of the levels in the 1980s, 1990s and early 2000s: just over 15,000 houses were purchased under the scheme in 2019–20, compared to an average of 97,000 a year in the 1980s, 47,000 a year in the 1990s and 67,000 a year in the early 2000s. This may reflect several factors including changes in the mortgage market (including requirements for larger deposits) and the fact that those living in the (smaller) social rented sector are relatively poorer than they once were.

### Childcare and early-years provision

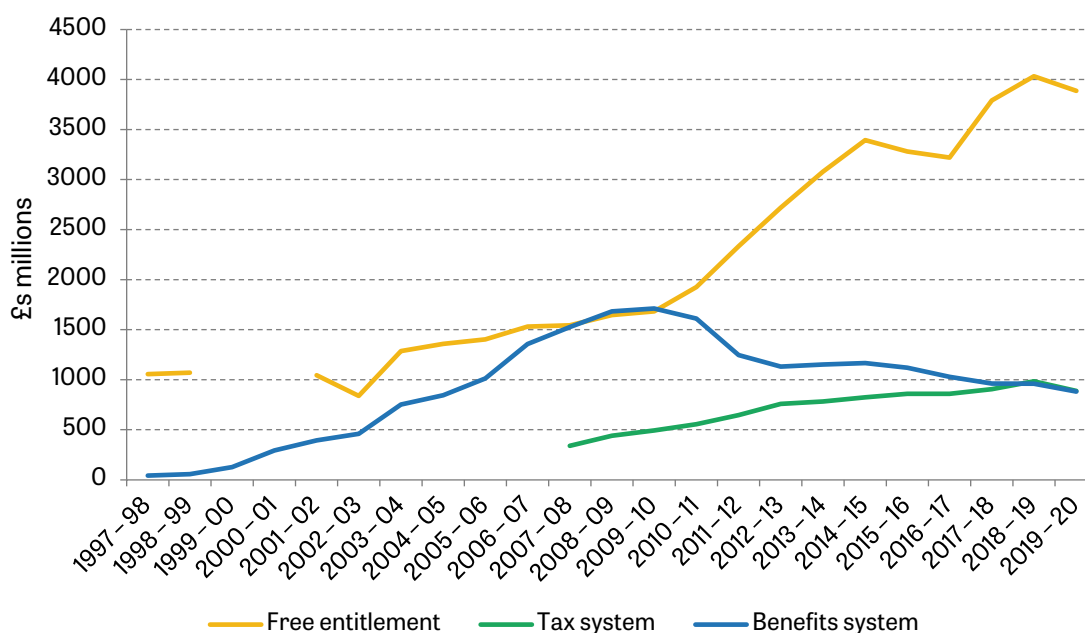
In contrast to adult social care services and social housing, eligibility for and spending on free and subsidised childcare services increased significantly during the 2000s. This is illustrated in Figure 30, which shows the amount spent on direct and fully subsidised 'free entitlements' in England, separately from that which is partially subsidised via the tax and benefit system.

Most of the increase in spending on free entitlements reflects expansions in the number of children eligible for free childcare, and the number of hours to which they are entitled (rather than the amount spent per hour). For example, in 1997, children aged 2 and 3 had no entitlement to free childcare, and 4-year-olds were entitled to 12.5 hours for 33 weeks a year (412.5 hours in a year). Table 2 shows that the focus was first on extending this universal offer to 3-year-olds and then making it more generous. Subsequent extensions have been targeted – either at disadvantaged 2-year-olds, or 3- and 4-year-olds in working families.

Figure 30 also shows that during the 2000s, the share of support provided by the benefit system – via the Working Tax Credit Child Care element – grew rapidly, briefly exceeding the amount spent on direct free provision towards the end of the decade. Subsequently, this spending was cut back as the generosity of the subsidies provided via the benefits system was reduced. There has been continued growth in the amount of support provided by the tax system, for example, via the 'tax-free childcare' scheme, which rebates the income tax paid on the amount spent on childcare, subject to rebate and income limits.



**Figure 30. Spending on different types of childcare and early education services, England**



Note: Free entitlement spending includes spending on the universal entitlement for 3- and 4-year-olds, the extended entitlement for 3- and 4-year-olds in working families, and the entitlement for disadvantaged 2-year-olds. Spending through the tax system includes the value of tax reliefs via employer-sponsored childcare vouchers and tax-free childcare, but not the value of VAT exemptions. Spending through the benefits system includes childcare subsidies in universal credit and its predecessors. Spending through universal credit is imputed based on modelling estimates from TAXBEN; see Farquharson (2019) for details.

Source: Farquharson et al. (2021a).

**Table 2. History of English free childcare entitlements**

	Ages	Hours per week	Weeks per year	Hours per year	Targeting
September 1997	4	12.5	33	412.5	
April 2004	3 & 4	12.5	33	412.5	
April 2006	3 & 4	12.5	38	475	
September 2009	3 & 4	12.5 or 15	38	475 or 570	15 hours for 25% most disadvantaged
September 2010	3 & 4	15	38	570	
September 2013	2, 3 & 4	15	38	570	20% most disadvantaged 2-year-olds entitled
September 2014	2, 3 & 4	15	38	570	40% most disadvantaged 2-year-olds entitled
September 2017	2, 3 & 4	15 or 30	38	570 or 1,140	30 hours for 3- and 4-year-olds, with working parents earning <£100k each

Source: Farquharson (2019).

Support for childcare costs via the tax and benefit system is available on the same basis throughout the UK. However, entitlements to directly subsidised free provision differ in each of the nations of the UK. Like the UK government in England, the devolved governments have also been expanding the generosity of their systems. For example, last year the Scottish local authorities completed the roll out of 30 hours per week (1,140 hours per year) for all children aged 3 and 4, and for the most disadvantaged 25% of 2-year-olds. This is as generous as – or more generous than – the English scheme for most children aged 2–4, apart from those modestly disadvantaged children who do not meet the Scottish Government's stricter definition of disadvantage.

The high costs of childcare, the lack of free entitlements to most children aged 0–2 years, and limits on the number of hours for those entitled to free childcare mean that childcare costs can still take a large fraction of families' net incomes. The OECD estimates that, as of 2018, a two-earner couple earning average wages and with two children aged 2 and 3 would still need to pay the equivalent of 18% of their net household income in childcare costs, compared to an average of 9% across the OECD on average (OECD, 2022).

In response to these costs, and to increase employment amongst parents of young children, the government recently announced a significant expansion of free entitlements in England to children aged 2 and under in working families. This will be gradually rolled out, with children from nine months old eligible for 30 hours free childcare a week from September 2025.

### Childcare spending is pro-poor but is less focused on low-income families than previously

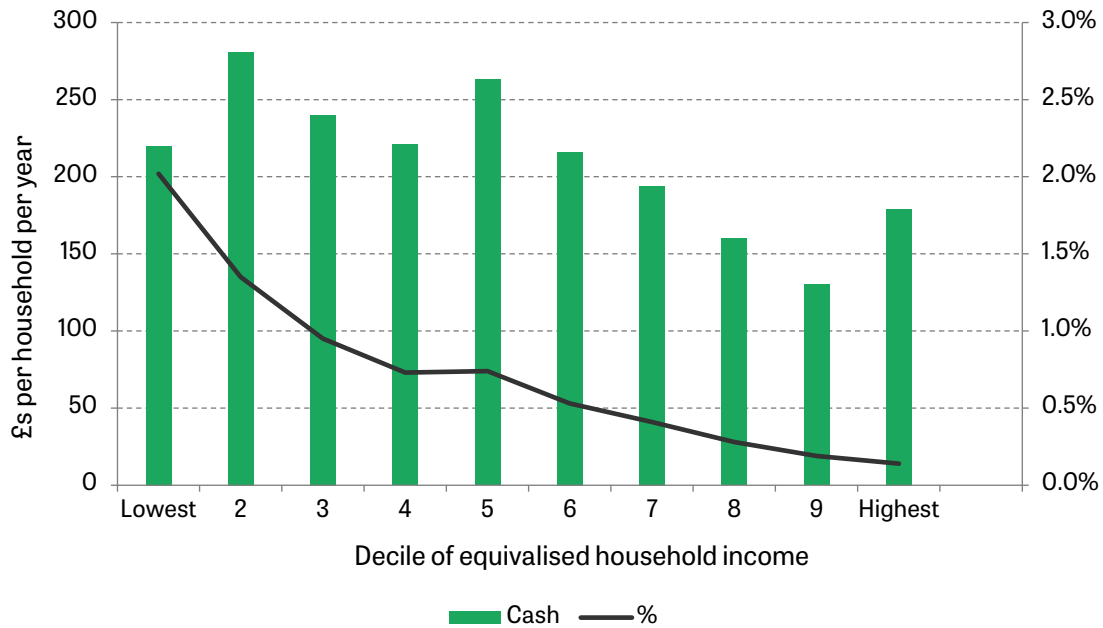
The ONS estimated how spending on free entitlement to childcare varies across the income distribution as part of its annual analysis of the distributional impacts of taxes and public spending for the first time in 2019–20. Figure 31 shows that the ONS estimates that this spending is slightly pro-poor in cash terms and strongly progressive relative to income. For example, childcare spending is equivalent to an average of 2.0% of net income (£220) for the lowest-income tenth of households, compared to 0.2% (£130) for the second highest and 0.1% (£180) for the highest.

The proposed expansion of the free entitlement would, based on existing patterns of childcare use, benefit a fifth of families earning less than £20,000 a year, but 80% of those with household incomes above £45,000 (Drayton et al., 2023). It is difficult to estimate the impact the reform is likely to have on patterns of use, and also on parents' working patterns and incomes. However, it is likely to make childcare spending less progressive overall.

When looking at support for childcare through the tax and benefit system as well as free entitlements, the extent to which support is targeted at low-income families has declined significantly over time. Farquharson (2019) estimates that whereas support for low-income families with children via the benefit system accounted for 45% of spending in 2007–08, it accounted for just 17% by 2017–18. The share focused on low-income families generally did not fall quite as much given the introduction of the free entitlement for disadvantaged 2-year-olds, but even so fell to 27%. However, support for working families – regardless of their income level – increased from 10% of total childcare subsidies to 25% over the same period, following the introduction of free childcare for working families for 30 hours per week.

This does not mean that spending on low-income families has fallen; as discussed above, total spending increased significantly during this period, and low-income families will be among those benefiting from expansions in free entitlements for working families and tax-free childcare. However, this does still represent a shift in the relative priorities of policymakers in the childcare sector over the last decade. The proposed reforms will continue this shift, with the share of childcare subsidy spending targeted at working families expected to more than double by 2027.

**Figure 31. The distribution of childcare spending by income decile group, 2019–20**



Source: ONS dataset, Effects of taxes and benefits on household income, 2019-20.

### Transport

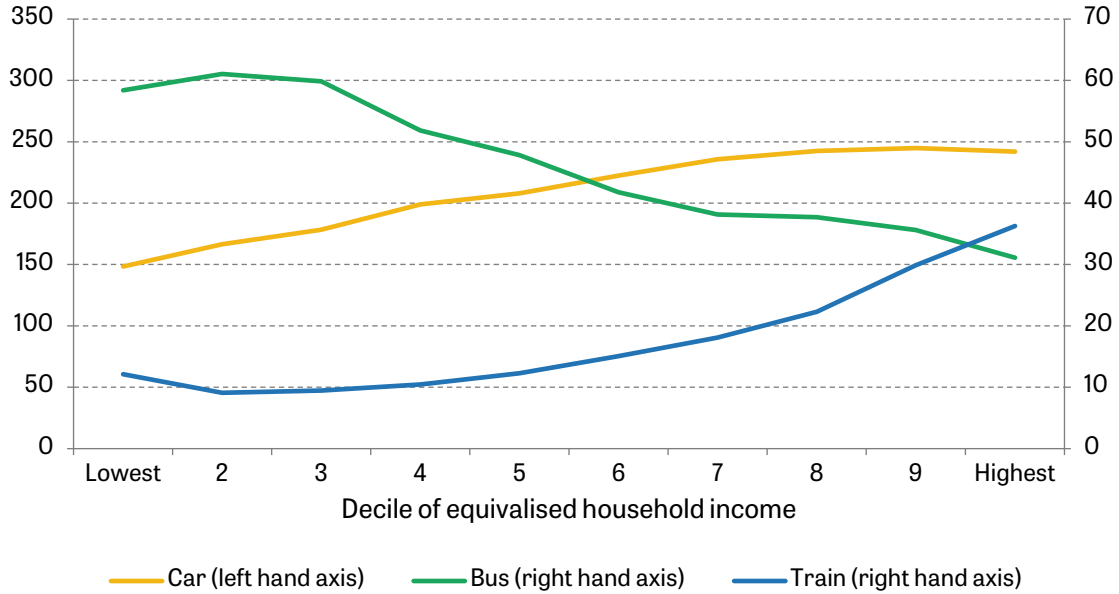
Transport spending is estimated to have been £35 billion in 2019–20, equivalent to £520 per person. Transport infrastructure and services are provided and subsidised by the government in several ways: national and local government pay for the construction and maintenance of the vast majority of roads; national government finances investment and most maintenance of railway tracks, and provides net subsidies for train operating companies; local government subsidises many local bus services; and in Scotland in particular, domestic air and sea routes are subsidised, to help ensure the economic viability of remote and island communities.

This expenditure benefits households both directly through their own travel, and indirectly through the commercial travel involved in the production of the goods and services they purchase (such as the delivery of goods to retailers). Existing empirical analyses focus on the former channel only though, utilising household survey data on transport use or expenditure. The ONS, for example, covers resource (i.e. non-investment) subsidies for rail and bus operators, using information on rail and bus expenditure, place of residence, and age from the Living Costs and Food Survey to allocate spending across households. Place of residence is used to account for differences in the rate of subsidy between regions and train operating companies, and age to allocate additional subsidy to those eligible for concessionary bus passes. More comprehensive analysis by Reed and Portes (2018) instead uses the National Transport Survey, which provides information on households' use of different modes of transport, as well as their income and other socio-economic characteristics. Both resource and capital investment spending is allocated to households in proportion to the number of journeys they make by mode of transport, under the implicit assumption that the benefits of capital expenditure are distributed in proportion to current service usage.

These analyses suggest that more of the benefits from bus subsidies go to lower-income households and more of the benefits of both rail subsidies and expenditure on roads go to higher-income households, reflecting differences in which forms of transport these groups use most. This is illustrated in Figure 32, which shows the average number of times households in each decile group reported using a mode of transport in the past year, during the period between 2012 and 2017. For example, households in the bottom three decile groups of the income distribution reported using buses an average of 60 times per year, compared to 30 times for households in the top decile group. In contrast, while households in the bottom half of the income distribution reported using trains 9–12 times a year, on average, households in the top income decile group reported using them 36 times.

Higher levels of subsidy per journey for rail services than bus services mean that despite the average number of reported bus journeys (46) being over 2.5 times higher than rail services (18), the overall subsidy for rail services is greater. It also means that taking rail and bus services in combination, much more spending is estimated to go to higher-income households than lower-income households, as illustrated in Figure 33.

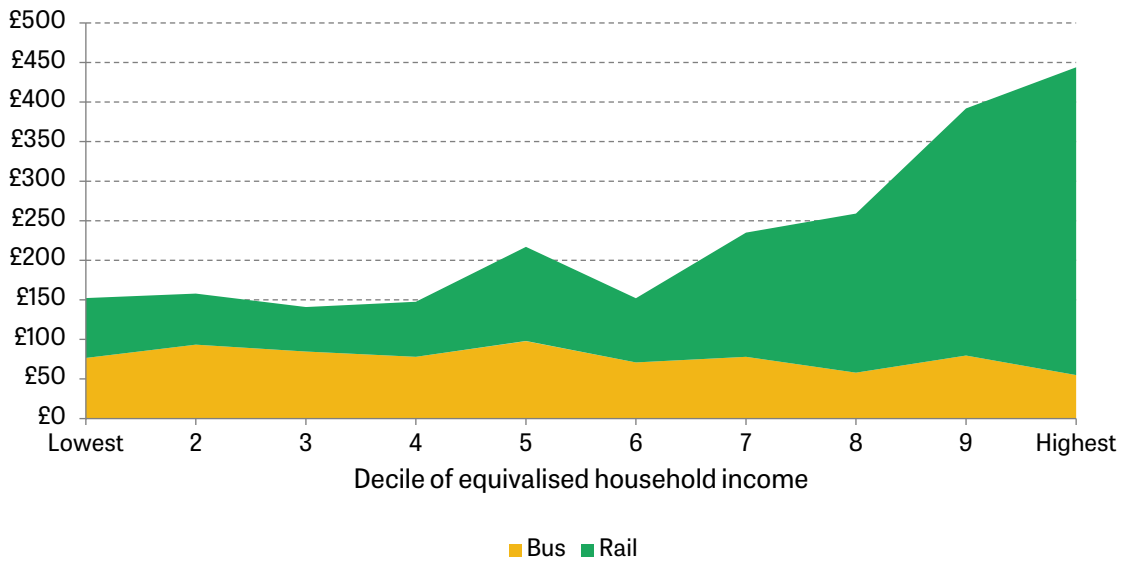
**Figure 32. Average annual number of journeys by car (left-hand axis), bus and train (right-hand axis) by income decile group, 2012-17**



Note: Average journeys amongst adults (16+) in each household, and then amongst households within each income decile, applying cross-sectional household weights within each wave. Analysis is restricted to households resident in England.

Source: Authors' analysis of UKHLS, waves 4, 6 and 8 (covering 2012-17).

**Figure 33. Estimated average rail and bus subsidy expenditure per household by income decile group, 2017-18 to 2019-20**

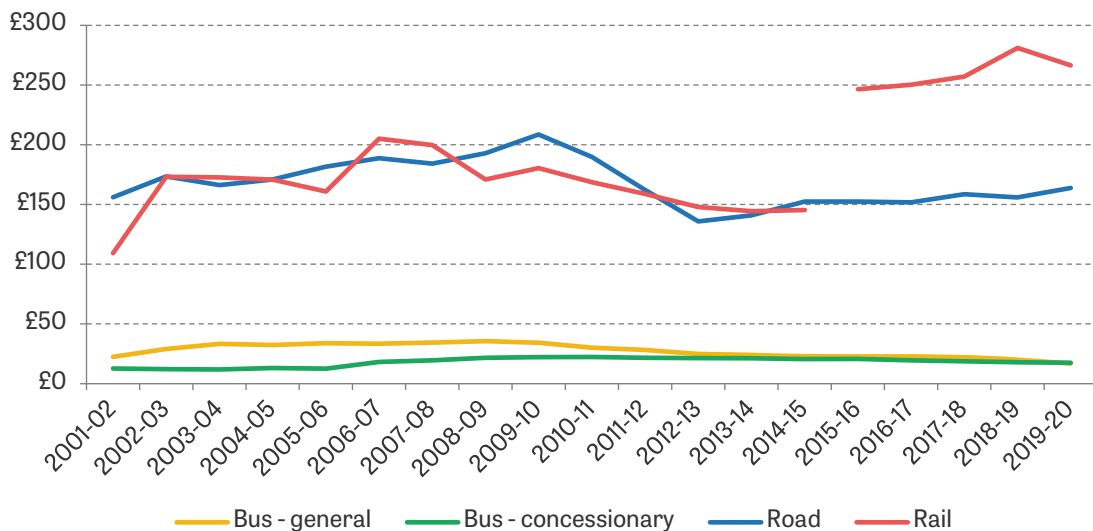


Source: ONS dataset, Effects of taxes and benefits on household income (various years).

While changes in ONS methodology and the infrequent nature of other analyses make it difficult to track how the distribution of transport spending has changed over time, studies suggest that these patterns are long-standing. Horton and Reed (2010) found that the highest-income decile group benefited from around three times the transport spending as households in the lowest-income decile group in 2007–08, with the lowest-income half of households benefiting more than average from spending on bus services, but higher-income households benefiting more from (the much greater) spending on rail services and roads. Le Grand (1982a) found a similar pattern in the 1970s. This is because spending on rail (and roads) has consistently been much higher than spending on buses. This is illustrated in Figure 34, which shows trends in total (current and capital) spending on rail and roads, as well as subsidies and payments for concessionary fares to bus operators back to 2001–02.

The figure does show a shift in the nature of public spending on bus services: whereas in the early to mid-2000s over two-thirds of spending was on general and fuel subsidies for bus operators, by 2019–20, more than half was accounted for by free bus passes for pensioners. This is the result of cuts of around half in the amount spent per person on general support for bus services between 2009–10 and 2019–20. Data also show higher levels of subsidies for bus services in London than the rest of England from the early 2000s: whereas London accounted for around 10% of spending on general bus subsidies in the late 1990s, since 2002–03 it has accounted for around 50% of spending on general bus subsidies. However, while residents of London and its commuting areas are also bigger users of rail services than other parts of the country, subsidies per passenger mile as of the mid-2010s are estimated to have been lower, on average, for operators of franchises predominantly serving those commuting into London than those predominantly serving the rest of the country.<sup>41</sup>

**Figure 34. Estimated public spending per person by transport mode, 2019–20 prices**



Note: Road and rail expenditure includes current and capital expenditure and is taken from HM Treasury’s Public Expenditure Statistical Analysis publications. These cover successive five-year periods and have been appended together by applying the year-to-year growth rates from previous publications to ‘backcast’ spending from the last publication. Changes to accounting rules mean rail spending figures from 2015–16 onwards include all Network Rail spending, not just government support for Network Rail, and are therefore not directly comparable with prior years. Bus subsidy expenditure figures from Department for Transport are for England only.

Source: HM Treasury (2021b, and previous releases) and Department for Transport (2021).

<sup>41</sup> For example, in 2015–16, the net operational subsidy per passenger mile averaged 2.1p for the c2c, Govia Thameslink, Greater Anglia, South West, Southeastern and Southern train franchises, compared to an average of 8.6p for other franchises in England.

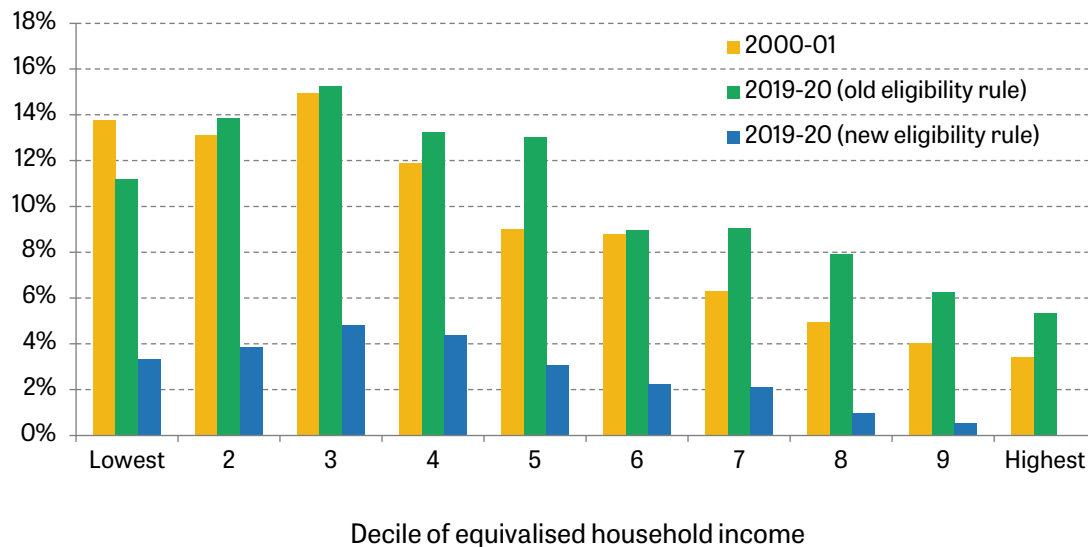
### Miscellaneous subsidised services

The government also mandates that certain groups are able to access subsidised utilities, including free TV licences, energy bill rebates and basic telecommunications packages.

In some instances, these are not actually benefits-in-kind. For example, the 'Warm Homes Discount' provides a flat rate £150 'rebate' on energy bills for low-income pensioners claiming Pension Credit, and for working-age households claiming means-tested benefits or tax credits and with incomes below particular thresholds, who in addition are estimated to face high-energy costs (based on the size, type and age of the property they live in).<sup>42</sup> However, given the flat rate nature of the rebate (and it would be very unlikely for anyone's pre-rebate bill to be below the rebate value), this scheme is effectively an additional cash benefit for selected low-income households akin to Winter Fuel Payments and Cold Weather Payments, rather than a true benefit-in-kind. Similarly, while both BT and KCOM (the legacy provider of telecoms services in Kingston upon Hull) are mandated to provide basic telecoms packages at low cost for households on certain means-tested benefits, other telecoms providers choose to voluntarily provide such services. This suggests that telecoms providers may actually see some commercial benefit from segmenting their market on the basis of income (although this might only be in response to the fact that BT and KCOM are mandated to segment the market in this way).

Free TV licences for the over-75s are a clearer example of a benefit-in-kind. Initially introduced in November 2000, until August 2020, all households with an individual aged over 75 were entitled to a free TV licence. As the incomes of the over-75s increased relative to the population as a whole, this policy became less progressive, as illustrated in Figure 35. Its cost also increased as the number and share of the population aged over 75 have increased: from £557 million in today's prices in 2001–02 to £713 million in 2017–18. Until 2017–18, the government paid for the cost in full,

**Figure 35. Proportion of people in each decile of the distribution of equivalised household income who live in households eligible for a free TV licence**



Note: Figures for 2000–01 and 2019–20 (old eligibility rule) measure the proportion of people within each income decile who live in a household where at least one person is aged over 75, making their household eligible for a free TV licence under the system in operation between 2000 and August 2020. Figures for 2019–20 (new eligibility rule) are the proportion of people within each income decile who live in a household where at least one person was claiming Pension Credit, making their household eligible for a free TV licence if the new eligibility criteria had been in place.

Source: IFS analysis of the Living Costs and Food Survey.

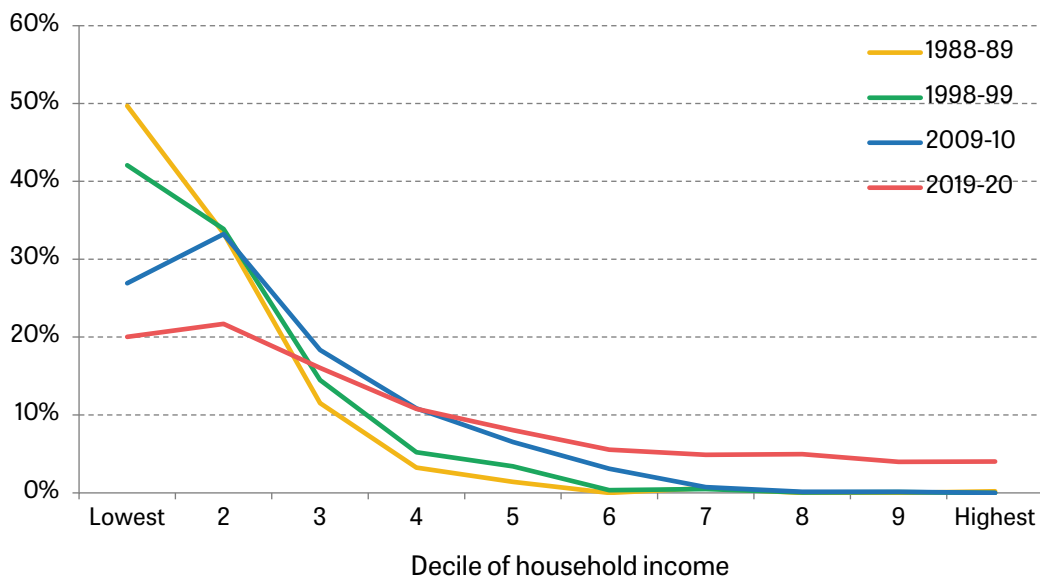
<sup>42</sup> This describes the approach in place from 2022 onwards (Department for Business, Energy & Industrial Strategy, 2021). Prior to that, the rebate was £140, with different energy providers having somewhat different eligibility criteria from each other (although the scheme was still focused on households with low incomes and high expected energy costs).

but as part of negotiations over funding between the UK government and the BBC in 2016, it was agreed that the cost would be transferred to the BBC between April 2018 and April 2020, and that the BBC would be responsible for the design of the free licence scheme. Since August 2020, the BBC has restricted eligibility to those pensioners claiming the means-tested Pension Credit. This has reduced the number of eligible households and the cost of the scheme by around three-quarters and focused support on households in the bottom half of the income distribution.

Another relatively important benefit-in-kind is FSM, with spending of around £460 per year per eligible child. While the Schools Meals Act 1906 allowed local authorities to provide FSM, the current system traces its origins to World War II, when the provision of meals became a statutory duty for schools. In recent decades, eligibility has been based on families' receipt of means-tested benefits and, more recently, their income levels and ages of their children. Currently, for example, those claiming universal credit and post-tax (but pre-benefit) income of £7,400 a year, and those claiming certain legacy benefits (such as income support, income-based jobseeker's allowance and income-related employment and support allowance), as well as all children in infant school (Reception, Year 1 and Year 2) are entitled to FSM.

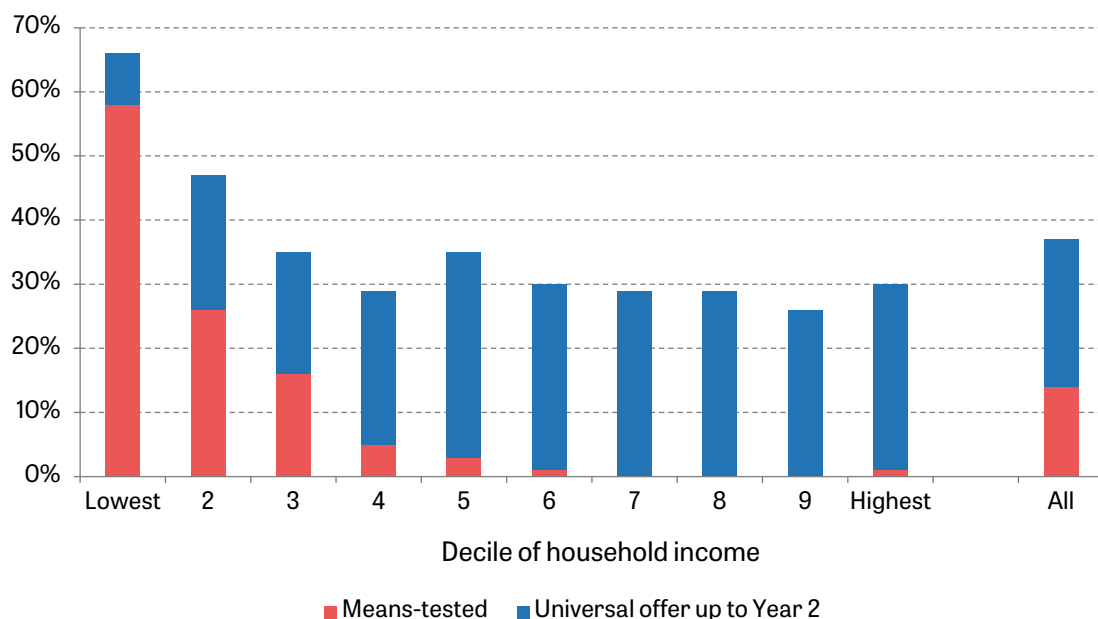
The numbers of families and children entitled to FSM has generally gone up and down in line with trends in employment, although even prior to the COVID-19 pandemic numbers were increasing despite a strong labour market. This is the result of the roll out of universal credit, which made some families newly eligible for FSM, and a transitional protection regime, which has allowed those who would otherwise lose eligibility under the new rules, or whose circumstances change, to keep receiving FSM. Figure 36 shows that eligibility for FSM is higher among the bottom half of the income distribution (77% of recipients), but that this concentration is much lower than it was historically (in 1988–89, 99% of recipients were in the bottom half and 83% in the bottom fifth of the income distribution). This partly reflects changes in the position of families with children in the income distribution, with relatively fewer at the very bottom. Much more significant is the roll out of universal FSM to children in infant school. As shown in Figure 37, around 30% of children in families in the top half of the income distribution are entitled to FSM, mostly as a result of this universal offer. Benefits-in-kind from the means-tested elements of provision remain heavily concentrated on those in the lowest three income deciles.

**Figure 36. Proportion of children entitled to FSM that are in each decile group of the household income distribution**



Source: IFS analysis using TAXBEN, the IFS tax and benefit microsimulation model.

**Figure 37. Proportion of children entitled to FSM in England, by decile of household income**



Note: Deciles are assigned using household equivalised income among the whole population of England. Excludes children in private education. Children in Year 2 or below who would be entitled to free school meals on a means-tested basis, where universal provision for their age group is available, are categorised as being entitled through means-testing.

Source: Cribb et al. (2023, Figure 4).

## Discussion and conclusions

On the eve of the COVID-19 pandemic, public service spending amounted to over £500 billion, or nearly a quarter of UK national income. Spending, particularly on health services, jumped during the pandemic and, while it has now fallen back somewhat, is planned to settle at a higher level of national income over the next decade, driven by higher health and social care spending. Understanding the distributional effects of this spending is therefore increasingly important.

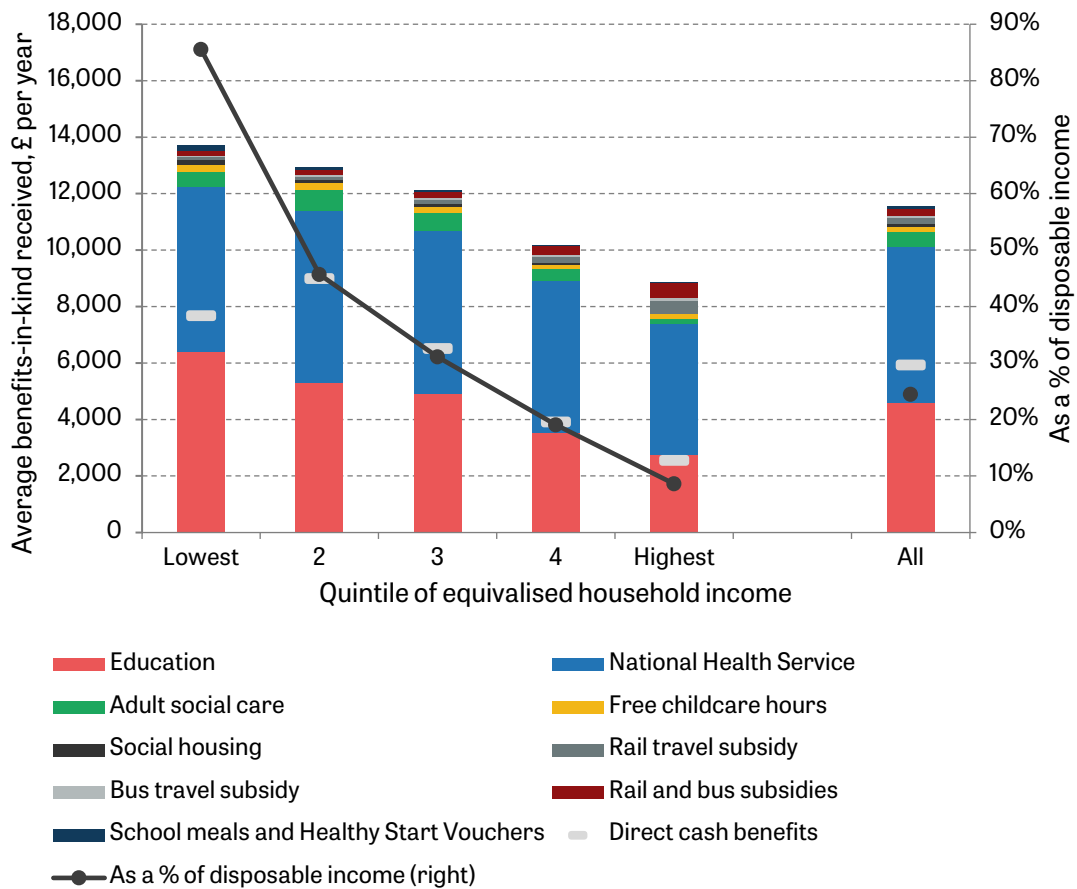
Public service provision will have an impact on many forms of inequality – not least health and education inequalities, and in turn inequalities in earnings and well-being. But spending the equivalent of over £7,600 per person (and rising) also directly and immediately redistributes significant financial resources across the population, and across people’s lifetimes. The focus of this commentary is the distribution of spending and how and why it has changed over time, and where possible, how it relates to the need for spending.

Even if spending were distributed equally across the income distribution, public service spending would be highly redistributive, given that it is funded by the UK’s progressive tax system. It would amount to 161% of income for the lowest-income tenth of households in a given year, and 20% for the highest-income tenth.

In fact, public service spending is substantially more redistributive than this. The most comprehensive and up-to-date published analysis of the distribution of public service spending, produced by the ONS, estimates that households in the bottom fifth of the ‘snapshot’ income distribution in 2019–20 received over 60% more in cash terms than households in the top fifth. Figure 38 shows that the biggest contributor to this was education spending, with households in the bottom fifth benefiting from around £3,650 more education spending, on average, than those in the top fifth. The biggest proportional difference was for social housing, with the poorest fifth benefiting almost 24 times as much as the richest fifth. On a relative basis, spending on the subset of public services analysed by the ONS is estimated to have amounted to 86% of cash post-tax-and-benefit income, on average, for the poorest fifth of households, and just 8.6% for the richest fifth.



**Figure 38. Average value of benefits-in-kind by service, and total value of benefits-in-kind and direct cash benefits as a percentage of post-tax-and-benefit income in 2019–20, by quintile of equivalised household income**



Source: ONS dataset, Effects of taxes and benefits on household income, 2019–20, Table 2.

For households across the income distribution, this spending is larger than the value of direct cash benefits they receive. As a result, it is more redistributive; spending on direct cash benefits was equivalent to 48% of cash post-tax-and-benefit income, on average, for the poorest fifth. But spending on direct cash benefit is more progressive, with those in the bottom fifth benefiting around three times as much in cash terms in 2019–20 than those in the top fifth, and those in the second lowest fifth 3.5 times as much.

As we discussed in the fourth and fifth sections, there are reasons to believe the ONS’s analysis actually understates the progressivity of public service spending and the scale of redistribution at any given point in time. Education spending is targeted at schools with more students from low-income families, meaning that state-school pupils in the lowest household income quintile benefit from around 10% more per-pupil spending than those in the highest-income quintile. Low-income people have poorer health and make more use of health services at all ages. Neither of these are properly accounted for in the ONS’s analysis.

But snapshot analyses, such as the ONS’s, can also give a misleading picture of how progressive and redistributive public service spending is in relation to people’s longer-run incomes, and how this is changing over time.

When considering the longer-run incomes of families with children, education spending is far less progressive than snapshot analyses suggest. Indeed, historically, less was spent on educating the children of low-income families than those of high-income families, given that the former were much less likely to continue to further and higher education and because spending per student was highest for post-compulsory education. Snapshot measures of the distribution of education spending show a much more progressive picture because families’ (equivalised) incomes tend to

be lower at the point they have children than before and, particularly, afterwards (i.e. their positions in the snapshot income distribution are much lower than their positions in the long-run income distribution).

The concentration of health spending on older adults, and the big increases in the incomes of pensioners relative to the rest of the population in the 1990s and 2000s, can also distort impressions of how the progressivity of health spending has changed over time. In particular, as pensioners have moved up the snapshot income distribution, health spending has looked much less progressive in snapshot analyses. But given that the ONS did not until very recently (and now only very partially) take account of any factors other than age and sex when analysing the distribution of health spending, this does not mean that health spending has become less progressive relative to longer-run incomes.

So how progressive and redistributive is public service spending relative to longer-run incomes, and how has this changed over time?

Health spending is highly progressive, with more spent in cash terms on those from low SES backgrounds, reflecting their poorer health and greater need for healthcare services. For example, spending per person on inpatient and outpatient care is around one-quarter higher for adults aged 25–64 living in the most-deprived areas relative to those in the least-deprived areas, rising to 35% higher among those aged 65 or over. These patterns hold even when one controls for the lower longevity of people living in more-deprived areas. However, there is some evidence that, conditional upon needs, people from deprived areas and with low education levels make less use of preventative and outpatient services, especially during periods when health funding is constrained.

The socio-economic gradient of education spending is now probably fairly flat in cash terms, but still highly progressive relative to incomes. The most recent comprehensive analysis covers those undertaking their GCSEs in 2009–10, the first cohort to face university tuition fees of £9,000 per year, finding such a pattern for this cohort. Since then, increases in further and higher education participation rates have probably acted to boost spending more on children from poorer backgrounds, but school funding has become less targeted at schools with the most-deprived pupils.

Over a longer time horizon though, public service spending has almost certainly become more progressive and more redistributive with respect to long-run income.

First, despite a decade of austerity, public service spending at the end of the 2010s was still significantly higher as a share of GDP (22.5%) than at the end of the 1980s (20.4%) and the end of the 1990s (19.0%). Within this, the share of GDP allocated to publicly funded healthcare nearly doubled over three decades, from 3.9% of GDP in 1988–99 to 7.3% of GDP in 2019–20. In part, this has been funded by a decline in defence spending, continuing a much longer trend, from 3.4% of GDP in 1988–89 to 1.9% of GDP by 2019–20. The broad allocation of spending across services has therefore shifted towards services for which a larger share of spending goes to poorer people.

Second, changes to policy and patterns of service usage mean spending on a range of services has become more progressive.

Increases in participation in further and, more recently, higher education, together with a shift in funding towards early-years provision and schools, has boosted the amount spent on children from deprived areas and low-income backgrounds more than those from high-income backgrounds. Reforms to how universities are funded, with the introduction and increase in tuition fees, and changes to student loan repayment arrangements, have also increased the progressivity of public spending on higher education. In particular, the share of the cost of higher education paid by students from high-income families, and who go on to have high earnings themselves, has increased much more than for poorer, lower-earning students, who have more of their student loans written off. Recently announced changes to loan repayment terms will undo some, but not all of this change.

For schools, the trends have been more complicated, with the progressivity of spending fluctuating over time. The extent to which funding was targeted at schools with more-deprived

pupils increased between the mid-1970s and mid-1980s, then decreased until the mid-1990s, before increasing again until the early 2010s and then decreasing again in recent years. Political narratives have clearly mattered for the policies underlying these trends, with an emphasis on improving inner city schools and narrowing attainment gaps between richer and poorer pupils driving policy in the 2000s and early 2010s, while an emphasis more recently on big gaps between funding for different schools has driven the more recent decline in progressivity of school spending. A key question for the coming years will be whether the ambitious targets to narrow educational attainment gaps as part of the levelling up agenda lead to another shift in funding policy or not.

Outside education, the retrenchment of a number of services has seen them become much more focused on those with the lowest incomes and the highest needs. This is most obvious for social housing, which houses around half the share of the population as it did at the start of the 1980s, and adult social care services, where both means-tests and needs-tests have become more stringent over time. However, while more progressive, the cutbacks in these services mean that fewer low-income people can access them than historically: more rent privately, with much more of the support for their housing costs provided by the cash benefits system instead; and those without the highest care needs have to either forgo care, rely on friends and family, or pay for support themselves. While more progressive, these services are therefore not more redistributive than they were.

Beyond the specific patterns and changes for particular services, these findings have a number of implications for policy and policymaking going forwards.

First, spending levels are generally the biggest driver for the degree of redistribution undertaken by public services in the medium term. Thus, the large increases in public service spending during the 2000s, particularly for healthcare and education, drove a big increase in the amount of redistribution during the 2000s. The austerity of the 2010s, particularly outside of healthcare, all else equal reduced the scale of redistribution relative to incomes. Subsequent spending (and tax) increases will have since increased the scale of redistribution again. A key driver of how redistributive public services will be in future is therefore whether the government increases spending as demands and costs rise, or pares back service provision.

However, the way funding is allocated between people and places can also play a significant role by changing how progressive a given level of spending is – with school funding formula reform, and student tuition fee and loan policies increasing the progressivity of spending during the 2000s and early 2010s, but reducing the progressivity of spend more recently. In the longer term, changes in people's behaviour can also play a significant role, with rising enrolment in further and higher education being a key driver of the scale of redistribution undertaken by education spending.

A second and related point is that recent times have shown that austerity and plenty can have complex effects on the progressivity of public service spending. On the one hand, one response to limited funding is to target resources at those with the most acute needs and/or limited resources to pay for services themselves. This has been the approach in social care services, for example, where needs-tests become more stringent and means-tests stingier during the 2010s, focusing support on the sickest and poorest people. On the other hand, greater rationing of services when funding is limited can also disproportionately affect people from low SES backgrounds if they find it more difficult to navigate systems and lobby service providers for the support they need. Tentative evidence suggests that this may happen in healthcare and special educational needs services, which are not means-tested in the same way adult social services are. The relaxation of financial means-tests and introduction of a cap on costs raises the prospect of such rationing according to one's ability to effectively lobby becoming more important for adult social care services too.

These differences are also a reminder that it is much harder to estimate the distributional effects of *changes* in public service spending than the effects of existing *levels* of public service spending. This is because the former will depend very much on who the marginal user affected by the changes in spending will be, which will differ according to the precise changes to policy being made, and will often be difficult to predict *ex ante*. The analyses of such changes produced by, for

example, HM Treasury, should therefore be treated cautiously, and interrogated ex post when updated data on service usage become available.

Finally, there are a number of important gaps in our knowledge, and clear priorities for future research.

First is a need for better evidence on how public spending varies across people and households according to their long-run or lifetime incomes. Most existing analyses focus on a snapshot in time, which – as we have seen in relation to both education and health spending – can give a misleading impression of how progressive public service spending is, and how this is changing over time. As highlighted in the section on conceptual and measurement issues, IFS researchers have used panel survey data and simulations of people's earnings and household circumstances over their lifetimes to construct estimates of how the impact of the tax and cash benefit system varies across the lifetime income distribution. While more challenging, there may be opportunities to use the same panel survey data to analyse how the distribution of public service spending varies by longer-run and lifetime measures of income. The linking of administrative datasets (such as the Longitudinal Education Outcomes dataset, which combines educational records with tax and benefit records) and/or survey data (such as linking health records with tax and benefit records and household survey data) is also promising. As with analyses of the tax and cash benefit system, life-cycle analysis would allow us to distinguish the role of public service spending in redistributing between people and across people's own lifetimes.

Second is more evidence on the extent to which access to and quality of public services vary by people's incomes and other characteristics. In the section on health spending, we found that for specialist and preventative healthcare services, people with low incomes and/or low education levels used fewer services relative to their health needs than those with higher incomes and/or education levels. There was also some evidence that the quality of the care they receive is somewhat lower too. However, a systematic appraisal of access and quality across the population, across services and over time is lacking. This should be invested in going forwards, given the challenges of funding, the rising costs of healthcare, and tentative evidence that low-income/education people tend to lose out when care is more rationed. The centrality of narrowing gaps in educational outcomes between places and socio-economic groups to the levelling up agenda would likewise benefit from better data on the quality of educational services provided to poorer children, given that existing evidence suggests that they are likely to be taught by less experienced and suitable teachers. There is a continued policy focus on lifelong learning, which would benefit from a much better understanding of the distributional effects of spending on adult education. The growing amounts spent on both adults' and children's social care services, and concerns about safeguarding vulnerable adults and children, suggest that these services should also be a priority for further research.

Third is better evidence on how much people value different public services, and any systematic variations in this across the population. As discussed in the section on conceptual and measurement issues, misleading conclusions can easily be drawn if analyses of cash spending are interpreted as providing evidence on the effects of public service spending on people's welfare. Eliciting the value people place on public services is difficult but detailed survey data on people's 'needs', their use of different services and the various costs they face in using those services can be used to estimate people's willingness to pay for services. Again, given how challenging it will be to fund both the rising cost and demand for public service spending and the cash benefit system in the years ahead, a better understanding of how valuable both are (at the margin) to people across the income distribution would be useful.

IFS researchers are planning projects to help address these questions in the coming years, which should allow stronger lessons for policy to be drawn.

## Appendix: further discussion of conceptual and measurement issues

### The value or cost of services?

The first issue to note is that unlike for cash benefits, where an additional £1 of spending is worth £1 to everyone (even if the impact of that £1 on their *welfare* varies), people may value £1 of spending on public services they receive at more or less than £1 in cash. Moreover, the same spending may be worth different amounts to different people. For example, some people (especially if they have low incomes) may see little value in spending on a service, and much prefer to receive cash instead to spend as they see fit. Others may deem the same service very important and beneficial for their welfare, so they would be willing to pay more for a service than it costs the state to provide. To consider how much a service being publicly provided improves people's welfare, it is also important to consider how much it would cost people to procure the same service privately in a world without public provision.

O'Dea and Preston (2012) discuss these issues in much more detail – including how the existence of public provision may affect market prices, and how private markets may not function for certain services. The key takeaway though is that without information on how much people value services, and how much they could purchase them for in a private market, one cannot assess the welfare impacts of different packages of public service spending, even in money-metric terms. Such data are not generally available though, and so empirical analyses typically focus on how spending on public services is distributed across households. As we shall see later, one common exception is the analysis of social housing, which often is based on comparing social housing rents to estimates of what it would cost to rent the same properties privately.

Focusing on the cash cost of providing public services as opposed to the value placed on those services by the recipient necessarily limits the conclusions that can be drawn. For example, two spending packages involving the same distribution of overall public spending across households may be valued very differently by the households if they involve different services and/or different mixes between in-kind benefits from public services and cash benefits. Similarly, a spending package allocating more spending to poor households than others may not necessarily be better for poor households if they place less value on the services involved. However, one can be more confident comparing different distributions of spending for given service areas. And analysis of who public money is spent on is still of interest in its own right – not least because of the aforementioned evidence that public service spending does matter for outcomes.

As well as valuing the same services differently, individuals may in practice receive services that differ in quality. Differences in the quality of provision between, for instance, hospitals and schools in different areas are important to understand the impact of public services on people's well-being. If the quality of services available varies systematically across people – for instance, if richer households are able to move closer to better schools, or are treated by more experienced doctors – then the benefits-in-kind from those services will be higher. Proxies for service quality can be analysed, and it may be possible to estimate how much more people would be willing to pay for a higher quality of service, for example by looking at how much higher house prices are in the vicinity of better schools. However, data limitations mean most distributional analyses do not account for variations in quality.

### Actual or expected use of services?

How should we measure how spending on public services is allocated across people and households? What might seem to be a technical question about the availability of data actually also depends importantly on what it is we are trying to measure.

One approach is to try to allocate spending to the people and households actually using the services. This requires data that include indicators of service usage that also contain (or can be matched to) information on the income or other characteristics that one is using to group people and households for distributional analysis. For school spending, for example, a basic analysis might use information only on the number and ages of children attending school. A more detailed analysis might also make use of indicators of what type of school a child attends (e.g. state or private) or even what specific school they attend (given differences in funding levels for different schools). For healthcare, indicators such as the number of GP appointments, outpatient visits or overnight stays in hospital may be utilised in combination with estimates of the average cost of such services.

Of course, average spending per pupil (even at the school level) and per GP appointment or hospital stay will miss much of the variation in actual spending across people. And this variation may be correlated with income or other characteristics that one is using in the distributional analysis. As we discuss in our analysis of health spending, administrative data can sometimes help us to obtain more accurate individual-level estimates of spending for at least a subset of health spending, but these data come with other drawbacks, such as less-good information on people's socio-economic characteristics.

However, even if we could precisely measure the public spending on services actually used by each individual, this may not actually be the best measure of the benefits-in-kind from healthcare and some other services (such as social care services). Episodes of ill health, for example, are intermittent and unpredictable, so the public funding of healthcare effectively provides insurance to all individuals against the risk of incurring healthcare expenditure. In other words, public provision of free healthcare benefits not only those using services in a given period, but anyone with some positive ex ante probability of requiring the services. These probabilities will vary across the population – by age, sex, pre-existing health conditions, etc.

This brings us back to the first question of whether we are looking at how households value public services, or how much is spent on the services they use. As we discussed above, the former really requires data on households' own valuations of services, and on the costs that services could be privately purchased for. In practice, distributional analyses taking an 'insurance' approach generally use information on the cost of public provision, allocating this across households on the basis of a few observable characteristics such as age, sex, and location of residence. Such analyses are not really assessing how either the value derived from public services or actual spending on public services are distributed across the population. Instead, these analyses of how much the state is paying to 'insure' different population groups can be thought of as proxies of the value of this insurance to these groups, and of the amounts spent on more specific households and individuals.

For some services, where service use is either more deterministic or choice-driven, an insurance-based approach seems less appropriate in principle, as the benefits of spending are more clearly limited to those who actually use a service. This points towards using different approaches for different services.

### What about differing needs?

As already highlighted, the value of a given amount of spending on a service will differ across people depending on their needs for that service: for example, their health status, or whether they have special educational needs (SEN). The amount they are saving relative to if they had to purchase the same service privately will also vary with local labour, property, and other costs. People or households with high needs or where costs of delivery are high will, in general, value spending on relevant services more, but would also require greater spending on those services in order to achieve the same level of welfare or outcome as households with lower needs or in areas where services are cheaper to deliver.

This has important implications for how one can use estimates of households' income that include spending/cost-based estimates of the benefits-in-kind they receive from public services. In particular, it means two households may have the same 'total income' but different levels of welfare, so that ranking households from 'poorest' to 'richest' using such measures may not be particularly meaningful. It also makes it difficult to judge how appropriate the relative levels of spending on public services for different households or population groups are.

In principle, such comparisons would be possible by adjusting estimates of public service spending and income for differences in households' needs and health, educational and other circumstances. A similar process called equivalisation is often used to adjust cash incomes for differences in the number and ages of people in a household, with households that have more members and more adults assumed to need a higher income to reach the same material living standard.

However, the data needed to equalise for differences in the need for spending on most public services are not widely available. Most distributional analyses of public service spending therefore do not try to do this, limiting their normative usefulness. As we discuss in the section on

the distribution of health spending, research on healthcare services is able to make use of information on people's health status and service usage to examine how usage varies across the population, conditional upon observable health needs.

### Who is benefiting from a service?

Many public services benefit not only the people or household directly using or insured by the service. For example, vaccinations and treatments for infectious diseases help prevent other people becoming ill, and wider society benefits if higher education reduces the likelihood of someone engaging in criminal activity or makes them more likely to engage in the democratic process. For some services, such as national defence or the diplomatic service, individual people and households do not directly use such services at all, but such services clearly have at least some value to society.

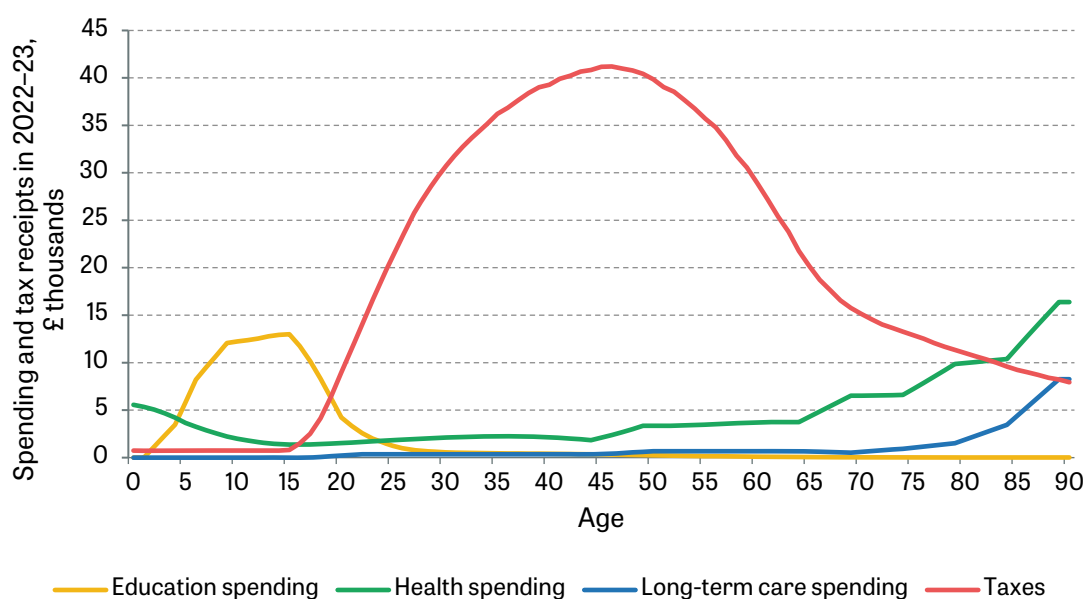
Most distributional analyses of public services focus on those services providing largely private benefits to specific people and households (such as health, education, social services and housing) rather than those providing largely public goods (such as defence). Those analyses that include services of a public good nature, such as defence, often use simple approaches such as allocating an equal amount per person, or allocating in line with post tax and (cash) benefit income (Rosewell, Cooper and Alldritt, 2010; Piketty, Saez and Zucman, 2018). There are rationales for both such approaches, but they result in very different distributions of spending, and neither can be considered a 'neutral' assumption.

Even for services with largely private benefits, there can sometimes be a question about which individual in a household is benefiting. For example, is spending on childcare and education services largely benefiting the child who receives the education or the parent who would otherwise have to pay for the service? What about spending on children's healthcare? In analyses focusing on snapshot or short-term measures of service usage and the distribution of spending across households, these issues typically do not matter; children and their parents are usually in the same household, with the notable exception of university students who choose to move away to study. However, when considering the long-run or lifetime distribution of public service spending, these issues do matter.

### Over what time period are distributional effects measured?

Most analyses covering multiple service areas are snapshot or short term in nature. For example households are grouped according to their income or other circumstances (such as age, location or employment status) in a given month or year, with the object of interest being their short-run use of, or benefit from, public services. This is likely to largely reflect related data and conceptual issues. First, most of the surveys used in this type of analysis are cross-sectional, rather than panel data following the same people and households over multiple years. Second, even with such panel data, one cannot observe or easily model how much public service spending a given person or household would receive over their life cycle under current public spending arrangements. Instead, one can estimate what is spent on different households at different points in their life cycle under current public spending arrangements (comparing current spending on households with children or pensioners, for instance), or what is spent on a given household under the different public spending arrangements in place during the years covered by the survey.

This matters because both incomes and the use of public services change over people's life cycles in systematic ways. This is illustrated in Figure A1, which shows Office for Budget Responsibility (OBR) estimates for average spending by age for health, education and long-term care services, and average taxes paid. With spending on children allocated to them rather than their parents, public service spending is generally high for children (due first to health and then education), low during early adulthood, and then rises increasingly rapidly with age due to rising healthcare and then long-term care costs. Conversely, tax payments (and underlying these, income) are hump-shaped, rising as people enter the labour market and move up the career ladder, reaching a peak in late middle age, and then declining as people leave the labour market.

**Figure A1. Representative age profiles for average spending on public services, and taxes paid**

Source: Office for Budget Responsibility (2018, Chart 3.10).

These life-cycle patterns would have the biggest impact on a snapshot analysis of the distribution of public service spending across individuals. Spending would look highly progressive because pensioners and particularly children, on whom spending is high, have low or even zero contemporaneous incomes, even if spending was the same for everyone over a lifetime. But these patterns can also distort household-level analysis. For example, families with (especially young) children tend to be at a lower point in the income distribution on a snapshot or annual basis than on a life-cycle or long-term basis. This reflects both that income tends to be lower than later in the adult household members' lives when the children have flown the nest, and that a given income has to stretch further (which equalisation is designed to account for). As we see in the section on the distribution of education spending, this means that education spending looks much more progressive when looking at a snapshot measure of a child's service use and household income, than when looking over a child's entire childhood, and when looking over the child's own lifetime income. This echoes findings from comparing snapshot and long-run or lifetime measures of the distributional effects of taxes and cash benefits (Levell, Roantree and Shaw, 2015, 2017): out-of-work benefits look less progressive and in-work benefits more progressive over longer-run horizons than in a given snapshot. This reflects the fact that when you look over longer time horizons, it becomes clear that what looks like redistribution between people in 'snapshot' analyses is better understood as redistribution between periods of a person's life cycle, such as periods of work and unemployment or ill health.

Of course, when considering the distribution of public service spending, we can care about how spending varies both across people and households with different long-term and life-cycle incomes and across people with different short-term living standards. Snapshot analysis can therefore have its place. However, research suggests that those with the lowest measured incomes at a given point in time do not necessarily have the lowest standards of living: consumption is generally higher and measures of material hardship lower than for those with merely low (but not the lowest) incomes (Brewer and O'Dea, 2012). This reflects the fact that those with the very lowest reported incomes may be suffering a temporary fall in income, and can draw on savings, may receive transfers from other households that are not captured, or may simply have misreported their income. This suggests that one might want to look at how public service spending varies across the consumption distribution and across groups based on indicators of material deprivation.

### How might changes in income and other circumstances affect estimates?

The fact that incomes change over people's life cycles and vary over cohorts means that changes over time in how public service spending is distributed across the income distribution can be



driven by changes in the position of different age groups and cohorts in the income distribution, rather than changes in who the services are being provided to. As we shall see in the section on the distribution of health spending, the large increase in the relative incomes of pensioners since the early 1990s has meant that health spending – a large part of which is concentrated on pensioners, as shown in Figure A1 – looks less progressive than it once did. This is not entirely meaningless: today's pensioners are richer relative to the rest of the population than pensioners 30 years ago, and so health spending is, in a sense, less progressive both at a given moment in time and across cohorts. But it does not mean that the health system has become relatively less good at meeting the health needs of poor people than 30 years ago. Instead, those with low snapshot incomes are less likely to be old and more likely to be young than they once were, and hence have lower health needs than they once did. This reinforces the need to consider how spending and usage varies conditional upon need.

### What about policies that affect who uses a service?

Estimates of the distribution of public service spending are, in some way, based on existing service usage: either actual use at the individual person or household level; or average use across groups (for example, based on age, sex and location) when using an insurance-type approach. Existing service usage patterns might be a reasonable guide to how resource (day-to-day) spending is currently distributed across the population. But they are probably a less good guide for looking at two other important aspects of public service spending policy: capital expenditure; and future planned changes in expenditure.

Capital spending is different in nature to resource spending. Investment in infrastructure, facilities and equipment is likely to have longer-run benefits than spending on staff salaries and consumables. The new hospital, school, MRI scanner or electronic whiteboard can be used for years to come – including perhaps for people not yet born, or at least not yet using the associated health or educational services. More generally, a large part of capital spending is about creating new infrastructure and facilities, the users of whom could differ from the users of existing infrastructure and facilities. Indeed, the purpose of the infrastructure or facilities could be to improve access to services for particular areas or population groups. Data on who will use the new infrastructure and facilities funded by capital spending are usually lacking, so analyses that incorporate capital spending often allocate it in line with current usage and resource spending. This is simple, but is not a neutral assumption. Alternatively, analyses can be restricted to current day-to-day spending, which more clearly benefits current users.

Changes in expenditure suffer a similar issue. When spending is increased or decreased, it does not necessarily affect all existing service users in the same way – specific examples of differential impacts from the austerity of the 2010s are discussed later in the sections on the distribution of health, education and other public service spending. Ex post, one can account for these changes, using updated data on service usage. Ex ante, it is much more difficult to do so, unless changes in spending are associated with a very specific set of policy changes (such as with adult social care spending, discussed in the section on the distribution of other public service spending). Most published analyses of planned spending changes (e.g. Reed and Portes, 2018; HM Treasury, 2021a) make the simplifying assumption that changes in spending for a given service area affect the amount spent on different groups (e.g. income decile groups) in proportion to the existing amounts spent on them. It is difficult to see what more could be done without detailed information on the policy changes accompanying the spending changes. Nevertheless, such estimates should be treated with a degree of caution and are not discussed further in this commentary.

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## Data

We use a wide range of published government statistics; these have been cited throughout. In addition, we analyse several datasets, cited below. We are grateful to the data owners for their work in making these resources available; responsibility for all analysis, and any errors, rests with the authors.

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