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Social Policies and Distributional Outcomes

in a Changing Britain

Going backwards? The slowdown, stalling and reversal of progress in reducing child poverty in Britain during the second decade of the 21st century, and the groups of children that were affected.

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The Social Policies and Distributional Outcomes in a Changing Britain (SPDO) research programme

The central objective of the Social Policies and Distributional Outcomes in a Changing Britain (SPDO) research programme is to provide an authoritative, independent, rigorous and in-depth evidence base on social policies and distributional outcomes in 21st century Britain. The research programme addresses the central question "*what progress has been made in addressing inequalities through social policy making?"* It is ambitious and comprehensive in scope, combining in-depth quantitative analysis of trends in distributional outcomes across multidimensional domains (living standards, employment, health and care, and physical security and security) by different characteristics (age, gender, disability, ethnicity/nationality/migration status, socio-economic group and area), with detailed social policy analysis ten major social policy areas (social security/general housing, health, social care, education, higher education, early years, employment, physical safety and security, homelessness/complex needs, social mobility). The research programme updates our previous Social Policy in a Cold Climate research programme and combines analysis of the period between the General Election in May 2015 and early (pre-COVID19 2020) with broader reflection on the changing nature of social policies and distributional outcomes over the 21st century. Further details and research papers from the programme are available on the SPDO website.

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1. Introduction

This paper examines the slowdown, stalling and reversal of progress in reducing child poverty during the second decade of the 21st century and how this affected children from different social groups. At the beginning of the 2010s, the Liberal-Democratic Coalition Government led by Prime Minister David Cameron made strong commitments to protect 'the most vulnerable' as part of an overall programme of fiscal adjustment, austerity and welfare reform. This paper contributes to broader discussions about whether this commitment was fulfilled by providing a detailed assessment of trends and patterns in child poverty during the 2010s. We present comprehensive and in-depth evidence on the groups of children that recorded increases in child poverty during the 2010s and assess the extent to which the position of groups of children that were already the most disadvantaged in terms of their child poverty risks at the beginning of the decade deteriorated further during the 2010s.

The paper has been written as part of the Social Policies and Distributional Outcomes (SPDO) research programme and provides a write of the findings from the SPDO child poverty research exercise. Findings from the SPDO child poverty research exercise have already fed into several previous SPDO outputs including the main conclusions of the SPDO overview paper (Vizard and Hills 2021). This identified that progress in tackling social disadvantage and inequalities slowed down, stalled or went into reverse against multiple social indicators spanning different critical areas of life (or 'domains') during the second decade of the 21st century. Specifically, the SPDO overview paper identifies eight key areas of stalling social progress that were already apparent in early 2020 - before the COVID-19 pandemic and the cost of living crisis struck: child poverty; in-work poverty; life expectancy inequalities; unmet need for care; educational inequalities; inequalities in early childhood; homicide inequalities; homelessness. The current paper sets out the detailed and comprehensive evidence on patterns and trends in child poverty outcomes during the 2010s that underpins this conclusion. Other related research papers produced as part of the SPDO research programme include Stewart and Reader (2021) and Cooper and Hills (2021), which examine child poverty outcomes, and Obolenskaya and Hills (2019), which sets out detailed disaggregated evidence on wealth, household income, wages and employment.

Like the other research papers written for the SPDO research programme, the analysis of child poverty in this paper stops in early 2020

- the eve of the COVID pandemic. That is, we do not attempt to provide an assessment of the impact of the COVID-19 pandemic or the subsequent cost of living crisis on child poverty within this report. However, we believe that our detailed evidence on trends and patterns in child poverty in the run up to the pandemic provides critical evidence in terms of pre-existing trends and patterns of risks and vulnerabilities on the eve of Covid-19. As such, the evidence is essential context for understanding the nature and scale of the interventions that were necessary when COVID-19 struck and as the cost-of-living crisis took hold.

Methodologically, the paper builds on an expanding body of research that provides detailed disaggregated evidence on economic and social outcomes for equalities and human rights monitoring purposes. This includes research undertaken in the context of the National Equality Panel (Hills et al 2010) and the Equality Measurement Framework (Burchardt and Vizard 2011). Disaggregated data on child poverty outcomes that goes beyond the standard breakdowns is required by national and international human rights monitoring bodies and our analysis in this paper extends the evidence base on disaggregated child poverty outcomes produced by the Equality and Human Rights Commission (EHRC 2010 2015ab 2018a)[1]. Building on these initiatives, as part of the SPDO research programme, we have produced in-depth evidence on patterns and trends in child poverty during the 2010s with systematic disaggregation by characteristics that are specifically protected in equalities legislation (age, gender, disability and ethnicity) and by additional characteristics that are important for equalities and human rights monitoring purposes (young carer status, country of birth, lone parent status, number of dependent children, geographical area and household socio-economic classification, employment status and tenure). The full results of the SPDO Child poverty research exercise are provided on our website in a set of online tables that accompany this paper.

In terms of the background to the paper, in addition to the previous evidence we have produced on child poverty outcomes as part of the Social Policies and Distributional Outcomes research programme, evidence on the

[1]The Equality Acts 2006 and 2010 were an important stimulus for this research agenda. The National Equality Panel provided systematic evidence on inequalities in economic outcomes by protected characteristics, social class, housing tenure, region and area deprivation (Hills et al 2010). This analysis was updated in Hills et al (2013, 2015), with supplementary work on inequalities in economic outcomes in London (Vizard et al 2015), and the changing nature of economic inequalities over two decades (Obolenskaya and Hills 2019). The EHRC's Measurement Framework initiative aims to build up quantitative evidence on multidimensional outcomes as a basis for national equality and human rights monitoring, with systematic disaggregation by protected characteristics and social class, supplemented by evidence on inter-sectionalities and at risk groups (see for example: Burchardt and Vizard 2011; EHRC 2010, 2015ab, 2017 2018ab; Vizard et al 2018, Vizard, Obolenskaya and Burchardt 2018 and Burchardt et al 2018). Other initiatives that aim to build up evidence by protected characteristics and for at risk groups include the Cabinet Office's Race Disparity Audit (Cabinet Office 2017) and work by the Children's Commissioners Office to build up data on vulnerable children (CCO 2015).

stalling and reversal of social progress in reducing child poverty was reported in 2015 as part of the Social Policy in a Cold Climate research programme. Multiple NGOs and thinktanks also issued warnings about a *slowdown* and *stalling* of progress in reducing anchored[2] child poverty, and a *reversal* of progress in reducing relative child poverty, in the years running up to the pandemic. Additionally, an expanding body of evidence and several new indicators pointed towards increases in more severe forms of hardship including destitution, homelessness and food insecurity *before* COVID-19 and the cost-of-living crisis struck. Key drivers of rising child poverty during the 2010s that were identified by NGOs, think-tanks and in a growing body of research evidence in the run up to the pandemic included the weakening of the welfare state; broader labour market, macro and socio-demographic factors; and cost pressures resulting from the housing crisis. After the 2015 General Election, the repeal of the Child Poverty Act (2010) in England also weakened legal accountability mechanisms by removing the statutory targets to reduce child poverty by 2020 as well as the duty on the UK Government to publish a regular UK child poverty strategy and to report on progress in its implementation to Parliament. Accountability mechanisms for child poverty in the UK also include a body of domestic and international human rights standards and the Equality and Human Rights Commission and multiple international human rights bodies did, however, raise major concerns about child poverty and the impact of austerity and elements of the welfare reform programme. The period running up to the pandemic was also one of notable judicial activism, with legal challenges to some welfare reform measures backed by landmark judicial decisions during the 2010s (see this paper, section 2, for references and further discussion).

Yet despite these developments, successive governments made a series of repeated and controversial claims that child poverty *fell* during the 2010s in the years running up to the pandemic including in the context of the 2019 General Election campaign. Notwithstanding the repeal of the Child Poverty Act (2010), reporting against the set of Child Poverty Act indicators remained a requirement under the Welfare Reform and Work Act (2016)[3] and these claims in turn provoked a series of statements from the Office

[2] Government (e.g. DWP HBAI reports) reports often refer to *absolute* rather than *anchored* low income. Our terminology is intended to avoid confusion with global absolute poverty standards (such as the extreme dollar a day standard). Our terminology also aligns with OECD and Eurostat practice, which refers to a poverty threshold which evaluates household income against an income standard that is fixed (or anchored) at a particular point in time in real terms as an *anchored* poverty rate. This terminology is also suggested in Office of Statistics Regulation (2021) paragraph 12.

[3] Welfare Reform and Work Act 2016, c. 7, Children living in low-income households, Section 4, http://www.legislation.gov.uk/ukpga/2016/7/section/4.

for Statistics Regulation reiterating the importance of reporting trends against a basket of different child poverty indicators and cautioning against the selective citation of child poverty statistics, inaccuracies and the undermining of public understanding and trust (Office of Statistics Regulation 2017, 2020, 2021). The importance of reporting against a basket of indicators was subsequently highlighted in the recommendations of a parliamentary committee on child poverty measures and targets (Work and Pensions Committee 2021) and in written evidence submitted to this inquiry by the Centre for Analysis of Social Exclusion (CASE 2021). This written evidence argued that no single indicator can give a full picture of poverty or the lack of sufficient material resources to meet human needs and that while the main headline measure of poverty should be relative poverty - the share of children living in households with less than 60% of median equivalised income after housing costs - a set of supplementary measures should also be tracked. This was specified as including anchored as well as relative measures; before as well as after housing costs measures; combined measures of low income and material deprivation; measures designed to capture more severe forms of poverty; and measures to assess poverty depth and persistence (CASE 2021).

Against this background, the central objective of the SPDO child poverty research exercise was to build up a more comprehensive, systematic and in-depth evidence on trends and patterns in child poverty during the 2010s by social group than had been previously available using a combination of descriptive and multivariate methods. The current paper provides a record of the findings from the research exercise and addresses four central research questions:

- Which groups of children were at higher risk of child poverty at the beginning of the second decade of the 21st century?
- Which groups of children recorded increases in child poverty risks during the 2010s and were they the same groups of children that were already at higher risk of child poverty at the beginning of the decade?
- Did child poverty prevalence gaps widen during the 2010s with the groups of children that were most disadvantaged at the beginning of the decade falling further behind more advantaged comparator groups?
- Which groups of children were at higher risk of child poverty at the end of the second decade of the 21st century – just before COVID-19 and the cost of living crisis struck?

The analysis uses data from the Family Resources Survey (FRS) and Households Below Average Income (HBAI) dataset. Descriptive methods are used to identify differences in child poverty risks by social group at the beginning of the second decade of the 21st century (in 2010/11); increases in child poverty risks for children from each social group between 2010/11 and 2019/20; and widening of child poverty prevalence gaps for children from disadvantaged social groups compared to more advantaged social groups between 2010/11 and 2019/20. All of our main estimates of differences and changes in child poverty rates during the 2010s by social group are accompanied by detailed assessments of statistical significance. Multivariate methods are used to assess whether the independent associations between child poverty outcomes and the different markers of child risk and disadvantage changed or strengthened during the second decade of the 21st century. We develop a series of child poverty models for both relative child poverty after housing costs and severe child poverty using logistic regression techniques. The model variants used in the analysis include cross-sectional models for 2010/11 and 2019/20 which enable us to identity factors that had an independent association with child poverty at the beginning and end of the decade. In addition, we develop a series of change models that pool the samples for 2010/11 and 2019/20, include time-period as an explanatory variable and incorporate a series of interaction terms between time-period and children's characteristics (for example, between time-period and parental disability). This enables us to assess whether independent associations between child poverty outcomes and different markers of risk and disadvantage *strengthened* during the 2010s.

In terms of indicator selection, the main in-depth analysis of patterns and trends in child poverty during the 2010s by social group focuses on two indicators: the relative child poverty (after housing costs) indicator and a severe child poverty indicator. The first of these indicators was included in the Child Poverty Act (2010) and is widely used as a headline child poverty indicator. It identifies the proportion of children living in households where total household income is below 60% of the average (median) after income tax, national insurance and housing costs have been deducted and adjusting for household size and composition. The severe child poverty indicator is a *before* rather than an *after* housing costs measure and combines a more severe household low income threshold (50% of median household income) with an assessment of material deprivation. Material deprivation indicators identify households that cannot afford specific goods and services that are deemed essential for basic needs and / or social participation and the FRS/HBAI measure is designed to capture the "self-

reported inability of individuals or households to afford particular goods and activities that are typical in society at a given point in time" (for further details, see section 3.1). The use of a severe child poverty indicator was initially recommended in the Independent Review of Poverty and Life Changes as a basis for monitoring the impact of policy on the very poorest (Field 2010) and was subsequently put forward in the Coalition's Child Poverty Strategy as a supplement to the suite of Child Poverty Act indicators (DWP and DE 2011, 69).

The rationale for focussing on these two indicators in our main analysis is that, in combination, this approach enables us to build up comprehensive and detailed evidence using both a widely accepted main (after housing costs) indicator of child poverty and a supplementary (before housing cost) indicator that is sensitive to more severe forms of hardship. To provide context for the main analysis, we also report on trends in *overall* child poverty rates for the entire period for which consistent data is available using the relative child poverty indicator (both before and after housing costs) and two further indictors that were included in the Child Poverty Act (CPA) (2010): the anchored child poverty indicator (before and after housing costs); and the combined low income and material deprivation indicator (which combines a before housing costs 70% poverty threshold with a measure of material deprivation). Additionally, the literature review reviews evidence against some of the new indictors that have been put forward in broader research.

The analysis we present in this paper is subject to several important caveats and limitations. One key issue relates to sample size. As is well known, FRS/HBAI sample size is low for some groups of children. For the purposes of the SPDO child poverty research exercise, in order to make best use of the available data, we planned at the outset to base our main estimates for some breakdowns (ethnicity, region and young carer status) using a pooled data approach. In addition, as the analysis progressed, in undertaking the descriptive analysis, we carefully followed DWP recommendations in using new bespoke resamples datasets that estimate uncertainty around our child poverty estimates. The main advantage of this approach is that the FRS complex survey design can be accounted for when statistical significance is assessed. However, one key issue we encountered is that the resamples datasets contains only around half the number of unique households of the original sample. Consequently, sample size for children is further reduced and this is a particular concern for the smaller breakdowns that are the specific focus of this paper and this has potential implications for statistical power and the assessment of statistical significance.

For these reasons, we adopt a nuanced approach to reporting findings in the descriptive analysis in this paper. We explicitly identify where differences and changes in child poverty risks are statistically significant at the 95% level of confidence using the resamples datasets for estimating uncertainty. These are findings where there is a high degree of confidence that the relevant difference or change in child poverty risk has not occurred by chance. Additionally, we also highlight increases in relative child poverty AHC during the 2010s for some social groups which, while not assessed as being statistically significant, we believe should not be simply disregarded or overlooked. However, looking forward, we believe that to address these issues of sample size, it might ultimately be necessary to increase sample size in the FRS survey to support the analysis of trends in child poverty for smaller social groups more adequately.

Like the descriptive analysis, the multivariate analysis we present in this paper is subject to some important caveats and limitations. The multivariate models we have developed are not intended as full causal models but rather as tool for disentangling and isolating the effects of the different markers of risk and disadvantage that we are concerned with in this study and assessing whether their independent effects strengthened during the 2010s. Note that all of the multivariate child poverty models were run using annual data and it was not practical to apply the resamples datasets to assess statistical significance in the multivariate analysis, given the extensive computational power required and the number of parameters and interactions included within our models. To compensate, we adopt more conservative thresholds in reporting the multivariate results and only report findings that are statistically significant at the 99% level of confidence or above.

The main conclusion we draw from the SPDO child poverty research exercise is that the second decade of the 21st century was a lost decade in terms of progress in reducing overall child poverty risks. The slowdown, stalling and reversal of progress in bringing down overall child income poverty rates during the 2010s shows that children in general were inadequately protected. Using a combination of descriptive and multivariate methods, our analysis shows that the slowdown, stalling and reversal of progress in reducing child poverty during the second decade of the 21st century impacted on children from many different social groups. However, it is of particular concern that some of the groups that were already the most disadvantaged at the beginning of the decade (in 2010/11) were disproportionally impacted with further increases in their child poverty risks (by 2019/20) and a widening of their prevalence gaps with more advantaged comparator groups. Multivariate analysis shows that the

independent associations between child poverty and some of the key markers of disadvantage and risk that we are concerned with in this study also strengthened during the 2010s. This evidence raises fundamental questions about retrogression in social outcomes in the second decade of the 21st century, the impact of underlying changes in social policies and social protection, the failure to protect vulnerable groups during period of fiscal adjustment, austerity and welfare reform during the second decade of the 21st century, and underlying issues of social justice.

Looking forward, momentum is building up for a new cross-governmental child poverty strategy for the 2020s. In 2021, the cross-party Work and Pensions Committee inquiry *Children in poverty: Measurement and targets* concluded that a lack of clear leadership and focus has hindered efforts to reduce the number of children growing up in poverty in the UK and recommended that the Government commit to a cross-departmental strategy. It also recommended that the Government end its focus on anchored poverty and return to tracking four income-based indicators, including relative poverty and broader material deprivation measures (Work and Pensions Committee 2021). The need for a comprehensive and cross-governmental anti-poverty strategy has also recently been highlighted in Legatum Institute (2021), Church of England (2022), JRF 2021b, Children' Commissioner for England (2021). However, at the time of finalising this paper, in February 2023, with the UK engulfed in a cost-of-living crisis and many families with children struggling to cover the costs of essential such as food and heating, a strategy of this type has not yet been adopted. Moreover, with the Government's Levelling Up and Regeneration Bill currently progressing through Parliament, it is of particular concern that a child poverty indicator was *not* included within the system of metrics that the Johnson Government proposed for evaluating the delivery of levelling up goals by 2030 (Vizard 2022).

Following on from this introduction, Section 2 discusses the background to our analysis and provides a brief overview of existing research. Section 3 sets out the research framework, data and methods. Section 4 examines the slowdown, stalling and reversal of progress in reducing overall child poverty risks during the second decade of the 21st century. Section 5 sets out comprehensive and in-depth findings on trends and patterns in relative child poverty after housing costs during the 2010s by social group. Section 6 repeats this analysis to assess progress using the severe child poverty indicator. Section 7 analyses the relationship between child poverty, children's characteristics and time-period using multivariate methods (comparing the strength of the independent associations between child poverty and different markers of child risk and disadvantage in 2010/11

and 2019/20). The final section (section 8) summarises the main findings and concludes.

2. Background and literature review

In this section we discuss the background to the SPDO child poverty research exercise and provide an overview of other research addressing the slowdown, stalling and reversal of progress in reducing child poverty during the second decade of the 21st century. Section 2.1 reviews previous assessments of progress in reducing child poverty in the UK during the first two decades of the 21st century made as part of the SPDO research programme and its predecessor the Social Policy in a Cold Climate research programme as well as in broader research. Section 2.2. reviews key drivers of rising child poverty during the 2010s that have been identified through our research programmes and the broader literature including the weakening of the welfare state (section 2.2.1.); broader labour market, macro and socio-demographic factors (section 2.2.1); and housing cost pressures (section 2.2.3). Section 2.3 provides some remarks on accountability mechanisms, human rights and the concept of non-retrogression.

2.1 Progress in reducing child poverty over two decades

2.1.1 The first decade of the 21st century

The reduction in overall child poverty rates during the first decade of the 21st century is documented in previous outputs as part of the Social Policy in a Cold Climate research programme and in a substantial body of research literature. Recognition of the elimination of child poverty as a goal of social policy dates back to 1999. Following substantial rises in relative child poverty in the 1980s, the Blair Government made an explicit commitment to eradicate child poverty by 2020. Substantial progress was made in reducing child poverty during Labour's period in power with significant reductions over the period as a whole. However, the most rapid progress was concentrated in first and second Labour administrations in the period up to 2004/5 (c.f. section 4.2.2). Although official data shows that Labour's 2004/5 and 2010/11 child poverty targets were both missed, assessments of Labour's record tend to emphasise the ambitious nature of the targets (specified in terms of relative rather than anchored child poverty rates) and the convergence in poverty rates amongst children and pensioners and the general population that was nevertheless achieved (Stewart 2013, Hills 2013, Joyce and Sibieta 2013, Stewart and Reader 2021, Stewart, Reeves and Patrick 2021). Research also suggests that overall progress under Labour may have been greater than official data suggests (and that the 2004/5 target may in fact have been achieved) when an adjustment is

made for under-reporting of benefit income at the bottom of the distribution (Corlett et al 2018).

Key studies attribute the progress that was made in reducing child poverty between 1997 and 2010 to the fact that multiple social policy measures were adopted across social policy areas simultaneously which reinforced each other and which, in combination, resulted in improved child poverty outcomes. The core components of Labour's anti-poverty programme included multiple reinforcing social policy measures across at least four dimensions. First, there was a focus on employment as the route out of poverty, including 'welfare to work' and a set of New Deal programmes targeted at young people, long-term unemployed, lone parents, disabled people etc. Second, specific measures were adopted to "make work pay", including the expansion in work support through the tax credit system and the introduction of the New Minimum Wage in 1998), Third, there was increased financial support with families for children (including the loading of WFTC towards families with children, increases in child benefit and new benefits and allowances relating to children including babies and younger children, such as the childcare element of WFTC and increased financial support related to maternity and pregnancy. Fourth, there was an expansion of human and social investment including in education and skills, childcare and years provision, early years development and health) (see for example, Lupton et al 2013, Stewart 2013, Hills 2013; Waldfogel (2010), Brewer et al (2010), Joyce and Sibieta (2013), Judge et al (2012)).

The main findings of the SPCC programme identified the coordinated nature of central government action across these multiple social policy areas as being key to the reductions in child poverty between 1997 and 2010. The programme findings highlighted the redistributive nature of New Labour's tax and benefit policies over a ten year period which raised incomes for families with children, boosted cash benefits for younger children and included the roll out of the Sure Start programme, children's centres and other early years support (Lupton et al 2013, Stewart 2013). Waldfogel (2010) compares New Labour's anti-poverty programme with policies adopted in the US during a similar period, which focussed on 'welfare to work', and argued that it was the adoption of a multi-pronged approach, including financial support targeted at families with children and sustained human and social investment, as well as measures that aimed to increase labour market participation, that resulted in declines in child poverty. Other studies also highlight that while multiple measures across different policy areas were adopted, one of the main lesson's Labour's "War on Poverty" was that it was the tax and benefit system, rather than

increases in the minimum wage, that was the main driver of poverty reductions (Brewer et al 2010, Joyce and Sibieta, 2013).

2.1.2 The second decade of the 21st century

The slowdown, stalling and reversal of social progress during the Coalition's period in power (2010-2015) is examined in Stewart and Obolenskaya (2015, 2016), Hills (2015), Hills and Stewart (2016) and in broader literature including Bradshaw (2017) and McEnhill & Taylor-Gooby (2017). Following on from the 2010 General Election, the Emergency June 2010 budget marked the beginning of the austerity programme and welfare reform. The SPCC assessments highlighted an initial period of broad stability in child poverty outcomes. While the recession that followed the financial crisis is generally dated for the UK as the six consecutive quarters of negative GDP between Q2 2008 and Q3 2009, maximum downward pressure on household income was somewhat later, with falls at the median in 2010/11 and 2011/12 followed by two years of flat-lining. Against a fixed threshold, there was a notable year-to-year increase in the anchored child poverty rate in 2011/12 while relative child poverty AHC rates remained broadly flat until after 2012/13. Indeed, a key conclusion from the SPCC research programme was that there was protection of the bottom of end of the income distribution up to 2012/13 with the welfare state still functioning effectively and essentially doing its job (Hills 2015, Stewart & Obolenskaya 2015 2016, Hills & Stewart 2016, Hills et al 2016, Agostini et al 2017, Stewart and Reader 2021). However, after 2012/13, there were clear indications of a major change. There were increases in relative child poverty both before and after housing costs in 2014/15, the Coalition's final year in power (on which, see section 3).

Following on from the 2015 General Election, the further austerity and welfare reform measures announced in the emergency summer budget in 2015, the Brexit vote in summer 2016, the transition to the May Government, the 2017 General Election, the transition to the Johnson Government in summer 2019, the 2019 General Election, and the COVID-19 pandemic all occurred against the backdrop of a slowdown and stalling of progress in reducing anchored child poverty, and a *reversal* of progress in reducing relative child poverty AHC. During the years running up to the pandemic, NGOs, academics and research organisations issued a succession of repeated and dire warnings that progress in reducing child poverty in the UK was in danger of unravelling with relative child poverty (AHC) on the rise, improvements in anchored child poverty tailing off, and particular concerns raised about trends for children living in lone parent

families, younger children and children living in larger families (see, for example, JRF 2018a, Tucker 2017, CPAG 2019a, Kelly et al 2018, Corlett et al 2018, Hood and Waters 2017a, Corlett 2019, Bourquin et al 2019; c.f. for example, Stewart and Reader 2021, Stewart et al 2021, Oppenheim and Milton 2021, JRF 2021, JRF 2022 and Cribb et al 2022). Forecasting exercises also pointed towards increasingly adverse trajectories. Under Theresa May's premiership - and well before the COVID-19 pandemic and cost of living crises struck - forecasts by the IFS were already indicating substantial increases in the proportion of children living in relative child poverty (AHC) in the upcoming period - to 30.3 percent and 36 per cent by 2021/21 - with increasing divergence in rates for children on the one hand, and working age adults without children and pensioners on the other (Hood and Waters 2017a). Notwithstanding the announcement of the 'end of austerity' by Theresa May at the end of 2018, forecasts that took into account the 2018 Autumn Budget did not alter this picture of substantial projected increases in child poverty by 2023[4]. In 2019, Resolution Foundation forecasts based on plans for tax and benefit reform and roll-out plans at the time predicted that relative child poverty (AHC) would increase to 37 percent by 2023 affecting over half of children with single parents or living in a family with no working age adults (Corlett 2019). Specific concerns were raised about child poverty amongst younger children, with projections for the 2016-20 cohort suggesting that the rate of relative child poverty AHC would rise to around 40 per cent at the age of two (Rahman 2019), and amongst children in larger families (Waters 2019).

Proposals for a new headline poverty measure were published by the Social Metrics Commission in 2018. This new indicator was intended to replace existing measures and to be the focus of a new cross-party consensus in relation to poverty statistics following the repeal of the Child Poverty Act (SMC 2018). The new SMC indicator is an after housing costs income based measure which makes a series of adjustments including, *inter alia*: inclusion of assets within household resources; deducting extra cost disability benefits; deducting childcare costs from household income; and making an adjustment for rough sleeping. Additionally, the median is averaged over three years to make it less sensitive to annual volatility, the logic being that the poverty line should be more stable and only change in response to permanent as oppose to temporary macro changes. The SMC measure has the effect of increasing the percentage of children in poverty

[4]Losses at the bottom are only mitigated by the 2018 Budget decisions (including the decision to increase work allowance in Universal Credit) by a relatively small amount, and do not substantially alter the inequality producing effects of on-going tax and benefit reforms (for data, see Waters 2018 and Keiller and Waters 2018). The Resolution Foundation projections on child poverty cited above were published after the 2018 budget and take account of its effects.

in each year for which comparable data available compared to the standard relative child poverty after housing cost measure (resulting in a child poverty rate of 32% rather than 31% on the eve of the pandemic, in 2019/20). Additionally, due to the smoothing effects of calculating the median as a three year average, the SMC measure also produces a flatter trend in child poverty over time than the standard relative child poverty AHC measure. In particular, the SMC measure records *less* of an improvement in the period after the financial crisis up to 2010/11 and broad flatling during the 2010s, with a 1 percentage point *decline* in child poverty between 2010/11 and 2019/20 (compared to an *increase* from 27% to 31% using the standard relative child poverty after housing costs measure). Nevertheless, a 1 percentage increase is recorded between 2014/15 and 2019/20. Additionally, increases in the years running up to the pandemic are identified using the SMC measure for children living in lone parent families, younger children and children living in larger families (SMC 2019, 2020, 2021, Oakley and McPherson 2023).

The period running up to the pandemic also saw the development of several new measures of more severe forms of poverty and hardship, as well as multiple warnings that these more severe forms of poverty and hardship were rising, with adverse impacts on children. In particular:

- A new measure of **destitution** in the UK used by JRF suggested that 1.55 million people were going without essentials need to eat, stay warm and dry, and keep clean in 2017. Destitution was found to be clustered in northern towns and some London boroughs and to be concentrated amongst single men under 35, with 365,000 children nevertheless found to be affected. Evidence suggested that destitution fell between 2015 and 2017, linked to the reduced use of sanctions after their 2013 peak, but was rising again rising prior to the COVID-19 pandemic between 2017 and 2019 (Fitzpatrick et al 2016, 2018 2020).
- The SPDO homelessness paper (Fitzpatrick and Bramley 2021) identified that **rising homelessness** was also a major concern before the COVID-19 pandemic and the cost-of-living crisis struck. The paper uses a broader measure of homeless than rough sleeping and captures those in temporary accommodation and for example sofa surfing as well as those sleeping rough. The importance of a broader measure of homelessness of this was type highlighted when the COVID-19 struck and the 'Everyone In' initiative was put into place, as the numbers helped by the scheme into accommodation far exceeding rough sleeping estimates from the eve of the pandemic

(Public Accounts Select Committee, 2021). Using this measure, the SPDO homelessness paper reported that homelessness in England was rising between 2015 and 2019, following on from increases under the Coalition, including a rising proportion of children living in temporary accommodation[5].

- **Food insecurity** was another major issue even before the pandemic and the cost-of-living crisis struck. Trussell Trust analysis reported that the number of three-day emergency parcels distributed by food banks in the UK continued to grow substantially after 2015 with around a third of parcels being allocated for children (The Trussell Trust, 2019). Food insecurity and the increased use of food banks, including by families with children, was examined in Scottish Parliament Welfare Reform Committee (2014), Loopstra et al (2015), Loopstra and Lalar (2017) and Human Rights Watch (2019)). Data on food insecurity from the Food and Agriculture Organization reported concerning patterns for the UK (FAO 2020) while DWP experimental estimates identified five million individuals as food insecure (with risk of, or lack of access to, sufficient, varied food) on the eve of COVID-19 (in 2019/20). Of this total, 1.7 million were children (DWP 2021a).
- A **'deep poverty' indicator** recommended by the Social Metrics Commission focusing on the percentage falling below 50% of the SMC poverty threshold suggests that rates increased from 5% in 2000/1 to 6% in 2010/11 and 7% on the eve of the pandemic in 2019/20. Note, however, that prevalence rates for children are not separately reported (SMC 2019, 2020, 2021).

However, IFS analysis published just before the pandemic presented a different picture in relation to trends in severe poverty during the 2010s. Bourquin et al (2019) reports trends against several different indicators which are put forward as measures of severe income poverty: after housing costs measures of household income applying poverty thresholds of 50% and 40% (rather than 60%) of the median; expenditure poverty; and material deprivation. This analysis suggests that while income and expenditure based measures of severe poverty did not fall over a twenty year period, they nevertheless showed little change between 2010/11 and

[5] The SPDO homelessness paper characterises homelessness as the 'hard edge' of rising poverty and hardship, with systematic drivers of rising homelessness during the second decade of the 21st century including poverty, sanctioning, the erosion of social security entitlements, lack of affordable housing supply and insecure tenancies. a substantial minority of single homeless adults are identified as having complex support needs associated with substance misuse and offending which are in turn systematically related to poverty (Fitzpatrick and Bramely 2021).

2017/18; and that the material deprivation rate (as measured by the FRS material deprivation indicator) *declined*. Subsequent separate analysis of trends in child material deprivation in Cribb et al (2022) also showed *reductions* in the years running up to the pandemic.

In explaining these observed declines in FRS material deprivation, Bourquin et al (2019) and Cribb et al (2022) note that the percentage of the population identified as materially deprived fell during the 2010s across most deprivation items. They also report evidence that that the costs of key items on the FRS material deprivation index declined. However, as we note later in this paper, there are some important additional caveats and reasons for careful interpretation. Specifically, while some items in the FRS material deprivation index capture more severe forms of hardship, the measure itself is designed to capture the self-reported inability of individuals or households to afford particular goods and activities that are *typical* in society at a given point in time. In addition, it should be noted that the list of items included in the FRS material deprivation indicator was fixed in 2010/11 and was *not* revised during the 2010s. As a result, while items such as access to internet or digital equipment might have increasingly been viewed as essential or typical as the decade progressed, these items are not captured or reflected[6].

In contrast to the FRS material deprivation indicator, the JFR minimum income standard (MIS) indicator indicates a *rising* trend during the 2010s, with the number of children falling below the JRF MIS standard increased by 800,000 from 5.1m to 5.9m (39.1% to 42.3% of children) between 2008/9 and 2018/19 (JRF 2021). This standard is designed to focus on the minimum income required for social participation, defined as what families with children need to meet material needs and participate in society, with the threshold set through participatory methods and has been revised at regular intervals. In its analysis of pre-pandemic trends, JRF (2020) highlighted the importance of increases in budget share of items such as childcare and transport as well new technologies that were driving changes in norms around the basic goods and services that necessary for social participation, with items such as access to printer ink growing in their importance for social participation for families with children.

The period also saw the Office for Statistics Regulation, the UK independent regulator of statistics, intervening on several occasions in relation to the claims about child poverty trends being made by government. The May Government regularly defended its record on child

[6] See this paper sections 2.2.3, 3.1, 4.3, Appendix section 9.6 and DWP (2022b) for further discussion of the FRS/HBAI material deprivation indicator. Also note that at the time of writing, a review of the FRS/HBAI material deprivation suite of questions is under way (DWP 2022c).

poverty in terms of reductions in anchored child poverty rates. However, in 2017/18 there was an unusual year on year increase in anchored child poverty AHC (on which, see section 4.1.1) and in summer 2018 official DWP analysis recognised that relative child poverty (AHC) had been rising since 2010/11 (while noting that this increase was not statistically significant) (DWP 2018b). Under Johnson, controversial claims that the number of children in poverty had *fallen* by 400,000 since 2010 were made during the December 2019 General Election campaign and further claims about declines in the number of children in poverty were made in June 2020. Complaints were made to the UK Statistics Authority relating to selective citation of child poverty statistics, inaccuracies and the undermining of public trust. Statements by Office for Statistics Regulation in response to these complaints emphasised the importance of recognising that there is no one single indicator of child poverty and of clear and transparent reporting against a basket of different child poverty indicators. Further recommendations warned against the selective use of child poverty indicators as well as the importance of governments identifying a preferred measure and reporting against it consistently (Office for Statistics Regulation 2017, 2020, 2021ab; c.f. Butler and Rawlinson 2020, Waugh 2020, Pickard 2020).

2.2 Drivers of child poverty during the 2010s

2.2.1 The weakening of the welfare state

Key studies have concluded that the weakening of the welfare state, was a key driver of rising child poverty during the 2010s. The SPDO social security paper (Cooper and Hills, 2021) identified that there was a profound change in the functioning of the welfare state in the UK during the 2010s and that the capacity of the welfare state to prevent working age adults and families with children from sliding into poverty was substantially eroded. This change resulted from the cumulative and combined effects of public expenditure and policy developments that occurred both before the May 2015 General Election (under the Conservative Liberal Democratic Coalition Government) and during the subsequent period of Conservative majority Governments (led by Cameron, May and Johnson respectively).

At the beginning of the decade, on public expenditure, planned cuts to welfare spending were announced in the 'emergency budget' set out by the Coalition Government following the General Election in May 2010 as part of the broader programme of fiscal adjustment and austerity. A legally binding welfare cap that controlled public expenditure on welfare was introduced in

2014 and a new round of cuts was announced after the 2015 General Election. In addition, there were no signs of an acceleration in growth in public expenditure on welfare following the announcement of the 'end of austerity' under Theresa May, as there were in other social policy areas such as health and education. As a result, public expenditure on social security and tax credits fell as a percentage of GDP during the 2010s and was cut in real terms between the 2015 General Election and the pandemic. The savings to the social security budget delivered during the 2010s were though less than had been anticipated and planned - partly because the imposition of eligibility restrictions on disability benefits failed to generate the scale of savings that had initially been envisaged. Moreover, spending on pensioners during the 2010s was protected through the 'triple lock' mechanism which uprated state pensions in line with the highest of average earnings, inflation or 2.5% (ensuring their real value was not eroded). In contrast, public expenditure on working age adults remained broadly flat while the reductions in spending were concentrated in child related expenditure such as child benefit and tax credits to families with children (Cooper and Hills (2021); c.f. Vizard and Hills (2021) section 3.1).

On broader policy developments, the Welfare Reform Act 2012 provided the framework for a series of major changes to the social security system implemented between 2010 and 2015, including the new system of Universal Credit. New forms of conditionality were introduced for out of work benefits and the use of punitive sanctions for non-compliance was intensified with a steep increase in Job Seekers Allowance sanctioning rates. Further measures restricted eligibility for benefits for working age adults and families and reduced thresholds and generosity. This included the introduction of a total household benefit cap; reforms to disability benefits (including the introduction a new system of Personal Independent Payments and new eligibility assessment criteria intended to reduce the number of people claiming disability benefits); restrictions on council tax support (with the change from a national to a local support scheme and the introduction of minimum payments in many local areas); restrictions on support with housing costs for private tenants (with Local Housing Allowance tied to the bottom 30th percentile of rents in broad rental market areas rather than the median); and the introduction of an under-occupancy rule for social tenants (the so-called 'bedroom tax', with a cap on housing benefit related to new rules about the number of rooms that can be included in a claim). The value of benefits and tax credits was further restrained by a series of price adjustment decisions including a switch in uprating from the retail price index to the consumer price index; a freeze on child benefit;

and price adjustment of other working age benefits by only 1% over a three year period (Hills and Cooper 2020, Cooper and Hills 2021).

Following the 2015 General Election, the Universal Credit system continued to be rolled out and a new round of cuts to the social security budget was announced. The nominal value of most working-age tax credits and benefits including unemployment benefits, Universal Credit, child benefit and Local Housing Allowance was frozen; the value of the total benefit cap was reduced and then failed to keep up with inflation; families premiums were removed; and work allowances were cut for new claimants. A two-child limit which restricts child tax credits and universal credit to the first two children was also introduced while social protection gaps for irregular migrant groups intensified as a result of a new wave of 'hostile environment' policies. The roll out of Universal Credit was also associated with long waiting periods and a system of advances and deductions to secure their repayment (Hills and Cooper 2020, Cooper and Hills 2021)[7].

The SPDO social security paper concludes that by the eve of the COVID-19 pandemic, the protective capacity of the welfare state and its effectiveness in preventing working age people and families with children from falling into poverty had been seriously weakened as a result of three key mechanisms. First, while the bottom end was effectively protected until around 2012/13, the real value of the safety net and the minimum income guaranteed by the state for working-age adults and families with children was subsequently eroded by restrictions on benefit entitlements and the cumulative effects of uprating decisions including the benefits freeze. Second, social protection gaps (or 'holes' in the welfare state) had opened up as a direct result of policy decisions, including the introduction of the total household benefit cap and the two-child limit, which decoupled social support from need. Third, the disposable income that benefit recipients often had to make ends meet was often substantially less than their formal benefit entitlements on paper would suggest. While sanctioning rates peaked in 2013, sanctioning and deductions of Universal Credit advances and other debt and arrears had further eroded the effective safety net and the cumulative effects of reductions in support with housing costs and council tax substantially exacerbated this effect. As a result of these developments, by early 2020 - the eve of the pandemic - not only were contributory social insurance arrangements linking unemployment benefits to wage levels very weak; but the protective capacity of the minimum safety net system that *was* in place had been eroded and weakened compared to that in placed prior to previous downturns and recessions. This

[7] On the harms associated with debt and advances, see for example, Jitendra et al (2019), UK Parliament (2019) and The Trussell Trust (2020).

helps to explain the scale of the interventions that were necessary when the COVID-19 pandemic struck (Hills and Cooper 2020, Cooper and Hills (2021), Vizard and Hills (2021)).

In the years running up to the pandemic, the connections between the weakening of the welfare state and rising child poverty were highlighted re were a series of warnings from NGOS and think-tanks. IFS analysis attributed a substantial proportion of the increases in child poverty being forecast at the time to the effects of tax and benefit reforms that had either been implemented or announced at the time. Decomposition analysis indicated that the extension of the freeze to benefits and tax credits and the two-child limit would have a substantial child poverty increasing effect. Although the decision not to implement the two-child limit within Universal Credit for children born before April 2017 delayed the full effects of this reform, it was anticipated that the measure would substantially reduce the extent to which the benefits system supports poorer families with three or more children in the long-run (Hood and Waters 2017b, Waters 2019)[8].

Modelling exercises from before the pandemic also clearly identified that the combined effects of changes in benefits and taxes during the 2010s were regressive - with those at the bottom of the household income distribution losing more than the top in proportional terms (Bourquin et al. (2019)[9]. Similar exercises identified that the combined effects of benefit and tax decisions would have disproportional adverse impacts on groups sharing protected characteristics including disabled people, some ethnic groups and women as well as on families with children and groups with multiple disadvantages (e.g. lone parents with disabled children) (Portes and Reed 2017 2018). House of Commons Library (2019) identified that the benefit/tax credit rates in 2019/20 were worth 6.1% less than if the freeze had not been introduced (House of Commons 2019). IFS analysis indicated that ten million families had lost an average of £420 a year as a

[8]The analysis in Hood and Waters (2017b) suggested that the transition to Universal Credit would increase receipts overall. However, Brewer et al (2019) found that on average the short-run effect of Universal Credit on families is a cut compared to legacy arrangements; that those in the lowest-income 10% of the population lose the most; that the persistently poor are particularly affected and that households where someone is disabled are more likely to fall into this group; and that around one quarter of lone parents will see substantial losses. Note that transitional protections are in place for many individuals and that forecasts on the effects of Universal Credit are dependent on take-assumptions.

[9] Analysis of the overall effects of tax and benefit changes under the Coalition between the General Elections in May 2010 and May 2015 for the SPCC research programme identified overall regressive effects, with substantial losses at the bottom of the income distribution, with lone parent families, families with three or more children and families with younger children particularly affected, and suggests that this was largely the result of households nearer the bottom losing the most from reduced means-tested and non means-tested benefits (De Agostini, Hills and Sutherland 2017; c.f. Vizard and Hills 2021 page 28)[9]. IFS analysis indicates that looking at the decade as a whole, the overall distributional effect of benefit and tax reforms between 2010 and 2019 were regressive, with bigger proportional losses at the bottom of the income distribution than at the top (Bourquin et al. (2019)).

result of the benefits freeze - with seven million poorer families losing an average of £560 if those impacted only by the child benefit freeze are excluded from the estimates (Johnson 2019).

The connections between the changes to the social security during the 2010s and rising child poverty were also highlighted in JRF (2018a). Analysis for CPAG (Tucker 2017, CPAG 2019a) documented the erosion of the child poverty reducing potential of Universal Credit through a series of cuts and demonstrated that many of the new measures targeted families with children or affected them disproportionately, with particular adverse impacts on lone parents, larger families and families where someone is disabled. Analysis for the Office of the Children's Commissioner examined the downward pressure on overall spending on children after 2015 (including reductions in public expenditure on social security and broader children's services (Kelly et al 2018). Stewart and Obolenskaya (2015 2016) and Stewart and Reader (2021) examine Stewart et al (2021) set out evidence on the adverse impact of the cash freeze on working-age benefits, the introduction of the two-child limit and the lowering of the benefit cap on the adequacy of the benefits system for families with young children and on larger families[10].

2.2.2 Broader labour market, macro and socio-demographic factors

The broader context of low returns to work during the 2010s include the persistent stagnation in wages and earnings growth of the 2010s; the sustained period of sluggish household income, GDP and productivity growth that characterised the period after the 2007/8 financial crisis; and technological change and labour market transformation. OECD analysis highlighted rising single parenthood as a major barrier to labour market participation and a key factor in explaining patterns of child poverty in rich countries (OECD 2018; c.f. Cantillon et al 2018). Demographic changes and changing family structures have also been identified as contributory factors in the literature, with some studies suggesting that the issue is not low pay

[10]Several studies highlighted associations between welfare reform and increasing food bank use (see the citations under the discussion of food insecurity above) while evidence on the financial hardship associated with the implementation of Universal Credit was presented in the NAO (2018), Committee of Public Accounts (2018), Work and Pensions Committee (2019a) and in cases litigated through the courts (e.g. England and Wales High Court (2019) and BBC (2018)). Experiences of Universal Credit and conditionality were also examined in a growing body of qualitative research (e,g. Cheetham 2019, Wright and Patrick 2019). Re-occurring themes included the detrimental impact of benefit levels, benefit waiting periods and delays, arrangements for the re-payment of advances, and the adverse effects of conditionality and sanctioning.

per se, but rather the inability for one-worker families to make ends meet (Hick and Lanau 2017).

On labour market factors, unemployment rates fell steadily during the 2010s and were at a record low on the eve of the COVID-19 pandemic. The proportion of children living in households with no working age adults in employment had also been falling from 17% in 2012/13 to 12% in 2019/20 on the eve of the pandemic. However, as the SPDO employment paper highlights, in-work poverty was on an upward trajectory in the period running up to the COVID-19 pandemic (McKnight and Cooper 2022; c.f. this paper, section 5). Prior to the pandemic, a series of studies identified that protective effects of work had diminished during the 2010s, with increases in the numbers of children affected by rising relative child poverty AHC concentrated in working families, and the link between being in work and making ends meet breaking down (Kenway 2008, MacInnes et al 2015, JRF 2018abc). Forecasts from before the COVID-19 pandemic struck also indicated that projected increases in child poverty were in part explained by low income households gaining less from real earnings growth than other households (Hood and Waters 2017ab) and several studies highlighted the connections between poverty, low pay and insecure and precarious work (Kenway 2008, MacInnes et al 2015, JRF 2018abc).

The Taylor Review and related studies identified that rising self-employment, casualisation and non-standard contracts had resulted in the emergence of a new precariat and growing economic insecurity for a wide range of people including skilled as well as unskilled workers. This expansion of non-standard employment practices had also resulted in the emergence of new and widening social protection gaps for the self-employed and gig economy workers (Wallace-Stephens 2019, Taylor 2017). As a result, these groups over-exposed to downside economic risk when the COVID-19 public health emergency struck. Moreover, self-employed and gig economy workers were less likely to qualify for the COVID protection schemes introduced by the Government in the wake of the pandemic (McKnight and Cooper 2022, Hills and Vizard 2021).

On a positive note, research from before the pandemic does identify that the introduction of the higher New National Living Wage in 2016 (and subsequent uprating in 2017 and 2018) increased pay at the bottom of the earnings distribution. There was a fall in the percentage of workers earning less than two thirds of median hourly pay (Cominetti et al 2019) and the lowest end of the hourly wage distribution was recording faster growth (Low Pay Commission 2019). However, the child poverty reducing potential of minimum wages is arguably limited since its main effects are *not* at the bottom of the household income distribution. As the SPDO employment

paper notes, minimum wage legislation by its very nature targets low individual hourly wages rather than low household income, so that, in isolation, a minimum wage is unlikely to have sufficient leverage over the bottom of the household income distribution to provide a solution to poverty (McKnight and Cooper 2022).

The importance of employment and social security policies working in a 'joined up' way is also underlined by the latest IFS decomposition analysis. This identifies that the increase in the share of children in families in which at least one adult was in work (employment or self-employment) and a small recovery in wages *did* result in increases in income from employment for low-income families with children in the run up to the pandemic. However, this rise in employment income was mostly offset by a fall in income from benefits, due to a series of cuts to the real value of working-age benefits (Cribb et al 2022).

2.2.3 The housing crisis and cost pressures

A series of studies have identified the role of housing costs as a key driver of poverty during the 2010s. The underlying context here includes national chronic housing shortages and changing patterns of tenure - with declines in home ownership, shortages in social housing and an expansion of private renting. These were coupled with the cumulative restrictions on support with housing costs and council tax discussed above ('the weakening of the welfare state'). Low income households are more likely to be living in rented accommodation and as a result are less likely to have benefited from the sustained period of low mortgage interest rates during the 2010s (see for example Belfield et al 2015, Hood and Waters 2017ab, Cribb et al 2018 and JRF 2018a). JRF (2015) found that increases in in-work poverty were disproportionately concentrated in households in private rented housing that were affected by rising rents and restrictions on support with housing costs. Analysis by income quintile for families with children identified that of housing costs had risen more for those at the bottom of the distribution, with the proportion of children in the bottom quintile living in private rented sector rising substantially and the amount of rent covered by benefits falling behind the actual rents paid by low-income families (JRF 2018a).

In addition to housing costs, other cost pressures identified in the poverty literature from the period *before* the pandemic and the cost-of-living crisis struck included childcare costs and the costs of transport, food, energy and technology (see for example David et al 2018, Social Metrics Commission 2019, JRF 2020). The adverse impacts of currency devaluation

on living standards in the wake of the Brexit vote are discussed in Stewart et al (2018). Conversely, IFS analysis of material deprivation Cribb et al (2022) note that the prices of some essentials (including clothes, non-processed foods and gas prices) were *low* in the run up to the pandemic. Indeed, the authors falls in gas bills as a factor in explaining observed declines in child material deprivation in the run up to the pandemic. This finding that FRS measured child material deprivation was *declining* in the run up to the pandemic is striking and contrasts with other evidence on deteriorating trends in child poverty and other indicators of hardship both in this paper and in the broader literature reviewed above (section 2.1.1). Looking at FRS measured material deprivation across age groups during the 2010s, Bourquin et al (2019) report similar findings, noting a decline in material deprivation with the inability to afford items falling across material deprivation items, and suggesting that several items in the material deprivation measure may have reduced in price[11].

2.3 Accountability mechanisms and human rights

2.3.1 The repeal of the Child Poverty Act (2010)

In England, the slowdown, stalling and reversal of progress in reducing child poverty during the 2010s occurred in the context of a substantial weakening of accountability mechanisms for reducing child poverty. The Child Poverty Act (2010) established legal duties on public authorities to reduce child poverty with time-bound targets and introduced a limited measure of judicial review. However, following the 2015 General Election, most of the content of the Act including the child poverty targets and duties were repealed by the Welfare Reform and Work Act (2016)[12].

The repeal of the Child Poverty Act (2010) in England contrasts with innovative approaches to addressing child poverty in rich countries internationally, such as new child poverty legislation enacted in New Zealand in 2018[13], as well as legislative and policy developments in the devolved administrations, which are more consistent with a human rights approach. In Wales, the Children and Families (Wales) Measure 2010 made statutory provision for the eradication of child poverty, whilst the UNCRC

[11] For further discussion of the definition of material deprivation and of trends in FRS measured material deprivation during the 2010s, see this paper sections 2.1.1, 3.1, 4.3, Appendix section 9.6 and DWP (2022b).

[12] Sections 1 to 11, 15, 17 and 19 to 25 of, and Schedule 2 to, the Child Poverty Act 2010 were repealed. See Welfare Reform and Work Act 2016 (legislation.gov.uk) section 7. For an analysis of the extent of opposition to the repeal of the Child Poverty Act, see Stewart and Roberts (2018).

[13] Child Poverty Reduction Act 2018 and the Children's Amendment Act 2018 https://dpmc.govt.nz/our-programmes/reducing-child-poverty/child-poverty-reduction-and-wellbeing-legislation.

was embedded into law and policy through the Rights of Children and Young Persons (Wales) Measure 2011)[14]. In Scotland, the 2017 Child Poverty (Scotland) Act[15] included four statutory child poverty targets. Devolved powers were in addition being used in Scotland to adopt measures to mitigate the effects of UK wide austerity and welfare reform policies and to adopt a human rights approach to social security (Stephens and Fitzpatrick 2018; Congreve and McCormick 2018). Prior to the pandemic, the jury was out as to whether these divergent approaches were making any difference to child poverty outcomes on the ground (Corlett 2019b) but the principles of setting goals and targets, and embedding them into domestic law, were being upheld, in contrast to England and the UK as a whole[16].

2.3.2 Human rights based challenges to austerity measures

Accountability mechanisms for child poverty in the UK also include a body of human rights standards. The human right to an adequate standard of living (including adequate food, clothing and housing) is explicitly recognised within several international human rights treaties that the UK has signed and ratified, including Article 11 of the UN Convention on Economic, Social and Cultural Rights, Article 27 of the UN Convention on the Rights of the Child and Article 28 of the Convention on the Rights of Persons with Disabilities[17]. Key international standards relating to the implementation of the human right to an adequate standard of living include the concept of progressive realisation (and its converse non-retrogression); non-discrimination; the fulfilment of minimum core obligations; essential minimum floor standards; the importance of goal-setting, targets and indicators; and the protection of at risk groups (Vizard 2006). These standards make allowance for resource limitations and recognise that it might be necessary to realise the human right to an adequate standard of living progressively over time. However, there is an expectation that measures to guarantee the realisation of this goal over

[14]See relevant legislation here https://www.legislation.gov.uk/mwa/2010/1/contents and here Rights of Children and Young Persons (Wales) Measure 2011 (legislation.gov.uk).

[15] See relevant legislation here Child Poverty (Scotland) Act 2017 (legislation.gov.uk).

[16] The first Scottish Tackling Child Poverty Delivery plan covered the period 2018 to 2022 and a second delivery plan covers the period 2022-2026. New measures introduced to tackle child poverty include Best Start Grants and Best Start Foods (which help towards the costs of being pregnant or looking after a child) and a Scottish Child Payment was first introduced in February 2021 for low-income families with children under six. This Scottish Child Payment was extended to children under 16 in November 2022.

[17]Further protection was provided at the regional level (in the EU Charter of Fundamental Rights within EU law, and the European Social Charter within the Council of Europe system. However, there are no enforcement mechanisms for the former, and the latter is no longer be applicable in the UK following Brexit. See Stewart and Cooper (2018) for further details.

time will be put into place immediately; that minimum core obligations will be fulfilled; and that reasonable progress towards this goal will be made over time (Vizard 2006).

Requirements relating to the protection of social and economic rights in the specific context of the austerity programmes that were put into place in many countries following the 2007/8 financial crisis were set out in OHCHR (2013). Whilst this guidance recognises that austerity measures are likely to impact on living standards, austerity measures are required to be necessary, proportionate, respectful of minimum core obligations and non-discriminatory. The guidance also identifies that states are required to avoid retrogressive measures and are under a positive duty to protect those at risk. A retrogressive measure is defined as one that, directly or indirectly, leads to backward movement in the enjoyment of the rights recognized in the ICESCR (c.f. Pillay 2012).

The domestic legal framework for addressing child poverty as a human right in the UK falls short of these international standards in several key respects. Neither the ICESCR not the UNCRC has been incorporated into UK-wide domestic law, a basic requirement under the international human rights framework. The UK Human Rights Act (1998) does not explicitly recognise the human right to an adequate standard of living (although as discussed below, several articles have been invoked as a basis for legal challenges to measures introduced in the welfare reform programme). The Child Poverty Act (2010) was recognised by the UK Joint Committee on Human Rights as a human rights enhancing measure and a means of implementing the progressive realisation of Article 11 of the ICESCR and Article 27 of UNCRC in Britain based on an innovative model combining Parliamentary sovereignty and limited judicial review (Vizard 2012, Joint Committee on Human Rights 2009). In the light of this statement, the repeal of the CPA and the consequential weakening of legal accountability mechanisms for ensuring reasonable progress in reducing child poverty over time can be viewed as a retrogressive, backward step[18].

During the 2010s, several international human rights bodies raised concerns relating to the impact of measures introduced as part of the welfare reform programme in the UK. In 2016, the UN Committee on the Rights of the Child called for an impact assessment of the cumulative impact of welfare reform measures on children (UN CRC 2016, paras 70 and 71) and the UN Committee on Economic, Social and Cultural Rights raised serious concerns about the disproportionate, adverse impact that

[18]The importance of re-establishing accountability legal accountability mechanisms including concrete time-bound targets and measurable indicators was also highlighted in the Concluding Observations of the UN Committee on the Rights of the Child (2016).

austerity measures were having on disadvantaged groups, including women, children and persons with disabilities (UN CESCR 2016). In 2017, the Committee on the Rights of Persons with Disabilities expressed concerns about the impact of welfare reform measures on disabled people, including financial hardship amongst persons with disabilities and their families, especially for families with children (UN CRPD 2016; c.f. Kennedy et al 2016, Jones et al 2017). In 2018, a statement by the UN Special Rapporteur on Extreme Poverty concluded that austerity and welfare reform measures were resulting in the systematic erosion of the social safety net and broader sources of social support with far-reaching adverse consequences for children and vulnerable groups (Alston 2018). A subsequent report called for the reversal of particularly regressive measures such as the household benefit cap and the two-child limit and concluded the cuts to social supported amounted to "retrogressive measures in clear violation of the United Kingdom's human rights obligations" (Alston 2019, UNGA 2019)[19].

In addition to these concerns from international human rights bodies, the domestic human rights regulator, the Equality and Human Rights Commission, identified that welfare reform measures were impacting disproportionately on groups with shared characteristics and that specific measures were inconsistent with domestic and international human rights standards. The two-child limit was identified as a regressive measure that is inconsistent with the human rights to an adequate standard of living and social security as it discriminates against children in larger families, and will disproportionately impact on children from Black African, Pakistani and Bangladeshi backgrounds (EHRC 2018ab). The Work and Pensions Committee (2019b) concluded that the two-child limit policy would disproportionately impact some groups in society including those who are already experiencing higher levels of poverty and deprivation (including an increase in poverty in Northern Ireland and a disproportionate impact on Muslim, Jewish, Pakistani, Bangladeshi and Gypsy, Roma and Traveller families).

2.3.3 The role of the Courts

Key elements of the Government's welfare reform programme were also challenged through the Courts during the 2010s and several of these

[19]In addition to the opinions expressed by the bodies cited this paragraph, the European Committee of Social Rights concluded in 2017 that the situation in the UK is not in conformity with Article 12 para. 1 of the European Social Charter (the right to social security) on the grounds that certain benefit levels (Statutory Sick Pay (SSP), minimum levels of the Employment Support Allowance (ESA), long-term incapacity benefits and unemployment benefits) were inadequate. See European Committee of Social Rights (2018: 190).

challenges relied on human rights standards. The period between May 2015 and early 2020 in particular was widely perceived as one of increasing judicial activism, with the willingness of the Courts to strike down executive measures culminating in the ruling that the Johnson Government's proroguing of Parliament was unlawful in the summer of 2019. Landmark challenges to welfare reform measures included a successful challenge to the housing benefit cap (or 'under-occupancy' rule) on the grounds that an adult who experiences severe disabilities could not reasonably be required to share a bedroom with a partner due to medical need. The Supreme Court ruled that the application of the under-occupancy regulations in these circumstances was unreasonable and constituted discrimination under Article 14 of the Human Rights Act when read with Article 8 (the right to respect for family and private life) (Supreme Court (2016), Disability Rights UK (website a) and Leighday (2016, 2019)). Another case involved a successful challenge to the exclusion of mental health conditions from the assessment of the mobility component of Personal Independent Payments. The High Court found that the exclusion of psychological distress from the mobility component of PIPs was unlawful since it constituted discrimination against those with mental health impairments under Article 14 (non-discrimination), as well as infringing article 19 of the Rights of Persons with disabilities (living independently and being included in the community) (Disability Rights UK (website b) and England and Wales High Court (2017)). OBR (2019) analysis the substantial public expenditure implications of these cases[20].

[20]In other legal cases, the Courts rejected human rights based challenges to welfare reform measures. This included the rejection of the case that the two-child limit discriminates against children with multiple siblings and larger families and breaches Article 8 (the right to respect for private and family life) and Article 12 (the right to marriage) and of these rights in conjunction with Article 14 (non-discrimination) by the Supreme Court in 2021 (Supreme Court 2021 and CPAG 2019b). In a separate case the Supreme Court recognised that the effect of the (total household) benefit cap was to reduce family income to below the poverty line, but rejected the argument that housing benefit regulations and the cap unlawfully discriminate against lone parents with children (Supreme Court 2019)A dissenting opinion found violations or Article 1 (property) and Article 8 (private and family life) in conjunction with Article 14 (discrimination) (see legal cases, Supreme Court 2019a). An earlier case in 2016 also rejected the case that the housing benefit regulations and total benefit cap discriminated against lone parents with young children (see legal cases, Supreme Court 2015).

3. Research framework: child poverty indictors, methods and limitations

This section provides an overview of the research framework and methods we use in this paper. Section 3.1 disusses child poverty indicators and sets out how we identify children from different social groups and the time windows that are adopted for the analysis. Section 3.2 provides details of the Family Resources Survey and the Households Belows Average Incomes datasets that are used in the research exercise. Section 3.3 summarises the descriptive and multivarite methods that are used in the SPDO child poverty research exercise. Section 3.4 clarifes our approach to estimating uncertainty around child poverty estimates and the approach we have adopted to assessing statistical significance.

3.1 Child poverty indicators, groups and time periods

Child poverty outcomes are examined using three of the child poverty indictors that were included in the Child Poverty Act (CPA) (2010) (specifically, the anchored child poverty indicator, the relative child poverty indicator and the combined low income and material deprivation indicator). Although the CPA was repealed, reporting CPA indicators is still required under the Welfare Reform and Work Act (2016) and the CPA indicators continue to be important for accountability purposes (Stewart and Roberts 2018). In addition, the analysis in the paper uses an additional (fourth) indicator - severe child poverty. This indicator was initially recommended in the Independent Review of Poverty and Life Changes as a basis for monitoring the impact of policy on the very poorest (Field 2010) and was subsequently put forward in the Coalition's Child Poverty Strategy as a supplement to the suite of CPA indicators (DWP and DE 2011, 69). Further details of all four of the child poverty indicators used in the analysis are provided in Box 1.

Box 1: Child poverty indicators used in this paper

- The **anchored poverty indicator** measures the proportion of children living in households where household income is below 60% of 2010/11 median income held constant in real terms, before and after housing costs. It is a conservative measure of child poverty, and provides information on whether the poorest children's living standards are keeping up in *real terms* against a fixed threshold that is anchored at a particular point in time (rather than being adjusted to reflect changes in typical living standards). Progress against this indicator can be regarded as a minimum gauge of social progress.
- The **relative child poverty indicator** measures the proportion of children living in households where household income is below 60% of the average (median) household income in the same year, before and after housing costs. It provides information on whether the living standards of children living in the poorest households are keeping up with the living standards of a typical household. Unlike the anchored child poverty threshold, which is fixed at a particular point in time, the relative child poverty threshold is adjusted each year to reflect changes in 'typical' household income.
    - The **combined relative low income and material deprivation indicator** measures the proportion of children living in households where household income is below 70% of the average (median) for that year before housing costs *and* that experience material deprivation. To measure **material deprivation**, we use the material deprivation measure available in the FRS/HBAI dataset. This is designed to capture the "self-reported inability of individuals or households to afford particular goods and activities that are typical in society at a given point in time, irrespective of whether they would choose to have these items, even if they could afford them". Children living in households that report not being able to afford basic goods or services, such as keeping the home warm, going on school trips, participating in social activities, eating fresh fruit and vegetables, having a warm winter coat, or not having a safe place to play near the home are classified as materially deprived. Further details of the measurement of material deprivation are provided in the Appendix.
    - The **combined relative severe low income and material deprivation indicator (or severe poverty) indicator** measures the proportion of children living in households where equivalised household income is below 50% of the average (median) for that year before housing costs are deducted *and* that experience material deprivation. The lower income threshold used for this indicator means that this indicator provides information on the position of the poorest children.

There are several caveats related to the interpretation of the severe child poverty indicator. Severe low income statistics produced from household surveys are subject to a greater degree of inaccuracy than headline indicators, due to measurement error at the bottom of the distribution and temporary income shocks where living standards are maintained (for example, by running down savings) (Bourquin et al 2019, Cribb et al 2022). While acknowledging there are issues of quality in relation to household income at the bottom of the distribution, DWP analysis suggests that the

50% low income threshold is of sufficient quality and this measure is reported in regular HBAI publications DWP (nd). In addition, a range of exercises in the broader literature report on more severe poverty using a similar methodology (see for example, Bourquin et al 2019 and the 'deep poverty' indicator used in SMC (2019, 2020, 2021). In addition, part of the rationale for combining a measure of severe low income with a measure of material deprivation is to reduce the effects of temporary income shocks and measurement error on poverty identification, as to count as "poor" against this indicator, children have to be both living in a household where income is less than 50% of the median *and* that is assessed to be materially deprived.

In addition, the material deprivation component of the severe child poverty indicator requires careful interpretation. While some items in the FRS/HBAI material deprivation measure are intended to capture more severe forms of hardship, the measure itself is designed to capture the self-reported inability of individuals or households to afford particular goods and activities that are *typical* in society at a given point in time. Moreover, the list of items included in the FRS/HBAI to assess material deprivation was fixed in 2010/11 and was *not* revised during the 2010s. As a result, while items such as access to internet or digital equipment might have increasingly been viewed as essential or typical as the decade progressed, these items are not captured or reflected. As a result, the interpretation of the FRS material deprivation indicator in terms of access to the goods and services that are necessary for social participation also has important caveats[21].

For the in-depth analysis of patterns and trends in child poverty by social group, we focus on breakdowns that are important equality and human rights monitoring purposes with systematic breakdowns by equality characteristics (age, disability, ethnicity, country of birth, young carer status), family characteristics (lone parent status and number of children), geographical area (country and English region) and household socio-economic characteristics (household level ns-sec occupational classification, household employment status and tenure-type). Children from different social groups have been carefully identified using the available data from the children's file in the FRS as well as by using the variables that are available in the HBAI. This includes using information on child carer status and parental country of birth from the FRS. Child level ethnicity information is *not* available in either HBAI or FRS, so for

[21] See this paper sections 2.1.1, 2.2.3, 4.3, Appendix section 9.6 and DWP (2022b) for further discussion of the FRS/HBAI material deprivation indicator. Also note that at the time of writing, a review of the FRS/HBAI material deprivation suite of questions is under way (DWP 2022c).

breakdowns by ethnicity, the only available option has been to rely on household level ethnicity information (focussing on the household reference person) as a proxy. As set out in the Appendix section 9.5, trends in ns-sec socio-economic classification and disability should be treated with caution due to definitional and coding issues (Appendix 9.5). Information on age, gender and young carer status is available at the level of the individual child; information on number of dependent children, parental and child disability and lone parent status are reported at the benefit unit (family) level; and information on ethnicity, household socio-economic classification and employment status are reported at the household level.

On time windows, we acknowledge that data up to 2019/20 data is too early to capture and assess the full effects of ongoing austerity and welfare reform measures on child poverty. For example, on the eve of the COVID-19 pandemic, the roll out of Universal Credit was not yet complete. The two-child limit was implemented for legacy benefits in 2017 and Universal Credit in early 2019, but only for children born after April 2017, and its full effects will not be played out until the 2030s (Waters 2019). Our analysis also does not capture and reflect the full effects of policy divergence in England and the devolved nations in relation to child poverty, as key measures such as the Scottish Child Payment in Scotland were not introduced until August 2021. In addition, it should be noted that the main analysis adopts 2010/11 rather than 2009/10 as the base year for assessing change in child poverty outcomes during the second decade of the 21st century. This is in line with the SPDO Indictor exercise and is justified because of the lagged effects of measures adopted prior to the May 2010 General Election feeding through during the course of 2010. Vizard and Hills 2021 (section 3 by Cooper and the related appendix) and Hills and Stewart (2016: 251) provide further discussion.

3.2 The FRS and HBAI datasets

The analysis in this paper uses household income data from the Family Resources Survey (FRS) and the Households Below Average Income (HBAI) dataset. The FRS is an annual survey of household income with a typical sample size of around 20,000 households and a complex survey design involving stratified cluster sampling. The HBAI is derived from FRS by the Department for Work and Pensions and includes measures of household income and poverty as well as household, benefit/family and individual level variables. Both the FRS and the HBAI are available through the UK Data Service (UKDS). Full citations to the FRS and HBAI datasets we have

used in the analysis are provided in the data references at the end of this paper. These were downloaded in August 2021 and have been accessed, kept and analysed in line with the UKDS End User Licence.

As the analysis in the paper uses information from both the FRS and HBAI, we have created a series of panels combining the FRS and HBAI data. To create the panels, the FRS and HBAI datasets for each year have been appended and the information available for each person for each year has been merged. Additional panels were created for consecutive three year periods as a basis for estimating child poverty by social group where sample size is particularly low. The panels have also been merged with the resamples datasets that DWP recommend are used to estimate uncertainty around HBAI estimates (on which, see section 3.4). The analysis of overall trends in child poverty in section 4 uses data from 1994/95 to 2019/20 while the in-depth analysis by social group in subsequent sections uses data from 2010/11 to 2019/20.

Unless otherwise stated, the child poverty outcomes reported used in this paper cover the United Kingdom. The household income information used in the analysis is soured from HBAI and represent total net weekly equivalised income. This is measured after deductions such as tax and national insurance and after the receipt of benefits such as social security benefits and tax credits. An adjustment is made to take account of the size and composition of households and income is examined both before and after housing costs (with rent and mortgage interest payments deducted). The income data have been adjusted for inflation by DPW using before and after housing cost variants of the Consumer Price Index (CPI). These are bespoke before and after housing costs deflators that are included in the dataset and have the advantage of including mortgage interest, ground rent and dwelling insurance costs for before housing costs price adjustment. The child poverty estimates are expressed in terms of 2019/20 prices. A recent methodological revision to include all income from child maintenance within household income has resulted in low income rates for families with children falling slightly estimates (DWP (2021)).

Whilst the FRS/HBAI is widely used as a source of specialist data on household incomes, we acknowledge that it is limited in important respects. The non-private household population is not covered by the FRS/HBAI sampling frame, meaning that key disadvantaged groups (for example, homeless people) are not covered by our analysis. The FRS/HBAI makes an adjustment for the under-reporting of upper-end incomes but it is nevertheless recognised that the top end of the distribution is not fully captured and reflected in the data. In addition, the importance of under-reporting of benefit income at the lower end is highlighted in Corlett et al

(2018)[22]. The standard definition of income used in this report does not adjust for the extra costs associated with disability and does not deduct from income benefits such as Disability Living Allowance, Attendance Allowance and Personal Independence Payments which are made in recognition of these additional costs. Childcare costs are also not deducted from income[23]. The deflators used for price adjustment measure price inflation based on overall patterns of household consumption, and do not adjust for the specific consumption patterns of households at the bottom of the income distribution.

'Children' are defined for the purposes of the analysis as children under 16 years of age and dependent young people aged 16 to 19 year olds (who are unmarried / non-cohabiting who are in full-time non-advanced education. The total sample of children varies by year, with 13,726 children in the sample in 2010/11 and 9,720 in 2019/20. Details of unweighted frequencies by social group are provided in the datatables that accompany this report and central estimates based on cell sizes of greater than 10 have been suppressed. In line with DWP recommendations, weights have been applied to the data to account for differential nonresponse. While most of the estimates are produced using annual data, breakdowns by region, ethnicity and young carer status are estimated using three years of pooled data due to low sample size and volatility and breakdowns by child and parental disability status have been estimated using both annual and pooled data.

3.3 Descriptive and multivariate methods

The paper uses a combination of descriptive and multivariate methods. Descriptive methods are used to evaluate overall (average) change in child

[22]A proposal for correcting for under-recording of benefit income is put forward in Corlett et al (2018). This correction has the effect of increasing median household income and *reducing* child poverty rates in the current period. In addition, the correction has the effect of altering trends in measured child poverty over time. This is because the problem of missing benefit data within the FRS is thought to have increased over time, largely because of a tendency to underreport tax credit income. Overall, the effect of the correction is to *increase* the pace of identified child poverty reductions in the 2000s and the pace of increase since 2010/11, compared with DWP published data on relative child poverty (AHC) (Corlett et al 2018, 65-69).

[23]A new poverty measure proposed by the Social Metrics Commission (SMC 2019) is a relative after housing costs measure which makes a series of adjustments including, inter alia: inclusion of liquid assets within household resources; deducting extra cost disability benefits and childcare costs from household income; and averaging the median over three years. These adjustments have the affect of increasing the number of children identified as being in poverty whilst altering the trend compared to the standard relative child poverty AHC indictor. This difference in trend is likely to result in part from the averaging of the median which results in smoothing / lagged effects compared to a measure based on the annual median. However, trends in the real value of disability benefits deducted may also impact on these findings. See for example (SMC 2019 Figure 46 and 76-80).

poverty outcomes over time (looking back over two decades) and to examine how rising child poverty has affected different groups of children (focussing on the second decade of the 21st century). Multivariate methods are used to examine whether there is any evidence that the independent associations between child poverty and markers of child risk and disadvantage *strengthened* during the second decade of the 21st century (comparing the strength of the independent associations between child poverty and different children's characteristics in 2010/11 and 2019/20).

In the descriptive analysis, we report on trends in overall (average) rates pf child income poverty over the period 1994/5-2019/20 (the entire period for which data was available at the time the study was undertaken) and trends in combined material income and low income over a shorter period (since consistent material deprivation data is not available for the entire twenty-six years). For the detailed analysis by social group, we focus on the relative child poverty (AHC) indicator (section 5) and the severe child poverty indicator (section 6), and we restrict the analysis to the second decade of the 21st century. For each indicator, we report on (1) cross-sectional differences in the prevalence of child poverty by social group at the beginning of the second decade of the 21st century (in 2010/11); (2) change in the prevalence of child poverty over the period 2010/11-2019/20 for each group ('absolute change by group'); (3) comparative for each disadvantaged group compared to a more advantaged comparator group (or change in the prevalence gaps by social group) between 2010/11 and 2019/20; and cross-sectional differences in the prevalence of child poverty by social group at the end of the second decade of the 21st century (in 2019/20).

The multivariate analysis focuses on relative child poverty (AHC) and the severe child poverty indicator. We develop a series of child poverty models using logistic regression techniques. This enables us to disentangle and isolate the effects of the different characteristics we are concerned with in this study and to examine their independent associations with child poverty by time-period (comparing the strength of these effects in 2010/11 and in 2019/20). The objective of the multivariate analysis is not to develop a full explanatory model of child poverty but to build up evidence on any strengthening of the independent associations between child poverty and different markers of child risk and disadvantage during the second decade of the 21st century.

For each logistic regression model, the dependent variable is child poverty and the independent variables include the characteristics that are examined in the descriptive analysis. The models have been built up by incorporating the independent variables sequentially in four conceptual

blocks, starting with equality characteristics (age, ethnicity, country of birth, disability), followed by family characteristics (lone parent status and number of children in the family), household socio-economic characteristics (household level occupational group, household economic activity and tenure-type), and geographical area (country and region). Model variants include cross-sectional models (for 2010/11 and 2019/20); main effects models (which pool the samples for 2010/11 and 2019/20 and include time as an additional independent variable); and interaction models (which include a series of interaction terms between time period and children's characteristics).

We report multivariate findings both before and after controlling for household socio-economic characteristics. This is because we recognise that there are important inter-relationships between some of our focus characteristic (for example, lone parent status, disability status and ethnicity) and socio-economic characteristics (such as socio-economic classification, labour market participation and tenure), and that there is a possibility of 'controlling out' the effects of some of these characteristics by including socio-economic variables within the logistic regression models. On the other hand, socio-economic characteristics can themselves be important markers of child disadvantage; and the independent associations between child poverty and these characteristics are an important subject for examination. Moreover, it is useful to know which of the associations between child poverty and other characteristics do and do not hold *after* the effects of labour market participation have been controlled for.

3.4 Our approach to assessing statistical significance

Several different approaches to adjusting the measurement of uncertainty around survey estimates are now available in statistical computer packages (including the use of complex survey adjustments in STATA and SPSS). However, DWP specifically recommends the use of new bespoke resamples datasets as a basis for estimating uncertainty around HBAI estimates. One way to estimate the level of uncertaintly around survey estimates is to calculate how they would change with multiple draws of survey samples for the same time period instead of just one. The DWP resamples datasets uses a bootstrapping methodology that simulates the FRS complex survey design (stratified cluster sampling) and uses a new set of grossing factors for each resample (DWP 2017). DWP recommendations for estimating the range of uncertainty around HBAI estimates use the resamples datasets. This involves up to 1,000 bootstraps for subgroup analysis and applying a process of further adjustment to account for small

samples (DWP 2017, DWP 2022a Annex 4, UKDS (n.d); also see this paper, Appendix section 9.1 and Figure 12).

In this descriptive analysis in this paper (sections 4-6), the findings on child poverty that we identify as being statistically significant have been assessed to be statistically significant at the 95% level of confidence using the resamples datasets to estimate uncertainty around the central child poverty estimates. In line with DWP recommendations, we have used the resamples datasets and have re-run the analysis for each estimate (for example, the difference in poverty between children in different age groups in a particular year) using 1,000 different sets of weights in STATA. This produces 1,000 estimates for differences in child poverty prevalence by age group. To identify values for lower and upper limits, the child poverty estimates were ordered from smallest to largest, and the values at the 2.5th percentile and the 97.5th percentile were selected. Finally, a small sample correction has been applied. Full details of the results of our assessments of statistical significance using the resamples datasets, with and without small sample corrections, are included in the online datatables that accompany this report (see SPDO Child poverty research exercise).

Like-on-like, there is a close alignment between our estimates of uncertainty around HBAI estimates using the resamples datasets and those published by DWP. This can be seen by comparing the overall estimates of relative child poverty rates and associated 95% confidence intervals published in DWP (2022d: tables 1.4, 1.4ci) with our own estimates and associated 95% confidence intervals calculated using the resamples microdata and applying the methods discussed above (for details, see Appendix Tables 6 and 7). Note however, that the assessments of statistical significance in the descriptive analysis in this paper (sections 4-6) use a series of statistical tests rather than relying on visual inspection of confidence intervals. Further details of each of the statistical tests we apply in the descriptive analysis (and how the DWP recommendations on the estimation of uncertainty in each case) are set out Appendix section 9.2. The use of statistical tests (rather than relying on visual inspection of confidence intervals) results in some differences in our assessments of statistical significance in marginal cases (for example, where confidence intervals marginally overlap).

As expected, the effects of following the DWP recommendations on the estimation of uncertainty using FRS/HBAI (and correcting for the FRS complex survey design) is to widen the estimates of uncertainty around child poverty estimates. This can be seen by comparing the estimates of uncertainty and statistical significance using the resamples method with those using standard methods (for further details see SPDO Child poverty

research exercise). A cross-checking exercise identifies that that there is a *high* degree of alignment of our assessments of statistical significance using the resamples method and standard methods in the context of our analysis of cross-sectional differences in child poverty rates by social group in both 2010/11 and 2019/20. However, there is a much *lower* degree of alignment in relation to our analysis of change over time. As a result, for many social groups, increases in relative child poverty (AHC) and severe child poverty during the 2010s that we would have assessed as being statistically significant using standard methods are not assessed to be statistically significant using the resamples dataset and are therefore not reported to be statistically significant in this paper.

One important concern raised by our analysis is that the sample sizes for children in the resamples datasets are much smaller than the full standard dataset for each year. We note that this in turn may have consequences for statistical power when using the resamples dataset. The resamples datasets contain just over half the number of unique households of the original sample, so, for an original HBAI sample of 20,000 households a resample dataset would have around 10,000 households (DWP 2022b). Consequently, the sample of children is reduced, and this impacts on the sample size for analysis by social group, especially for the smaller groups and breakdowns that are the specific focus of this paper.

One proposed solution to issues of low sample size is to use pooled data. In this paper, we have used three-year pooled data as a basis for some of the central estimates based on the main HBAI dataset from the outset (by ethnicity, region and young carer status). In addition, as we encountered issues of low sample size using the resamples dataset, we began to explore the use of pooled data for additional breakdowns such as child poverty risks by parental and child disability status. Looking forward, we recommend further research is undertaken to expand the data-pooling approach to make best use of existing FRS/HBAI data. However, this is a second-best solution and ultimately there might be a need for increased sample size in the FRS survey to support the analysis of trends in child poverty rates by social group more adequately. Given these caveats and limitations, we have adopted a nuanced approach to reporting the descriptive findings in the current report. We explicitly identify where differences and changes in child poverty risks are statistically significant at the 95% level of confidence using the resamples datasets for estimating uncertainty. These are findings where there is a high degree of confidence that the relevant difference or change in child poverty risk has not occurred by chance. In addition, we report increases in relative child poverty AHC during the 2010s for some

social groups which, while not assessed as being statistically significant, we believe should not be simply disregarded or overlooked.

Unlike the descriptive analysis, the multivariate analysis reported in section 7 uses standard methods only to assess statistical significance. This is because it is not practical to apply the resamples methodology above to each estimate in our regression analysis, given the extensive computational power required and the number of parameters included within our models. For this reason, in order to adopt a more cautious approach, we use standard methods but report findings from the regression analyses that are statistically significant at least at the 99% level of confidence or above.

4. The slowdown, stalling and reversal of progress in reducing overall child poverty rates during the second decade of the 21st century

This section examines the slowdown, stalling and reversal of progress in reducing overall rates of child poverty during the second decade of the 21st century. The analysis uses the four child poverty indicators defined in section 3.2 and covers the twenty-six year period for which consistent micro-data was available from the mid-1990s to the eve of the COVID-19 pandemic (2019/20). Section 4.1 examines the overall progress that was made in reducing child income poverty over the entire period for which consistent data is available. Section 4.2 examines trends by sub-period in more detail (looking at average annual rates of progress by political administration; before and after the 2007/8 financial crisis and the subsequent 'Great Recession'; before and after the onset of the welfare reform and austerity programme that were implemented during the 2010s; and during the first and second decades of the 21st century. Section 4.3 extends the analysis to cover the combined low income and material deprivation indictors. Section 4.4 summarises the main findings from section 4. Further details of our findings on overall child poverty outcomes are provided in a series of datatables that accompany this report (see SPDO Child poverty research exercise online Tables 2-5 and Table 12).

4.1 Progress in reducing overall child income poverty between 1994/5 and 2019/20

Figures 1 and 2 show overall progress in reducing child income poverty between 1994/5 and 2019/20 focussing first on the anchored child poverty indicator and then on the relative child poverty indicator. Progress against each of these indicators is reported before and after housing costs (BHC and AHC).

4.1.1 Anchored child poverty

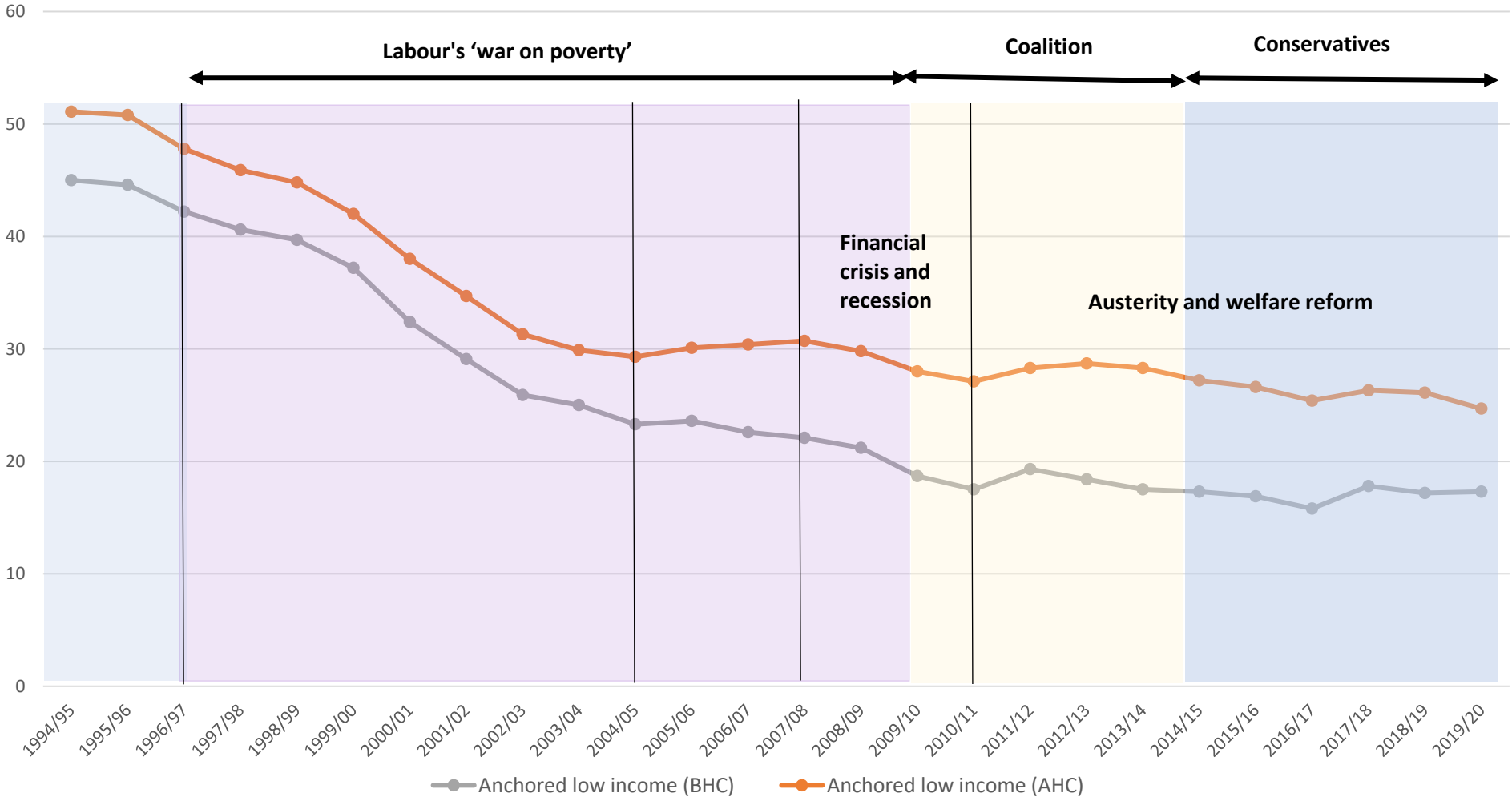
As noted in section 3.2, the anchored rate is a conservative indicator of child poverty and over a twenty-six year period and achieving substantial reductions in the percentage of children living in households where income is less than a minimum threshold that is anchored at a particular point in time should be viewed as a minimal condition of social progress. Nevertheless, as highlighted in section 2.1, the anchored child poverty indictor was referred to by incumbent governments during the 2010s in

defending their records on child poverty, and the anchored child poverty indicator provides a gauge of how the poorest children's living standards changed in real terms (with the child poverty threshold only adjusted for inflation to maintain its real value).

Looking at the period 1994/5-2019/20 as a whole, the poorest children's household incomes did improve in substantially in real terms against this conservative minimum fixed standard, both BHC and AHC. Rates of anchored child poverty declined from 45 per cent in 1994/5 to 17.3 per cent in 2019/20 BHC and from 51.1 per cent to 24.7 per cent AHC (Figure 1). However, Figure 1 also shows that rates of progress in reducing anchored child poverty *slowed down* and *stalled* during the second decade of the 21st century both BHC and AHC. Most of the gains in reducing anchored child poverty were made during the first decade of the 21s century – with the second decade being a lost decade in terms of the further progress that was made. This is reflected in the shallowing of the gradient of the anchored child poverty curves both AHC and BHC over time.

- BHC, progress was particularly marked before 2004/5 with continued progress in the wake of the financial crisis and recession (up to 2010/11) but with little further progress during the 2010s. Rates were a historical minimum in 2016/17 (15.8%), before rising again in the years running up to the COVID-19 pandemic (to 17.3% in 2019/20). There were unusual year-on-year *increases* in anchored child poverty BHC in both 2011/12 and 2017/18.
- AHC, patterns were more mixed. There were sustained annual year-on-year reductions between 1997/8 to 2004/5, but this was followed by a period of annual increases (2005/6-2007/8), and a further period of declines (2008/9-2010/11). While the further improvements in anchored child poverty (AHC) during the 2010s were very limited, rates were nevertheless at a historic low on the eve of COVID-19 (in 2019/20).

Figure 1: Trends in overall (average) prevalence of anchored child poverty (1994/5-2019/20, %)



Source: Author's analysis using FRS/HBAI microdata (1994/95-2019/20). The graph shows the percentage of living in households in the UK Britain where equivalised income is less than the anchored poverty threshold.

4.1.2 Relative child poverty

Figure 2 shows similar data for the relative child poverty indicator both BHC and AHC. As noted in section 3, the relative child poverty indicator is a less conservative standard than the anchored poverty indicator for gauging progress over time, and reductions in relative child poverty over the period 1994/5-2019/20 were considerably more modest than the improvements against the fixed minimum threshold discussed above. This is indicated by the overall shape of the relative child poverty curves both BHC and AHC in Figure 2, which are both considerably flatter than the anchored child poverty curves. Looking at the period as a whole, BHC, prevalence rates fell from 24.9 per cent in 1994/5 to 22.7 per cent in 2019/20. AHC, prevalence rates declined from 32.2 in 1994/5 per cent to 30.6 per cent in 2019/20. This amounts to only very limited progress of 2.2 percentage points BHC and 1.6 percentage points AHC in reducing relative child poverty over the 26 year period prior to the COVID-19 pandemic.

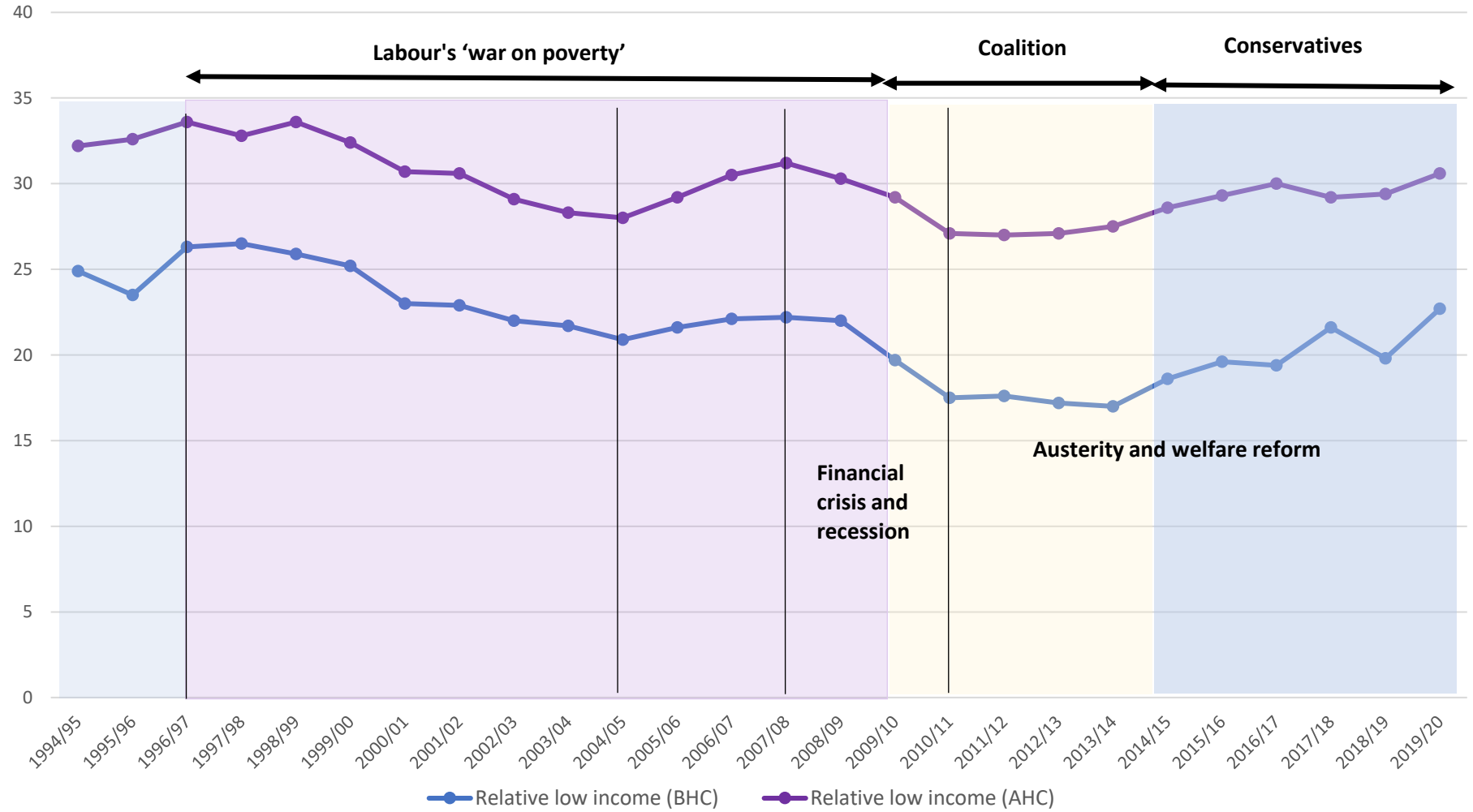
Moreover, Figure 2 also shows that against the relative child poverty indicator, rates of improvement not only *slowed down* and *stalled* during the second decade of the 21st century (as we reported above in the context of anchored child poverty), but also actually went into *reverse.* The upturns in relative child poverty BHC and AHC during the second decade of the 21st century indicate that children at the bottom of the income distribution fell behind in relative terms during the 2010s, with their living standards failing to keep up with those of the typical (median) household during the post-austerity and welfare reform period. The increases in relative child poverty AHC and BHC during the 2010s (between 2010/11 and 2019/20) are both statistically significant at the 95% level of confidence using the resamples dataset[24].

Looking at the annual year-on-year rates of progress, there were sustained annual *declines* BHC 1997/8-2004/5, followed by year-on-year *increases* 2004/5-2008/9 followed by year-on-year *declines* - with rates falling to a minimum in 2010/11. This was followed by a period of flatling (2011/12-2013/14) and a period of year-on-year increases between 2014/15 and 2019/20 resulting in an upward trend in the years running up to the COVID-19 pandemic. There were particularly steep annual increases in 2017/18 and 2019/20. Year-on-year patterns of change in relative child poverty (AHC) were broadly similar, with rates achieving a record low in 2010/11 and 2011/12. This was followed by multiple annual year-on-year

[24] For further details of our approach to estimating uncertainty and the statistical tests we have applied in assessing statistical significance, see section 3.3 and the Appendix (sections 9.1-9.3).

increases from 2012/13 with rates at their highest level in a decade on the eve of the COVID-19 pandemic.

Figure 2: Trends in overall (average) prevalence of relative child poverty (1994/5-2019/20, %)



Source: Author's analysis using FRS/HBAI microdata (1994/95-2019/20). The graph shows the percentage of children living in households in the UK where equivalised income is less than the relative poverty threshold.

4.2 Progress in reducing overall child income poverty by sub-period

The analysis in the previous section looked at the progress that was made in reducing overall child income poverty between the mid-1990s and the eve of the COVID-19 pandemic. We now drill down on the progress that was made by sub-period in more detail, examining the progress that was made by political party / government; before and after the financial crisis and 'Great Recession'; before and after the introduction of the austerity and welfare reform programme; and during the first and second decades of the 21st century. As the sub-periods we examine at are variable by duration, as well as looking at percentage point change by sub-period, we also assess the average annual rates of progress during each sub-period. This provides a more consistent basis for making comparisons of rates of improvement over time.

4.2.1 Progress by political party / government

Progress in reducing anchored child poverty by political party / government is indicated by the blocks of colour in Figure 1. BHC rates fell from 42.2 per cent to 18.7 per cent - a substantial 23.5 percentage point fall - between 1996/7 and 2009/10 (the period of Labour's "War on Poverty"). AHC rates fell from 47.8 per cent to 28.0 per cent over the same period (a 19.8 percentage point fall). Note though that progress under Labour was not linear, with an initial period of sustained progress in reducing anchored child poverty rates between 1996/7 and 2004/5; followed by a period of faltering progress with a slowdown in rates of reduction BHC and year on year increases / reversals AHC in the run up to the financial crisis (2004/5–2007/8); followed by further reductions following on from the financial crisis and during the subsequent economic downturn and recession (2007/8-2009/10). Subsequently, there were modest further falls of 1.4 percentage point falls under the Coalition (2009/10-2014/15) followed by no further change (0 percentage point change) under the Conservatives (Cameron, May and Johnson, 2014/15-2019/20) BHC. AHC, there were falls of 0.8 and 2.5 percentage points respectively.

Progress in reducing relative child poverty by political party / government is indicated by the blocks of colour in Figure 2. BHC, there was a fall from 26.3 per cent to 19.7 per cent (6.6 percentage points) over the period 1996/7-2009/10 (during the period of Labour's "War on Poverty"). AHC, there was a more modest decline of 4.4 percentage points between

from 33.6 percent in 1996/7 to 29.2 percent in 2009/10. Again, progress under Labour was not linear, with an initial period of progress (from 1997/8 BHC and 1998/9 AHC -2004/5); followed by *increases* both BHC and AHC (2004/5-2007/8); followed by further falls following the financial crisis and during the subsequent economic downturn and recession (2007/8-2009/10). The reversal of previous progress in reducing relative child poverty rates during the run up to the financial crisis is viewed in the literature as a crucial factor in explaining the overall failure of Labour to achieve the 2010/11 child poverty target (e.g. Joyce and Sibieta 2013). The resumption of progress during post-crisis and recession period has been attributed in part to counter-cyclical public expenditure and the protection of the bottom half of the income distribution in the context of downward pressure on real income growth after 2009/10 (Bradshaw 2017, Hills 2013). Following on from the 2010 General Election, BHC, there was a reduction of 1.1 percentage points under the Coalition (2009/10-2014/15), and a 4.1 percentage point *increase* under Cameron, May and Johnson (2014/15-2019/20). AHC, there was a fall of 0.6 percentage points under the Coalition, and an *increase* of 2 percentage points under the Conservatives.

As political administrations are variable in duration, examining average annual rates of improvement provides a more consistent basis for assessing progress by political party / government (Figure 3). For anchored child poverty, the average percentage point reduction was 1.8 percentage points per annum over the period of the three Labour administrations (1996/7-2009/10) BHC. This compares to average annual rates of decline of 0.3 percentage points under the Coalition (2009/10-2014/15) and a 0 percentage point change during the period of Conservative majority Government (Cameron, May and Johnson administrations 2014/15-2019/20). AHC, average reductions in anchored child poverty of 1.5 percentage points per annum were achieved over the period 1996/7-2009/10, compared to average annual reductions of 0.2 and 0.5 percentage points respectively under the Coalition (2009/10-2014/15) and during the period of majority Conservative Government 2014/15-2019/20.

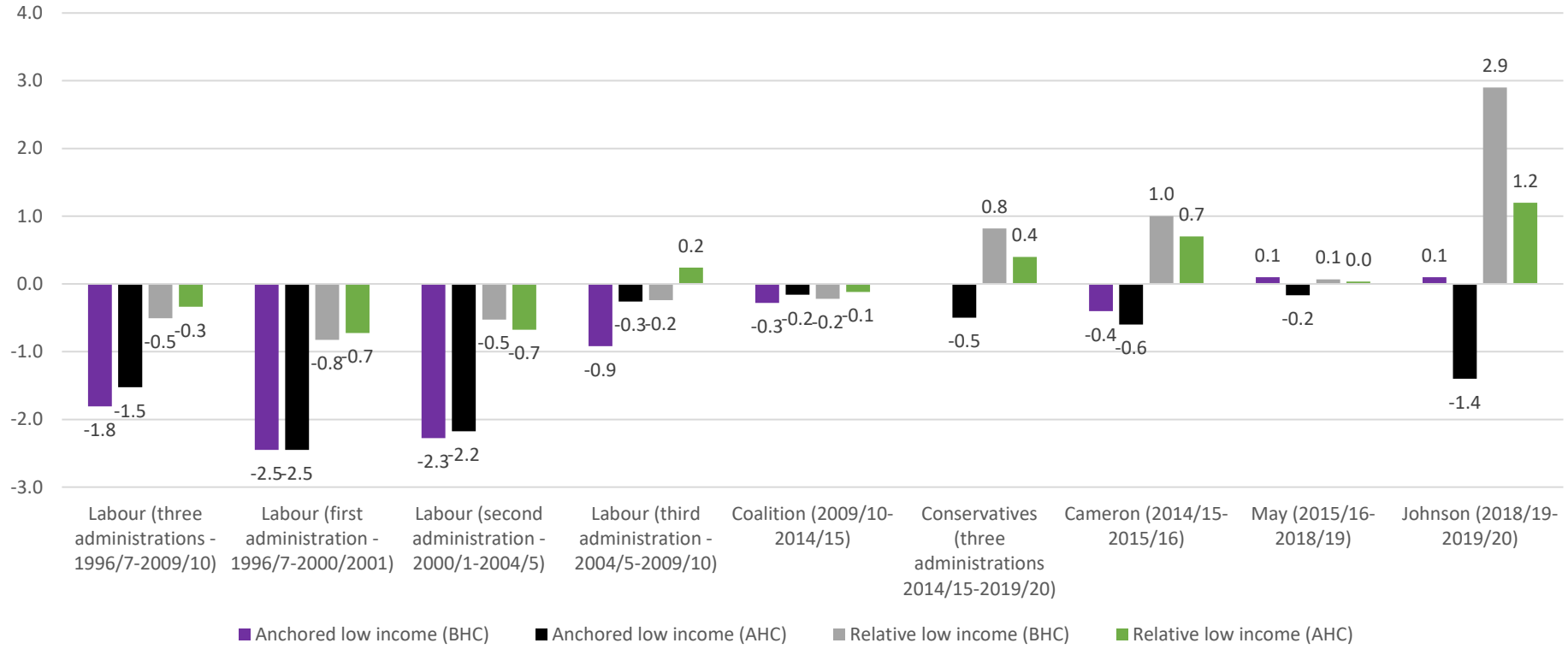
Looking at average annual rates of improvement in relative child poverty by political party / government (Figure 3), average annual percentage point reductions in relative child poverty of 0.5 and 0.3 percentage points BHC and AHC were achieved over the period of the three Labour administrations (1996/7-2009/10). This compares with average falls of 0.2 percentage points per annum BHC and 0.1 percentage points per annum AHC under the Coalition (2009/10-2014/15) and averages *increases* of 0.8 percentage points per annum BHC and 0.4 percentage points per annum AHC under

the Conservative administrations led by David Cameron, Theresa May and Boris Johnson (2014/15-2019/20).

While there was clear pattern of declining rates of progress by political party over time, it is important to note that if progress under each of the three Labour Governments that were in power between May 1997 and May 2010 is examined separately, declining rates of progress are also observed. As noted above, the most rapid improvements in reducing child income poverty under Labour were in the period up to 2004/5. Average annual rates of progress against the anchored and relative thresholds, and before and after housing costs, were substantially greater under the first two Labour administrations (1996/7-2000/1 and 2000/1-2004/5) than under the second two Labour administrations (2004/5-2007/8 and 2007/8-2009/10).

Also note that break-points by political administration based on the dates of general elections do not always coincide with breaks in policy and policy effects can also be lagged. As Hills (2016) and Hills and Stewart (2016) have emphasised, lagged policy effects are particularly important in assessing the Coalition's legacy in terms of income distribution and inequality. Claims that income inequality *fell* under the Coalition relative to the inherited position reflect the adoption of 2009/10 as the break-point. However, much of what happened during 2010 was determined by the March 2010 budget just prior to the General Election and could be reasonably characterised as a lagged policy effect from the Labour administration. Subsequently, those in the top half of the income distributional gained more than those in the bottom half of the income distribution from changes to personal tax allowance (with the exception of the very top). "Re-allocating" the progress made in 2010/11 to Labour to better capture lagged policy effects would improve our assessment of performance in reducing child poverty under Labour, and worsen our assessment of progress under the Coalition, compared to the findings reported above.

Figure 3: Average annual percentage point changes in anchored and relative child poverty rates by political administration

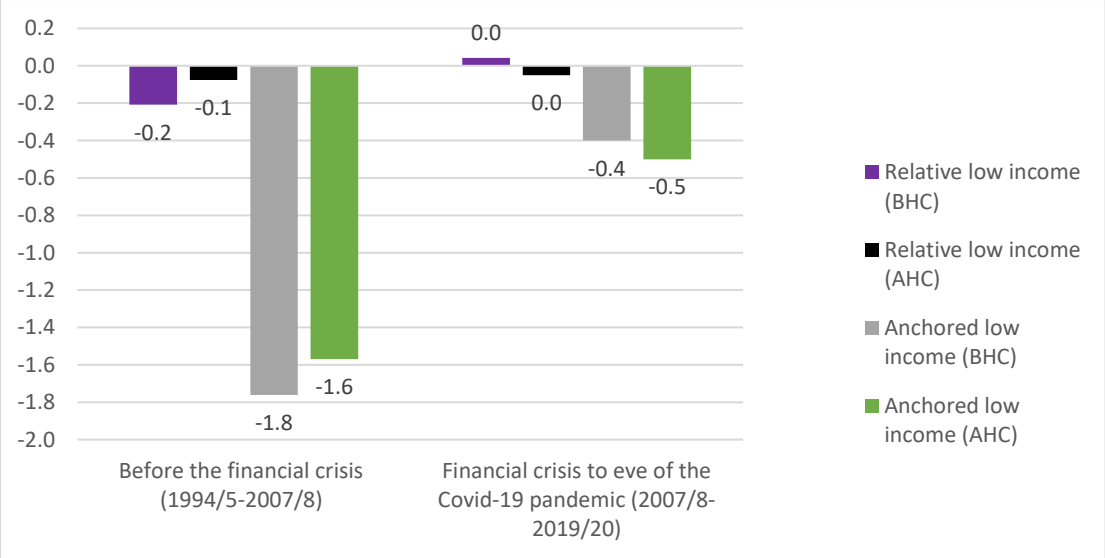


Source: Author's analysis using FRS/HBAI microdata. **Note:** average annual percentage point changes are arithmetic means and the specified time windows include the base years. For further information see the Appendix (section 9.6).

4.2.2 Progress before and after the financial crisis and 'Great Recession'

OECD analysis of child poverty in the period following the 2007/8 financial crisis and the subsequent 'Great Recession' that impacted on economic growth internationally shows relative child poverty increasing in several rich countries after 2007/8 and anchored child poverty rising in some rich countries (OECD 2018; c.f. Cantillon et al 2017). Figure 4 shows that in the UK, for anchored child poverty, annual average rates of reduction were considerably smaller in the period following the financial crisis (2007/8-2016/17) than in period that preceded it (1994/5-2007/8). Pre-crisis, there were average annual reductions in anchored child poverty rates of 1.8 percentage points per annum BHC and 1.6 percentage points AHC. Post-crisis, the average annual reductions were considerably smaller, at 0.4 percentage points and 0.5 percentage points respectively. For relative child poverty, pre-crisis (1994/5-2007/8), there were average annual reductions in relative child poverty of 0.2 percentage points (BHC) and 0.1 (AHC) percentage points. Post-crisis (2007/8-2016/17), there were no further reductions.

Figure 4: Average annual percentage point changes in child poverty before and after the financial crisis and 'Great Recession'



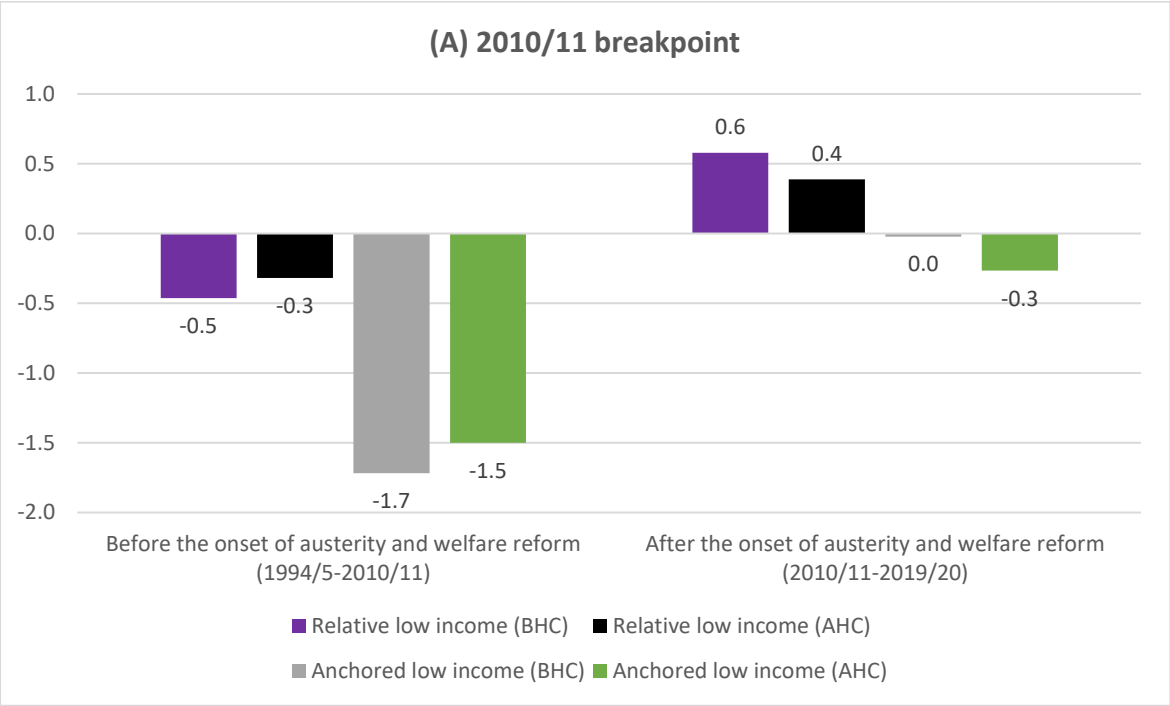
Source: Author's analysis using FRS/HBAI microdata. **Note:** average annual percentage point changes are arithmetic means and the specified time windows include the base years. For further information see the Appendix (section 9.6).

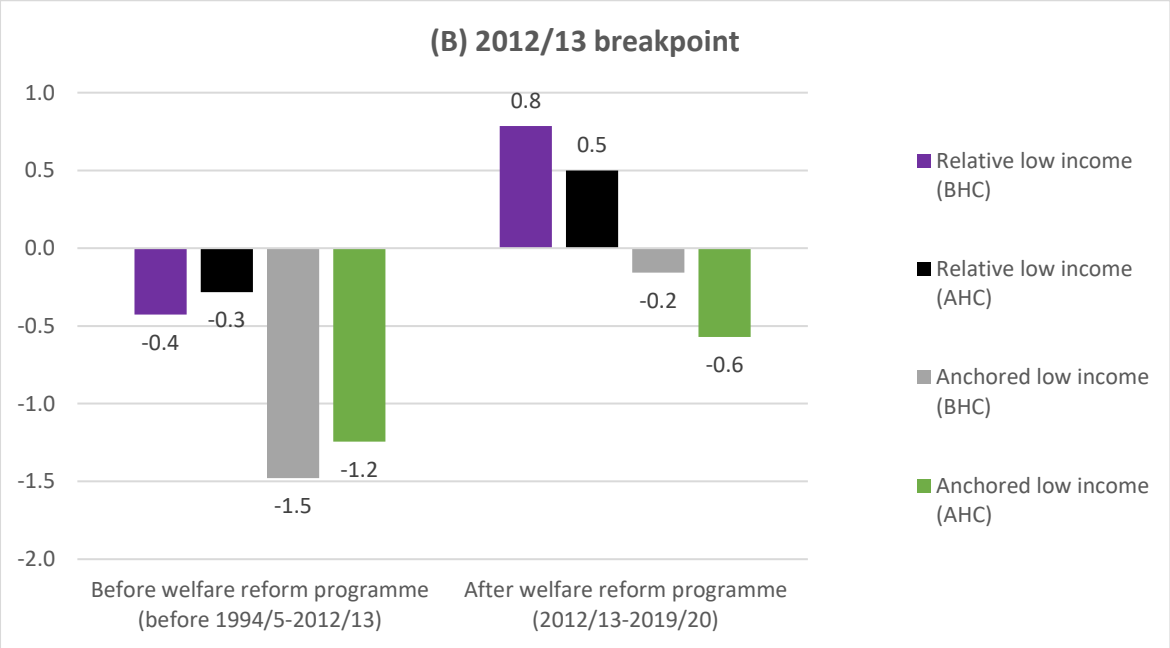
4.2.3 Progress before and after the onset of austerity and welfare reform

Figure 5 shows average annual rates of change in anchored and relative child poverty before and after the onset of austerity and the welfare reform programme. Panel A shows rates of improvement in reducing child income poverty with 2010/11 as a break-point. Looking first at annual rates of improvement in anchored child poverty, prior to the onset of the austerity programme, there were average annual declines of 1.7 and 1.5 percentage points BHC and AHC between 1994/5 and 2010/11, compared with average falls of 0.0 percentage points and 0.3 percentage points per annum after the onset of the austerity programme (2010/11-2019/20). For relative child poverty, there were average percentage point declines of 0.5 (BHC) and 0.3 (AHC) per annum between 1994/5 and 2010/11, compared with average *increases* of 0.6 and 0.4 percentage points per annum after the onset of the austerity programme.

As the Coalition's first austerity budget was not until June 2010, and as the early elements of the austerity and welfare reform programme only began to be put into place after this date, we repeat the analysis with 2012/13 as a breakpoint. With 2012/13 as a breakpoint, the contrasts are even starker. For anchored child poverty, there were average annual declines of 1.5 and 1.2 percentage points BHC and AHC between 1994/5 and 2012/13, compared with average falls of 0.2 percentage points and 0.6 percentage points per annum after the onset of the austerity programme (2012/13-2019/20). For relative child poverty, there were average percentage point declines in relative poverty of 0.4 and 0.3 percentage points per annum between 1994/5 and 2012/13. This contrasts with average *increases* of 0.8 and 0.5 percentage points per annum after the onset of the austerity and welfare reform programme in 2012/13.

Figure 5: Average annual percentage point changes in anchored and relative child poverty rates before and after the onset of austerity and the introduction of the welfare reform programme





Source: Author's analysis using FRS/HBAI microdata. **Note:** average annual percentage point changes are arithmetic means and the specified time windows include the base years. For further information see the Appendix (section 9.6).

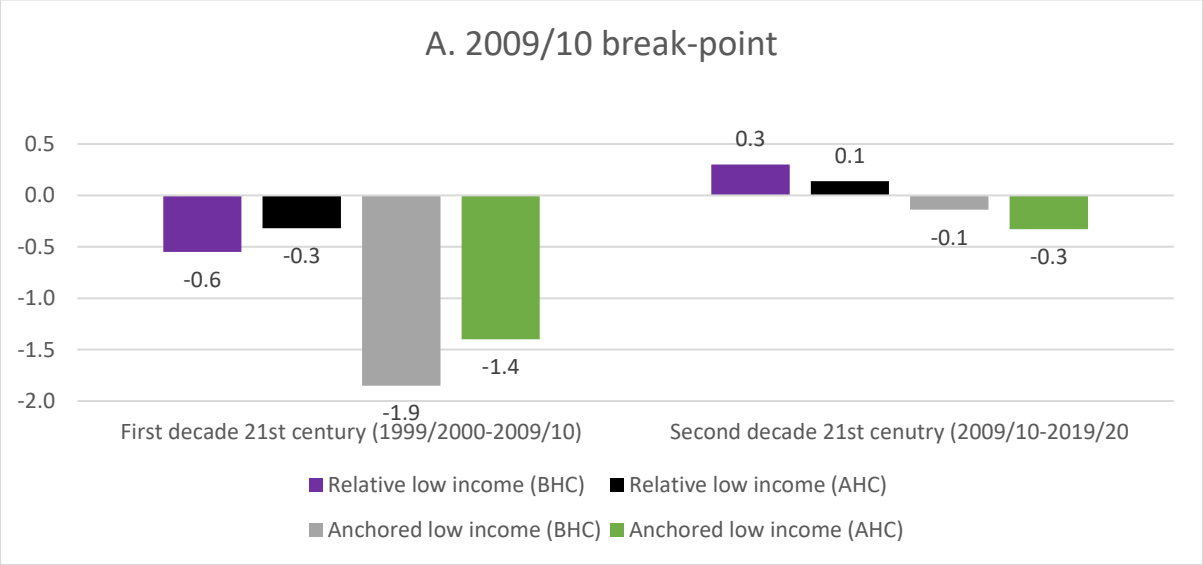
4.2.4 Progress during the first and second decades of the 21st century

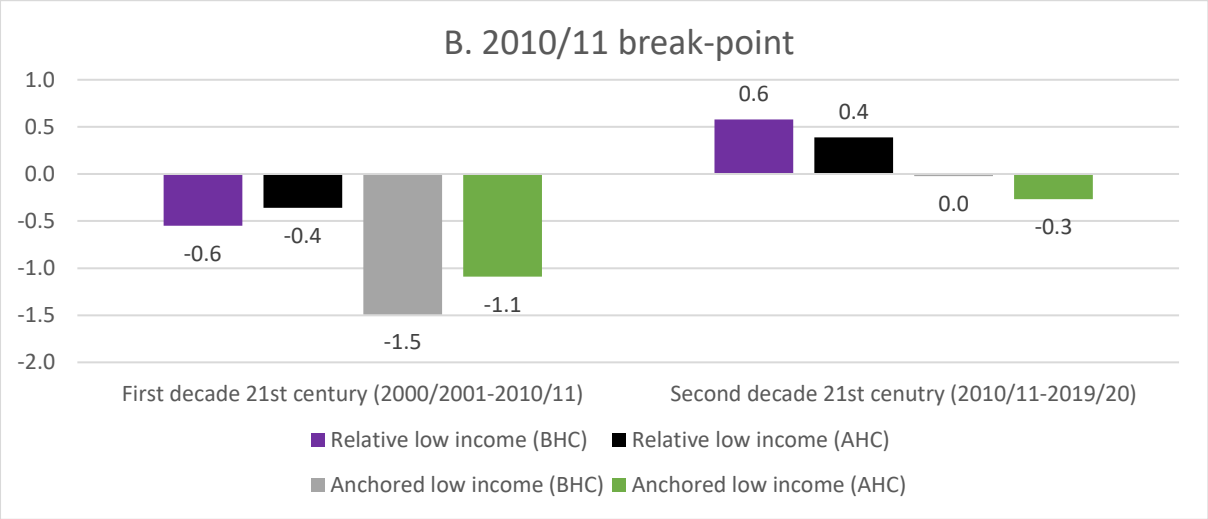
Figure 6 compares annual average rates of progress in reducing anchored and relative child income poverty during the first and second calendar decades of the 21st century. Looking first at breakdowns with 2009/10 as a break-point, for anchored child poverty, there were average annual declines of -1.9 and -1.4 percentage points, before and after housing costs, during the first calendar decade of the 21st century between 1999/2000 and 2009/10, compared with average declines of 0.1 and 0.3 percentage points per annum between 2009/10 and 2019/20. For relative child poverty, there were average declines of 0.6 and 0.3 percentage points per annum, before and after housing costs, during the first calendar decade of the 21st century between 1999/2000 and 2009/10, compared with average annual *increases* of 0.3 percentage points and 0.1 percentage points per annum between 2009/10 and 2019/20.

We now repeat the analysis with 2010/11 as a break-point. As noted in section 4.2.1 2010/11 was an important turning point in relation to child poverty, with both anchored and relative child poverty (both before and after housing costs) being at seventeen year minimums. Figure 5 panel B shows that adopting 2010/11 (rather than 2009/10) as a break-point makes a small difference to the assessment of average annual percentage point change by decade. For anchored child poverty, there were average annual falls of 1.5 and 1.1 percent per annum between 2000/1 and 2010/11 and average falls of 0.1 percentage points and 0.3 percentage points per annum between 2010/11 and 2019/20. For relative child poverty, there were average falls of 0.6 and 0.4 percent per annum between 2000/1 and 2010/11 and average *increases* of 0.3 and 0.1 percentage points per annum between 2010/11 and 2019/20.

Note that in the analysis in sections 5-7 of this paper, we adopt 2010/11 rather than 2009/10 as a breakpoint for the in-depth analysis of patterns and trends in child poverty during the second decade of the 21st century. While acknowledging the sensitivity of the choice of 2009/10 or 2010/11 as a base for this analysis, we argue that the choice of 2010/11 rather than 2009/10 is justified because of the lagged effects of measures adopted prior to the May 2010 General Election feeding through during the course of 2010. For further discussion of this issue, see 'time periods' in section 3.2, 'political administration' in section 4.2.1. The choice and implications of adopting 2009/10 versus 2010/11 as a baseline for comparisons is also discussed in Vizard and Hills (2021) (section 3.3 and appendix), Hills (2016) and Hills and Stewart (2016: 251).

Figure 6: Average annual percentage point changes in anchored and relative child poverty rates during the first and second decades of the 21st century





Source: Author's analysis using FRS/HBAI microdata. **Note:** average annual percentage point changes are arithmetic means and the specified time windows include the base years. For further information see the Appendix (section 9.6).

4.3 Progress against the combined low income and material derivation indicators

Figure 7 extends the analysis to cover the combined low income and material deprivation indicator, and the combined severe low income and material deprivation indicator. This data is available over a shorter time period (2004/5-2009/10 and 2010/11-2019/20). In addition, a break in the FRS material deprivation suite of questions in 2009/10 means that the data

for the period 2004/5-2009/10 is not strictly comparable with the data for the period 2010/11-2019/20.

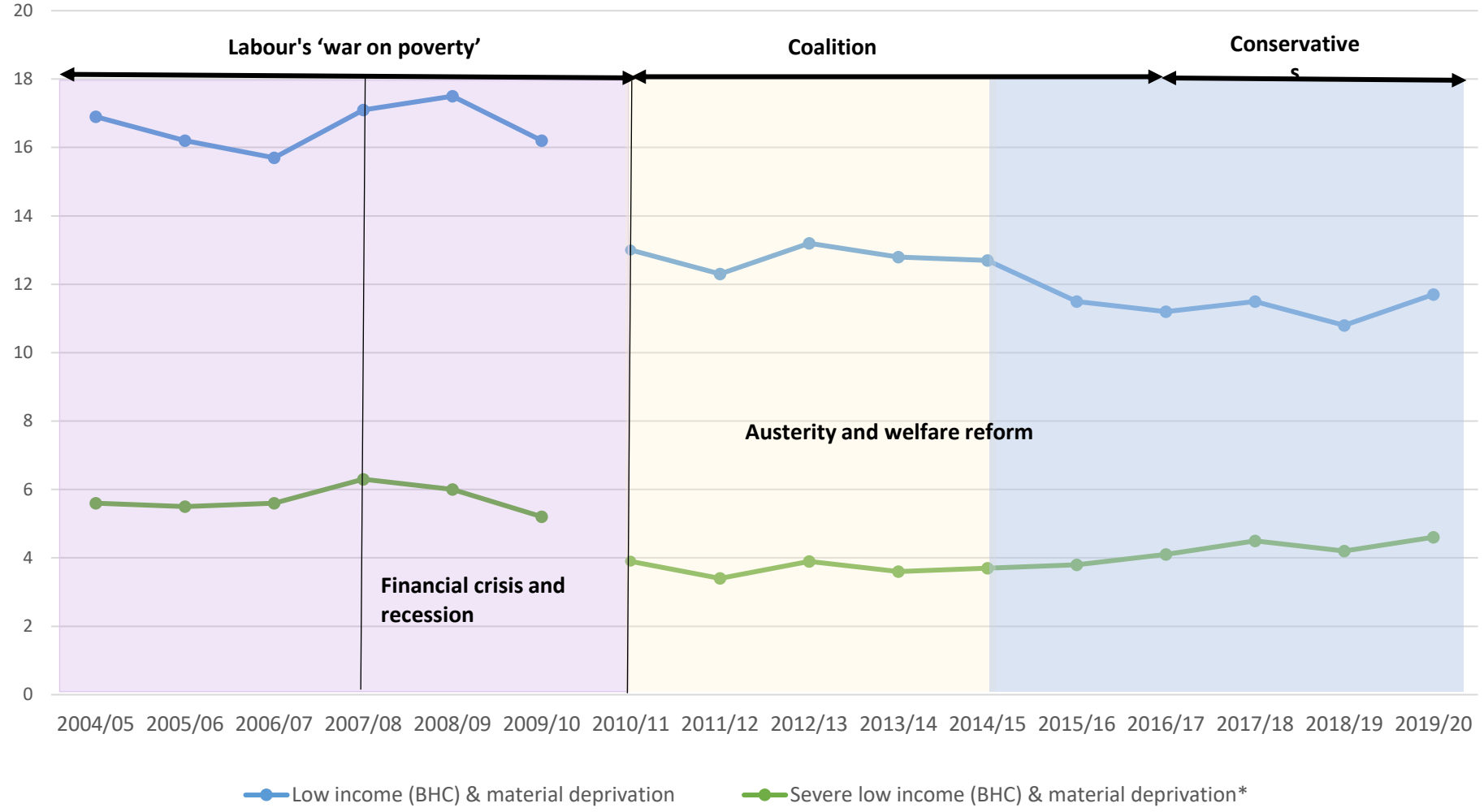
Looking at the first period for which consistent data is available, for the combined child low income and material deprivation indicator, there was upward pressure around the time of the financial crisis, with year-on-year increases in 2007/8 and 2008/9. Looking at the period 2010/11-2019/20, there was a gradual decline from 13 per cent in 2010/11 to 10.8 per cent in 2018/19. However, at the end of the period, on the eve of COVID-19 pandemic in 2019/20, there was an unusual sharp year-on-year increase to 11.7 percent, reversing previous declines. As a result, there was a 1.3 percentage point fall against the combined low income and material deprivation indictor between 2010/11 and 2019/20.

Trends are more adverse when the assessment of material deprivation is combined with a harsher severe relative low income threshold (that is, against the severe child poverty indicator, that is the focus of analysis in sections 6 and 7.2). Looking at the first period for which consistent data is available, there was again upward pressure in severe child low income and material deprivation around the time of the financial crisis, with an increase in 2007/8. Looking at the period 2010/11 to 2019/20, the overall prevalence of severe child low income and material deprivation stood at 3.9 per cent in 2010/11 but had risen somewhat to 4.6 per cent in 2019/20.

However, in interpreting the findings above, it should be noted that Cribb et al (2022) look separately at material deprivation separately (that is, not in combination with either the relative or severe low income thresholds) using similar FRS/HBAI data and identify a downward trend in child material deprivation in the run up to the pandemic. As we noted in section 2.2 (footnote 3), this finding is striking in that it contrasts with other evidence of *stalling* or *deteriorating* trends in child poverty and hardship using other indicators. Some analysts argue that the fact that the list of items included in the FRS/HBAI to assess material deprivation is fixed over long periods of time makes it less useful for assessing trends in the affordability of the goods and services that are necessary for social participation. Some items including access to internet or digital equipment might have increasingly been viewed as essential for social participation during the course of the 2010s. However, the list of items used to assess material deprivation using the FRS/HBAI during the 2010s was fixed at the beginning of the decade and these items were not included[25].

[25] See the Appendix (section 9.6) and DWP (2022b) for further discussion of the FRS/HBAI material deprivation indicator. At the time of writing, a review of the FRS/HBAI material deprivation suite of questions is under way. See (2022c) for further details.

Figure 7: Trends in overall prevalence of child low income and material deprivation (2010/11-2016/19)



Source: Author's analysis using FRS/HBAI data microdata (1994/95-2019/20). **Note:** Data for combined low income and material deprivation measures are only available for 2004/5 onwards and there is a break in the series in 2010/11 due to the introduction of new questions on material deprivation into the FRS questionnaire.

4.4 Summary

The analysis in this section shows that, looking back over a twenty-six year period (1994/5-2019/20), considerable progress was made in reducing child income poverty. However, most of the gains in reducing child income poverty were made during the first decade of the 21s century – with the second decade being a lost decade in terms of the further progress that was made and rates of progress in reducing child income poverty *slowed down*, *stalled* and *reversed* during the 2010s. Declining rates of progress are evident whether the focus of analysis is on the anchored or relative indicator of child income poverty, and both before ("BHC") and after ("AHC") housing costs are taken into account and for both the relative and anchored child poverty indicators. Declining rates of progress are evident looking at subperiods by political administration, by decade, by before and after the financial crisis and 'Great Recession', or by before and after the onset of austerity and welfare reform. Statistically significant increases in overall relative child income poverty occurred both BHC and AHC between 2010/11 and the eve of the COVID-19 pandemic (2019/20). However, the clearest breakpoint is 2012/13, when the effects of the austerity and welfare reform programme began to feed through. For relative child poverty, there were average percentage point declines of 0.4 (BHC) and 0.3 (AHC) per annum between 1994/5 and 2012/13. This contrasts with average *increases* of 0.8 and 0.5 percentage points per annum after the onset of the austerity programme. Looking at progress during the 2010s against the combined material deprivation indicators the picture is somewhat different. There was a small decline against the combined low income and child material deprivation indicator and a small (not statistically significant) increase in the combined severe low income and material deprivation indicator.

5. Which social groups were affected by rising relative child poverty (AHC) during the second decade of the 21st century?

This section examines the impact of rising relative child poverty (AHC) during the second decade of the 21st century on children from different social groups. In section 4, we identified that the overall increase in relative child poverty (AHC) between 2010/11 and 2019/20 is statistically significant at the 95% level of confidence using the resamples datasets for estimating uncertainty. This section takes the analysis forward by addressing which social groups were most affected by the reversal in progress in reducing relative child poverty (AHC) during the 2010s. We address in particular whether the extent to which the most disadvantaged groups of children that already had high relative child poverty (AHC) risks at the beginning of the 2010s (in 2010/11) recorded *further increases* in relative child poverty (AHC) over the decade and whether the prevalence gaps between disadvantaged groups and more advantaged comparator groups *widened*.

In order to build up in-depth evidence on this issue, we examine: (1) cross-sectional differences in relative child poverty (AHC) poverty prevalence by social group at the beginning of the decade (in 2010/11); (2) increases in relative child poverty (AHC) by social group between 2010/11 and 2019/20; (3) widening of relative child poverty (AHC) prevalence gaps between 2010/11 and 2019/20); and (4) cross-sectional differences in child poverty by social group at the end of the decade (in 2019/20). The findings are systematically disaggregated by equality characteristics (disability, ethnicity, country of birth), family type (single parent status and number of children), household socio-economic characteristics (household socio-economic classification, household employment status and household tenure type) and geographical area (region and country).

As set out clearly set out in section 3, we have adopted a nuanced approach to reporting the descriptive findings in the relative child poverty (AHC) research exercise, highlighting all differences and changes that we identify as large or of particular concern, while explicitly indicating where differences and changes are statistically significant at the 95% level of confidence using the resamples datasets for estimating uncertainty. As noted in section 3, the rationale for this approach is that our analysis of child poverty trends raises some important methodological issues relating to low sample size and potentially to statistical power and the assessment of statistical significance for some social groups when using the resamples

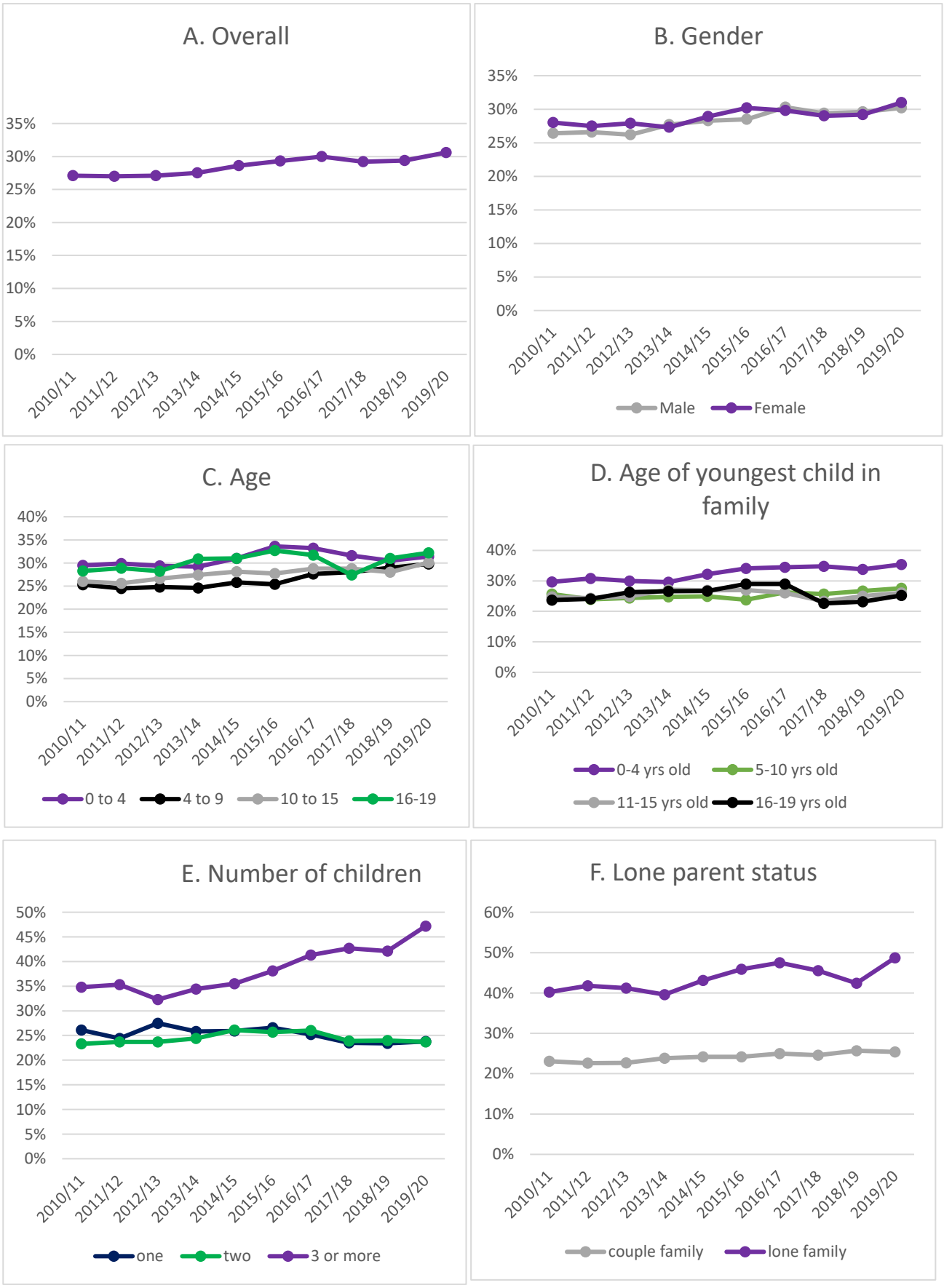
dataset. Specifically, the sample sizes in the HBAI resamples datasets are only about half the size of the full standard HBAI dataset for each year. Consequently, the samples of children in the resamples datasets are reduced and this is a particular concern for the analysis of trends in child poverty for the smaller groups and breakdowns that are the specific focus of this paper. Given these limitations and caveats, in addition to identifying statistically significance differences and changes, we also report increases in relative child poverty (AHC) risks during the 2010s for some groups which, while not assessed as being statistically significant, we believe should not be simply disregarded or overlooked.

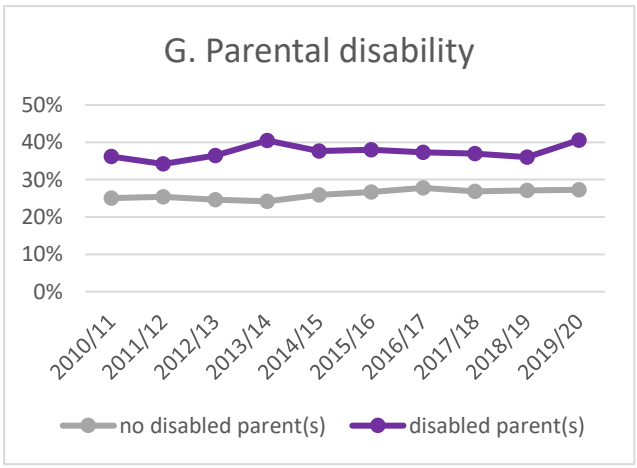
Section 5.1 sets out the main findings looking across social groups. Section 5.2 provides more detailed descriptions of patterns and trends for each social group. Section 5.3 provides a summary. Further details of the findings on relative child poverty (AHC) by social group (including cross-sectional estimates, estimates of change and assessments of statistical significance) are provided in a series of online datatables that accompany this report (see SPDO Child poverty research exercise online Table 1, Table 6 and Tables 9-12).

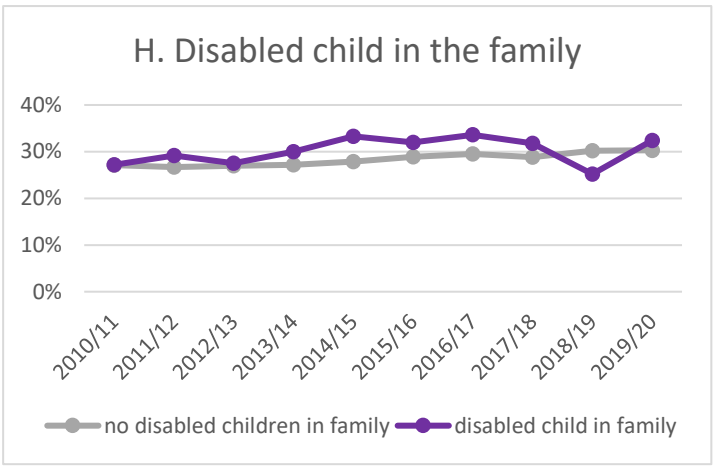
5.1 Overview of patterns and trends in relative child poverty (AHC) by social group during the 2010s

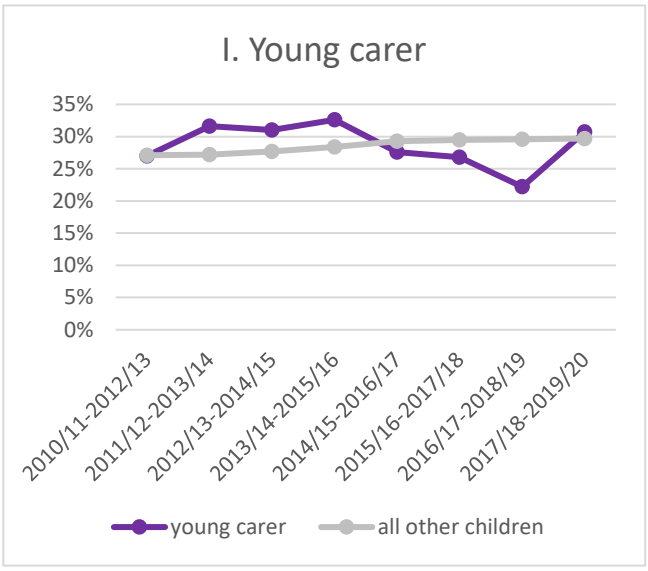
Figure 8 (Panels A-P) provides an overview of the patterns and trends in relative child poverty (AHC) during the 2010s by social group that we examine in this section.

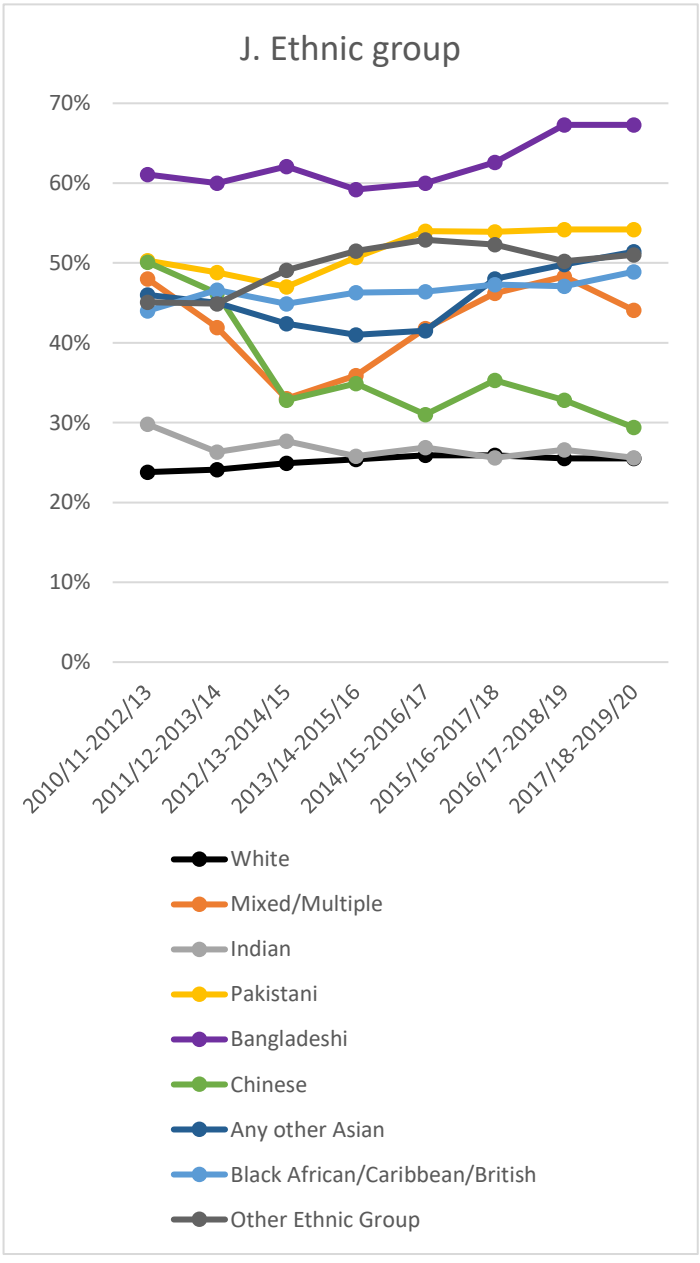
Figure 8: Trends in relative child poverty AHC by characteristics (2010/11-2019/20)

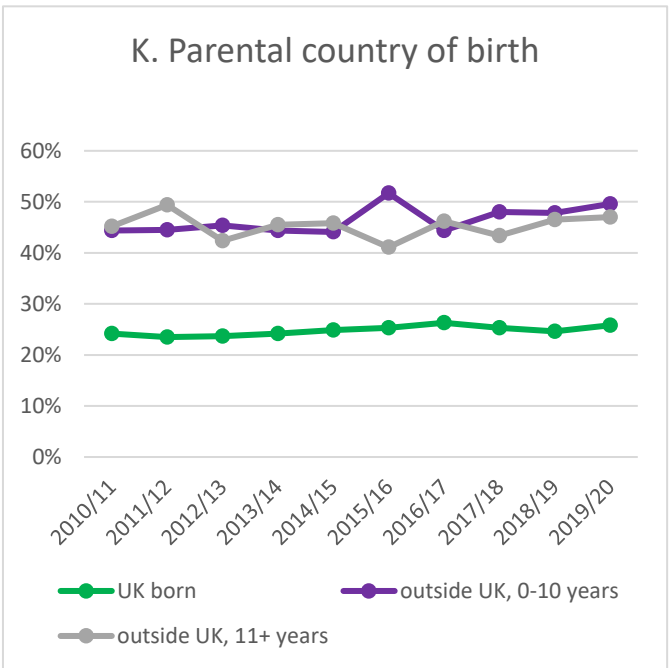


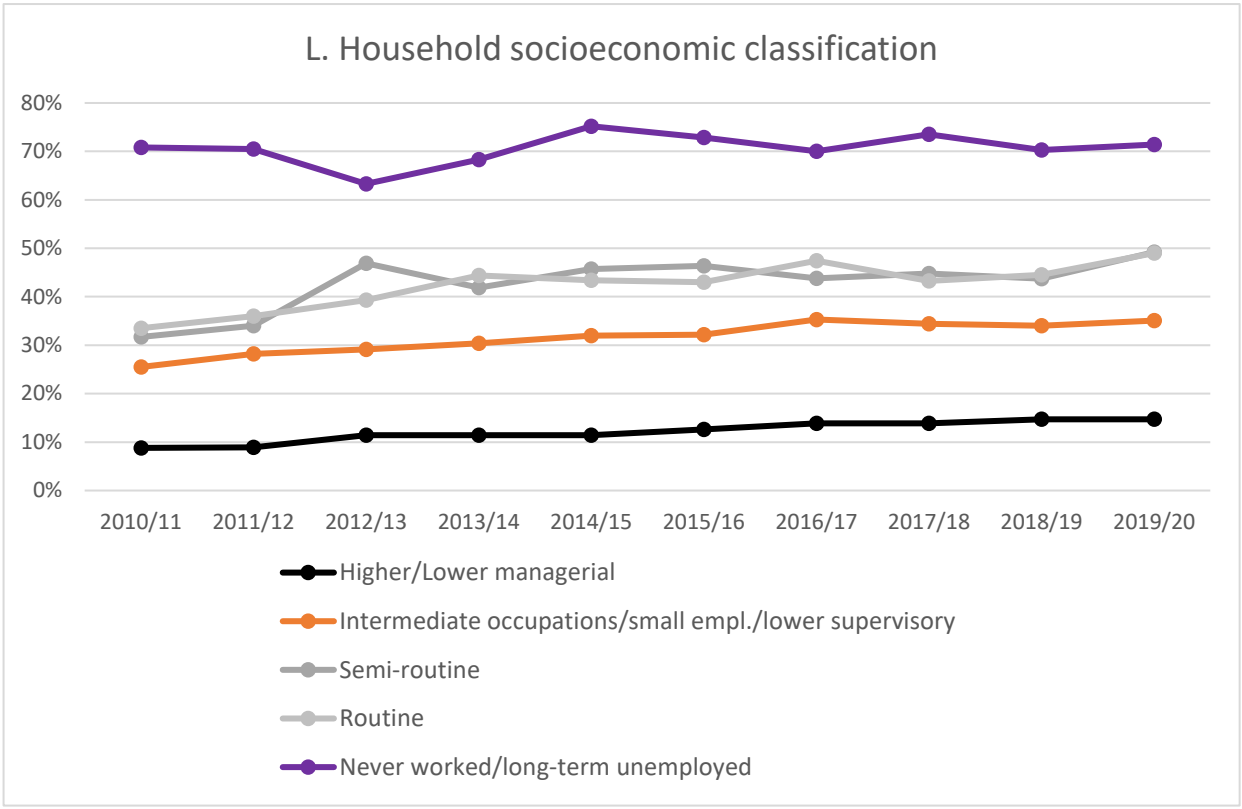

G. Parental disability
50%
40%
30%
20%
10%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
no disabled parent(s)
disabled parent(s)

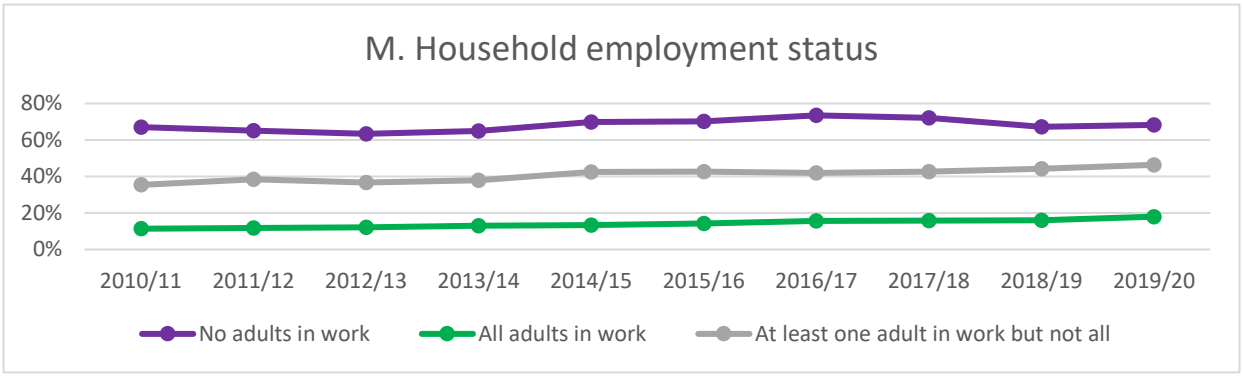

H. Disabled child in the family
40%
30%
20%
10%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
no disabled children in family
disabled child in family

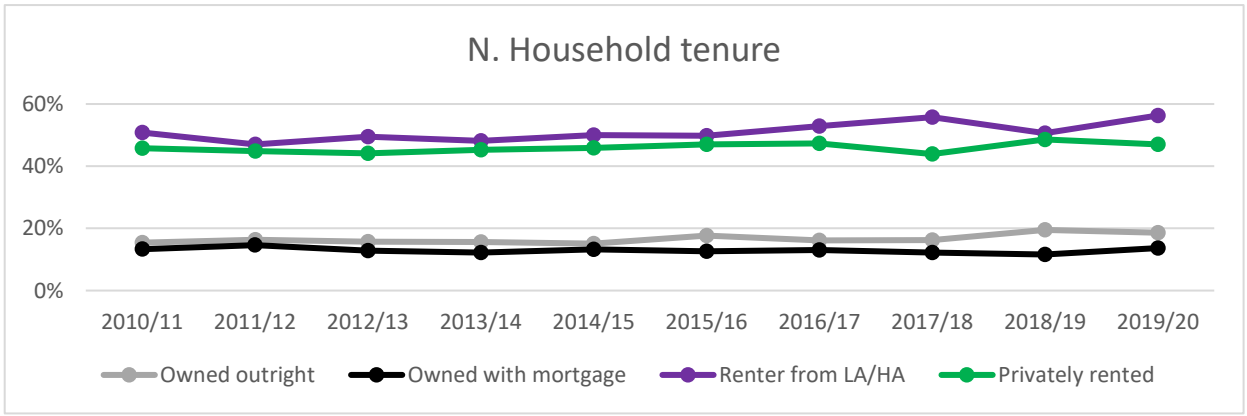

I. Young carer
35%
30%
25%
20%
15%
10%
5%
0%
2010/11-2012/13
2011/12-2013/14
2012/13-2014/15
2013/14-2015/16
2014/15-2016/17
2015/16-2017/18
2016/17-2018/19
2017/18-2019/20
young carer
all other children

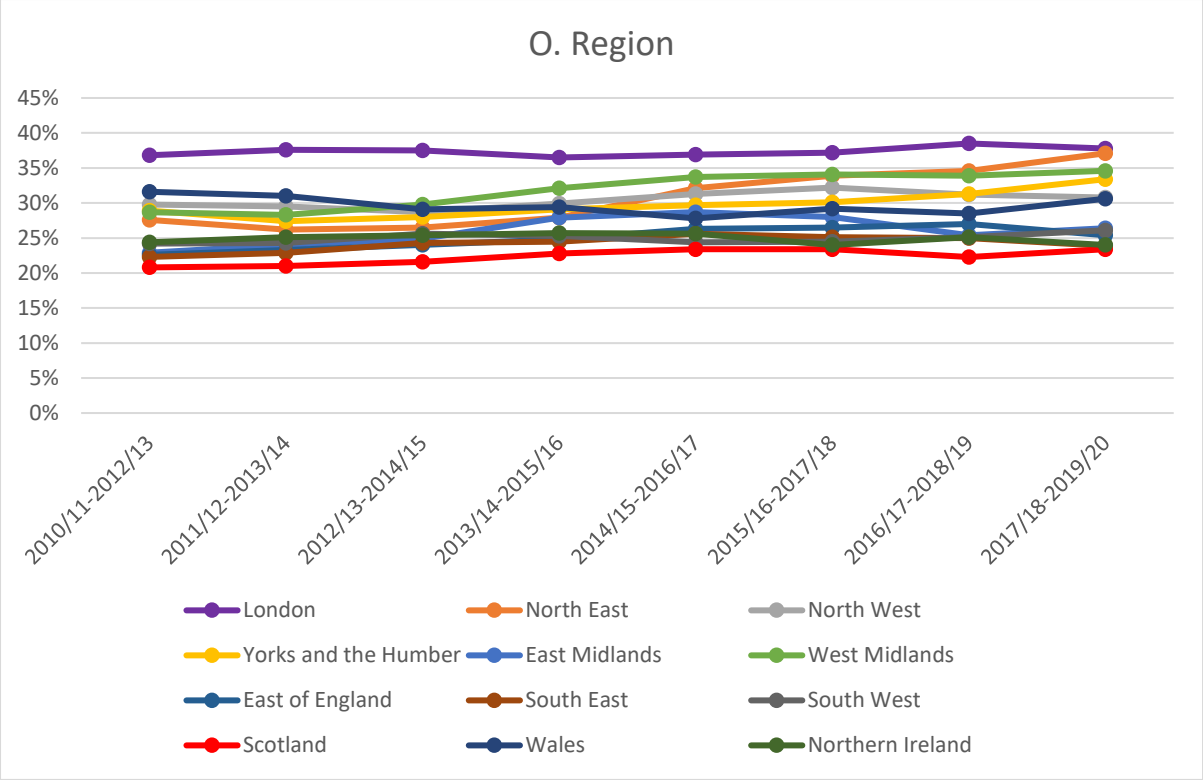

J. Ethnic group
70%
60%
50%
40%
30%
20%
10%
0%
2010/11-2012/13
2011/12-2013/14
2012/13-2014/15
2013/14-2015/16
2014/15-2016/17
2015/16-2017/18
2016/17-2018/19
2017/18-2019/20
White
Mixed/Multiple
Indian
Pakistani
Bangladeshi
Chinese
Any other Asian
Black African/Caribbean/British
Other Ethnic Group

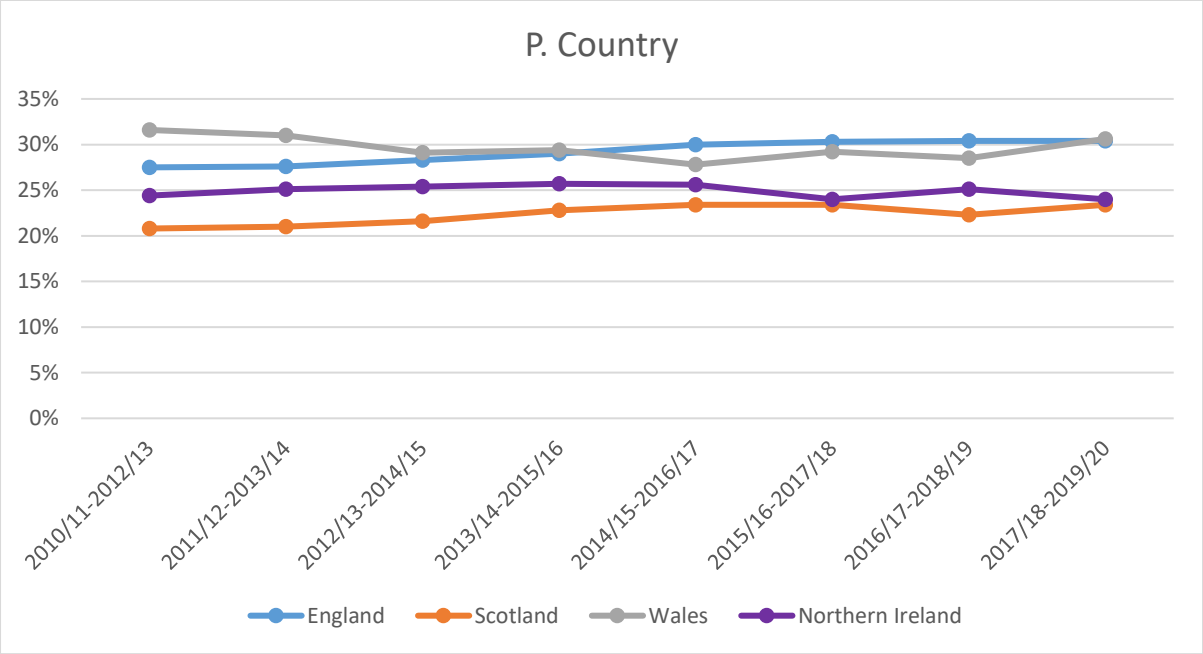

K. Parental country of birth
60%
50%
40%
30%
20%
10%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
UK born
outside UK, 0-10 years
outside UK, 11+ years


L. Household socioeconomic classification
80%
70%
60%
50%
40%
30%
20%
10%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
Higher/Lower managerial
Intermediate occupations/small empl./lower supervisory
Semi-routine
Routine
Never worked/long-term unemployed


M. Household employment status
80%
60%
40%
20%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
No adults in work
All adults in work
At least one adult in work but not all


N. Household tenure
60%
40%
20%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
Owned outright
Owned with mortgage
Renter from LA/HA
Privately rented





Source: Authors' analysis using FRS/HBAI microdata. The charts show percentages of children aged 0-19 years old living in households with equivalised income less than 60% of the contemporary median AHC. Estimates by young carer status, ethnic group and geographical area are based on three years of pooled data. Breakdowns by household socio-economic classification and ethnic group are based on the characteristics of the household reference person.

5.1.1 Statistically significant findings

In this section, we identify findings that we assess as being statistically significant at the 95% level of confidence of above using the resamples datasets for calculating uncertainty (as recommended by DWP).

Differences in relative child poverty (AHC) risks by social group at the beginning of the 2010s

At the beginning of the second decade of the 21st century child poverty rates were higher for the social groups listed below. In each of these cases, our analysis shows that in 2010/11 rates of relative child poverty AHC for each of these groups was higher than for comparator groups and that the differences are statistically significant at the 95% level of confidence of above using the resamples datasets for calculating uncertainty.

- Children living in families with a lone parent (40.2%) compared to children living in couple families (23.1%);
- Children living in families with three or more children (34.8%) compared with children living in families with one child (26.1%);
- Children living in families with a disabled parent (36.2%) compared to children with no parental disability (25.1%);
- Children living in households where the HRP is from an ethnic minority group (Mixed/Multiple 48.0%, Indian 29.8%, Pakistani 50.3%, Bangladeshi 61.1%, Black African/Caribbean 44.0%, Chinese 50.1%) compared to children living in households where the HRP is White (23.8%) (pooled data).
- Children living with a non-UK born parent residing in the UK for 10 years or less (44.4%), and children living with a non-UK born parent residing in the UK for 11 or more years (45.2%), compared with children whose parental country of birth is the UK (24.2%).
- Children living in households where the HRP is from the semi-routine (31.7%), routine (33.5%) and never worked occupational groups (70.8%) compared with children living in families from the higher and lower managerial/administrative and professional groups (8.8%);
- Children living in households where no adults are in employment (67%) or only one adult is in employment (35.4%) compared with children living in families where all adults are in employment (11.4%).
- Children living in private rented accommodation (45.8%) and accommodation that is rented from a local authority or housing

association (50.8%) compared with children living in owner occupied accommodation (15.4%).
- Children living in London (36.8%) compared with children living in other English regions.

Increases in relative child poverty (AHC) risks during the 2010s by social group

Our analysis identifies increases in relative child poverty (AHC) rates that are statistically significant at the 95% level of confidence using the resamples datasets for calculating uncertainty were identified for the following groups:

- Children living in lone parent families (a 8.5 percentage point increase);
- Children living in families with three or more children (a 12.4 percentage point increase);
- Children living in households with all working-age adults in employment as well as those living in households with at least one (but not all) adults in work (6.6 and 11 percentage points respectively);
- Children living with HRPs from the intermediate, small employer and lower supervisory, the semi-routine and routine occupational groups (with increases of 9.6, 17.5 and 15.5 percentage points respectively);
- Children living in the North East (an increase of 9.5 percentage points).

In addition, for children living in families with three or more children compared to children living in families with one child, the relative child poverty (AHC) prevalence gap widened by 14.6 percentage points between 2010/11 and 2019/20. This indicates that children living in larger families – a group that was already more disadvantaged in terms of its relative child poverty (AHC) risks at the beginning of the decade – fell further behind. This finding is assessed to be statistically significant at the 95% level of confidence using the resamples datasets to estimate uncertainty.

Differences in relative child poverty (AHC) risks by social groups at the end of the 2010s

Most of the social groups that were identified as higher risk of relative child poverty (AHC) in 2010/11 (and where the differences are assessed as statistically significant) remained at higher risk in 2019/20 (with the differences remaining statistically significant). The exceptions were children

where the HRP is from the Chinese and Indian groups compared to the White group. In addition, children living in the North East, North West and Yorkshire and Humber were another exception. Here, the relative child poverty (AHC) prevalence gaps with London became statistically nonsignificant, with virtual convergence between prevalence rates in the North East and London by the end of the decade.

5.1.2 Findings that are not assessed to be statistically significant but which should not be overlooked

Our analysis puts the spotlight on increasing prevalence of relative child poverty (AHC) amongst children from several other social groups during the 2010s that we do not believe should be simply disregarded or overlooked. In these cases, we did *not* assess the increases to be statistically significant at the 95% level of confidence or above using the resamples datasets to estimate uncertainty. However, as we noted in section 3, as is well known, FRS/HBAI sample size is low for some social groups and sample sizes in the resamples datasets are even smaller than in the full standard dataset. We have concerns that this might be impacting on statistical power particularly in the context of the smaller groups and breakdowns that are the specific focus of our analysis in this paper. With these limitations and caveats in mind, we note that the increases in child poverty prevalence for the following groups, while not statistically significant, are nevertheless of concern:

- Children with a disabled parent (a 4.4 percentage point increase);
- Children with a disabled child in the family (a 5.2 percentage point increase);
- Children living in accommodation rented from local authorities (a 5.6 percentage point increase);
- Children living in Yorkshire and Humber and the East and West Midlands (pooled data - 4.5, 3.5 and 5.9 percentage points respectively).
- Children living in households where the HRP is from the Pakistani, Bangladeshi and Black African/Caribbean/British ethnic groups (pooled data – 3.9, 6.2 and 4.8 percentage points respectively).

Additionally, the analysis puts the spotlight on increasing relative child poverty (AHC) prevalence gaps for several other groups which, given the limitations and caveats relating to sample size and potentially to statistical power noted above, we do not believe should be simply disregarded or overlooked. Again, in each of these cases, we note that the widening of the

prevalence gap has not been assessed to be statistically significant at the 95% level of confidence using the resamples dataset. These groups are:

- Children from lone parent families compared to couple families (with a 6.2 percentage point increase in the gap from 17.1 percentage points in 2010/11 to 23.3 percentage points in 2019/20).
- Children living in households where the HRP is from the routine and semi-routine occupational groups compared to children with households where the HRP is from the higher and lower managerial / administrative / professional occupations.
    - For children from households where the HRP is from the routine occupational group, there was a striking 24.6 percentage point prevalence gap at the baseline (in 2010/11), and this gap had further widened by an additional 9.6 percentage points to 34.2 percentage points by 2019/20.
    - For children from households where the HRP is from the semi-routine occupational group, the prevalence gap widened by 11.6 percentage points from 22.8 percentage points to 34.5 percentage points.
- Children living in the North East compared to London. For children living in the North East there was a narrowing of the gap with London from 9.2 percentage points (with London most disadvantaged) to less than 1 percentage point with very similar rates by the end of the period.

Widening relative child poverty (AHC) prevalence gaps in the context of disability, while smaller in nature and again not found to be statistically significant using the resamples dataset, are also a concerning trend. Relative changes by disability status were *not* found to be statistically significant at the 95% confidence level using either the standard or resamples datasets for estimating uncertainty or when using pooled data. Our particular concerns relate to:

- A widening of the relative child poverty prevalence gap for children with a disabled parent compared to other children by 2.2 percentage points.
- For children with a disabled child in the family compared to other children, there was no prevalence gap in 2010/11. However, a 2 percentage point gap had opened up by the end of the decade.

Positive findings

Some positive findings also emerge from the relative child poverty (AHC) change analysis, especially by ethnicity – although again these positive findings are not assessed to be statistically significant at the 95% level of confidence using the resamples datasets to estimate uncertainty. In 2010, relative child poverty rates amongst children where the HRP is from the Indian group were high at 34.7%. However, during the 2010s rates fell to 26.1%, resulting in convergence with children where the HRP is from the White group. Rates also fell for children where the HRP is from the Chinese group and the Mixed or Multiple group, although, in the case of the Mixed or Multiple group, this overall reduction masks a period of sustained increases during the post-welfare reform period.

5.2 Further details of patterns and trends patterns and trends in relative child poverty (AHC) by social group during the 2010s

In this section, we provide a more detailed description of patterns and trends in relative child poverty (AHC) during the 2010s for each social group. Note that the descriptions in this section are provided for readers who have interests in relation to specific groups. The analysis is *not* restricted to statistically significant findings. However, findings that are assessed as being statistically significant at the 95% confidence level or above using the re-samples method for estimating uncertainty recommended by DWP are clearly identified.

5.2.1 Age group

Looking at cross-sectional in patterns of prevalence of relative child poverty in 2010/11, rates were highest amongst the youngest children aged 0-4 (29.5%), followed by children and young people aged 16-19 (28.3%), children aged 10-15 (26.0%) and children aged 4-9 (25.3%). Looking at change between 2010/11 and 2019/20 increases occurred for 16-19 year olds (a 3.9 percentage point increase), 10-15 year olds (a 4.1 percentage point) increase and 4-9 year olds (a 4.5 percentage point increase) for 0–4 year olds (a 1.9 percentage point increase). As a result of these trends, by 2019/20, those aged 16-19 recorded the highest child poverty rates in 2019/20 (32.2%), followed by those aged 0-4 (31.4%).

Stewart and Reader (2021) examined trends in child poverty in for children under 16 by the age of the ***youngest*** child in the family. Their

analysis identified that the increases in child poverty were largest for families where the youngest child is aged 0-4 years, where poverty increased from 30% in 2010/11 to 35% in 2019/20. They note that this effect was especially striking for those with a baby or toddler aged 0-1, up from 32% in 2010/11 to 38% in 2019/20, raising particular concerns about the impact of child poverty on families with very young children. These findings are also reported in Oppenheim and Milton (2021), which focuses on trends in early years. Similar findings are reflected in Figure 6.

5.2.2 Disability

Looking at breakdowns by parental disability status in 2010/11, prevalence rates of relative child poverty (AHC) amongst children with a disabled parent were 36.2%, whereas prevalence rates amongst children without a disabled parent were 25.1%. This difference was statistically significant.

Looking at trends between 2010/11 and 2019/20, amongst children with a disabled parent in the household, there was a 4.4 percentage point increase, compared to a 2.2 percentage point increase amongst children without a disabled parent. The gap was already very large at 11.0 percentage points at the baseline (in 2010/11), and further widened to 13.3 percentage points in 2019/20. As a result of these trends, rates for children with disabled parents stood at 40.6% on the eve of the COVID-19 pandemic in 2019/20, compared to rates of 27.3% for other children. This difference was statistically significant.

Looking at breakdowns by child disability status, relative child poverty rates in 2010/11 were similar for children living in a family (benefit unit) that includes a disabled child compared to other children (rates of 27.2% and 27.1% respectively). Over the period 2010/11-2019/20, increases in the prevalence of relative child poverty (AHC) occurred for children living in families (benefit units) that include do and do not include a disabled children. However, the increases for those with a disabled child in the family were larger than for those without a disabled child in the family (a 5.2 percentage point increase compared with a 3.1 percentage point increase). As a result of these trends, a gap had opened up the eve of the pandemic, with the prevalence of relative child poverty (AHC) rising to 32.4% for children with a disabled child in the family and 30.3% for other children in 2019/20.

Vizard and Obolenskaya (2018) identified that young carers fared worse than other children in terms of trends over the period that coincided with

the financial crisis, economic downturn and onset of austerity (comparing rates in 2013/14-2015/16 with those in 2005/06-2007/08). At the beginning of this period, rates of child poverty (AHC) were lower than rates for other children (24% v 30%). However, in the period following financial crisis, economic downturn and onset of austerity, rates climbed, first converging with rates for other children and then overtaking rates for other children by the end of the period with a substantial (5 percentage point) gap opening up by 2013/14-2015/16.

Our analysis here provide an update. Trends for young carers are identified using three year averages (comparing 2010/11-2012/13 and 2017/18-2019/20). In 2010/11-2012/13, rates for young carers and other children were similar (27.0% amongst young carers and 27.1 % amongst other children). Rates over the period increased by 3.7 percentage points for young carers compared with 2.7% percentage points for other children, with rates of 30.7 and 29.7% respectively at the end of the period.

5.2.3 Ethnic group

Trends by ethnicity are identified using three year averages (comparing 2010/11-2012/13 and 2017/18-2019/20). In 2010/11-2012/13, rates were higher amongst children living in households where the HRP is from minority ethnic groups compared to the White ethnic group. Rates for the Bangladeshi, Pakistani, Chinese Mixed or Multiple, Black/African/Caribbean and Indian backgrounds – stood at 61.1, 50.3, 50.1, 48.0%, 44.0% and 29.8% per cent living in relative low income after housing costs, respectively. This compares to rates of 23.8% for children living in households where the HRP is from the White ethnic group. With the exception of the Indian ethnic group, the difference in child poverty rates between children from living in households where the HRP is from each of these minority ethnic groups compared with children living in households where the HRP is from the White ethnic group was statistically significant.

Trends for different ethnic groups between 2010/11-2012/13, and 2017/18-2019/20 show a mixed picture. There was an increase of 1.7 percentage points for children living in households where the HRP is from the White ethnic group. For minority groups, there were increases of 4.9 percentage points for children living in households where the HRP is from the Black African/Caribbean / British ethnic group, 3.9 percentage points for children living in households where the HRP is from the Pakistani ethnic group and 6.2 percentage points where the HRP is from the Bangladeshi ethnic group. In contrast, there were also some positive developments, with declines for children living in households where the HRP is from the

Chinese, Indian and Mixed or Multiple ethnic groups, of 20.8, 4.2 and 3.9 percentage points respectively, and with reductions in the gaps between the Indian and Chinese groups respectively, and the White group.

For the Mixed or Multiple group, an initial period of progress was followed by a rise, so that the overall picture of a reduction of 3.9 percentage points masks a considerable rise of 11.1 percentage points between 2012/13-2014/15 and 2019/20. Looking at this shorter time period, which coincides with the post-welfare reform period, rates were high and rising for children living in households with HRPs from the Pakistani, Bangladeshi, Black African/Caribbean/British and Mixed or Multiple ethnic groups. In contrast, rates for children with HRPs remained unchanged (an increase of less than 0.01 percentage points).

By the end of the period under observation, rates for children living in households where the HRP is from the Bangladeshi, Pakistani, Mixed or Multiple and Black/African/Caribbean ethnic groups stood at 67.3, 54.2, 29.4, 44.1 and 48.9 per cent, respectively, compared to rates of 25.5% for children living in households where the HRP is from the White ethnic group, with statistically significant gaps in each case. Rates for children living in households where the HRP is from the Indian ethnic group stood at 25.6% by the end of the period, converging with rates for children living in households where the HRP is from the White ethnic group, while rates for children living in households where the HRP is from the Chinese ethnic group had fallen to 29.3%.

5.2.4 Parental country of birth

Looking at cross-sectional differences in 2010/11, prevalence rates were 24.2% for children with UK born parents, compared to 44.4% for children living with a non-UK born parent residing in the UK for 10 years or less, and 45.2% for children living with a non-UK born parent residing in the UK for more than 10 years. The differences in prevalence rates for those with and without UK born parent/s in 2010/11 were statistically significant.

Looking at trends by country of birth, there was a statistically significant 1.6 percentage point increase in prevalence amongst children with UK born parents between 2010/11 and 2019/20. A 5.2 percentage point increase occurred for children living with a non-UK born parent residing in the UK for 10 years or less, and a 1.8 percentage point increase occurred for children living with a non-UK born parent residing in the UK for more than 10 years.

As a result of these trends, patterns of differentiation by country of birth were similar in 2019/20 to those observed in 2010/11, but prevalence had

increased for each group, to rates of 25.8%, 49.6% and 47% respectively. These differences are statistically significant at the 95% level of confidence.

5.2.5 Lone parent status

Looking at cross-sectional patterns in the prevalence of relative child poverty (AHC) in 2010/11 by lone parent status, rates were 23.1% for children living in couple families compared to 40.2% for children living in lone parent families. This difference was statistically significant.

There was a steep 8.5 percentage point increase in the prevalence of relative child poverty (AHC) for children living in lone families between 2010/11 and 2019/20 compared to a 2.3 percentage point increase for children living in couple families. This increase is statistically significant at the 95% level of confidence using the resamples dataset). As a result of these trends, there was a widening prevalence gap between children living in single and couple families of 6.2 percentage points (from 17 percentage points in 2010/11 to 23.3 percentage points in 2019/20).

By 2019/20, rates for children living in lone parent families stood at 48.7%, while rates for children living in couple families stood at 25.4%. This difference was statistically significant.

5.2.6 Number of children

Looking at cross-sectional prevalence rates for relative child poverty (AHC) by number of children in 2010/11, rates were considerably higher amongst children with three or more children in the family (34.8%), compared to rates of 23.3% and 26.1% for those with two or one children in the household respectively. The difference in prevalence for those with three or more children in the household and those with one child was statistically significant.

Prevalence amongst children living in households where they are the only child *fell* between 2010/11 and 2019/20 (by 2.3 percentage points), whereas prevalence rates amongst children living in families with two children were broadly stable (an increase of 0.5 percentage points), while rates increased for those with three or more children increased sharply by 12.4 percentage points (this increase was statistically significant). As a result, there was a clear divergence over the period, with a statistically significant 14.6 percentage point widening of the prevalence gap between children living in families with three or more children compared to families with only one child (from 8.8 percentage points in 2010/11 to 23.4 percentage points in 2010/11). This increase was statistically significant.

By 2019/20, rates for those living in families with three or more children had increased to 47.2%, compared to 23.8% for those living in families with only one child and 23.7% for those with two children in the family. This difference was statistically significant.

5.2.7 Household socio-economic classification

Looking at patterns of differentiation by household socio-economic classification (NS-SEC category) in 2010/11, there was a sharp social gradient, with rates of child poverty of 8.8% for children with family backgrounds from the higher or lower managerial, professional and administrative occupational groups; of 25.5% for those from the intermediate occupations; of 31.7% and 33.5% for those from the semi-routine and routine groups; and rates of more than 70.8% for those with family background from the 'never worked/long-term unemployed' category. The differences in prevalence for children with family backgrounds from the higher managerial, professional and administrative occupational groups and these other occupational groups were all statistically significant.

Looking at trends by household socio-economic classification, children from across the social spectrum were affected by increases in relative child poverty (AHC) during the 2010s. There were statistically significant increases amongst children with family backgrounds from across the social spectrum (with the exception of the 'never worked' category). However, whilst children from all social backgrounds were affected, the largest increases were for children with family backgrounds from the semi-routine and routine occupational classes (with statistically significant increases of 17.5 and 15.5 percentage points respectively).

As a result of these trends, widening prevalence gaps between these groups and children with professional and managerial family backgrounds, are a striking feature of this period. The gap between children from the routine group and the higher / lower managerial / administrative / professional occupations was a striking 24.6 percentage points at the baseline for the group analysis (in 2010/11), and this gap had further widened by an additional 9.6 percentage points to 34.2 percentage points by 2019/20. The prevalence gap between children from the semi-routine group and the higher managerial / administrative / professional group widened by 11.6 percentage points from 22.8 percentage points to 34.5 percentage points.

As a result of these trends, by 2019/20, rates amongst children living in households from the routine occupational group stood at 49.0% and rates

for children from the semi-routine group at 49.2%, compared to rates of 14.7% amongst children with family backgrounds from the managerial, administrative and professional group. These differences are statistically significant.

Rates for children from households from the never worked / long-term unemployment group remained extremely high, and substantially higher than for all other groups, throughout the period. Although the increase was smaller than for other groups (at 0.6% percentage points), rates stood at 71.4% by the end of the decade.

5.2.8 Household employment status

Looking at patterns of relative child poverty (AHC) by household employment status in 2010/11, rates were 67.0% for children living in households where no working age adults were in employment or self-employment, 35.4% for children living in households were at least one (but not all) adults were in employment or self-employment, and 11.4% for children living in households where all adults were in employment or self-employment. The differences in rates for children with no adults in employment or self-employment, and the other two groups, were statistically significant.

Between 2010/11 and 2019/20, there were statistically significant increases in relative child poverty (AHC) rates for children living in households with one but not all working age adults in employment or self-employment, and households where all working age adults are in employment or self-employment. These findings are consistent with other studies that show an increase in work poverty affecting families with children over the period 2010/11-2016/17 (e.g. JRF 2018abc, Hick and Lanau 2017). As a result of these trends, by the end of the decade, rates stood at 46.4% for children living in households with one but not all working age adults in employment or self-employment) and at 18.0% for children in households where all working age adults in employment or self-employment.

Rates for children living in households with no working age adult in employment or self-employment remained substantially higher than that for the other groups throughout the decade. Although the increase was smaller (a 1.3 percentage point increase). rates had risen to 68.3% by 2019/20. The differences in rates between households with no working age adults in employment or self-employment, and households with one or all working age adults in employment or self-employment, remained

statistically significant at the 95% level of confidence at the end of the decade.

5.2.9 Household tenure

Looking at patterns of relative child poverty (AHC) by tenure in 2010/11, prevalence rates were 15.4% for children living in accommodation that was owned outright and 13.3% for children living in accommodation that was owned with a mortgage, with substantially higher rates for children living in rented accommodation, either privately rented (45.8%) or rented from a local authority or housing association (50.8%). The differences in the rates for both private renters, and renters from local authorities or housing associations, were statistically significant at the 95% level of confidence from both categories of ownership (with a mortgage, and owned outright).

Between 2010/11 and 2019/20, prevalence rates increased by 3.2 percentage points for children living in accommodation that was owned outright and by 0.4 percentage points for children living in accommodation that was owned with a mortgage, with increases of 5.6 percentage points and 1.3 percentage points for children living in accommodation rented from a local authority or housing association, or in accommodation rented privately, respectively.

Patterns of prevalence in 2019/20 were similar to those in 2010/11 with the differences between both categories of renters, and both categories of owner occupiers, being statistically significant at the 95% level of confidence. Rates of prevalence were higher by the end of the decade, particularly for those renting from local authorities or housing associations, for whom rates reached 56.3%, and private renters, with rates reaching 47.0%.

5.2.10 Geographical area

Trends by geographical area are identified using three year averages (comparing 2010/11-2012/13 and 2017/18-2019/20).

Country

Looking at breakdowns by country, rates in England were 27.5% in 2010/11-2012/13, compared to rates of 31.6% in Wales, 20.8% in Scotland and 24.4% in Northern Ireland.

Between 2010/11-2012/13 and 2017/18-2019/20, there was a 3.0 percentage point increase in the prevalence of relative child poverty AHC in England and a 2.6 percentage point increase in Scotland, compared to broad stability in Wales and Northern Ireland. The increase in England was statistically significant. Note that the figure for Scotland in 2019/20 does not capture and reflect the full effects of policy divergence in England and the devolved nations in relation to child poverty, as key measures such as the Scottish Child Payment in Scotland were not introduced until August 2021.

As a result of these trends, rates in England and Wales were very similar at 30.4% and 30.6% by the end of the decade (in 2017/18-2019/20), with rates of 23.4% and 24.0% were recorded in Scotland and Northern Ireland respectively.

Region

Looking at breakdowns by English region at the beginning of the decade, rates were highest in London (36.8%), the North West (29.8%), Yorkshire and the Humber (28.9%), the West Midlands (28.7%) and the North East (27.6%). The largest increases over the decade were recorded in the North East (9.5 percentage points), the East and West Midlands (3.5 and 5.9 percentage points) and Yorkshire and the Humber (4.5 percentage points). The increase in the North East was statistically significant at the 95% level of confidence. As a result of these trends, by the end of the decade, prevalence rates were higher than 30% in five English regions. Rates were highest in London (37.8%) and the North East (37.1%), followed by the West Midlands (34.6%), Yorkshire and the Humber (33.4%), and the North West (30.8%).

5.3 Summary

The analysis identifies that statistically significant increases in relative child poverty AHC occurred for children from many different social backgrounds during the 2010s, including for children living in lone parent families, in families with three or more children, in households with all or at least one working-age adult in employment or self-employment, living in households from the intermediate, small employer and lower supervisory, the semi-routine and routine occupational groups and for children living in the North East.

It is striking that two of these statistically significant increases were for social groups that were *already* at higher risk of relative child poverty AHC

at the baseline (at the beginning of the second decade of the 21st century, in 2010/11). Specifically, this is the case for children living in lone parent families and for children living in families with three or more children, with children from these groups falling further behind compared to more advantaged comparator groups (children living in couple families and one child families). Both groups were at a statistically significant higher risk of relative AHC child poverty rates compared to more advantaged comparator groups (children living in couple families and families with one child) at the beginning of the decade in 2010/11 and recorded further increases during the 2010s. In addition, for children living in families with three or more children, there was a statistically significant widening of the relative child poverty (AHC) prevalence gap compared to children living in families with one child between 2010/11 and 2019/20. This indicates that risks increased more for children in larger families with three or more children than for the more advantaged comparator group (children in one child families – for whom relative child poverty AHC risks did not increase during the 2010s).

The relative child poverty (AHC) analysis also raises some important methodological issues relating to low sample size and potentially to statistical power when using the resamples datasets for estimating uncertainty for some social groups. For these reasons, we have also reported increases in relative child poverty AHC during the 2010s for some social groups which, while not assessed as being statistically significant, we believe should not be simply disregarded or overlooked. This includes increases recorded for children with a disabled parent, children with a disabled child in the family, children living in accommodation rented from local authorities or housing associations, children living in Yorkshire and Humber and the East and West Midlands, and children living in households where the HRP is from the Pakistani, Bangladeshi and Black African/Caribbean/British ethnic groups. There were also (statistically non-significant) widening of relative child poverty (AHC) prevalence gaps for several social groups, notably for children from lone parent families (compared to couple families) and children from households from routine and semi-routine occupational groups (compared to children from households from managerial, professional and administrative occupational groups).

On a positive note, there were some good news stories, with declines for children where the household reference person is from the Indian, Chinese and Mixed or Multiple ethnic groups. Note, however, that these declines were again not assessed to be statistically significant.

6. Patterns and trends in severe child poverty by social group during the second decade of the 21st century

We now undertake similar analysis to that undertaken in section 5 using the severe child poverty indicator. The analysis in section 4 showed that the overall prevalence of severe child poverty stood at 3.9 per cent in 2010/11 and had risen to 4.6 per cent in 2019/20. This overall increase was not assessed as being statistically significant using the resamples datasets to estimate uncertainty. This section takes the analysis forward by examining pattern and trends in severe child poverty during the 2010s by social group. We address in particular whether there is any evidence that the disadvantaged groups of children that already had high severe child poverty risks at the beginning of the 2010s (in 2010/11) recorded *further increases* over the decade and whether the prevalence gaps between disadvantaged groups and more advantaged comparator groups *widened*.

In order to build up in-depth evidence on this issue, we examine: (1) cross-sectional differences in severe child poverty prevalence by social group at the beginning of the decade (in 2010/11); (2) increases in severe child poverty by social group between 2010/11 and 2019/20; (3) widening severe child poverty prevalence gaps between 2010/11 and 2019/20); and (4) cross-sectional differences in severe child poverty by social group at the end of the decade (in 2019/20). The findings are systematically disaggregated by equality characteristics (disability, ethnicity, country of birth), family type (single parent status and number of children), household socio-economic characteristics (household socio-economic classification, household employment status and household tenure type) and geographical area (region and country).

As set out clearly set out in section 3, we have adopted a nuanced approach to reporting the descriptive findings in the severe child poverty research exercise, highlighting all differences and changes that we identify as large or of particular concern, while explicitly indicating where differences and changes are statistically significant at the 95% level of confidence using the resamples datasets for estimating uncertainty. As noted in sections 3 and 5, the rationale for this approach is that our analysis of child poverty trends raises some important methodological issues relating to low sample size and potentially to statistical power for some social groups when using the resamples dataset. Specifically, as is well known, FRS/HBAI sample size is low for some social groups, which is why we adopt a three year pooled data approach for our main estimates in some

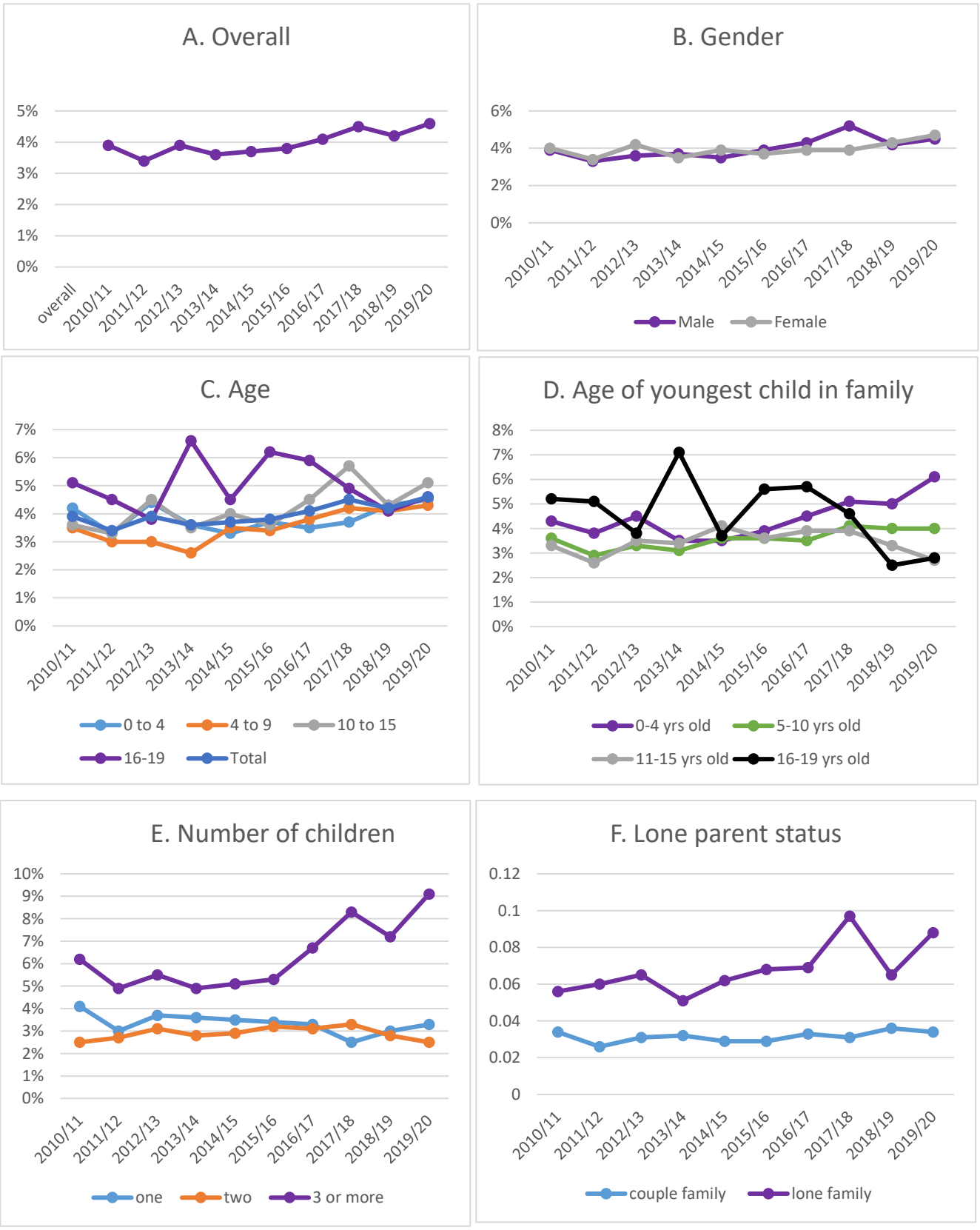
cases. In addition, sample sizes in the HBAI resamples datasets are only about half the size of the full standard HBAI dataset for each year, and consequently, the samples of children in the resamples datasets are reduced. This is a particular concern for the analysis of trends in child poverty for the smaller groups and breakdowns that are the specific focus of this paper. For these reasons, in addition to identifying statistically significance differences and changes, we also report increases in severe child poverty risks during the 2010s for some groups which, while not assessed as being statistically significant, we believe should not be simply disregarded or overlooked.

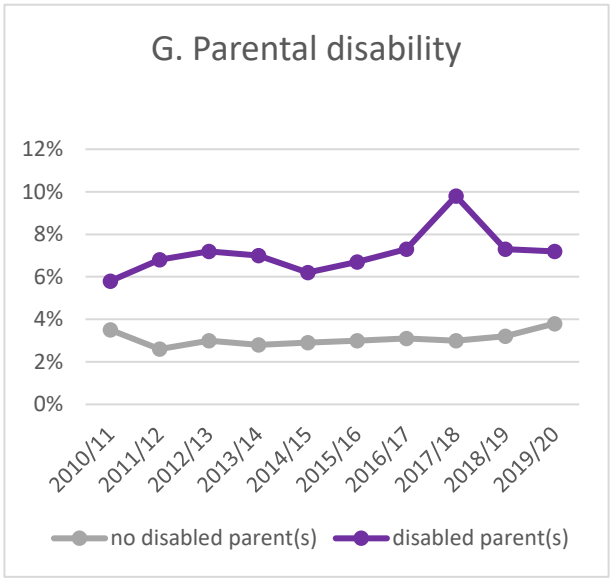
Section 6.1 sets out the main findings looking across social groups. Section 6.2 provides more detailed descriptions of patterns and trends for each social group. Section 6.3 provides a summary. Further details of the findings on severe child poverty by social group (including cross-sectional estimates, estimates of change and assessments of statistical significance) are provided in a series of online datatables that accompany this report (see SPDO Child poverty research exercise online Table 1, Table 6 and Tables 9-12).

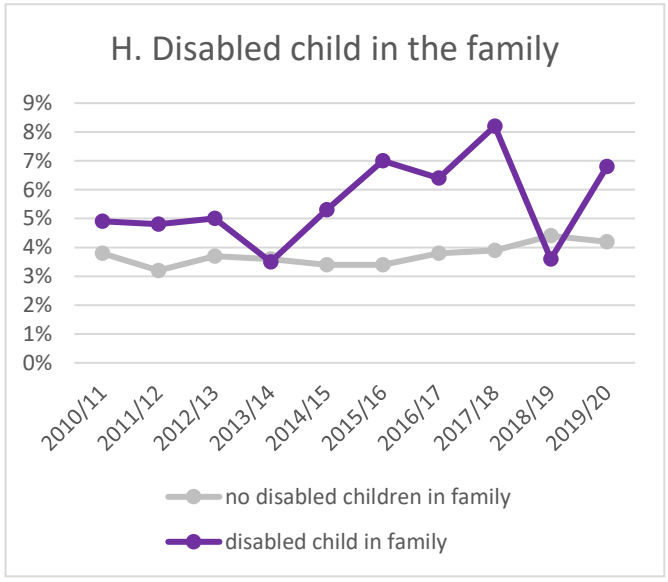
6.1 Overview of patterns and trends in severe child poverty by social group during the 2010s

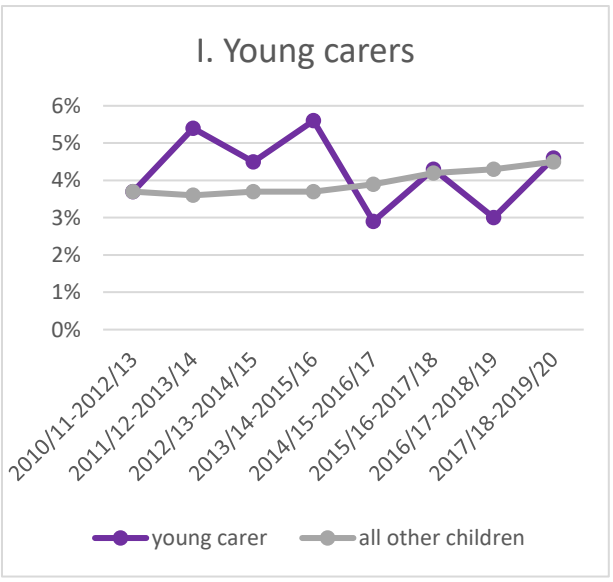
Figure 9 (Panels A-P) provides an overview of the findings on severe child poverty during the 2010s by social group.

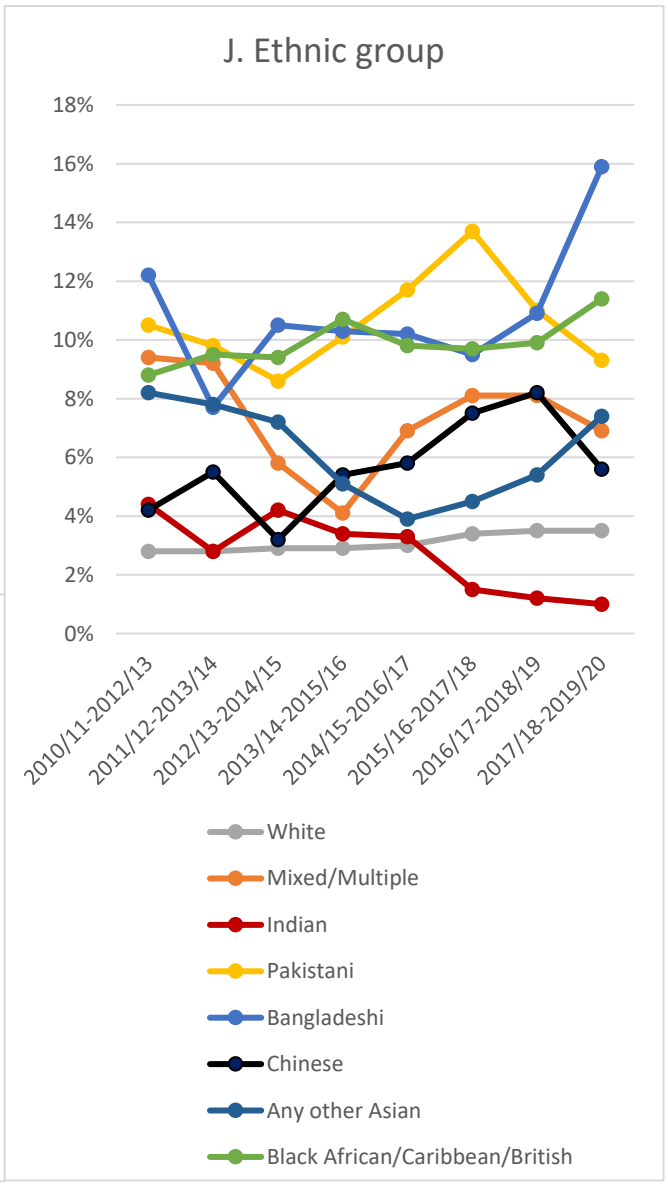
Figure 9: Trends in severe child poverty by characteristics (2010/11-2019/20)

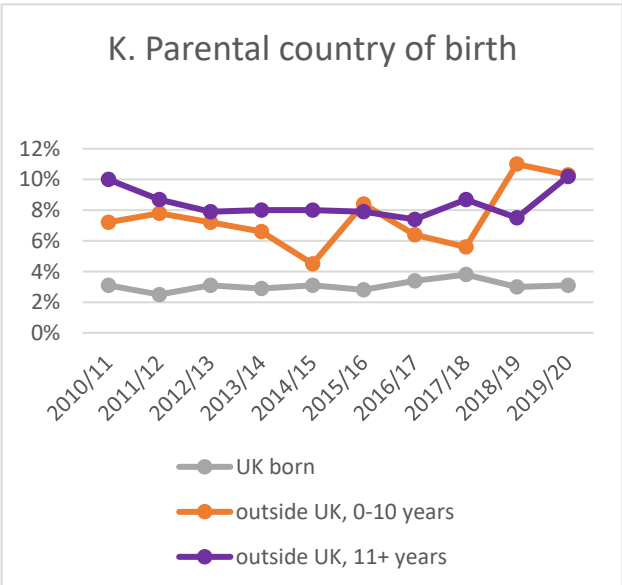


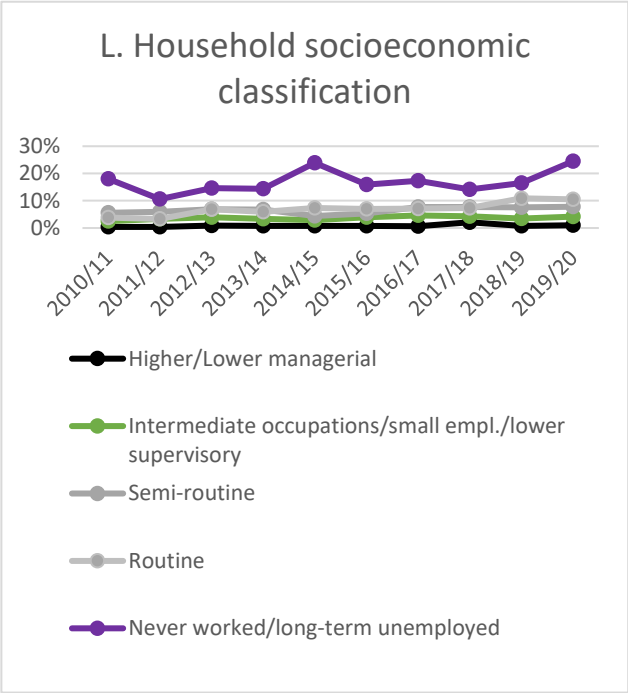

G. Parental disability
12%
10%
8%
6%
4%
2%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
no disabled parent(s)
disabled parent(s)

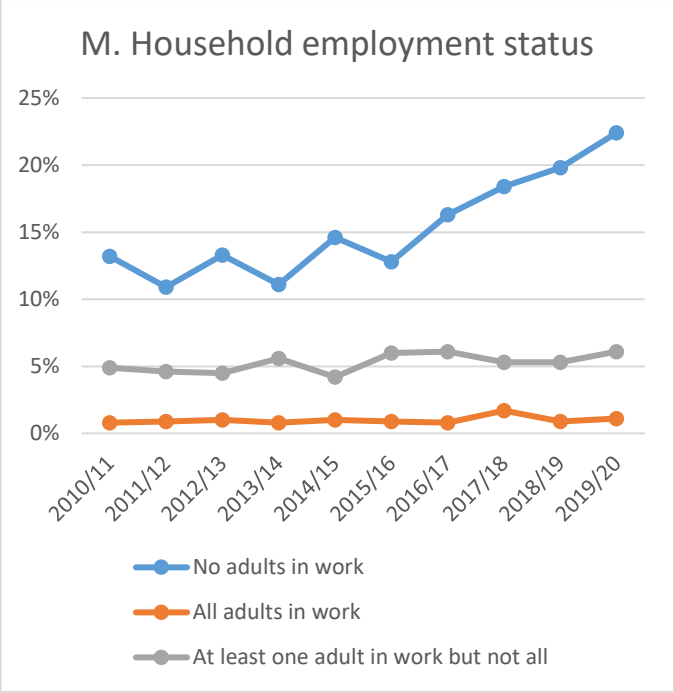

H. Disabled child in the family
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
no disabled children in family
disabled child in family

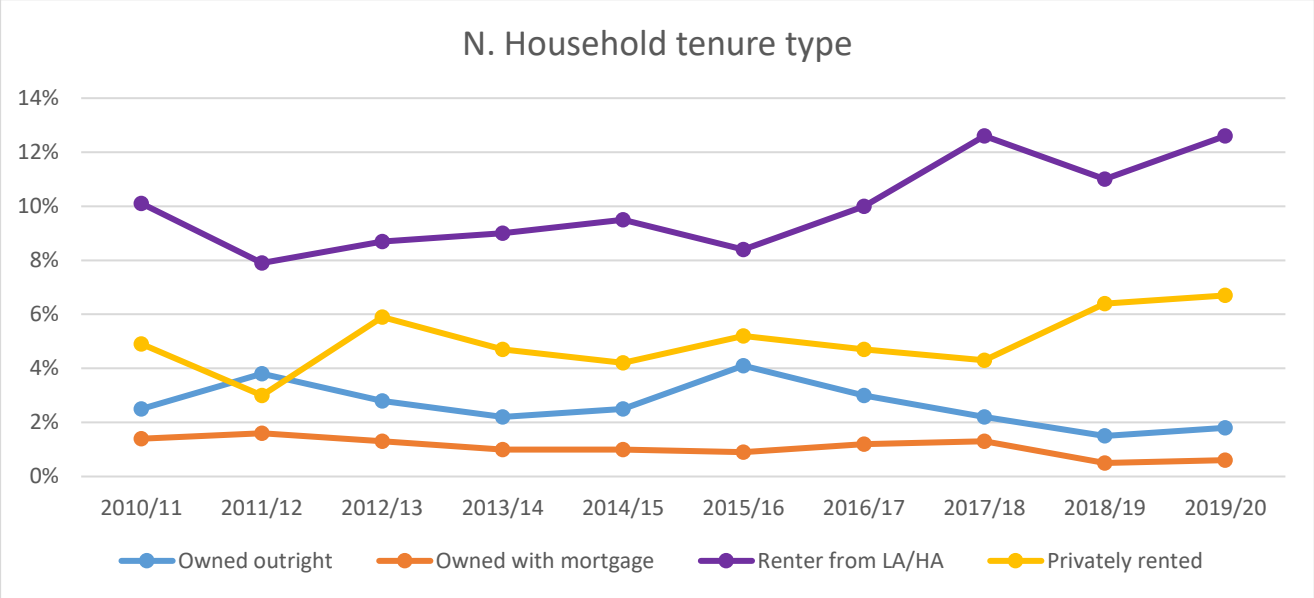

I. Young carers
6%
5%
4%
3%
2%
1%
0%
2010/11-2012/13
2011/12-2013/14
2012/13-2014/15
2013/14-2015/16
2014/15-2016/17
2015/16-2017/18
2016/17-2018/19
2017/18-2019/20
young carer
all other children

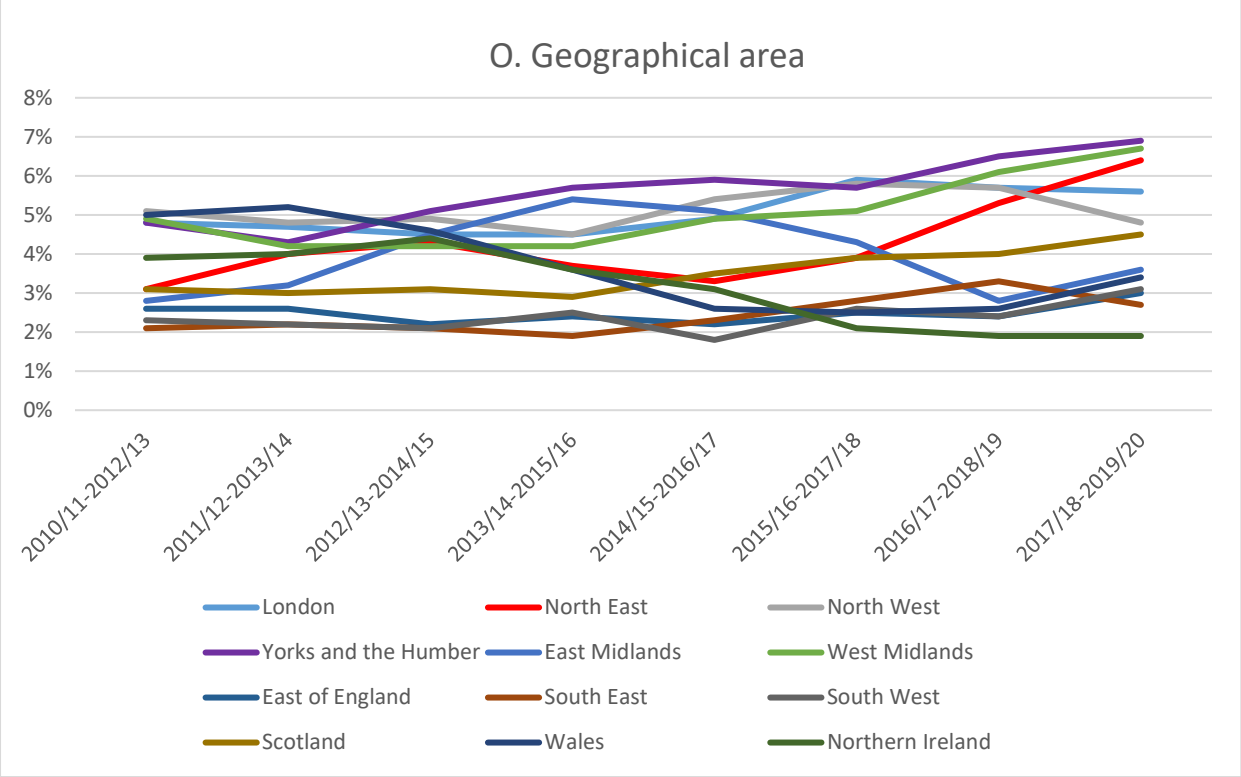

J. Ethnic group
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
2010/11-2012/13
2011/12-2013/14
2012/13-2014/15
2013/14-2015/16
2014/15-2016/17
2015/16-2017/18
2016/17-2018/19
2017/18-2019/20
White
Mixed/Multiple
Indian
Pakistani
Bangladeshi
Chinese
Any other Asian
Black African/Caribbean/British

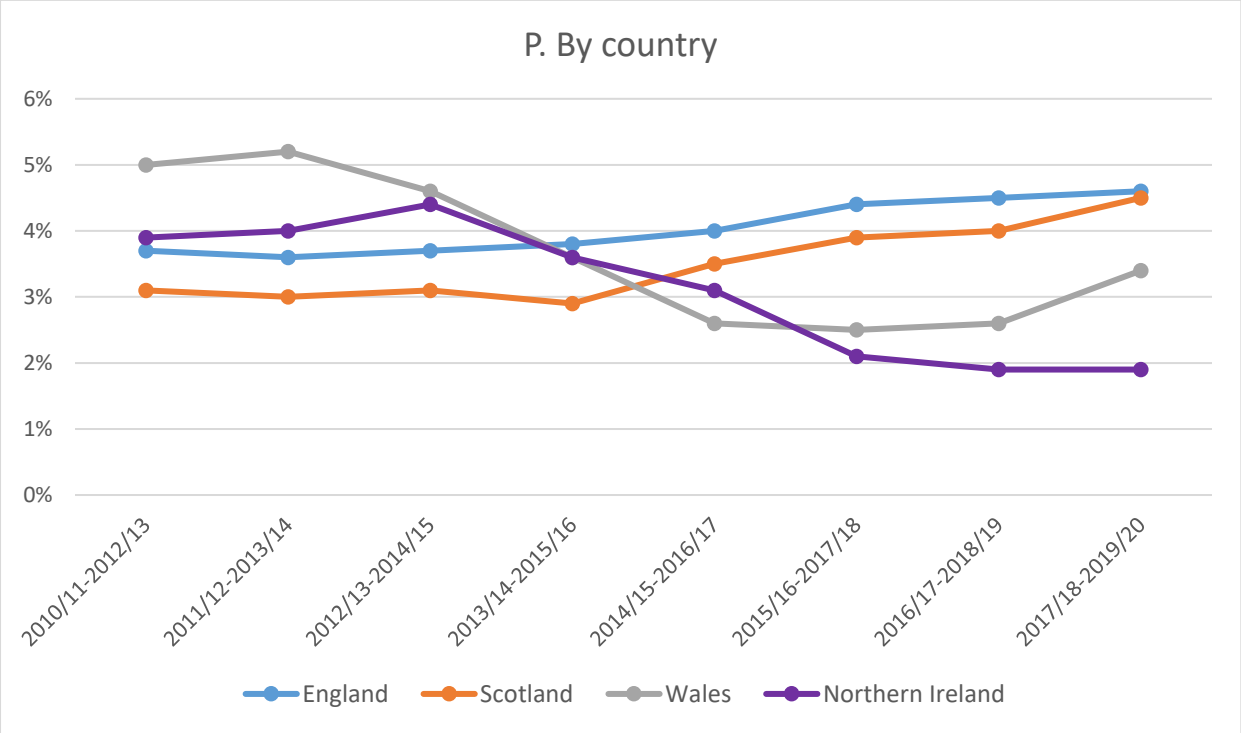

K. Parental country of birth
12%
10%
8%
6%
4%
2%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
UK born
outside UK, 0-10 years
outside UK, 11+ years


L. Household socioeconomic classification
30%
20%
10%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
Higher/Lower managerial
Intermediate occupations/small empl./lower supervisory
Semi-routine
Routine
Never worked/long-term unemployed


M. Household employment status
25%
20%
15%
10%
5%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
No adults in work
All adults in work
At least one adult in work but not all


N. Household tenure type
14%
12%
10%
8%
6%
4%
2%
0%
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
Owned outright
Owned with mortgage
Renter from LA/HA
Privately rented





Source: Authors' analysis using FRS/HBAI microdata. **Note:** The charts show the percentages of children aged 0-19 years living in households where equivalised income less is than 50% of the median and the material deprivation score ≥ 25. Estimates by young carer status, ethnic group and geographical area are based on three years of pooled data. Breakdowns by household socio-economic classification and ethnic group are based on the characteristics of the household reference person.

6.1.1 Statistically significant findings

In this section, we identify findings that we assess as being statistically significant at the 95% level of confidence of above using the resamples datasets for calculating uncertainty that is recommended by DWP.

Differences in severe child poverty risks by social group at the beginning of the 2010s

At the beginning of the second decade of the 21st century severe child poverty rates were higher for the social groups identified below. In each of these cases, our analysis shows that in 2010/11 rates of severe child poverty for each of these groups was higher than for comparator groups and that the differences are statistically significant at the 95% level of confidence of above using the resamples datasets for calculating uncertainty.

- Children living in families with a lone parent compared to children living in couple families;
- Children with parents whose country of birth is not the UK compared with children whose parental country of birth is the UK.
- Children living in families with a disabled parent compared to children with no parental disability (pooled data);
- Children living in households where the HRP is from the Pakistani, Bangladeshi or Black African/Caribbean ethnic or Mixed or Multiple group compared to children living in households where the HRP is White (pooled data)
- Children from households where the HRP is from the semi-routine, routine and never worked occupational groups compared with children from households where the HRP is from the higher and lower managerial/administrative and professional groups;
- Children living in households where no adults are in employment or only one adult is in employment compared with children living in households where all adults are in employment.

Differences in severe child poverty risks by social group at the end of the 2010s

At the end of the second decade of the 21st century severe child poverty rates were higher for the social groups listed below. In each of these cases,

our analysis shows that in 2019/20 rates of severe child poverty for each of these groups was higher than for comparator groups and that the differences are statistically significant at the 95% level of confidence of above using the resamples datasets for calculating uncertainty.

- Children living in families with a lone parent compared to children living in couple families;
- Children with parents whose country of birth is not the UK compared with children whose parental country of birth is the UK.
- Children living in families with three or more children compared with children living in families with one child (note that this difference were *not* assessed as being statistically significant at the beginning of the decade in 2010/11).
- Children living in families with a disabled parent compared to other children (note that the differences between children with and without disabled parents were assessed as being statistically significant at the beginning of the decade in 2010/11 based on pooled data but not on annual data; in contrast, the difference in 2019/20 is assessed to be statistically significant based both on annual and pooled data).
- Children living in households where the HRP is from the Pakistani, Bangladeshi or Black African/Caribbean ethnic group compared to children living in households where the HRP is White (pooled data)
- Children living in families from the semi-routine, routine and never worked occupational groups compared with children living in families from the higher and lower managerial/administrative and professional groups;
- Children living in families where no adults are in work or only one adult is in work compared with children living in families where all adults are in employment or self-employment.

6.1.2 Findings that are not assessed to be statistically significant but which should not be overlooked

Using the resamples datasets for estimating uncertainty recommended by DWP, *no* groups are assessed as having a statistically significant increase in severe child poverty between 2010/11 and 2019/20 at the 95% level of confidence using the resamples dataset. However, as noted in section 3, one concern raised by our analysis is that sample sizes in the resamples datasets are much smaller than the full standard dataset and that this impacts on statistical power – especially in the context of our analysis of child poverty by social group (as sample sizes are already relatively small

in the standard dataset). With this limitation in mind, we note that for several groups of children, we identified increases in severe child poverty that look intuitively large and / or of particular concern, even though the increases are not statistically significant. This includes:

- An increase of 3.2 percentage points for children living in lone parent families.
- An increase of 2.8 percentage points for children in families with three or more children.
- An increase of a 1.9 percentage points for children with a disabled child in the family.
- An increase of 1.4 percentage points was recorded for children living in households with a disabled parent, compared with no increase (0.3%) for other children.
- An increase of 2.2 percentage points for children from households where the HRP is from the semi-routine occupational group, of 6.7 percentage points for children from households where the HRP is from the routine occupational group and of 6.4 percentage points for children from households where the HRP is from the never worked/long-term unemployed occupational group.
- An increase of 9.1 percentage points for children from households with no working-age adults in employment between.
- An increase of 2.5 percentage points for children living in accommodation rented from a local authority or housing association and of a 1.7 percentage points for private renters.
- An increase of 3.7 percentage points for children living in households where the HRP is from the Bangladeshi ethnic group and of 2.7 percentage points for children living in households where the HRP is from the Black African/Caribbean/British ethnic group (pooled data).
- An increase of 3.1 percentage points for children with foreign-born parent(s) who had resided in the UK for 0-10 years.
- Increases of 3.3 percentage points for children living in the North East, of 2.1 percentage points for children living in Yorkshire and the Humber and of 1.8 percentage points for children living in the West Midlands.

Note that the baseline severe poverty rates for children living in severe poverty for children living lone parent families, and children in families with three or more children, in 2010/11 are 5.6% and 6.2% respectively. The increases of 3.2 percentage points and 2.8 percentage points in severe poverty rates between 2010/11 and 2019/20 are equivalent to increases of

57.1% and 45% respectively – increases that we might anticipate, a priori, might be found to be statistically significant. Although the results by socio-economic occupational classification require treating with caution due to ONS coding issues, increases in severe poverty rates amongst those from the semi-routine occupational group, of 6.7 percentage points for children from households where the HRP is from the routine occupational group and of 6.4 percentage points for children from households where the HRP is from the never worked/long-term unemployed occupational group, are striking, and are echoed by the increase in severe poverty rates of 9.1 percentage points for children from households with no working-age adults in employment. The latter is a 68.8% increase in severe child poverty prevalence from the 2010/11 baseline (from 13.2% in 2010/11 to 22.4% in 2019/20) - but is nevertheless not assessed as being statistically significant using the resamples datasets for estimating uncertainty at the 95% level of confidence.

Additionally, no widening severe child poverty prevalence gaps were assessed as statistically significant at the 95% level of confidence using the resamples datasets to estimate uncertainty. However, for the reasons mentioned above, we believe that the findings below should not be simply disregarded and overlooked.

- For children in families with three or more children compared to families with one child, there was a 3.6 percentage point widening of the severe child poverty prevalence gap.
- For children in families children living in lone parent families compared to children living in couple families, there was a 3.2 percentage point increase in the severe child poverty prevalence gap.
- For children in families where the HRP is from the routine occupational group compared to the professional group, there was a 6.5 percentage point widening of the severe child poverty prevalence gap.
- For children in families where the HRP is from the never worked category compared to the professional group, there was a 6.3 percentage point widening of the severe child poverty prevalence gap.
- For children in families where no adult is employment compared to children in families where all adults are in work, there was an 8.8 percentage point increase in the severe child poverty prevalence gap.

Positive findings

On a positive note, and in line with findings in the context of relative child poverty (AHC), there was a 3.4 percentage point decline in severe child poverty risk for children with a HRH from the Indian ethnic group (pooled data). This increase was not assessed to be statistically significant using resamples datasets for estimating uncertainty.

6.2 Further details of patterns and trends in severe child poverty during the 2010s by social group

In this section, we provide a more detailed description of patterns and trends in severe child poverty during the 2010s for each social group. Note that the descriptions in this section are provided for readers who have interests in relation to specific groups. The analysis is *not* restricted to statistically significant findings. However, findings that are assessed as being statistically significant at the 95% confidence level or above using the re-samples method for estimating uncertainty recommended by DWP are clearly identified.

6.2.1 Age group

Rates were highest in 2010/11 for children aged 16-19 (at 5.1 percent), followed by 4.2% for children aged 0-4, 3.6% for children aged 10-15, and 3.5% for children aged 4-9. By 2019/20, rates stood at 4.6% for children aged 16-19, 5.1% for children aged 10-15, 4.5% for children aged 0-4 and 4.3% for children aged 4-9.

Looking at breakdowns by age of youngest child at the beginning of the decrease, rates were highest in families where the youngest child was 16-19 year olds at 5.2% in 2010/11, followed by rates of 4.3% in families where the youngest child is aged 0-4, 3.6% in families where the youngest child is aged 5-10, and 3.3% in families where the youngest child was aged 11-15. By 2019/20, rates had fallen in families where the youngest child was aged 11-15 or 16-19 (with rates of 2.8% and 2.7% respectively) and had remained broadly unchanged in families where the youngest child was aged 5-10, but had risen in families where the youngest child was aged 0-4 (with rates reaching 6.1%).

6.2.2 Disability

Looking at patterns and trends by parental disability status, rates of 5.8% were recorded for children with a disabled parent in the household in 2010/11 compared to rates of 3.4% for other children. The difference in rates was not statistically significant at the 95% level of confidence in 2010/1 using annual data. However, examining these differences at the beginning of the decade using three years of pooled data (ie pooling data for 2010/11, 2011/12 and 2012/13), a statistically significant difference in rates between children with a disabled parent and other children *is* observed. Between 2010/11 and 2019/20, increases of 1.4 percentage points were recorded for children living in households with a disabled parent, compared with no increase (0.3%) for other children. The increase for children with a disabled parent between 2014/15 and 2017/18 was particularly steep, with a peak of 9.8 recorded in 2017/18, before rates fell back somewhat. As a result of these trends, by 2019/20, the prevalence gap had widened, with rates of 7.2% recorded for children living in families with disabled parents, compared with rates of 3.8% for other children. The difference in rates at the end of the decade is statistically significant at the 95% level of confidence in 2019/20 using annual data and the resamples dataset.

Looking at breakdowns by child disability in the family (benefit unit), rates in 2010/11 were 4.9 per cent for children with a disabled child in the family, and 3.8 per cent for children without a disabled child in the family. Over the decade, rates increased by 1.9 percentage points for children with a disabled child in the family, and by 0.4 percentage point for other children, with respective rates of 6.8% and 4.2% by the end of the decade. As a result of these trends, the prevalence gap widened.

Severe child poverty rates amongst young carers are examined using three year averages comparing 2010/11-2012/13 and 2017/18-2019/20. At the beginning and end of the decade, rates of 3.7% were recorded for both young carers and other children. At the end of the decade, rates were higher but remained undifferentiated (with rates of 4.6% recorded for young carers, and 4.5% for other children). However, there was a period between 2013/14 and 2017/18 when rates diverged, with young carers recording substantially higher rates than for other children.

6.2.3 Ethnicity

Rates of severe child poverty for children by ethnic group are compared using three year averages (comparing 2010/11-2012/13 and 2017/18-2019/20). Rates with family backgrounds from all non-White backgrounds

were higher than those for White children in 2010/11-2012/13. Rates were highest for children with family backgrounds from the Bangladeshi and Pakistani ethnic groups (with rates of 12.2 and 10.5 percent respectively) and the Black/African/ Caribbean/Black British 8.8% and Mixed or Multiple ethnic groups 9.4%. This compares with rates of 2.8 percent for children with White family backgrounds). The gaps for the Bangladeshi, Pakistani, Black/African/ Caribbean/Black British and Mixed or Multiple groups vis-à-vis the White group were all statistically significant.

Patterns of change by ethnic group over the period 2010/11-2012/13 and 2017/18-2019/20 were somewhat varied, reflecting the mixed fortunes of different ethnic groups discussed in the context of relative child poverty (AHC) (section 5.2.3). There were improvements for some ethnic groups, whilst the position of others deteriorated. Children living in households where the HRP is of Bangladeshi and Black/African/ Caribbean/Black British ethnicity recorded increases of 3.7 and 2.7 percentage points respectively between 2010/11-2012/13 and 2017/18-2019/20, despite having substantially higher prevalence rates compared to children living in households where the HRP is from the White group in 2010/11-2012/13. There was a smaller increase for children where the HRP is from the White group over this period (0.6 percentage points). Somewhat different patterns are observed for children where the HRP is from the Pakistani and Mixed or Multiple groups. For both groups, there were initial declines followed by a period of increases and then tailing off, with an overall a 2.5 percentage point decline for children living in households where the HRP was from the Mixed or Multiple ethnic group between 2010/11-2012/13 and 2017/18-2019/20. In addition, a 3.4 percentage point decline was recorded for children living in households where the HRP was Indian and.

As a result of these trends, by 2017/18-2019/20, rates with family backgrounds from most non-White backgrounds remained higher than those for White children in 2010/11-2012/13. Rates remained highest for children with family backgrounds from the Bangladeshi ethnic groups (with rates of 15.9% by the end of the period) with rates for the Black/African/ Caribbean/Black British climbing to 11.4%, Pakistani 9.3%, Mixed or Multiple 6.9%. Amongst the Indian group, rates had dropped to 1%. This compares with rates of 3.5 percent for children with White family backgrounds. The gaps for the Bangladeshi, Pakistani, Black/African/ Caribbean/Black British vis-à-vis the White group were statistically significant.

6.2.4 Country of birth

In 2010/11, rates were 7.2% for children with foreign born parents who had resided in the UK for 0-10 years, and rates of 10.0% for children with parents who had resided in the UK for children with foreign-born parents who had resided in the UK for more than 11 years, compared to rates of 3.1% for children with at least one UK born parent.

Rates remained stable for children with a UK born parent and for children with foreign-born parents who had resided in the UK for more than 11 years, but increased to 10% for children with foreign born parents who had resided in the UK for 0-10 years (a 3.1 percentage point increase). As a result of these trends, the gap between children with UK parents and those with foreign born parents who had resided in the UK for 0-10 years widened to similar levels to those observed for children with foreign born parents who had resided in the UK 11 years or more (with both groups recording rates of around 10%).

6.2.5 Lone parent status

In 2010/11, rates of severe child poverty stood at 5.6% for children living in a lone parent family, compared to rates of 3.4% of children living in a couple family. This difference is statistically significant at the 95% level of confidence using the resamples datasets for estimating uncertainty.

Severe child poverty rates increased by 3.2 percentage points for children living in single parent families between 2010/11 and 2019/20, while the corresponding rate for children living in couple families group remained unchanged. Rates stood at 8.8% and 3.1% by the end of the decade. The difference in rates at the end of the decade in 2019/20 is statistically significant at the 95% level of confidence using annual data and the resamples dataset. As a result of these trends, the prevalence gap between children living in lone parent families and couple-parent families widened from 2.2 percentage points in 2010/11 to 5.4 percentage points in 2019/20. This was a 3.2 percentage point increase in the gap.

6.2.6 Number of children

In 2010/11, rates of severe child poverty stood at 4.1% for children with one child in the family, 2.5% for children with two children in the family, and 6.2% for children with three of more children in the family.

Between 2010/11 and 2019/20, rates for children living in families where they were the only child decreased a little, and rates for those in two

child families remained unchanged. However, for families with three or more children, there was a statistically significant increase in prevalence by 2.8 percentage points.

As a result of these trends, rates for children living families with three or more children and one child families stood 9.1% and 3.3% respectively at the end of the decade. The difference in rates at the end of the decade is statistically significant at the 95% level of confidence in 2019/20 and the resamples dataset.

6.2.7 Household socio-economic classification

In 2010/11, rates of severe poverty were 0.4% amongst children living in households from the higher or lower managerial, administrative or professional occupational group, compared to rates of 2.5% amongst children from households from the intermediate occupational group,; 5.6% from the semi-routine occupational group; 3.8% from the routine occupational group; and 18% from the never worked or long-term unemployed occupational group. The differences between children living in households from the managerial, administrative or professional occupational groups, and children living in households from the semi-routine or never worked, long-term or unemployed occupational group, were statistically significant at the 95% level of confidence.

Severe poverty rates increased for children living in households from the intermediate, small employer or lower supervisory, semi-routine, routine or never worked or long-term unemployed occupational groups, whilst prevalence for those living in households with family backgrounds from the professional occupational group remained unchanged at 0.1 per cent. This included increases of 2.2 percentage points for children from the semi-routine group, 6.7 percentage points for children from the routine group and 6.4 percentage points for children living in households from the never worked or long-term unemployed occupational group. The prevalence gaps between children from the routine and never worked or long-term unemployed occupational group and the managerial or professional groups widened by 6.1 and 5.9 percentage points respectively.

By 2019/20, rates stood at 7.8% for children living in households from the semi-routine occupational group, 10.5% amongst the routine occupational group, and 24.5% amongst the long-term unemployed or never worked occupational group. The differences between children from households from the managerial, administrative or professional groups, and children from households from the semi-routine, routine or never

worked or long-term unemployed groups, was statistically significant at the 95% level of confidence.

6.2.8 Household employment status

In 2010/11, rates stood at 13.2% for children living in households with no working age adults in employment or self-employment, compared to 4.9% for children living in households with at least one (but not all) working age adults in employment or self-employment, and 0.1% for children with all working age adults in employment or self-employment. The differences for children living in households with no working age adults in employment or self-employment, and children living in households with at least one (but not all) working age adults in employment or self-employment, and children living in households with all adults in employment or self-employment, were statistically significant.

Rates increased substantially by 9.1 percentage points for children from households with no working-age adults in employment or self-employment between 2010/11 and 2019/20), compared to a 0.4% increase for those in households with all adults in work, and a 1.2 percentage point increase for those with one (but not all) working age adults in work employment or self-employment.

These trends resulted in a widening of the prevalence gap between children in families with no adults in work and those with all adults in work (by 8.8 percentage points). In 2019/20, rates stood at 22.4% for children living in households with no working age adults in employment or self-employment, compared to 6.1% for children living in households with at least one (but not all) working age adults in employment or self-employment, and 1.1% for children with all working age adults in employment or self-employment. The differences for children living in households with no working age adults in employment or self-employment, and children living in households with at least one (but not all) working age adults in employment or self-employment, and children living in households with all adults in work, were statistically significant.

6.2.9 Household tenure

In 2010/11, rates for children living in accommodation that was rented from local authorities and housing associations stood at 10.1%, compared to rates of 4.9% amongst private renters, 2.5% amongst outright owners and 1.4% owned with a mortgage.

The largest increase over the period was amongst renters from local authorities or housing associations, a 2.5 percentage point increase, followed by private renters, a 1.7 percentage point increase.

In 2019/20, rates for children living in accommodation that was rented from local authorities or housing associations stood at 12.6%, compared to rates of 6.7% amongst private renters, 1.8% amongst outright owners and 0.6% owned with a mortgage.

6.2.10 Geographical area

Trends by geographical area are identified using three year averages (comparing 2010/11-2012/13 and 2017/18-2019/20).

In 2010/11-2010/11-2012/13, rates stood at 5.0% in Wales, 3.7% in England and 3.1% in Scotland and 3.9% in Northern Ireland. Rates increased in England between 2010/11-2012/13 and 2017/18-2019/20 by 0.9 percentage points and 1.3 percentage points in Scotland, while falling in Wales and Northern Ireland by 1.6 and 2.0 percentage points respectively. By 2017/18-2019/20, rates stood at 4.6% in England and 4.5% in Scotland, with rates of 3.4% in Scotland and 1.9% in Northern Ireland. The increase in England was statistically significant. Note that the figure for Scotland in 2019/20 does not capture and reflect the full effects of policy divergence in England and the devolved nations in relation to child poverty, as key measures such as the Scottish Child Payment in Scotland were not introduced until August 2021.

Looking at breakdowns by English region, rates were highest in 2010/11-2012/13 in the North West (5.1%), West Midlands (4.9%), London (4.8%) and Yorkshire and the Humber (4.8%). There was a general upward trend over the decade with the largest increases for children living in the North East (3.3 percentage points), Yorkshire and the Humber (2.1 percentage points) and the West Midlands (1.8 percentage points).

As a result of these patterns and trends, rates at the end of the period stood at 6.4% in the North East, 5.6% in London, 6.7% in the West Midlands, 6.9% in Yorkshire and the Humber, 4.8% in the North West.

6.3 Summary

Our assessments did not identify *any* social group as recording a statistically significant increase in severe child poverty between 2010/11 and 2019/20, or a statistically significant widening of a severe child poverty prevalence gap, at the 95% level of confidence using the resamples

datasets for assessing uncertainty. However, we again highlight several findings that we believe should not be disregarded or overlooked. In particular, the analysis identifies (non-statistically significant) increases for several groups that were already at higher risk at the baseline (in 2010/11). This includes increases in severe poverty risks for children living lone parent families, children in families with three or more children, children living in households with a disabled parent, children living in households where the HRP is from the Bangladeshi or Black African/Caribbean/British ethnic group (pooled data); and children with foreign-born parent(s) who had resided in the UK for 0-10 years. The increases for children from households from out of work groups are particularly large and contrast with the trends for these groups reported in the context of relative child poverty AHC. This raises concerns about an upturn in more severe forms of hardship for children living in households from the long-term unemployment or not in employment or self-employment groups on the eve of the COVID-19 pandemic. In addition, statistically non-significant increases in serve child poverty were recorded for children who are disabled or are living with a disabled child; children living in accommodation rented from a local authority or housing association or privately renting; and children living in the North East, Yorkshire and the Humber and West Midlands (pooled data). On a more positive note, there was a decline in severe child poverty risks for children where the HRP is from the Indian group. Note however that this decline was again not assessed to be statistically significant.

7. Multivariate analysis of the relationships between child poverty, time-period and children's characteristics

In this section, we analyse changes in the strength of the associations between child poverty and social group during the 2010s using multivariate methods. Like the in-depth descriptive analysis, the multivariate analysis focuses on relative child poverty (AHC) and the severe child poverty indicator (which combines measures of severe low income BHC and material deprivation). We develop a series of child poverty models for each of these outcomes using logistic regression techniques. This enables us to disentangle and isolate the effects of the different characteristics we are concerned with in this study, to examine their independent associations with child poverty by time-period and to compare the strength of these independent effects in 2010/11 and in 2019/20. The full results of the multivariate findings reported in this section are provided in a series of online datatables that accompany this report (see SPDO Child poverty research exercise).

For each logistic regression model, the dependent variable is child poverty (relative child poverty AHC or severe child poverty) and the independent variables include the characteristics that are examined in the descriptive analysis. The models have been built up by incorporating the independent variables sequentially in four conceptual blocks, starting with equality characteristics (age, ethnicity, country of birth, disability), followed by family characteristics (lone parent status and number of children in the family), geographical area (region and country) and finally household socio-economic characteristics (household level occupational group, household economic activity and tenure-type).

Model variants used in the analysis include cross-sectional models for 2010/11 and 2019/20 which support the analysis of patterns of differentiation in child poverty prevalence at the beginning and end of the decade. The cross-sectional analysis uses odds ratios to identity statistically significant differences in child poverty prevalence for a focus group (for example, children with a disabled parent) and a comparator group (for example, children with non-disabled parents). In addition, in order to examine *changes* in the strength of the associations between child poverty and social group during the decade, we pool the samples for 2010/11 and 2019/20, include time as an additional independent variable and incorporate a series of interaction terms between time-period and children's characteristics (for example, time-period and child disability). We use these interaction models to identify statistically significant increases in adjusted

child poverty risks between 2010/11 and 2019/20 by social group (based on an examination of model generated predicted probabilities) and to identify statistically significant strengthening of the associations between child poverty and social group (based on an examination of the cross-product terms from the interaction models).

The multivariate findings are reported both *before* and *after* controlling for household socio-economic characteristics such as household labour market participation. This is because there are important inter-relationships between some of our focus characteristics (for example, lone parent status, disability status and ethnicity) and socio-economic characteristics (such as socio-economic classification, labour market participation and tenure), and that there is a possibility of "controlling out" the effects of some of these characteristics by including socio-economic variables within the logistic regression models. On the other hand, socio-economic variables can themselves be important markers of child disadvantage; and the independent associations between child poverty and these characteristics are an important subject for examination. Moreover, it is useful to know which of the associations between child poverty and other characteristics do and do not hold *after* the effects of socio-economic variables such as labour market participation have been controlled for.

As noted in section 3, we measure uncertainty in the multivariate analysis using standard methods only. This is because it was not practical to apply the resamples methodology above to each estimate in our regression analysis, given the extensive computational power required and the number of parameters and interactions included in our models. To compensate, we report findings that are statistically significant at the 99% and 99.9% levels of confidence (rather than at the 95% level of confidence).

7.1 Relative child poverty (AHC)

7.1.1 Differences in relative child poverty (AHC) risks by social group in 2010/11 after controlling for other factors

We begin the relative child poverty (AHC) multivariate analysis by examining the independent associations between relative child poverty (AHC) and the markers of risk and disadvantage that we are concerned with in this paper in 2010/11. The results of the cross-sectional relative child poverty (AHC) model for 2010/11 are reported in online Table 13 model variants 1-9. Each model variant shows odds ratios for relative child

poverty (AHC) in 2010/11 for each focus group compared to a comparator group. Each model variant incorporates additional controls. The key model variants we discuss here are model variant 9 (which shows results after controlling for equality characteristics, family type, region and socio-economic variables) and model variant 5 (which shows results after controlling for equality characteristics, family type and region but *not* socio-economic variables). These results are reproduced in Table 1 below. They show that the (adjusted) risks of relative child poverty (AHC) in 2010/11 were higher for the following groups after all the characteristics we consider in this paper are controlled for:

- Older children aged 16-19 years old and children aged 11-15 than for the youngest children aged 0-4 year old. This contrasts with the baseline descriptive findings discussed in section 4, where the highest raw prevalence rates were observed amongst the youngest children (aged 0-4).
- Children living in a family where the HRP is from an ethnic minority group (Indian, Pakistani, Bangladeshi, or Chinese) compared to the White group. Note that this result holds *after* controlling for country of birth.
- Children living in a family where the HRP is not from the higher managerial, administrative professional ns-sec occupational groups, compared to children where the HRP is from the higher professional NS-SEC occupational group, with an odds ratio of around 5 for children where the HRP is from the intermediate, semi-routine, routine and never worked/long-term unemployed category
- Children living in households where there is no working age adult in employment or self-employment, compared to children living in households where one (but not all) adults currently in employment or self-employment, and children living in households where all working age adults are in employment or self-employment [26].
- Children living in privately rented accommodation compared to children living in accommodation that is owned outright, owned with a mortgage or rented from local authorities or housing associations.

[26]Since ns-sec occupational class is controlled for, this odds ratio expresses the increased odds for these subgroups after the effects of long-term unemployment / having never worked are controlled for.

Table 1: Characteristic associated with relative child poverty (AHC) in 2010/11 (odds ratios)

	With socio-economic controls		Without socio-economic controls	
	Odds ratios	**Significance**	**Odds ratios**	**Significance**
0-4 years old	1.000		1.000	
5-10 **years** old	0.966		0.729	***
	(0.063)		(0.042)	
11-15 **years** old	1.251	**	0.760	***
	(0.087)		(0.045)	
16-19 **years** old	1.490	***	0.863	
	(0.131)		(0.066)	
White	1.000		1.000	
Mixed/Multiple	1.503	*	1.944	***
	(0.312)		(0.369)	
Indian	2.257	***	1.424	**
	(0.355)		(0.181)	
Pakistani	2.087	***	2.267	***
	(0.305)		(0.297)	
Bangladeshi	2.547	***	3.214	***
	(0.625)		(0.751)	
Chinese	3.279	***	1.987	*
	(0.950)		(0.631)	
Any other Asian	1.384		1.903	***
	(0.311)		(0.351)	
Black African/Caribbean/British	1.224		1.162	
	(0.190)		(0.147)	
Other Ethnic Group	1.655	*	1.537	*
	(0.363)		(0.275)	
UK born parents	1.000		1.000	
Born outside UK,0-10 years	1.175		2.233	***
	(0.137)		(0.218)	
Born outside UK,11+ years	1.190		1.669	***
	(0.136)		(0.165)	
No disabled children in family	1.000		1.000	
Disabled child(ren)	0.455	***	0.726	***
	(0.039)		(0.054)	
No disabled parent(s)	1.000		1.000	
Disabled parent(s)	0.875		1.848	***
	(0.061)		(0.105)	
Couple family	1.000		1.000	
Lone parent family	0.794	**	2.485	***
	(0.056)		(0.122)	
One child in family	1.000		1.000	
2 children in family	1.177	*	1.043	
	(0.076)		(0.060)	
3+ children	1.143		1.725	***
	(0.081)		(0.106)	
London	1.000		1.000	
North East	1.120		1.142	
	(0.165)		(0.141)	

	With socio-economic controls		Without socio-economic controls	
	Odds ratios	**Significance**	**Odds ratios**	**Significance**
North West	1.158		1.049	
	(0.127)		(0.096)	
Yorkshire and the Humber	1.189		1.236	*
	(0.135)		(0.123)	
East Midlands	0.802		0.767	*
	(0.102)		(0.085)	
West Midlands	1.013		1.043	
	(0.117)		(0.101)	
East of England	0.939		0.835	
	(0.113)		(0.086)	
South East	0.973		0.785	**
	(0.104)		(0.071)	
South West	0.998		1.004	
	(0.138)		(0.117)	
Scotland	0.748	**	0.768	**
	(0.080)		(0.069)	
Wales	1.290		1.311	*
	(0.180)		(0.156)	
Northern Ireland	0.886		0.915	
	(0.107)		(0.093)	
High.managerial/admin/profession. occupations	1.000			
Lower managerial/admin/profess.	2.005	***		
	(0.242)			
Intermediate occupations/lower supervisory	5.275	***		
	(0.605)			
Semi-routine occupations	5.035	***		
	(0.638)			
Routine occupations	5.273	***		
	(0.716)			
Never worked/long-term unemployed	5.639	***		
	(0.922)			
Full-time student	4.750	***		
	(1.173)			
Not classified/inadequately. stated	4.148	***		
	(0.587)			
No adults in work	1.000			
All adults in work	0.108	***		
	(0.012)			
At least one adult in work	0.367	***		
	(0.038)			
Privately rented	1.000			
Owned outright	0.240	***		
	(0.026)			
Owned with mortgage	0.331	***		
	(0.024)			
Rented from LA/HA	0.793	**		
	(0.059)			

Source: Authors' analysis using FRS/HBAI microdata. Statistical significance has been assessed using standard methods. Significance levels: * p<0.05; ** p<0.01; *** p<0.001. For further details, see section 3 and online datatable 13.

The adjusted risks associated with lone parent status, having three or more children in the household, parental disability and having parents born out of the UK require careful interpretation because of their inter-relationships with socio-economic variables. Controlling for equality characteristics, family type and region but *not* for socio-economic variables, an independent positive association is observed between relative child poverty (AHC) and living in a lone parent family in 2010/11 (odds ratio 2.5, $p<0.01$). However, this result alters after household socio-economic variables are incorporated into the model, with a negative association now observed (Table 1). These results imply that in 2010/11 the positive association between relative child poverty AHC and lone parent status was explained by, or accounted for, the additional socio-economic variables that are incorporated into the model. Socio-economic classification and household economic activity make the critical difference - confirming the pivotal inter-relationships between lone parent status and labour market participation.

Similar results are observed for children who live in families with three or more children, with a disabled parent, who have non-UK born parents, or who have a Mixed or Multiple family background. In each case, statistically significant positive associations are observed when controls for equality characteristics, family type and region are included in the model, but before socio-economic controls are introduced. In each case, the associations become weaker, nonsignificant or negative when socio-economic controls are progressively incorporated into the model.

- The effect of having three or more children is statistically significant prior to controlling for socio-economic factors, but becomes statistically non-significant once socio-economic factors are controlled for (Table 1).
- *Before* controlling for household socio-economic variables there is an independent positive association between relative child poverty AHC and having a disabled parent in 2010/11 (odds ratio 1.9, $p<0.01$). However, this effect alters when socio-economic controls are introduced, with labour market factors again making the critical difference (Table 1).
- Looking at the results by country of birth, before controlling for socio-economic variables, the odds of relative child poverty AHC in 2010/11 were higher for, both, children with a parent born outside the UK who had lived in the UK for 0-10 years, or more than 11 years, compared with children with a UK born parent (model variant 5). These independent associations are not statistically significant when

controls for household socio-economic variables are included within the model (Table 1). Note that it is household tenure type, rather than labour market factors, that makes the critical difference in the context of country of birth.

- A similar positive and statistically significant association is observed between relative child poverty AHC and having a HRP from the Mixed or Multiple ethnic group controlling for equality characteristics, family type and region, but not once socio-economic variables are introduced as controls.

Looking at the results by geographical area, it is striking that there were virtually *no* statistically significant differences in the odds of relative child poverty for children living in London relative to children living in other regions in 2010/11 after controlling for socio-economic variables, meaning that children with similar characteristics and backgrounds had similar odds of relative child poverty AHC regardless of the region where they were living. The only exception is Scotland, where the odds of relative child poverty AHC were *lower* than in London. Controlling for equality characteristics and family type but not socio-economic variables, the odds of relative child poverty AHC were significantly lower in the South East.

In relation to child disability, in 2010/11 a consistently *negative* association between relative child poverty AHC and having a disabled child in the family is observed with and without controls for socio-economic variables.

7.1.2 Changes in the independent associations between relative child poverty (AHC) and different markers of risk and disadvantage during the 2010s

To undertake multivariate analysis of changes in the independent relationships between relative child poverty (AHC) and the different markers of risk and disadvantage we are concerned with in this paper, we develop a series of change model variants that pool the FRS/HBAI samples for 2010/11 and 2019/20 and incorporate time-period as an explanatory variable. The first set of results (for variants of a fixed effects model) are reported in online Table 16. We again show odds ratios for each model variant with additional controls progressively incorporated. Model variant 9 shows the results after equality characteristics, family type, region and socio-economic variables are all controlled for. These results show that after controlling for other factors, time-period has a statistically significant independent effect, with higher adjusted risks of relative child poverty

(AHC) in 2019/20 than in 2010/11. As ethnicity, country of birth, lone parent family status and number of children are all controlled for, the fixed effects model suggests that compositional effects related to these factors do *not* fully explain (or account for) the higher odds of relative child poverty (AHC) in 2019/2020 compared to 2010/11.

In order to identify any *strengthening* of the independent associations between different child and household level characteristics between 2010/11 and 2019/20, we extend the change model by incorporating a series of interaction terms between time-period and children's characteristics (for example, between time-period and parental disability). The predicted probabilities generated by the interaction model enable us to identify groups that record a statistically significant increase in child poverty risks after adjusting for equality characteristics, family type, geographical area and socio-economic variables (see Table 2 below). The results show that after controlling for all of these factors, the (adjusted) risks of relative child poverty AHC were higher in 2019/20 than in 2010/11 for many different groups of children. This includes:

- Children aged 0-4 and 5-10;
- Children living with a disabled parent in the household;
- Children where the HRP is from the White ethnic group;
- Children with parents born in the UK and children with a foreign born parent/s living in the UK for 11 or more years;
- Children living lone parent families;
- Children living in households with 3 or more children;
- Children living in households where one but not all and all working age adults are in employment or self-employment;
- Children living in accommodation that is privately rented and owned with a mortgage;
- Children living in several different regions (North East, East Midlands and Scotland).

Additionally, an increase in the adjusted risk of relative child poverty (AHC) between the two periods is observed for children where the HRP is from the Mixed or Multiple and Black-African background *before* but not *after* controlling for household socio-economic characteristics.

Table 2: Changes in the independent effects of different markers of risk and disadvantage for relative child poverty (AHC) between 2010/11 and 2019/20 by social group (predicted probabilities adjusting for equality characteristics, family type and region)

	With socio-economic controls				Without socio-economic controls			
	Predicted probabilities 2010/11	Predicted probabilities 2019/20	Marginal effects	Sig.	Predicted probabilities 2010/11	Predicted probabilities 2019/20	Marginal effects	Sig.
Age: 0-4	0.248	0.295	0.047	***	0.317	0.325	0.008	
Age 5-10	0.243	0.272	0.029	**	0.259	0.278	0.020	
Age : 11-15	0.278	0.288	0.010		0.266	0.272	0.006	
Age: 16-19	0.303	0.328	0.025		0.289	0.305	0.016	
White	0.243	0.282	0.039	***	0.260	0.279	0.019	*
Mixed or Multiple	0.300	0.224	-0.076		0.394	0.233	-0.161	**
Indian	0.363	0.244	-0.118	***	0.328	0.245	-0.084	*
Pakistani	0.350	0.366	0.016		0.428	0.428	-0.001	
Bangladeshi	0.382	0.452	0.070		0.508	0.503	-0.005	
Chinese	0.424	0.123	-0.301	***	0.399	0.126	-0.273	**
Any other Asian background	0.288	0.330	0.043		0.389	0.364	-0.025	
Black/African/ Caribbean/Black British	0.270	0.338	0.068	*	0.288	0.379	0.091	**
Other Ethnic Group	0.314	0.325	0.011		0.344	0.338	-0.006	
UK born parent(s)	0.255	0.278	0.023	**	0.257	0.262	0.004	
Parent(s) born outside the UK, in UK 0-10 years	0.277	0.327	0.050	*	0.420	0.493	0.073	*
Parent(s) born outside the UK, in UK 11+ years	0.279	0.333	0.054	**	0.357	0.396	0.039	
No disabled children in the family	0.276	0.306	0.031	***	0.289	0.301	0.013	
Disabled children in the family	0.179	0.197	0.019		0.233	0.243	0.010	
No disabled parent(s) in household	0.265	0.279	0.014		0.256	0.263	0.008	
Disabled parent(s) in household	0.247	0.324	0.077	***	0.375	0.401	0.026	
Couple family	0.269	0.268	-0.001		0.239	0.243	0.004	
Lone parent family	0.239	0.347	0.109	***	0.422	0.459	0.038	**
1 child in the family	0.246	0.223	-0.023		0.249	0.215	-0.034	**
2 children in the family	0.267	0.277	0.010		0.256	0.251	-0.005	
3+ children in the family	0.264	0.368	0.105	***	0.352	0.437	0.085	***

	With socio-economic controls				Without socio-economic controls			
	Predicted probabilities 2010/11	Predicted probabilities 2019/20	Marginal effects	Sig.	Predicted probabilities 2010/11	Predicted probabilities 2019/20	Marginal effects	Sig.
Higher manag. /admin/professional	0.112	0.175	0.063	***				
Lower manag./admin/prof	0.183	0.273	0.091	***				
Intermediate occupations/small employed/lower supervisory	0.322	0.336	0.014					
Semi-routine	0.314	0.369	0.055	**				
Routine	0.321	0.361	0.040	*				
Never worked/long-term unemployed	0.333	0.357	0.024					
Full-time student	0.304	0.215	-0.089					
Not classified /inadequately stated	0.283	0.161	-0.122	**				
No adults are in work	0.528	0.417	-0.111	***				
All adults in work	0.146	0.199	0.053	***				
At least one, but not all, adults in work	0.330	0.398	0.068	***				
Privately rented	0.358	0.389	0.031	**				
Owned outright	0.154	0.202	0.048					
Owned with mortgage	0.191	0.198	0.007	***				
Rented from LA/HA	0.318	0.387	0.069	*				
London	0.260	0.279	0.019		0.288	0.288	0.000	
North East	0.275	0.429	0.154	***	0.313	0.422	0.109	***
North West	0.280	0.277	-0.003		0.297	0.282	-0.015	
Yorkshire and the Humber	0.284	0.283	-0.001		0.329	0.323	-0.007	
East Midlands	0.231	0.311	0.080	***	0.241	0.295	0.054	*
West Midlands	0.261	0.298	0.037		0.296	0.339	0.043	
East of England	0.251	0.292	0.041	*	0.256	0.262	0.006	
South East	0.256	0.289	0.033		0.245	0.247	0.002	
South West	0.259	0.263	0.003		0.289	0.281	-0.008	
Scotland	0.222	0.271	0.049	**	0.241	0.285	0.043	*
Wales	0.295	0.310	0.015		0.341	0.337	-0.004	
Northern Ireland	0.244	0.224	-0.020		0.272	0.243	-0.029	

Source: Authors' analysis using FRS/HBAI microdata. Statistical significance has been assessed using standard methods. Significance levels: * p<0.05; ** p<0.01; *** p<0.001. For further details, see section 3 and online datatable 7.

Further analysis of the relative child poverty (AHC) interaction model enables us to assess whether the increases in risks for disadvantaged groups during the 2010s was greater than the increase in risks for more advantaged comparator groups after controlling for other factors. These results are shown in online Table 20 (which shows logit coefficients rather than odds ratios). To make this assessment, we report on the statistical significance of the interaction product terms.

The results shows that the associations between child poverty (AHC) and living in a lone parent family strengthened between 2010/11 and 2019/20, compared to children living in couple families, after controlling for equality characteristics, family type, geographical area and socio-economic variables (positive and statistically significant logit coefficients for the interaction product term for 2019/20, online Table 20 model variant 1, $p<0.001$). Another way of expressing this finding is that the increase in the adjusted risk of relative child poverty (AHC) between 2010/11 and 2019/20 was greater for children in lone parent families than for children living in couple families after controlling for other factors. This is illustrated visually in Figure 10. Panel A shows that, after controlling for household socio-economic characteristics, the model generated predicted probability of relative poverty AHC increased from 23.9% to 34.7% for children living in lone parent families between 2010/11 and 2019/20, compared with rates of 26.9% in 2010/11 and 26.8 % in 2019/20 for children living in couple families. Panel B shows that a similar increase for children living in lone parent families is observed when household socio-economic variables are *not* controlled for and that the difference in the increase is again statistically significant (i.e. the logit interaction product term for 2019/20 is again positive and statistically significant $p<.01$ - see online Table 20 model variant 3)[27].

A similar positive and statistically significant effect is observed for the interaction of having three or more children in the family and time-period, after controlling for other factors (online Table 20 model variant 1). Figure 8 Panel C below shows this effect graphically. The model generated predicted probability of relative child poverty AHC decreased from 24.6% to 22.3% for children living in families where they were the only child compared with increases from 26.7% to 27.7%% for children living in

[27]The interaction results in Figure 8 show that without adjusting for socio-economic variables, children living in lone parent families are at higher adjusted risk than children living in couple families in 2010/11 (Panel B) whereas there is no significant difference in the adjusted risks amongst children living in lone parent and couple families in 2010/11 after controlling for socio-economic factors (overlapping confidence intervals in 2010/11, Panel A). By 2019/20, the adjusted risk for children living in single parent families was higher than for those in couple families, whether or not we control for labour market factors (non-overlapping confidence intervals in 2019/20, Panels A and B).

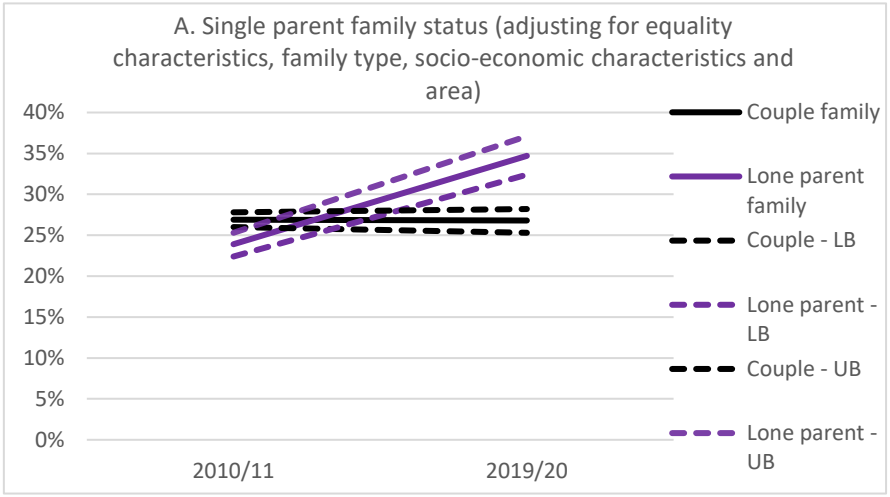
families with two dependent children (not significant); and from 26.4% to 36.8% for children living in families with 3 or more children. The difference in the increases between those in families with three or more children, and those in families with one child, was statistically significant (i.e. positive and statistically significant logit coefficient interaction production term for 2019/20 with $p<0.001$, on which see online Table 20 model variant 1). As Figure 10 shows, the consequence of these changes was a clear divergence in the position of children from large families, controlling for other factors.

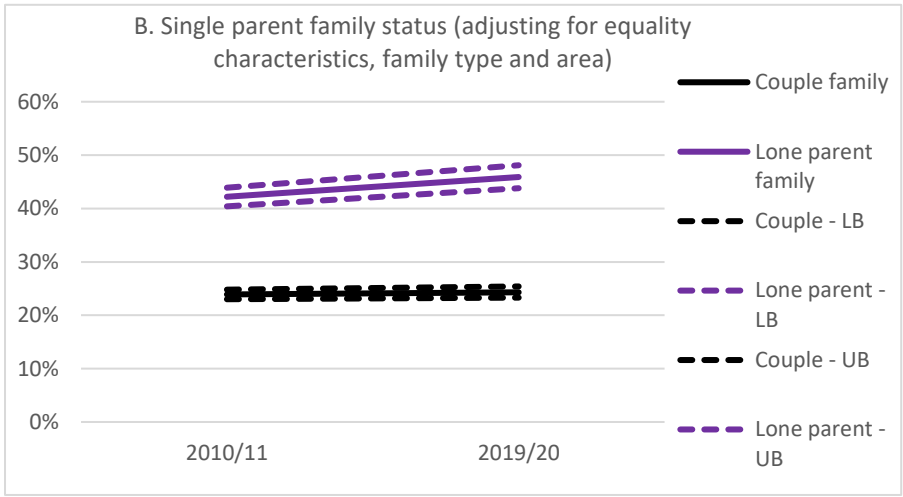
A similar positive and statistically significant effect is observed for the interaction of parental disability and time-period, after controlling for other factors (positive logit coefficient product interaction term for 2019/20, online Table 20 model variant 1). Figure 10 Panel E shows this effect visually. The model generated predicted probability of relative child poverty AHC for children where there was no parental disability increased from 26.5% to 27.9% compared with an increase from 24.7% to 32.4% for children living in families including a disabled parent. The increase for children living in families including a disabled parent is statistically significant and the difference in the increases in the adjusted poverty risk is statistically significant ($p<0.001$ – i.e. the logit interaction product term for 2019/20 is positive and statistically significant).

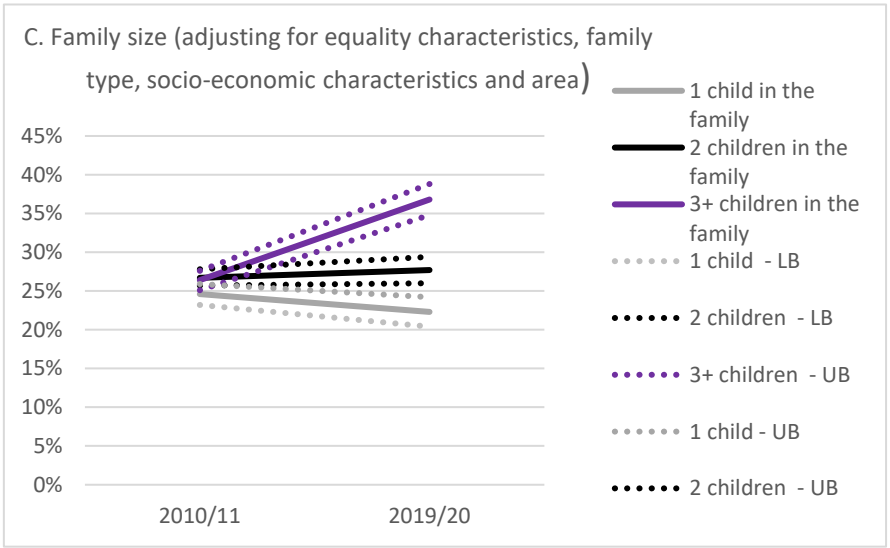
A further positive statistically significant effect is observed for the interaction of the North East region and time period after controlling for other factors (online Table 20 model variant 1). Figure 10 Panel F below shows this effect graphically. The model generated predicted probability of relative child poverty AHC for children in the North East increased from 27.5% to 42.9% (statistically significant, $p<0.001$) compared with increases from 26.0% to 27.9% for children living in London (not statistically significant). Consequently, the increases in adjusted poverty risks were significantly larger for children living in families in the North East relative to children living in London. The differences in the changes are statistically significant (i.e. the logit interaction product term for 2019/20 is positive and statistically significant in both instances, $p<0.001$).

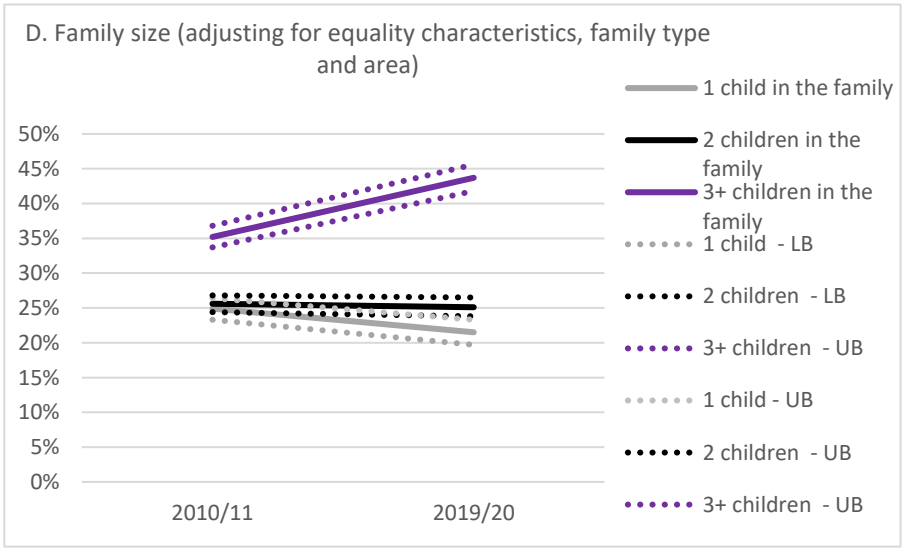
These are strong results. They show that after controlling for other factors, the independent associations between lone parent status, larger families, having a disabled parent and living in the North East all strengthen substantially, and that these effects are statistically significant.

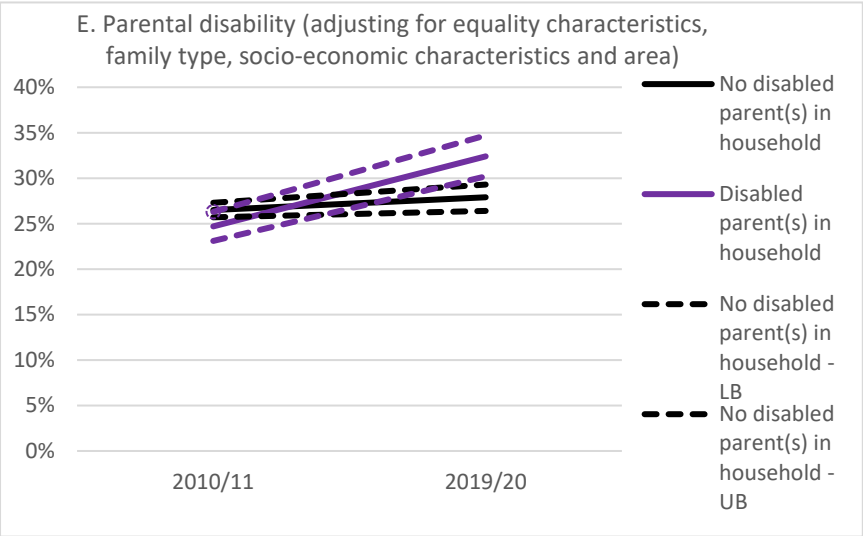
Figure 10: Associations between relative child poverty AHC and child and household characteristics (predicted probabilities)

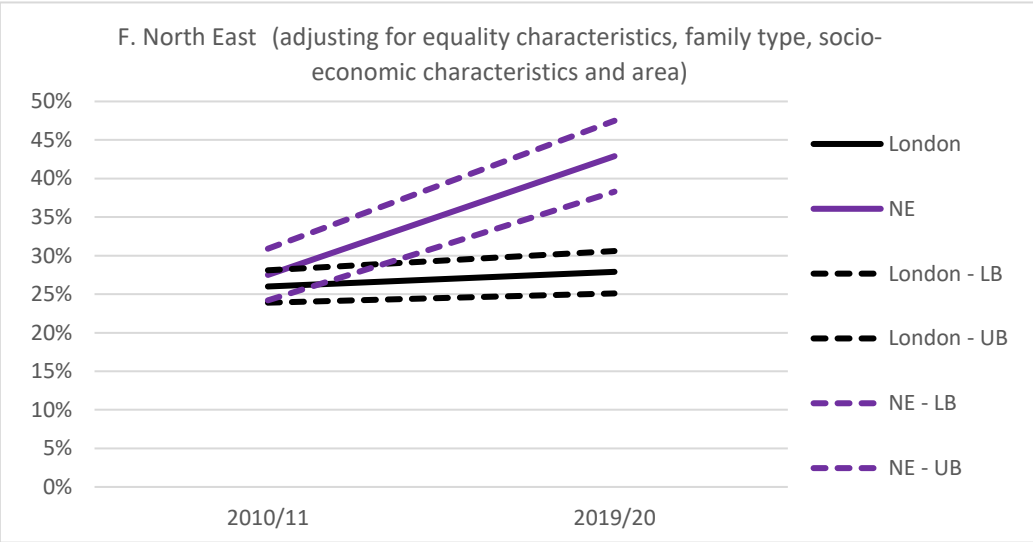












Source: Authors' analysis using FRS/HBAI microdata.

. Differences in relative child poverty (AHC) risks by social group in 2019/20 after controlling for other factors

Adjusted relative child poverty (AHC) risks at the end of the second decade of the 21st century for each social group are identified using a cross-sectional model for 2019/20 (see online Table 17 and Table 3 below). The results show that the groups of children that were at higher (adjusted) risk in 2010/11 remained at higher risk in 2019/20. In addition, the patterns of the associations had changed in some instances.

In section 7.1.1, we identified that at the beginning of the second decade of the 21st century, while positive associations between a child having lone parent, having three or more children in the family, having a disabled parent and having non-British born parents and relative child poverty AHC were observed after controlling for equality characteristics, family type and geographical area but *before* controlling for socio-economic factors. However, these positive associations were *not* observed once socio-economic economic factors were controlled for - meaning that these positive associations were being explained by (or 'accounted for' by) factors such as labour market participation and tenure. However, the relationships between having a lone parent, being in a family with three or more children, having a disabled parent and having a parent born outside the UK (11+ years) and relative child poverty AHC all strengthened during the 2010s. By 2019/20, positive independent statistically significant associations between these factors and relative child poverty AHC are observed in the cross-sectional model, even after controlling for socio-economic factors.

Other differences in patterns of relative child poverty AHC risk that stand out in 2019/20 compared to 2010/11 relate to patterns of differentiation by ethnicity and region. In 2019/20, is a statistically significant increased adjusted risk of relative child poverty AHC for children is observed where the household reference person is from the Black African/Caribbean/British group compared to the White group in 2019/20 is observed after controlling for socio-economic factors, whereas this increased risk was not statistically significant after controlling for socio-economic factors in the 2010/11 cross-sectional model. Similarly, by 2019/20, risks of relative child poverty AHC were higher in the North East than in London after controlling for other factors and the difference is statistically significant.

Patterns of differentiation by tenure type had also changed by the end of the decade. In 2010/11, children living in privately rented accommodation were at higher risk of relative child poverty (AHC) compared to children living in accommodation that is owned outright,

owned with a mortgage or rented from local authorities or housing associations. However, by the end of the decade, the difference between private renters and those renting from local authorities was no longer statistically significant.

Table 3: Characteristics associated with relative child poverty (AHC) in 2019/20 (odds ratios)

	With socio-economic controls		Without socio-economic controls	
	Odds ratios	**Significance**	**Odds ratios**	**Significance**
0-4 years old	1.000		1.000	
5-10 years old	0.856	*	0.769	***
	(0.066)		(0.054)	
11-15 years old	0.956		0.741	***
	(0.080)		(0.055)	
16-19 years old	1.245	*	0.895	
	(0.132)		(0.085)	
White	1.000		1.000	
Mixed/Multiple	0.664		0.757	
	(0.174)		(0.166)	
Indian	0.772		0.812	
	(0.130)		(0.123)	
Pakistani	1.706	***	2.141	***
	(0.247)		(0.284)	
Bangladeshi	2.811	***	3.050	***
	(0.560)		(0.614)	
Chinese	0.263		0.326	
	(0.219)		(0.194)	
Any other Asian	1.374		1.570	
	(0.343)		(0.384)	
Black African/Caribbean/British	1.437	**	1.688	***
	(0.192)		(0.224)	
Other Ethnic Group	1.326		1.374	
	(0.244)		(0.238)	
UK born parent(s)	1.000		1.000	
Parent(s) born outside UK,0-10 years	1.378	*	3.208	***
	(0.172)		(0.385)	
Parent(s) born outside UK,11+ years	1.426	***	2.034	***
	(0.139)		(0.190)	
No disabled children in family	1.000		1.000	
Disabled child(ren) in family	0.444	***	0.705	***
	(0.041)		(0.058)	
No disabled parent(s)	1.000		1.000	
Disabled parent(s)	1.352	***	2.089	***
	(0.098)		(0.130)	
Couple family	1.000		1.000	
Lone parent family	1.671	***	3.038	***
	(0.130)		(0.184)	
One child in family	1.000		1.000	
2 children in family	1.473	***	1.258	**
	(0.118)		(0.093)	
3+ children	2.607	***	3.270	***
	(0.218)		(0.253)	
London	1.000		1.000	
North East	2.549	***	2.003	***
	(0.412)		(0.296)	

	With socio-economic controls		Without socio-economic controls	
	Odds ratios	**Significance**	**Odds ratios**	**Significance**
North West	0.992		0.966	
	(0.130)		(0.118)	
Yorkshire and the Humber	1.028		1.209	
	(0.128)		(0.140)	
East Midlands	1.242		1.040	
	(0.172)		(0.130)	
West Midlands	1.140		1.323	*
	(0.165)		(0.169)	
East of England	1.094		0.854	
	(0.145)		(0.103)	
South East	1.074		0.778	*
	(0.134)		(0.088)	
South West	0.895		0.956	
	(0.129)		(0.124)	
Scotland	0.950		0.978	
	(0.119)		(0.111)	
Wales	1.233		1.303	
	(0.210)		(0.202)	
Northern Ireland	0.672	**	0.762	*
	(0.086)		(0.088)	
Higher manag./admin./prof occupations.	1.000			
Lower manag/admin/professional	2.105	***		
	(0.249)			
Interm./lower superv. occupations	3.127	***		
	(0.362)			
Semi-routine occupations	3.797	***		
	(0.485)			
Routine occupations	3.633	***		
	(0.490)			
Never worked/long-term unemployed	3.535	***		
	(0.686)			
Full-time student	1.391			
	(0.455)			
Not classified/inadeq. stated	0.881			
	(0.375)			
No adults in work	1.000			
All adults in work	0.267	***		
	(0.028)			
At least one adult in work	0.907			
	(0.103)			
Privately rented	1.000			
Owned outright	0.320	***		
	(0.040)			
Owned with mortgage	0.311	***		
	(0.025)			
Rented from LA/HA	0.992			
	(0.083)			

Source: Authors' analysis using FRS/HBAI microdata. Significance levels: * p<0.05; ** p<0.01; *** p<0.001. For further details, see online datatable 17.

7.1 Severe child poverty

7.1.1 Differences in severe child poverty risks by social group in 2010/11

We now repeat the multivariate analysis using severe child poverty indicator. We begin by examining the independent associations between severe child poverty and the markers of risk and disadvantage that we are concerned with in this paper in 2010/11. The results of the severe child poverty model for 2010/11 are reported in online Table 21 model variants 1-9. Each model variant shows odds ratios for relative child poverty (AHC) in 2010/11 for each focus group compared to a comparator group. The first model variant controls for equality characteristics, family type, region and socio-economic variables and the second model variant omits the controls for socio-economic variables. These results of the first model variant are reproduced in Table 4 below. They show that the risks of severe child poverty in 2010/11 were higher for the following groups after all the characteristics we consider in this paper are controlled for:

- Older children aged 16-19 relative to children from the youngest age group;
- Children with family backgrounds from the Bangladeshi, Pakistani, Indian, Black African/Caribbean/British ethnicities compared to those with White family backgrounds;
- Children with family backgrounds from the intermediate, semi-routine, routine and never worked / long-term occupational classes compared to children with family backgrounds from the managerial and professional occupational group;
- Children living in households with no adults in work compared to those living with one but not all, or all, adults in work;
- Children living in housing rented from local authorities or housing associations, compared to those renting in the private sector.
- Children living in Yorkshire and the Humber, compared with children living in London.

The patterns by geographical area are different from those highlighted in the context of relative child poverty above (which report on relative child poverty *after* housing costs have been deducted from household income and which do not assess material deprivation). Severe child poverty risks were generally higher for children living outside London than within London

in 2010/11, with significantly higher risks for children living in Yorkshire and Humber.

The adjusted risks for children living in lone parent families, children with a disabled parent, children from larger families, and children with a non-UK born parent require careful interpretation. For these groups, there are lower risks or no significant differences in risks when socio-economic variables are controlled for. However, controlling for equality characteristics, family type and geographical area but *not* controlling for socio-economic variables, these groups were at higher (adjusted) risk compared to their respective comparator groups in 2010/11. This is still a strong finding and shows that the effects of these characteristics are independent of other equality characteristics, family type and geographical area (model variant 2).

Table 4: Characteristics associated with severe child poverty in 2010/11 (odds ratios)

	With socio-economic controls		Without socio-economic controls	
	Odds ratios	**Significance**	**Odds ratios**	**Significance**
0-4 years old	1.000		1.000	
5-10 years old	0.964		0.765	*
	(0.130)		(0.102)	
11-15 years old	1.156		0.786	
	(0.167)		(0.109)	
16-19 years old	1.657	**	1.094	
	(0.281)		(0.174)	
White	1.000		1.000	
Mixed/Multiple	0.850		1.204	
	(0.338)		(0.481)	
Indian	2.311	**	1.731	*
	(0.717)		(0.478)	
Pakistani	2.106	**	2.553	***
	(0.526)		(0.569)	
Bangladeshi	3.225	***	4.507	***
	(1.115)		(1.506)	
Chinese	1.100		1.120	
	(0.780)		(0.756)	
Any other Asian	1.991	*	2.896	***
	(0.687)		(0.919)	
Black African/Caribbean/British	2.274	***	2.329	***
	(0.533)		(0.499)	
Other Ethnic Group	1.600		1.540	
	(0.660)		(0.594)	
UK born parent(s)	1.000		1.000	
Parent(s)outside UK,0-10 years	1.296		1.767	**
	(0.281)		(0.333)	
Parent(s) born outside UK,11+ years	1.465		1.785	**
	(0.314)		(0.343)	
No disabled children	1.000		1.000	
disabled child(ren)	0.794		1.011	
	(0.133)		(0.163)	
No disabled parent(s)	1.000		1.000	
	(.)		(.)	
Disabled parent(s)	0.683	**	1.625	***
	(0.098)		(0.207)	
Couple family	1.000		1.000	
Lone parent family	0.473	***	1.684	***
	(0.074)		(0.185)	
One child in family	1.000		1.000	
2 children in family	0.740	*	0.692	**
	(0.103)		(0.093)	
3+ children	0.928		1.535	**
	(0.127)		(0.201)	

	With socio-economic controls		Without socio-economic controls	
	Odds ratios	**Significance**	**Odds ratios**	**Significance**
Higher/lower manag. occupations	1.000			
Intermediate /lower supervisory	5.343	***		
	(1.743)			
Semi-routine **occupations**	9.459	***		
	(3.157)			
Routine	5.762	***		
	(2.076)			
Never worked/long-term unemployed	9.020	***		
	(3.595)			
Not classified/inadequately stated	6.004	***		
	(2.246)			
No adults in work	1.000			
All adults in work	0.092	***		
	(0.027)			
At least one adult in work	0.344	***		
	(0.075)			
Privately rented	1.000			
Owned outright	0.724			
	(0.176)			
Owned with mortgage	0.723			
	(0.139)			
Rented from LA/HA	1.502	**		
	(0.219)			
London	1.000		1.000	
	(.)		(.)	
North East	0.952		0.952	
	(0.349)		(0.330)	
North West	1.782	*	1.410	
	(0.414)		(0.298)	
Yorkshire and the Humber	2.435	***	2.136	***
	(0.561)		(0.443)	
East Midlands	1.092		0.872	
	(0.325)		(0.238)	
West Midlands	1.305		1.260	
	(0.311)		(0.280)	
East of England	1.519		1.105	
	(0.408)		(0.277)	
South East	1.122		0.715	
	(0.292)		(0.162)	
South West	1.760	*	1.585	
	(0.501)		(0.426)	
Scotland	1.700	*	1.376	
	(0.386)		(0.282)	
Wales	1.707		1.646	
	(0.513)		(0.461)	
Northern Ireland	1.897	*	1.571	*
	(0.480)		(0.361)	

Source: Authors' analysis using FRS/HBAI microdata. Statistical significance has been assessed using standard methods. Significance levels: * p<0.05; ** p<0.01; *** p<0.001. For further details, see section 3 and online datatable 21.

7.1.2 Changes in the independent associations between severe child poverty and different markers of risk and disadvantage during the 2010s

To undertake multivariate analysis of changes in the relationships between severe child poverty and the different markers of risk and disadvantage we are concerned with in this paper, we develop a series of change model variants that pool the FRS/HBAI samples for 2010/11 and 2019/20 and incorporate time-period as an explanatory variable. The first set of model variants are for a fixed effects model and are reported in online Table 21. We report two model variants: the first controlling for equality characteristics, family type, region and socio-economic variables and a second that omits the controls for socio-economic variables. Unlike the results for the relative child poverty (AHC) model, the results do *not* show that after controlling for these other factors, time-period has a statistically significant independent effect at the 99% confidence level or above. Therefore, we do not assess the odds of severe child poverty as being higher in 2019/20 than in 2010/11, after controlling for other factors.

In order to identify any *strengthening* of the independent associations between severe child poverty and the different markers of risk and disadvantage we are concerned with in this report, we extend the change model by incorporating a series of interaction terms between time-period and children's characteristics (for example, between time-period and lone parent status, time-period and parental disability, time-period and region and time-period and labour market participation). The predicted probabilities generated by the interaction model enable us to identify groups that record a statistically significant increase in adjusted severe child poverty risks after controlling for equality characteristics, family type, geographical area and socio-economic variables (see online Table 8 and Table 5 below). Key groups impacted by increasing adjusted risks of severe child poverty between 2010/11 2019/20 after controlling for other factors (including socio-economic variables) are: children living in lone parent families; children living in families with three or more children; and children living in the North East, East Midlands and Scotland. Without controlling for socio-economic variables (including labour market participation), children living in families where parents are born outside the UK and have been in the UK for less than 11 years are also at higher (adjusted) risk.

Table 5: Changes in the independent effects of different markers of risk and disadvantage severe child poverty between 2010/11 and 2019/20 by social group (predicted probabilities adjusting for equality characteristics, family type and region)

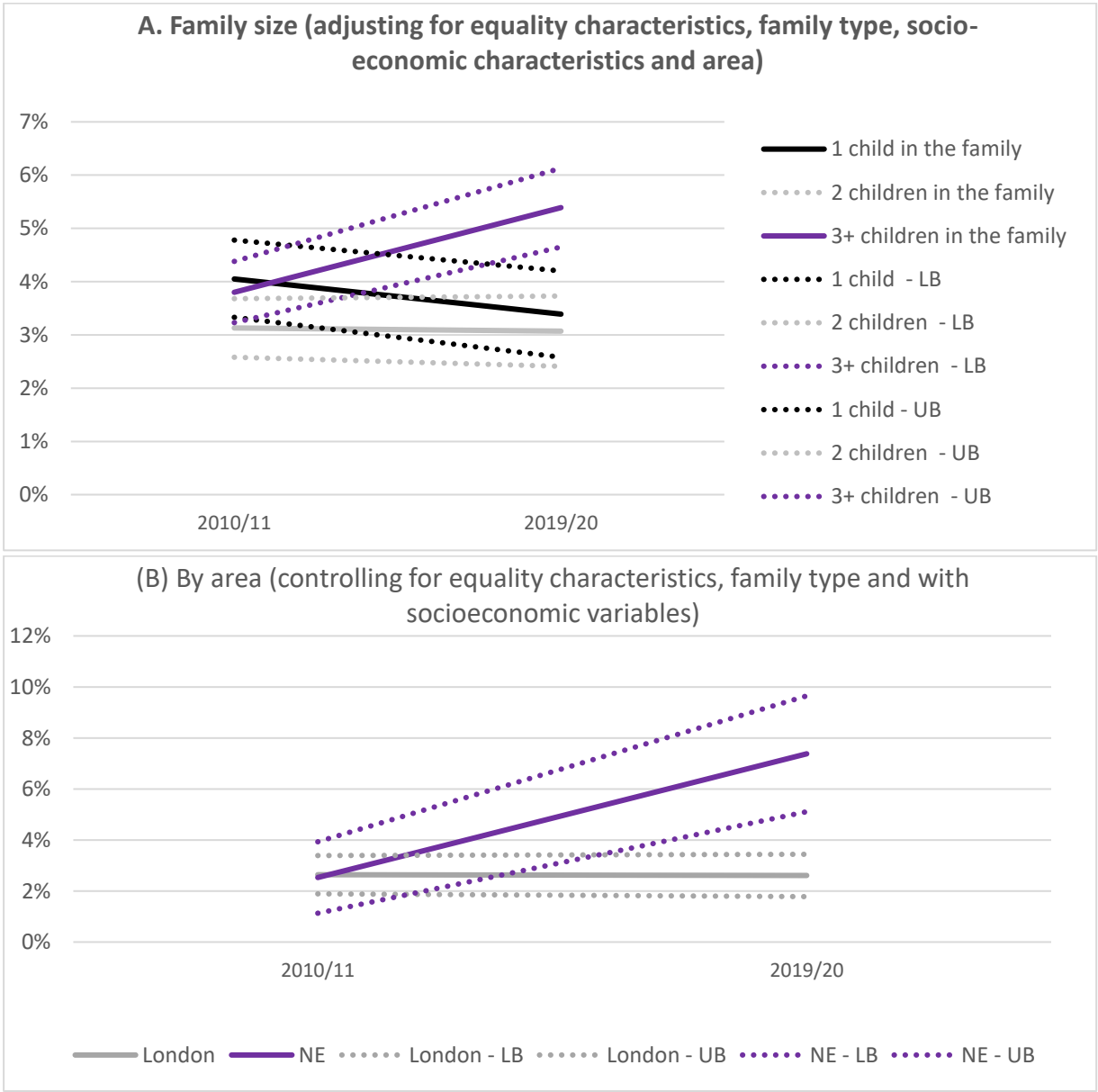
	With socio-economic controls				Without socio-economic controls			
	Predicted probabilities 2010/11	**Predicted probabilities 2019/20**	**Marginal effects**	**sig**	**Predicted probabilities 2010/11**	**Predicted probabilities 2019/20**	**Marginal effects**	**sig**
Age: 0-4	0.034	0.041	0.007		0.048	0.048	0.000	
Age 5-10	0.033	0.037	0.004		0.037	0.038	0.001	
Age : 11-15	0.038	0.046	0.008		0.038	0.042	0.004	
Age: 16-19	0.051	0.043	-0.008		0.052	0.038	-0.014	
White	0.029	0.035	0.006		0.033	0.035	0.002	
Mixed/Multiple	0.025	0.050	0.024		0.040	0.054	0.014	
Indian	0.060	0.011	-0.049	**	0.056	0.011	-0.045	**
Pakistani	0.056	0.048	-0.007		0.079	0.047	-0.032	
Bangladeshi	0.078	0.107	0.029		0.130	0.147	0.018	
Chinese	0.032	0.009	-0.023		0.037	0.010	-0.027	
Any other Asian background	0.053	0.073	0.020		0.089	0.076	-0.013	
Black/African/ Caribbean/Black British	0.059	0.064	0.005		0.073	0.069	-0.004	
Other Ethnic Group	0.044	0.038	-0.007		0.050	0.052	0.002	
UK born parent(s)	0.033	0.032	-0.002		0.036	0.031	-0.005	
Parent(s) born outside the UK, in UK 0-10 years	0.041	0.067	0.025	*	0.061	0.099	0.038	**
Parent(s) born outside the UK, in UK 11+ years	0.046	0.065	0.019		0.062	0.075	0.014	
No disabled children in the family	0.038	0.043	0.005		0.042	0.041	-0.001	
Disabled children in the family	0.031	0.034	0.003		0.043	0.046	0.003	
No disabled parent(s) in household	0.040	0.041	0.000		0.038	0.035	-0.003	
Disabled parent(s) in household	0.029	0.041	0.012	*	0.059	0.064	0.006	
Couple family	0.046	0.044	-0.003		0.037	0.032	-0.005	
Lone parent family	0.025	0.037	0.013	**	0.059	0.070	0.011	
1 child in the family	0.041	0.034	-0.007		0.041	0.030	-0.011	*
2 children in the family	0.031	0.031	-0.001		0.029	0.026	-0.003	
3+ children in the family	0.038	0.054	0.016	***	0.061	0.072	0.011	

	With socio-economic controls				Without socio-economic controls			
	Predicted probabilities 2010/11	**Predicted probabilities 2019/20**	**Marginal effects**	**sig**	**Predicted probabilities 2010/11**	**Predicted probabilities 2019/20**	**Marginal effects**	**sig**
Higher/Lower manag /admin/professional	0.008	0.025	0.018	***				
Intermediate occupations/small empl./lower supervisory	0.037	0.045	0.009					
Semi-routine	0.060	0.049	-0.011					
Routine	0.039	0.063	0.024	*				
Never worked/long-term unemployed	0.058	0.063	0.005					
Not classified /inadequately stated/FT student	0.041	0.014	-0.026	**				
No adults are in work	0.095	0.104	0.009					
All adults in work	0.011	0.013	0.003					
At least on, but not all, adult in work	0.038	0.037	-0.001					
Owned outright	0.025	0.023	-0.003					
Owned with mortgage	0.025	0.013	-0.013	**				
Rented from LA/HA	0.048	0.058	0.010					
Privately rented	0.034	0.047	0.013	*				
London	0.026	0.026	0.000		0.035	0.029	-0.006	
North East	0.025	0.074	0.049	***	0.033	0.063	0.030	
North West	0.044	0.031	-0.013		0.048	0.032	-0.016	
Yorks and the Humber	0.056	0.048	-0.008		0.070	0.054	-0.016	
East Midlands	0.029	0.057	0.028	**	0.031	0.051	0.020	*
West Midlands	0.033	0.038	0.004		0.043	0.054	0.011	
East of England	0.038	0.061	0.023	*	0.038	0.051	0.013	
South East	0.029	0.031	0.002		0.026	0.018	-0.008	
South West	0.043	0.040	-0.003		0.054	0.043	-0.010	
Scotland	0.042	0.070	0.028	**	0.047	0.077	0.030	**
Wales	0.042	0.052	0.010		0.055	0.053	-0.003	
Northern Ireland	0.046	0.031	-0.015		0.053	0.034	-0.019	*

Source: Authors' analysis using FRS/HBAI microdata. Significance levels: * p<0.05; ** p<0.01; *** p<0.001. For further details, see online datatable 8.

Analysis of the interaction terms shows that the associations between severe child poverty and having three or more children, or living in the North East, were stronger in 2019/20 than in 2010/11 (positive and statistical significant logit product term, see online Table 25 – model variant 3). This result is also shown visually in Figure 11 below. These are strong results and show that, even after the effects of multiple other factors are controlled for, there is evidence that in terms of their severe poverty risks, these groups fell further behind more advantaged comparator groups during the 2010s.

Figure 11: Associations between severe child poverty and child characteristics (predicted probabilities) in 2010/11 and 2019/20



Source: Authors' analysis using FRS/HBAI microdata.

7.1.3 Differences in severe child poverty risks by social group in 2019/20

Adjusted severe child poverty risks at the end of the second decade of the 21st century for each social group are identified using a cross-sectional model for 2019/20 (see online datatables Table 23 and Table 6 below). The results show that in 2019/20 on the eve of the pandemic, most of the groups identified in section 7.2.1 as being at higher (adjusted) risk of severe child poverty after controlling for other factors in 2010/11 remained at higher (adjusted) risk in 2019/20. This includes:

- Children with family backgrounds from the Bangladeshi, Indian, Black African/Caribbean/British ethnicities compared to those with White family backgrounds;
- Children with family backgrounds from the intermediate, semi-routine, routine and never worked / long-term occupational classes compared to children with family backgrounds from the managerial and professional occupational group;
- Children living in households with no adults in work compared to those living with one but not all, or all, adults in work;
- Children living in Yorkshire and the Humber compared with children living in London.

Risks by tenure show a different pattern in 2019/20 to 2010/11, with the differences in risks for children living in accommodation rented from local authorities or housing associations, and those renting from the private sector, no longer being statistically significant; but private renters are at greater (adjusted) risk than owner occupiers - both outright owners and owned with a mortgage. Other patterns of differentiation that had changed by the end of the decade relate to family size and region. By the end of the decade, the difference in risks for children in families with three or more children compared to one child were statistically significant in 2019/20 even when controlling for socio-economic factors, whereas these were not statistically significant in 2010/11.

Similarly, in 2019/20, patterns by region were different in 2019/20, with children living in the North East, Yorkshire and the Humber, East Midlands, the East of England and Scotland were all at higher risk compared to children in London and the differences with London were all statistically significant.

Table 6: Characteristics associated with severe child poverty in 2019/20 (odds ratios)

	With socio-economic controls		Without socio-economic controls	
	Odds ratios	**Significance**	**Odds ratios**	**Significance**
0-4 years old	1.000		1.000	
5-10 years old	0.871		0.776	
	(0.136)		(0.117)	
11-15 years old	1.166		0.860	
	(0.185)		(0.130)	
16-19 years old	1.081		0.762	
	(0.238)		(0.150)	
White	1.000		1.000	
Mixed/Multiple	1.531		1.602	
	(0.710)		(0.557)	
Indian	0.261	**	0.298	*
	(0.131)		(0.145)	
Pakistani	1.478		1.387	
	(0.387)		(0.331)	
Bangladeshi	4.510	***	5.411	***
	(1.464)		(1.548)	
Chinese	0.206		0.262	
	(0.229)		(0.269)	
Any other Asian	2.570	**	2.376	*
	(0.933)		(0.999)	
Black African/Caribbean/British	2.150	**	2.139	***
	(0.560)		(0.480)	
Other Ethnic Group	1.087		1.547	
	(0.309)		(0.375)	
UK born parents	1.000		1.000	
Parents born outside UK,0-10 years	2.626	***	3.788	***
	(0.528)		(0.624)	
Parents born outside UK,11+ years	2.539	***	2.731	***
	(0.529)		(0.479)	
No disabled children in family	1.000		1.000	
Disabled child(ren)	0.749		1.138	
	(0.116)		(0.176)	
No disabled parent(s)	1.000		1.000	
Disabled parent(s)	1.023		2.001	***
	(0.141)		(0.252)	
Couple family	1.000		1.000	
Lone parent family	0.806		2.458	***
	(0.140)		(0.283)	
One child in family	1.000		1.000	
2 children in family	0.886		0.871	
	(0.163)		(0.149)	
3+ children	1.808	***	2.696	***
	(0.301)		(0.414)	

	With socio-economic controls		Without socio-economic controls	
	Odds ratios	**Significance**	**Odds ratios**	**Significance**
Higher/Lower managerial occupations	1.000			
Intermediate/lower supervisory occupations	2.009	**		
	(0.455)			
Semi-routine occupations	2.226	***		
	(0.541)			
Routine occupations	3.092	***		
	(0.736)			
Never worked/long-term unemployed	3.080	***		
	(0.816)			
Not classified/inadequately stated	0.528			
	(0.303)			
No adults in work	1.000			
All adults in work	0.090	***		
	(0.019)			
At least one adult in work	0.276	***		
	(0.058)			
Privately rented	1.000			
Owned outright	0.428	**		
	(0.140)			
Owned with mortgage	0.221	***		
	(0.054)			
Rented from LA/HA	1.312			
	(0.186)			
London	1.000		1.000	
North East	3.993	***	2.405	**
	(1.256)		(0.737)	
North West	1.211		1.094	
	(0.383)		(0.294)	
Yorkshire and the Humber	2.194	**	2.002	**
	(0.575)		(0.463)	
East Midlands	2.738	***	1.868	*
	(0.765)		(0.457)	
West Midlands	1.591		1.999	**
	(0.468)		(0.535)	
East of England	3.030	***	1.873	*
	(0.846)		(0.464)	
South East	1.224		0.576	
	(0.418)		(0.186)	
South West	1.736		1.542	
	(0.562)		(0.463)	
Scotland	3.688	***	3.049	***
	(0.958)		(0.709)	
Wales	2.397	*	1.934	*
	(0.873)		(0.605)	
Northern Ireland	1.232		1.161	
	(0.372)		(0.309)	

Source: Authors' analysis using FRS/HBAI microdata. Statistical significance has been assessed using standard methods. Significance levels: * p<0.05; ** p<0.01; *** p<0.001. For further details, see section 3 and online datatable 23.

The multivariate results confirm the picture of declining prevalence, convergence and a narrowing of relative gaps for some ethnic minority groups highlighted in the descriptive analysis (sections 5).

The relative child poverty (AHC) logistic regression modelling exercise shows that whilst children with all non-White ethnic backgrounds had higher child poverty risks in 2010/11, risks fell for children with family backgrounds from the Indian and Chinese ethnic groups over the decade with significant negative coefficients observed for the interactions of Indian and time period and time period, and Chinese and time period (product terms, online Table 20). As a result of the substantial weakening of HRP Indian and Chinese as a risk factor for relative child poverty AHC, the differences in prevalence with children with a HRP from the White group were not statistically significant after controlling for socio-economic factors.

Likewise, the severe child poverty multivariate results confirm some of the positive findings in the descriptive analysis for some ethnic groups, with statistically significant declines in severe child poverty risks after controlling for other factors for children with family backgrounds from the Indian ethnic group. Analysis of the interaction terms shows that the (independent) association between severe child poverty and having a family background from the Indian ethnicity was weaker in 2019/20 than in 2010/11 (negative and statistically significant logit interaction product term, see online Table 25).

7.4 Summary

Given the complexity of our multivariate models, it has not been possible to use the resamples datasets as a basis for assessing statistical significance in the modelling exercise. Instead, we have adopted conservative thresholds for establishing statistical significance and only report findings that are statistically significant at the 99% level of confidence or above. Based on these evidential thresholds, the results of the logistic regression modelling exercise show that even after controlling for a wide range of factors, the independent associations between child poverty and some markers of child risk and disadvantage strengthened during the second decade of the 21st century.

The relative child poverty (AHC) modelling exercise shows that the adjusted risks of relative child poverty (AHC) were higher in 2019/20 than in 2010/11 for most groups of children and that the increases in adjusted child poverty risk were greater for some at risk and disadvantaged groups of children than for comparator groups. The strengthening of the effects of

children living in single parent families relative to couple families, children living in families with three or more children relative to children with no siblings, children living in families with a disabled parent, and children living in the North East, are particularly striking.

The severe child poverty modelling exercise shows that after controlling for socio-economic factors, risks of severe child poverty were higher in 2019/20 than in 2010/11 for children from larger families, lone parent families and children living in the North East, East Midlands and Scotland. Analysis of the interaction terms shows that the associations between severe child poverty and having three or more children, or living in the North East, were stronger in 2019/20 than in 2010/11.

These are strong results which reinforce the descriptive findings in section 5 by highlighting the extent of the reversal of progress in addressing child poverty during the second decade of the 21st century for these groups.

8. Key findings and conclusions

This paper has examined the slowdown, stalling and reversal of progress in reducing child poverty during the second decade of the 21st century and how this affected children from different social groups. Using a combination of descriptive and multivariate methods, our analysis shows that the slowdown, stalling and reversal of progress in reducing child poverty during the second decade of the 21st century impacted on children from many different social groups. However, it is of particular concern that some of the groups that were already the most disadvantaged at the beginning of the 2010s were disproportionally impacted with further increases in their child poverty risks and a widening of prevalence gaps with more advantaged comparator groups. Multivariate analysis shows that the independent associations between child poverty and some of the key markers of disadvantage and risk that we are concerned with in this study also strengthened during the 2010s. The evidence we present raises fundamental questions about retrogression in social outcomes in the second decade of the 21st century, the impact of underlying changes in social policies and social protection, the failure to protect vulnerable groups during a period of fiscal adjustment, austerity and welfare reform, and underlying issues of social justice and human rights. The findings also highlight the urgent need for a new UK wide cross-governmental anti-child poverty strategy for the 2020s.

8.1 Summary of key findings from the empirical analysis

Eleven key findings emerge from the empirical analysis. **First, the analysis shows that the second decade of the 21st century was a lost decade in terms of progress in reducing *overall* rates of child income poverty.** Looking back over a twenty-six year period (1994/5-2019/20), considerable progress was made in reducing overall child income poverty rates. However, most of this progress occurred during the first decade of the 21st century and the second decade was a lost decade in terms of the further progress that was made and rates of progress in reducing child income poverty *slowed down*, *stalled* and went into *reverse* during the 2010s. Declining rates of progress are evident whether the focus of analysis is on the anchored or relative indicator of child income poverty, both before ("BHC") and after ("AHC") housing costs are taken into account, and whether subperiods are cut by political party / government, by decade, by before and after the financial crisis and 'Great Recession', or by before and after the onset of austerity and welfare reform. However, the

clearest breakpoint is 2012/13, when the effects of the austerity and welfare reform programme began to feed through. The anchored child poverty indicator is a conservative indicator of social progress that is fixed at a particular point in time and only adjusted for inflation. However, the analysis shows that even against this minimum floor standard, rates of improvement ***slowed down*** and ***stalled.*** The relative child poverty indictor is a less conservative indicator that 'moves' in relation to typical living standards. The analysis shows that progress against the relative child poverty indicator ***slowed down***, ***stalled*** and ***reversed*** and our assessments identify statistically significant increases in relative child poverty between 2010/11 and 2019/20 both BHC and AHC. For relative child poverty, there were average percentage point ***declines*** of 0.5 (BHC) and 0.3 (AHC) per annum between 1994/5 and 2010/11, compared with average ***increases*** of 0.6 and 0.4 percentage points per annum during the 2010s (between 2010/11 and 2019/20).

Second, we find that despite the substantial improvements in rates of child income poverty that occurred during the first decade of the 21st century, child poverty risks remained strongly differentiated by social group at the beginning of the 2010s. Turning to our in-depth analysis of patterns and trends in child poverty risks by social during the 2010s, differences in child poverty risks at the baseline have been assessed using the resamples datasets with statistically significant differences reported at the 95% level of confidence. The analysis identifies relative child poverty (AHC) risks at the beginning of the second decade of the 21st century 11 as being higher for children from the following social groups:

- Children living in families with a lone parent (40.2%) compared to children living in couple families (23.1%);
- Children living in families with three or more children (34.8%) compared with children living in families with one child (26.1%);
- Children living in families with a disabled parent (36.2%) compared to children with no parental disability (25.1%);
- Children living in households where the HRP is from an ethnic minority group (Mixed/Multiple 48.0%, Indian 29.8%, Pakistani 50.3%, Bangladeshi 61.1%, Black African/Caribbean 44.0%, Chinese 50.1%) compared to children living in households where the HRP is White (23.8%) (pooled data).
- Children living with a non-UK born parent residing in the UK for 10 years or less (44.4%), and children living with a non-UK born parent

residing in the UK for 11 or more years (45.2%), compared with children whose parental country of birth is the UK (24.2%).
- Children living in households where the HRP is from the semi-routine (31.7%), routine (33.5%) and never worked occupational groups (70.8%) compared with children living in families from the higher and lower managerial/administrative and professional groups (8.8%);
- Children living in households where no adults are in employment (67%) or only one adult is in employment (35.4%) compared with children living in families where all adults are in employment (11.4%).
- Children living in private rented accommodation (45.8%) and accommodation that is rented from a local authority or housing association (50.8%) compared with children living in owner occupied accommodation (15.4%).
- Children living in London (36.8%) compared with children living in other English regions.

Similar patterns of differentiation in severe child poverty risks are observed at the beginning of the 2010s. Severe child poverty risks are higher (statistically significant) for children living in a lone parent family; children living with a disabled parent (pooled data); children living in households where the HRP is from the Pakistani, Bangladeshi, Black African/Caribbean or Mixed/Multiple ethnic groups (pooled data); children living with parents born outside of the UK; children living in households where the HRP is from the semi-routine, routine or never worked/long-term unemployed; and children living in households where no adult is in work. One difference in the patterns of differentiation for severe child poverty are that the positive association with living in a family with three or more children was *not* statistically significant at the 95% level of confidence of above using the resamples datasets for calculating uncertainty in 2010/11. Although the differences in severe child poverty risks by English region in 2010/11 were not found to be statistically significant at the 95% level of confidence using the resamples datasets for calculating uncertainty, it is worth noting that the rankings are different from those highlighted above. In the context of relative child poverty (AHC), risks were higher in 2010/11 in London than in other English regions; however, in the context of severe child poverty (which is a *before* housing costs measure), patterns of hardship were higher Yorkshire and the Humber, the West Midlands and the North East.

Third, the analysis identifies that statistically significant increases in relative child poverty AHC occurred for children from a range of different social backgrounds during the 2010s. Our in-depth

analysis of patterns and trends in relative child poverty AHC during the 2010s identifies groups that recorded increases in relative child poverty AHC rates between 2010/11 and 2019/20 that are statistically significant at the 95% level of confidence or above using the resamples datasets for estimating uncertainty. This includes:

- Children living in lone parent families (an 8.5 percentage point increase);
- Children living in families with three or more children (a 12.4 percentage point increase);
- Children living in households with all working-age adults in employment or self-employment as well as those living in households with at least one (but not all) adults in work (6.6 and 11 percentage points respectively);
- Children living with HRPs from the intermediate, small employer and lower supervisory, the semi-routine and routine occupational groups (with increases of 9.6, 17.5 and 15.5 percentage points respectively);
- Children living in the North East (an increase of 9.5 percentage points).

Fourth, it is striking that some of the groups of children that recorded statistically significant increases in relative child poverty AHC during the 2010s were already particularly disadvantaged at the beginning of the decade. At the baseline, in 2010/11, children living in lone parent families and for children living in families with three or more children were already at higher risk of relative child poverty AHC compared to more advantaged comparator groups (children living in couple families and families with one child respectively). These differences are statistically significant at the 95% level of confidence using the resamples method for estimating uncertainty. Both groups recorded further increases (of 8.5 percentage points and 12.4 percentage points respectively) during the 2010s. In addition, for children living in families with three or more children, there was a statistically significant 14.6 percentage point widening of the relative child poverty AHC prevalence gap compared to children living in families with one child between 2010/11 and 2019/20. This indicates that the relative child poverty AHC risks increased *more* for children in larger families with three or more children than for children in one child families (for whom relative child poverty AHC risks did *not* increase during the 2010s).

Patterns and trends in relative child poverty AHC by household socio-economic disadvantage and geographical area are somewhat different, but

are equally striking. Looking at breakdowns by household occupational classification and household employment status, the most disadvantaged groups in 2010/11 were for children from the 'never worked/long-term unemployed' occupational groups and from households where no working age adult is in employment or self-employment. Relative child poverty AHC prevalence rates for children living in households from each of these 'out of work' groups remained *substantially higher* than for more advantaged comparator group throughout the 2010s. However, comparing prevalence rates in 2010/11 and 2019/20, rates for these groups remained broadly similar. While this binary comparison masks increases from 2013/14 for both groups followed by a period of tailing off, the analysis points towards sharper increases in relative child poverty AHC risks during the 2010s for children living in households where working age adults are in employment or self-employment. In particular, looking at breakdowns by socio-economic classification, particularly sharp increases were recorded for children with family backgrounds from the semi-routine occupational class (an increase of 17.5 percentage points) and the routine occupational class (an increase of 15.5 percentage points). Note that while rates of relative child poverty AHC were substantially lower amongst children with family backgrounds from these occupational groups than from children from the 'never worked/long-term unemployed' occupational groups, rates were nevertheless also substantially higher than for children with family backgrounds from the managerial, professional and administrative occupational groups at the beginning of the decade, and that these differences were statistically significant. In the case of household employment status, sharp increases were recorded for children living in households with all working-age adults in employment or self-employment as well as those living in households with at least one (but not all) working-age adults in employment or self-employment (of 6.6 and 11 percentage points respectively).

Looking at breakdowns by geographical area, the most disadvantaged area in terms of relative child poverty AHC at the start of the decade (in 2010/11) was London – with most other regions recording statistically significant *lower* rates. During the 2010s, the steep and statistically significant 9.5 percentage point increase in the North East was greater than the increase in London, resulting in increasing *convergence* in relative child poverty AHC rates in the North East and London, and by the eve of the COVID-19 pandemic, the differences in relative child poverty AHC rates in the North East and London were no longer statistically significant.

Fifth, our in-depth analysis of child poverty trends by social group raises some important methodological issues relating to low

sample size and statistical power. As noted in section 3, and as is well known, FRS/HBAI sample size is already low for some groups of children. Additionally, in undertaking the analysis for this paper, we found that sample sizes in the HBAI resamples datasets – the datasets that DWP now recommend is used to assess statistical significance - are substantially smaller than the full standard HBAI dataset for each year. Consequently, the samples of children in the resamples datasets are reduced and this is a particular concern for the analysis of trends in child poverty for the smaller groups and breakdowns that are the specific focus of this paper, including in relation to statistical power and in the assessment of statistical significance.

One proposed solution to low sample size is to adopt a pooled data approach to analysis for some groups. In this paper, as recommended by DWP, we have used three-year pooled data as a basis for some of the central estimates based on the main HBAI dataset from the outset (by ethnicity, region and young carer status). In addition, as we encountered issues of low sample size when using the resamples dataset, we began to explore the use of pooled data as a basis for our analysis of child poverty risks by parental and child disability status. Looking forward, we recommend further research is undertaken to expand the data-pooling approach to make best use of existing FRS/HBAI data. However, this is a second-best solution and ultimately there might be a need for increased sample size in the FRS survey to support the analysis of trends in child poverty rates by social group more adequately. Given these caveats and limitations, and again as clearly set out in section 3, we have adopted a nuanced approach to reporting the descriptive findings in the current paper, highlighting all differences and changes that we identify as large or of particular concern, while explicitly indicating where differences and changes are statistically significant at the 95% level of confidence using the resamples datasets for estimating uncertainty.

Sixth, taking into account these caveats and limitations, we also highlight increases in relative child poverty (AHC) during the 2010s for some groups which, while not assessed as being statistically significant, we believe should not be simply disregarded or overlooked. For example, in the context of relative child poverty (AHC), we highlight the following increases in relative child poverty (AHC) between 2010/11 and 2019/20 which, while not being assessed as statistically significant, we nevertheless believe are of particular concern.

- Children with a disabled parent (a 4.4 percentage point increase);

- Children with a disabled child in the family (a 5.2 percentage point increase);
- Children living in accommodation rented from local authorities or housing associations (a 5.6 percentage point increase);
- Children living in Yorkshire and Humber and the East and West Midlands (pooled data - 4.5, 3.5 and 5.9 percentage points respectively).
- Children living in households where the HRP is from the Pakistani, Bangladeshi and Black African/Caribbean/British ethnic groups (pooled data – 3.9, 6.2 and 4.8 percentage points respectively).

For several groups, we also identify several instances of widening relative child poverty (AHC) prevalence gaps during the 2010s which again are not assessed to be statistically significant, but which we again believe should not be disregarded or overlooked. Specifically:

- Children living in lone parent families recorded particularly high relative child poverty AHC risks at the beginning of the decade on 2010/11 and the differences with children from couple parent families was statistically significant. During the 2010s, our central estimates indicate a further widening of the relative child poverty AHC prevalence gap for children living in lone parent families compared to children living in couple families from 17.1 percentage points in 2010/11 to 23.3 percentage points in 2019/20 (a 6.2 percentage point increase). While this widening gap for children living in lone parent families has not been assessed to be statistically significant, we believe this should not be overlooked.
- Looking at breakdowns by disability, risks of relative child poverty AHC were significant higher for children living in families with a disabled parent at the beginning of the 2010s, and our central estimates suggest a further 2.2 percentage point widening of the relative child poverty AHC prevalence gap over the decade. For children who are disabled or who have a disabled child in the family compared to other children, there was no prevalence gap in 2010/11, but a two percentage point gap had opened up by the end of the decade.
- Looking at breakdowns by household socio-economic classification, for children from households where the HRP is from the routine occupational group recorded a particularly large 24.6 percentage point prevalence gap at the baseline (in 2010/11), and this gap had further widened by an additional 9.6 percentage points to 34.2 percentage points by 2019/20. For children from households where

the HRP is from the semi-routine occupational group, our central estimates again indicate a particularly large widening of the prevalence gap by 11.6 percentage points from 22.8 percentage points to 34.5 percentage points.
- Conversely, the relative child poverty AHC gap for children living in the North East compared to London fell from 9.2 percentage points to less than 1 percentage point (pooled data).

Seventh, again taking into account the methodological caveats and limitations noted above, we also highlight increases in severe child poverty during the 2010s for some groups which, while not assessed as being statistically significant, we again believe should not be simply disregarded or overlooked. Our assessments of change in the overall severe child poverty rate between 2010/11 and 2019/20 indicted a small increase that is not statistically significant. Moreover, looking at trends and patterns by social group, we did not assess *any* group as recording a statistically significant increase in severe child poverty between 2010/11 and 2019/20, or a statistically significant widening of a severe child poverty prevalence gap, at the 95% level of confidence using the resamples datasets for assessing uncertainty. However, taking account of the methodological caveats and limitations noted above, and as clearly set out in section 3, we again adopt a nuanced approach to reporting the severe child poverty findings. While not meeting the evidential threshold for statistical significance, several of these findings raise concerns about a *possible* upturn in more severe forms of hardship for some groups - reinforcing the evidence in the broader literature reviewed in section 2.1. This includes:

- An increase of 3.2 percentage points for children living in lone parent families.
- An increase of 2.8 percentage points for children in families with three or more children.
- An increase of a 1.9 percentage points for children with a disabled child in the family.
- An increase of 1.4 percentage points was recorded for children living in households with a disabled parent, compared with no increase (0.3%) for other children.
- An increase of 3.7 percentage points for children living in households where the HRP is from the Bangladeshi ethnic group and of 2.7 percentage points for children living in households where the HRP is from the Black African/Caribbean/British ethnic group (pooled data).

- An increase of 3.1 percentage points for children with foreign-born parent(s) who had resided in the UK for 0-10 years.
- An increase of 2.2 percentage points for children from households where the HRP is from the semi-routine occupational group, of 6.7 percentage points for children from households where the HRP is from the routine occupational group and of 6.4 percentage points for children from households where the HRP is from the never worked/long-term unemployed occupational group.
- An increase of 9.1 percentage points for children from households with no working-age adults in employment.
- An increase of 2.5 percentage points for children living in accommodation rented from a local authority or housing association and of a 1.7 percentage points for private renters.
- Increases of 3.3 percentage points for children living in the North East, of 2.1 percentage points for children living in Yorkshire and the Humber and of 1.8 percentage points for children living in the West Midlands.

The severe child poverty findings for children living in households where adults are from the 'out of work' groups are particularly striking and contrast with the trends for these groups reported above in the context of relative child poverty AHC. It is worth noting that the 9.1 percentage point increase for children from households with no working-age adult in employment or self-employment represents a 68.8% increase in severe child poverty prevalence from the 2010/11 baseline (from 13.2% in 2010/11 to 22.4% in 2019/20). In addition, the increases in severe poverty risks for children living lone parent families and children in families with three or more children between 2010/11 and 2019/20 also correspond to very substantial increases in percentage terms (of 57.1% and 45% respectively).

Eighth, it is again of particular concern that most of the groups that we identify as recording (not statistically significant) increases in severe poverty during the 2010s were particularly disadvantaged at the beginning of the decade. Our cross-sectional assessments of severe child poverty risks for children in different groups in 2010/11 establishes that all of the groups identified above as recording a (not statistically significant) increase in severe child poverty between 2010/11 and 2019/20 were particularly disadvantaged in terms of their severe child poverty risks at the beginning of the decade. In each case, the baseline differences with more advantaged comparator groups are assessed as being statistically significant at the 95% level of confidence of above using

the resamples datasets for calculating uncertainty and further (not statistically significant) increases were recorded during the 2010s. The one exception is children who are disabled or who live in a household with a disabled child, where the baseline difference with other children was not assessed to be statistically significant in 2010/11 using the resamples dataset for estimating uncertainty.

Ninth, multivariate analysis establishes that the independent associations between relative child poverty (AHC) and some markers of child risk and disadvantage we are concerned with in this paper strengthened during the second decade of the 21st century. As set out in section 3, given the complexity of our multivariate models, it has not been possible to use the resamples datasets as a basis for assessing statistical significance in the modelling exercise. To compensate, we adopt more conservative thresholds in reporting the multivariate results and only report findings that are statistically significant at the 99% level of confidence or above.

Based on these evidential thresholds, the baseline multivariate analysis identifies that the (adjusted) risks of relative child poverty (AHC) in 2010/11 were higher for children living in a family where the HRP is from an ethnic minority group (Indian, Pakistani, Bangladeshi, or Chinese) compared to the White group after controlling for other factors – including *after* controlling for both country of birth and labour market participation. Similarly, the effects of coming from households from the intermediate, semi-routine, routine and never worked/long-term unemployed NS-Sec occupational groups, and living in a household where there is no working age adult in employment or self-employment, or living in privately rented accommodation, were all found to be independent of the other factors controlled for in our models. The positive associations between relative child poverty (AHC) and living in a lone parent family and a family with three or more children were found to be independent of equality characteristics, family type and geographic area but *not* of socio-economic variables including labour market participation. These are strong results further reinforcing the conclusion that child poverty risks remained strongly differentiated by social group at the beginning of the 2010s.

To undertake multivariate analysis of *changes* in the independent associations between relative child poverty (AHC) and the different markers of risk and disadvantage we are concerned with in this paper during the 2010s, we report findings from a series of change model variants that pool the FRS/HBAI samples for 2010/11 and 2019/20 and incorporate time-period as an explanatory variable. The results for the fixed effects model variants show that after controlling for other factors, time-period has a

positive and statistically significant effect, with higher adjusted risks of relative child poverty (AHC) in 2019/20 than in 2010/11. As ethnicity, country of birth, lone parent family status and number of children are all controlled for, the fixed effects model suggests that compositional effects related to these factors do *not* fully explain (or account for) the higher odds of relative child poverty (AHC) in 2019/2020 compared to 2010/11.

Turning to the interaction model variants, which incorporate a series of interaction terms between time-period and children's characteristics, model generated predicted probabilities show that the adjusted risks of relative child poverty (AHC) were higher at the end of the decade (in 2019/20) than at the beginning of the decade (in 2010/11) for the following groups of children:

- Children aged 0-4 and 5-10;
- Children living with a disabled parent in the household;
- Children where the HRP is from the White ethnic group;
- Children with parents born in the UK and children with a foreign born parent/s living in the UK for 11 or more years;
- Children living lone parent families;
- Children living in households with 3 or more children;
- Children living in households where one but not all and all working age adults are in employment or self-employment;
- Children living in accommodation that is privately rented and owned with a mortgage;
- Children living in several different regions (North East, East Midlands and Scotland).

Additionally, the relative child poverty (AHC) interaction model variants enable us to identify where the independent associations between relative child poverty (AHC) and the different markers of child risk and disadvantage that we are concerned with in this paper *strengthened* during the second decade of the 21st century. The results show that, after controlling for a wide range of factors, the (independent) effects of children living in single parent families compared to living in a couple family, of living in a family with three or more children compared to living in a family with no siblings, of living with a disabled parent compared to other children, and of living in the North East compared to London, were stronger at the end of the decade. These are again strong results which reinforce the descriptive findings and underline the extent to which, even after other

factors are controlled for, these groups fell further behind during the 2010s, with the gaps in adjusted relative child poverty (AHC) risks widening.

Tenth, multivariate analysis also establishes that the independent associations between severe child poverty and some markers of child risk and disadvantage strengthened during the second decade of the 21st century. At the baseline, after controlling for other factors, the patterns of association between severe child poverty and different social groups are similar to those observed for relative child poverty (AHC). One notable difference was in relation to geographical area. The cross-sectional multivariate analysis for 2010/11 indicted that the positive association between severe child poverty and living in Yorkshire and the Humber was independent of equality characteristics, family type and socio-economic factors such as labour market participation.

Pooling the FRS/HBAI samples for 2010/11 and 2019/20 and incorporating time-period as an explanatory variable, the severe child poverty modelling exercise shows that after controlling for a wide range of factors, while overall severe child poverty risks were not found to be significantly higher at the end of the decade, the (adjusted) risks were higher for some groups including children living in lone parent families; children living in families with three or more children; and children living in the North East, East Midlands and Scotland. That is, the model generated predicted probabilities of severe child poverty were assessed to be significantly higher at the end of the decade than at the end of the decade for these groups. Analysis of the interaction terms shows that the (independent) associations between severe child poverty and living in a family with three or more children, or living in the North East, were stronger in 2019/20 than in 2010/11. Again, these are strong results and show that, even after the effects of multiple other factors are controlled for, there is evidence that in terms of severe poverty risks, these groups fell further behind more advantaged comparator groups during the 2010s.

Eleventh, some positive developments also emerge from the analysis, especially for some ethnic groups. In 2010, relative child poverty rates AHC amongst children where the HRP is from the Indian group were high at 34.7%. However, during the 2010s rates fell to 26.1%, resulting in convergence with children where the HRP is from the White group. Rates also fell for children where the HRP is from the Chinese group and the Mixed or Multiple group, although, in the case of the Mixed or Multiple group, this overall reduction masks a period of sustained increases during the post-welfare reform period. In the context of severe child poverty, there was a 3.4 percentage point decline for children from the

Indian group. These falls are *not* statistically significant using the resamples datasets for estimating uncertainty but are nevertheless of note.

8.2 Broader reflections

More broadly, the patterns and trends reported in this paper also provide important context for understanding the extent of economic insecurity and the patterns of risk and vulnerabilities when the COVID-19 pandemic and cost of living crisis struck as well as the nature and scale of the interventions that have proved necessary in the wake of these shocks. The analysis shows that during the 2010s, improvements in reducing overall child poverty rates in terms of a minimum floor standard (the anchored child poverty threshold) had tailed off, and that children living in households at the bottom of the income distribution had been failing to keep up with a moving threshold related to typical household income (60% of median) during the 2010s. The upward pressure on relative child poverty AHC prevalence for children living in households where adults are in work, and the particularly sharp increases for children living in households where the HRP is from the routine and semi-routine occupational groups, and the upward trend of children living in the North East, were already apparent at the time of the Brexit referendum vote in 2016 and child poverty rates for children living in households with no adult in employment had also been increasing. By the eve of the COVID-19 pandemic, statistically significant increases in relative child poverty AHC prevalence rates had been recorded for children living in families with a lone parent or three or more children, for children living in households with HRPs from the routine and semi-routine occupational groups or where at least one adult is in work, and for children living in the North East – with virtual convergence in prevalence rates in relative child poverty (AHC) rates in the North East and London by the end of the decade.

The cross-sectional patterns of differentiation in severe hardship identified in the paper at the end of the second decade of the 21st century are also revealing. Statistically significant higher severe poverty risks were recorded on the eve of the COVID-19 pandemic for children living in lone parent families; larger families; with a disabled parent; where the HRP is from the Pakistani, Bangladeshi or Black African/Caribbean ethnic groups and where parents' country of birth is not the UK. Looking at breakdowns by socio-economic characteristics, rates were higher on the eve of the pandemic for children living in households where the HRP is from the semi-routine, routine and never worked or long-term unemployed occupational groups compared to children from professional and managerial

backgrounds; for children living in households where no adults, or only one adult, is in employment or self-employment compared with children living in families where all adults are in work; children living in rented accommodation (both private and rented from a local authority or housing association) compared with children living in owner occupied groups. Rates of severe child poverty were also particularly high in 2019/20 in the North East, Yorkshire and the Humber, the West Midlands, London and the North West, showing the extent of economic fragility when the pandemic struck.

The findings from this paper also add to the growing body of literature evidencing the adverse impact of fiscal adjustment, austerity and welfare reform during the second decade of the 21st century on children. A series of studies (cited in section 2.2) have provided evidence of the adverse impacts on families with children, including children living in single parent families, children living in families with three or more children and children living in families with reported disabilities. Our findings add to this literature. We acknowledge that there are multiple explanatory factors that are relevant here - including sluggish GDP, income, earnings and wages growth in the period after the 2007/8 financial crisis; rising economic insecurity associated with other labour market and technologically driven changes; cost factors (especially housing costs). Nevertheless, as the SPDO social security paper (Cooper and Hills, 2021) concluded, the prevention and reduction of child poverty should be a central objective of any social security system, and the evidence we present here reinforces the evidence in that paper that the capacity of the welfare state to protect families with children from poverty was seriously eroded during the 2010s.

The proposition that austerity and welfare reform measures were associated with a structural change in the functioning of the welfare state is theorized in McEnhill & Taylor-Gooby (2017). This study challenges interpretations of UK welfare reform that highlight 'continuities' under the Coalition (2010-2015) and New Labour (1997-2010) and argues that a fundamental change in the functioning of social protection mechanisms occurred after 2010. In developing this argument, McEnhill & Taylor-Gooby (2017) identify two different approaches to the analysis of the welfare state: one approach that focuses on policy instruments and a second that also assesses the process and culmination of various shifts and consequent outcomes. They argue that the former approach tends to understate extent to which iterative and cumulative change over a longer timespan (beyond a single identifiable 'rupture') can point towards a structural change. As the authors note, the identification of a turning-point in progress in reducing child poverty under the Coalition as part of the Social Policy in a Cold

Climate research programme provides evidence that such a structural change had occurred. The further evidence on the slowdown, stalling and reversal of progress in reducing child poverty we present in this paper, and the evidence we present on inadequate protection for particularly disadvantaged groups, further reinforces this conclusion.

Overall, the findings in the paper raise fundamental issues of social justice and human rights. The patterns and trends we evidence in the paper arguably constitute *prima facie* evidence of an inconsistency with the principle of non-retrogression established within the international human rights framework. As noted in section 2.3, OHCHR (2013) set out interpretative guidance relating to the human rights requirements of austerity measures and the prohibition of retrogression. Whilst there is recognition that austerity measures are likely to impact on living standards, austerity measures must be necessary, proportionate, respectful of minimum core obligations and non-discriminatory. States are required to avoid retrogressive steps or impacts and are under a positive duty to protect those at risk. A retrogressive measure is defined as one that, directly or indirectly, leads to backward movement in the enjoyment of the rights recognized in the ICESCR (c.f. Pillay 2012). In the light of these standards, adverse trends in child poverty outcomes - including reversals of previous improvements - or further deterioration of the position of at risk groups - for example, increasing child poverty prevalence rates amongst at risk groups, widening of the gaps in the prevalence of child poverty between different social groups, and / or any strengthening of the associations between child poverty and risk factors such as ethnicity, disability or family background – can be considered as prima facie evidence of human rights retrogression.

The paper also raises important issues around public trust and what it means to protect vulnerable groups within an overall programme of fiscal adjustment. At the beginning of the 2010s, the Liberal-Democratic Coalition Government led by Prime Minister David Cameron made strong commitments to protect 'the most vulnerable' as part of an overall programme of fiscal adjustment, austerity and welfare reform. Such an approach that might be characterised as 'fiscal adjustment with a human face'[28]. However, the evidence in this paper indicates that the position of some of the most disadvantaged and at-risk groups of children deteriorated during the course of the second decade of the 21st

[28] The term 'adjustment with a human face' was adopted in the development context to differentiate structural adjustment programmes in the 1980s that did not build in adequate social protection including for children, which were in many cases associated with a slowdown and reversal of human development indicators. See Jolly (2012) for further explanation.

century and points towards a fiscal adjustment programme that failed to build in adequate social protection mechanisms - that is, a process of fiscal adjustment with an *inhuman* face. In November 2022, almost three years after the COVID-19 pandemic struck, in the midst of a cost-of-living crisis and following on from the collapse of the Government led by Prime Minister Elizabeth Truss and the creation of a new Government led by Prime Minister Rishi Sunak, the question of what it means to protect vulnerable groups during a period of public expenditure cuts and austerity again moved up the political agenda. It is critical that the lessons from the 2010s are learnt.

8.3 Challenges for the 2020s

Looking forward, the analysis in this paper shows that a series of anti-child poverty measures are urgently required both in the short-run and in the medium term. In the short-run, certain features of the social security system that have increasingly eroded and weakened its effectiveness in protecting children from poverty must be urgently addressed. These include the benefit cap and the two-child limit which de-couple support and need; shortfalls in housing support; and deductions that undermine the effective value of minimum income guarantees.

In the medium term, a new cross-governmental strategy that co-ordinates public action to eliminate child poverty over multiple policy areas will be required. On a positive note, support for a new cross-governmental child poverty strategy for the 2020s is widening (Work and Pensions Committee 2021; Legatum Institute 2021; JRF 2021b; Children' Commissioner for England 2021; Church of England 2022). Critically, and learning the lessons from both the first and second decades of the 21st century, it is critical that a cross-governmental child poverty strategy of this type is comprehensive in scope with multiple simultaneous policy interventions across multiple social policy areas including social security, employment, education and skills and early childhood. This relates in important ways to one of the key social policy challenges for the 2020s identified in the SPDO overview paper – specifically, the need for more social policy emphasis on *combinations* of social policies (or 'policy mixes') and multi-dimensional strategies and interventions that join up different social policy areas and address deficits across multiple domains of life simultaneously (Vizard and Hills, 2021).

Yet at the time of finalising this paper, in February 2023, in the face of a real income shock that is disproportionately hitting the poorest, a strategy of this type is not yet in place. Meanwhile, an inflationary surge has severely impacted on the costs of essentials such as energy and food; the benefit

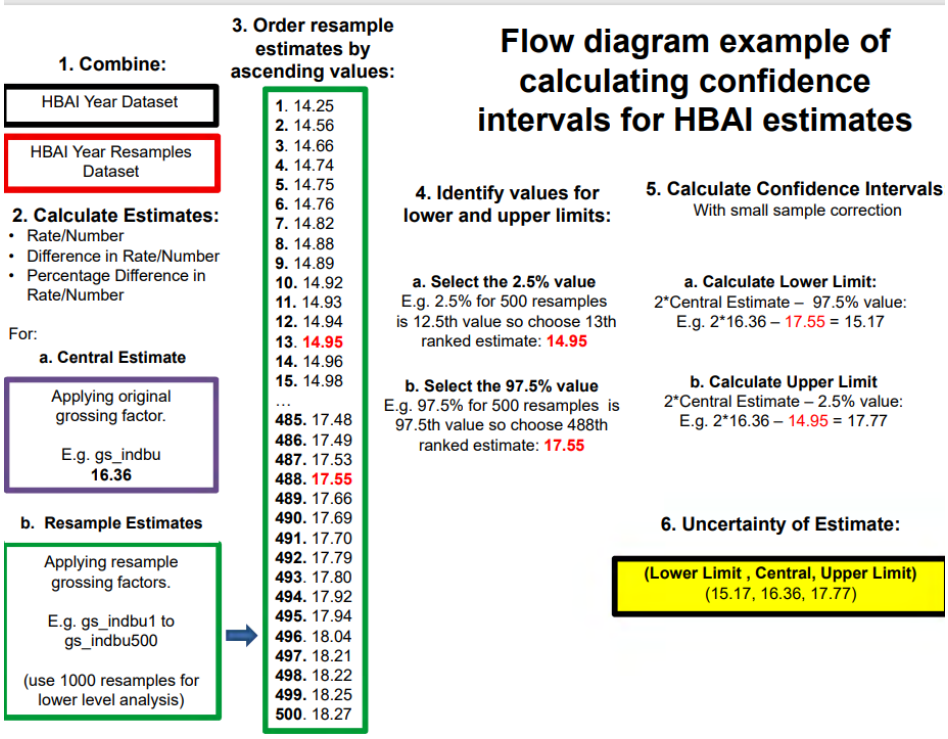
'uplift' introduced during the pandemic for recipients of Universal Credit was removed in Autumn 2021; and during the fiscal year 2022-23, as a result of lags in benefit uprating, the real value of most benefits has fallen even further. Finally, with the Government's Levelling Up and Regeneration Bill currently progressing through Parliament, it is of deep concern that a child poverty indicator was *not* included within the system of metrics that has been proposed for evaluating the delivery of the Government's levelling up goals by 2030 (Vizard 2022).

9. Appendix: further details of research framework and methods

9.1 Estimation of uncertainty

DWP recommendations on estimating uncertainty around HBAI estimates using the resamples datasets are summarised in Figure 12 below[29].

Figure 12: Summary of DWP recommendations on measuring uncertainty around child poverty estimates



Source: UKDS (n.d)

The DWP recommendations build on methodological proposals set out in a commissioned IFS research paper (Brewer, Gdula and Joyce 2017). This paper set out a refined bootstrap methodology for estimating uncertainty using the FRS which is adjusted to take account of the specifics of the FRS complex survey design. The key features of the FRS sampling design accounted for are stratified sampling, clustered sampling, the fact that the sample is weighted ex post using external information about the characteristics of the population, and non-independence of the samples in

[29] These current recommendations supersede the previous approach set out in DWP (2014).

consecutive years. While the cumulative effect of these changes is to increase the range of uncertainty, the discrete steps on the adjustment can work in different directions. For example, the effect of the clustering adjustment is to widen the uncertainty range, whereas the effect of the stratification adjustment is to increase precision and narrow the range of uncertainty. The net effects of the adjustments applied also differs at different points in the income distribution. Applying the new refined bootstrap methodology, the authors report sets of 95% confidence intervals for key HBAI statistics using bootstraps of differing degrees of refinement. The results for relative child poverty are reproduced in Figure 133 below.

Figure 13: 95% confidence intervals for single-year statistics (2013-14) using different bootstraps

Table 1: 95% confidence intervals for single-year statistics (2013–14) using different bootstraps

Statistic	Memo: sample estimates	Bootstrap											
		'Naive': simple random sampling		Major strata		Minor (pseudo) strata		+ clustered sampling		+ ex post reweighting		+ defining strata as for consecutive year bootstrap	
Mean Income (£ p/w)	561.3	546.2	575.7	546.0	575.5	546.6	574.6	533.5	584.3	552.5	570.7	553.1	570.7
Median Income (£ p/w)	453.1	448.0	458.2	448.0	458.2	447.6	457.9	443.3	462.0	445.6	461.8	445.5	461.3
Gini Coefficient	0.342	0.327	0.357	0.327	0.357	0.327	0.356	0.316	0.366	0.334	0.349	0.335	0.349
90/10 Ratio	3.813	3.706	3.905	3.710	3.900	3.714	3.904	3.620	3.956	3.629	3.943	3.641	3.945
Relative poverty rate	0.152	14.6%	15.8%	14.6%	15.8%	14.5%	15.8%	14.1%	16.3%	14.1%	16.4%	14.2%	16.3%
Relative child poverty rate	0.170	15.7%	18.1%	15.8%	18.1%	15.8%	18.2%	14.8%	19.1%	14.9%	19.2%	15.0%	19.1%

Note: Bootstraps use 2000 replications. Incomes measured before deducting housing costs. See text for details of the bootstraps.

Source: Table 1 in Brewer, Gdula and Joyce (2017)

As noted in section 3.3, like-on-like, there is a close alignment between our estimates of uncertainty around HBAI estimates using the resamples datasets and those published by DWP. This can be seen by comparing the overall estimates of relative child poverty rates and associated 95% confidence intervals published in DWP (2022) with our own estimates and associated 95% confidence intervals calculated using the resamples microdata and applying the methods discussed above. These are set out in Tables 6 and 7.

Table 7: DWP published central child poverty estimates and associated 95% confidence intervals (percentages)

Relative low income BHC	Estimate	LB	UB
2010/11	17.5	15.7	19.5
2019/20	22.9	20.5	25.4
Relative low income AHC			
2010/11	27.2	25.3	29.3
2019/20	30.7	28.1	32.9

Source: DWP (2022d: tables 1.4 1.4ci)

Table 8: Author calculated child poverty central estimates and associated confidence intervals using the resamples micro-dataset and DWP recommended methodology for estimating undertainty (percentages)

	Central estimate	CIs: standard method		CIs: resamples method (no small sample correction)		Final CIs: resamples with small sample correction	
		LB	UB	LB	UB	LB	UB
	Relative low income BHC						
2010/11	17.5	16.9	18.1	15.7	20.2	14.8	19.3
2019/20	22.7	21.9	23.5	19.2	25.2	20.2	26.2
	Relative low income AHC						
2010/11	27.1	26.4	27.9	25.0	29.0	25.3	29.2
2019/20	30.6	29.7	31.5	28.1	33.2	28.0	33.0

Source: authors calculations using FRS and HBAI microdata

In order to assess whether there is a statistically significant different in child poverty prevalence in 2010/11 and 2019/20, one method would be to undertake visual inspection of confidence intervals and, to identify statistically significant change, look for non-overlapping confidence intervals around estimates in these years. If confidence intervals do *not* overlap, we would reasonably conclude that the proportions in two years are significantly different - and if they do, that they are not – at the 95% level of confidence. Similarly, confidence intervals around estimates by group each year and across years could be compared to infer significant difference/change between them. This quick and simple method could,

however, result in classifying difference between two years/groups as not significant when there is a marginal overlap of the confidence intervals as it is possible for estimates to have slightly overlapping confidence intervals and still be statistically significantly different. An alternative solution is to use statistical tests of the differences in child poverty prevalence by year and group. This is the approach we adopt in this paper and the next section provides a brief overview of the different statistical tests that we use in the descriptive analysis.

9.2 Statistical tests used to assess statistical significance in the descriptive analysis in this paper

The statistical tests that we use to assess statistical significance in the descriptive analysis in this paper (sections 4-6) have all been undertaken using the resamples dataset.

Change in overall child poverty prevalence between 2010/11 and 2019/20

To test whether the change in the overall child poverty rate between 2010/11 and 2019/20 is statistically, we use a one variable logistic regression test with child poverty as the outcome variable and time as an independent variable (2010/11 being the reference year). We follow DWP's recommendation for calculating uncertainty and perform these regressions 1000 times using the resamples datasets. This allows us to then estimate 95% confidence intervals around the central regression coefficient (which indicates the difference between the two years) and judge its significance by assessing whether the confidence intervals pass through zero – i.e. the true difference between the two years could be zero (not significant) or do not pass through zero (significant).

Cross-sectional differences in child poverty prevalence by group (in 2010/11 and 2019/20)

To test whether the cross-sectional differences in child poverty rates by social groups are statistically significant, we use a series of one variable logistic regression tests with child poverty as the outcome variable and group as the independent variable. Again, we follow DWP's recommendation for calculating uncertainty and perform these regressions 1000 times using the resamples datasets. This allows us to then estimate 95% confidence intervals around the central regression coefficient (which indicates the difference between a focus subgroup and a reference subgroup) and to judge its significance by assessing whether the confidence intervals pass through zero. If they do not, we can conclude that the coefficient for that group relative to reference group was significantly different at (with 95% confidence).

Change in child poverty prevalence for each group between 2010/11 and 2019/20

To test whether the change in the prevalence of child poverty for each group between 2010/11 and 2019/20 is statistically significant, we estimate the change in proportion for each group and associated 95% confidence intervals calculated using the resamples dataset. If the confidence intervals are not going through zero, we conclude that the change in child poverty prevalence rate for that group was significant at the 95% level of confidence.

Relative change in child poverty prevalence by group (or changes in the gap)

To test whether the relative change for each group (or the change in the gap) between 2010/11 and 2019/20 is statistically significant, we use logistic regression techniques to estimate an interaction coefficient which captures the interaction of group and year and associated lower and upper 95% confidence intervals. This shows whether the change in proportion in child poverty over time for each focus group was significantly different than for the reference group. Again, resamples methods are applied to adjust for the complex survey method are applied. If the CIs around the interaction term are not going through zero, we conclude that the change in child poverty for that group was significantly different to that of the reference group (with 95% confidence).

9.3 Statistical significance of changes in overall child poverty prevalence

As noted above, to test whether the change in the overall child poverty rate between 2010/11 and 2019/20 is statistically, we use a one variable logistic regression test with child poverty as the outcome variable and time as an independent variable (2010/11 being the reference year). We apply DWP's recommendation for calculating uncertainty and perform these regressions 1000 times using the resamples datasets and implementing a small sample adjustment.

The results of our assessment of statistical significance for overall child poverty rates indicate a significant change in child poverty between 2010/11 and 2019/20 for relative low income both before and after housing costs are show in Table **9**8 below. Note that this is a different assesment to conclusions one would draw about the change in BHC poverty between the two years from the visual assessment of the confidence intervals around corresponding proportions (e.g. looking at Table **8**7 above), as the confidence intervals presented in that table overlap. As noted in section 3, while a visual assessment of confidence intervals around prevalence

estimates is a useful tool in assessing the difference between two estimates where it is not possible to undertake any statistical testing, in this paper we perform statistical tests to assess statistical significance.

Table 9: Coefficient estimatess and corresponding confidence intervals from logistic regressions of year on each poverty measure

	Main dataset	Resamples datasets		Resamples dataset	
	Coefficient (central estimate)	Lower 95% CI	Upper 95% CI	Confidence intervals with small sample correction	
				Lower 95% CI	Upper 95% CI
Relative low income BHC					
2019/20 (2010/11 - ref group)	0.326374	0.145	0.505	0.147	0.508
Relative low income AHC					
2019/20 (2010/11 - ref group)	0.167536	0.025	0.329	0.006	0.310
Low income and material deprivation					
2019/20 (2010/11 - ref group)	-0.12588	-0.359	0.119	-0.371	0.107
Low income and severe material deprivation					
2019/20 (2010/11- ref group)	0.168696	-0.257	0.559	-0.221	0.595

Source: authors calculations using FRS/HBAI microdataset. See Online datatables (Table 29) for further details.

9.4 Real value of the child poverty thresholds used in this paper

As noted in section 3, the income data for all years have also been adjusted for inflation by DPW using variants of the Consumer Price Index (CPI) and the results are expressed in terms of 2019/20 prices. The analysis uses bespoke before and after housing costs deflators for price adjustment that have been provided in the dataset by DWP. These price deflators are variants of the CPI and include mortgage interest, ground rent and dwelling insurance costs for before housing costs price adjustment. See DWP (2015, 2016) for further information.

For comparison, the DWP published real values of the relative and anchored poverty lines by family type in 2019/20 prices are first reproduced below. This is followed by a summary of our micro generated weekly median household income and child poverty thresholds.

Table 10: Money value of the weekly relative poverty line by family type (2019/20, UK)

		Weekly income	
		Median	**Poverty line (60%)**
Single no children	Before housing costs	£366	£220
	After housing costs	£276	£166
Couple no children	Before housing costs	£547	£328
	After housing costs	£476	£285
Couple two children aged 5 and 14	Before housing costs	£836	£502
	After housing costs	£771	£462

Note: the table shows (1) the value of median weekly household income for the UK, before and after housing costs, in 2019/20 prices; and (2) the value of the weekly relative poverty threshold (defined as 60% of median weekly household income) for the UK in 2019/20. Source: HBAI 2019/20 datatable "Income values and inequality measures HBAI 1994/5-2019/20, available at Households below average income: for financial years ending 1995 to 2020 - GOV.UK (www.gov.uk) Table 2.4ts: Equivalent money values of overall distribution mean, median, and 60 per cent of median income for different family types in 2019/20 prices, United Kingdom

Table 11: Real value of 2010/11 median weekly household income and corresponding poverty line for different family types (UK – published DWP data)

		Weekly income	
		2010/11 weekly median income	2010/11 weekly poverty line (60% 2010/11 median)
Single no children	Before housing costs	£335	£201
	After housing costs	£249	£149
Couple no children	Before housing costs	£500	£300
	After housing costs	£429	£258
Couple two children aged 5 and 14	Before housing costs	£766	£459
	After housing costs	£695	£417

Note: the table shows the real value of 2010/11 median weekly household income for the UK, before and after housing costs, in 2019/20 prices; and 60% of this value. Source: HBAI 2019/20 datatable "Income values and inequality measures HBAI 1994/5-2019/20, available at Households below average income: for financial years ending 1995 to 2020 - GOV.UK (www.gov.uk) Table 2.4ts: Equivalent money values of overall distribution mean, median, and 60 per cent of median income for different family types in 2019/20 prices, United Kingdom

Table 12: Weekly median income and poverty thresholds (UK – micro data generated)

This table provides information on median weekly household incomes for the equivalised reference group (a couple with no children) and accompanying poverty thresholds (60% of the annual median values) in 2019/20 prices.

	Weekly median income (BHC)	Poverty line (60%)
2009/10	£508	£305
2010/11	£501	£301
2011/12	£490	£294
2012/13	£491	£295

	Weekly median income (BHC)	Poverty line (60%)
2013/14	£496	£298
2014/15	£512	£307
2015/16	£520	£312
2016/17	£529	£317
2017/18	£530	£318
2018/19	£523	£314
2019/20	£547	£328
	Weekly median income (AHC)	**Poverty line**
2009/10	£438	£263
2010/11	£430	£258
2011/12	£420	£252
2012/13	£420	£252
2013/14	£424	£254
2014/15	£439	£263
2015/16	£449	£269
2016/17	£457	£274
2017/18	£457	£274
2018/19	£455	£273
2019/20	£476	£286

Source: Authors' analysis using FRS/HBAI microdata

9.5 Coding of variables using FRS and HBAI data

Household employment status

One of the breakdowns we use in the analysis, household employment status, is based on a household level variable derived by DWP which records whether all working age adults in the household are all in employment, some (but not all) are in employment, or none are in employment. Note that under this schema, lone parents living without any other adults (such as their own parent, for example) are classified as 'all in work' if working or 'none in work' if they are not in employment. Additionally, DWP's household employment definition incorporates pensioners' employment status if they are in work, but not if they are not, with the exception of households where pensioners are living with children and no other working-age adults. In that case, their employment status counts towards both

household's 'in work' and 'not in work' categorisation (see HBAI Quality & Methodology Information Report, DWP (2021), for more information).

Disability

Disability is defined as having a long-standing illness or health condition (or disability) that reduces the ability of the individual to carry day-to-day activities in any way. Note that there was a change in the disability questions in 2012/13 so comparisons should be made with caution. For more information see HBAI methodology report (DWP 2021). The breakdown by child disability status identifies both children who are themselves disabled and children who live with another disabled child.

Socio-economic classification (NS-SEC)

Household socio-economic classification is based on the National Statistics Socio-economic classification, NS-SEC, which is available in FRS data from 2001/02 onwards. This classification is not strictly consistent between 2010/11 and 2019/20 as we identified that a large proportion of individuals (30-40%) in the data up to 2011/12 were categorised as "unclassified for any other reason" and only a marginal proportion of people were in this category in later years. While the vast majority of people who were in "unclassified for any other reason" group were not in work at the time of the survey, removing them from the sample would also remove a significant proportion of those who were categorised in other groups of the measure for later years. Therefore we undertook the undertake analysis using this measure of household socio-economic classification but recommend that comparisons are treated with caution.

In summer 2022, after we had completed the analysis, we were informed by UKDS that the ONS had released a statement about an issue with occupation data on their social surveys: https://www.ons.gov.uk/news/statementsandletters/occupationaldatainonssurveys. The UKDS notification noted: "This issue was caused by the implementation of the updated Standard Occupational Classification from SOC 2010 to SOC 2020 in January 2021. Occupational data collected on impacted surveys since then are currently subject to review. However, initial estimates suggest that the majority of responses have been correctly recorded, though this will vary depending on the occupation. While they estimate any impacts will be small overall, this will affect the accuracy of the breakdowns of some detailed (four-digit Standard Occupational Classification (SOC)) occupations, and data derived from them. This

affects the following datasets: Labour Force Survey (LFS) and Annual Population Survey (APS); Opinions and Lifestyle Survey (OPN); Over 50s Lifestyle Study (OLS);Vaccine Opinions Survey (VOS);Living Costs & Food survey (LCF);Wealth and Assets Survey (WAS);Annual Survey of Hours & Earnings (ASHE);Family Resources Survey (FRS) (UKDS 2022, personal communication).

In September 2022, ONS issued an update on the issues with occupation data in ONS social surveys: The impact of miscoding of occupational data in Office for National Statistics social surveys, UK - Office for National Statistics (ons.gov.uk). Focussing on LFS and APS, this states: "Analysis at SOC Major Group (one-digit) level found that the coding error only had a marginal effect on results". In addition, it states: "[T]his coding issue has only a negligible impact on published data from other social surveys"

9.6 Definition of material deprivation

Material deprivation is defined in DWP (2022c) as an additional way of measuring living standards and refers to the "self-reported inability of individuals or households to afford particular goods and activities that are typical in society at a given point in time, irrespective of whether they would choose to have these items, even if they could afford them". We use the measure of material deprivation included in the FRS/HBAI micro-datasets which is in turn derived from a suite of questions designed to capture material deprivation amongst families with children (listed below). These questions are viewed as distinguishing between families that are materially deprived and those that are not. Respondents are asked whether they have access to a list of 21 goods and services (which include child, adult and household items). If they do not have access to a good or service, they are asked whether this is because they do not want them or cant afford them. To assess whether a family experiences material deprivation, a scoring system is used. Items that are lacked because they can't be afforded are scored 1 (with scores otherwise being set to 0). Each score is then multiplied by a prevalence weight (with more weight in the overall material deprivation measure to families lacking items that most families have). The weighted scores are then summed; divided by the total maximum score (resulting a continuous distribution of scores from 0 to 1); and multiplied by 100 (resulting in a final set of scores ranging from 0 to 100). A child is assessed as experiencing material deprivation if they live in a family that has a final score of 25 above.

- **Child level**

- Outside space or facilities to play safely
- Enough bedrooms for every child of 10 or over of a different sex to have their own bedroom
- Celebrations on special occasions such as birthdays, Christmas or other religious festivals
- Leisure equipment such as sports equipment or a bicycle
- A family holiday away from home for at least one week a year
- A hobby or leisure activity
- Friends around for tea or a snack once a fortnight
- Go on school trips
- Toddler group/nursery/playgroup at least once a week
- Attends organised activity outside school each week
- Fresh fruit and vegetables eaten by children every day
- Warm winter coat for each child

- **Adult/household level**
  - Enough money to keep home in a decent state of decoration
  - A holiday away from home for at least one week a year, while not staying with relatives at their home
  - Household contents insurance
  - Regular savings of £10 a month or more for rainy days or retirement
  - Replace any worn out furniture
  - Replace or repair major electrical goods such as refrigerator or a washing machine, when broken
  - A small amount of money to spend each week on yourself, not on your family
  - In winter, able to keep accommodation warm enough
  - Keep up with bills and regular debt payments

9.7 Average annual percentage point changes

The average annual percentage point changes reported in this paper are arithmetic means. We have sensitivity tested the results using geometric means and the differences are extremely marginal. The specified time windows include the base years. For example, the figure for Labour (three administrations) 1996/7-2009/10 captures the annual percentage point changes over the period 1996/7-1997/8 to 2008/9-2009/10 inclusive.

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