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5 Are young children healthier than they were two decades ago? The changing face of early childhood in the UK



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The changing face of early childhood series

The changing face of early childhood is a series of short reviews, events and engagement that seeks to generate an informed debate on early childhood based on the collective evidence. The series draws on over 80 studies funded by the Nuffield Foundation and undertaken by multidisciplinary researchers working in universities, research institutes, think tanks and other organisations, as well as other key studies. The research is wide-ranging, reflecting the interests of the research community, as well as the Foundation's priorities.

Our approach is designed to be holistic, bringing together perspectives from different disciplines and vantage points. We want to involve researchers, policy makers, and practitioners to help us explore the issues, develop evidence-informed recommendations and identify gaps in the evidence. The final review will draw on the insights provided by our readers and contributors over the course of the series.

This review, the fifth in the series, explores the significant developments in young children's health over the last 20 years. It includes some research funded

by the Nuffield Foundation and draws on a collaboration with the Nuffield Trust—our sister organisation and independent think tank that aims to improve the quality of health and social care in the UK through evidence-based research and policy analysis.

- **Review 1** – How are the lives of families with young children changing?
- **Review 2** – Protecting young children from abuse and neglect
- **Review 3** – Changing patterns of poverty in early childhood
- **Review 4** – The role of early education and childcare provision in shaping life chances
- **Review 5 – Are young children healthier than they were two decades ago?**
- **Review 6** – Parents and the home
- **Conclusion** – Bringing up the next generation: priorities and next steps

We value your input on the series as it progresses. You can provide feedback on this review via our website: www.nuffieldfoundation.org/contact/feedback-changing-face-of-early-childhood-series

Are young children healthier than they were two decades ago?

Overview and summary

The changing face of early childhood series explores how the lives of children under five have changed over the last two decades. Two key themes underpin the series.

The first is the changing nature of family and family circumstances and the implications for the economic security, development and wider well-being of young children.

The second is the inequality and asymmetries in experience and life chances, including disparities between advantaged and disadvantaged families with young children.

Note to the reader: Inline references that are underlined are those funded by the Nuffield Foundation.

This review explores the significant developments in young children's health over the last 20 years, focusing on seven fundamental indicators.

While the review identifies improvements across these indicators, progress has recently stalled—and in some cases the situation has deteriorated. Indeed, inequalities are growing across many of our indicators. Rather than cause for dismay, this review finds evidence of policies that work, with the potential to reduce inequalities and improve the life chances of many young children.

This review focuses on seven key indicators of young children's health:

- 1 Infant mortality
- 2 Immunisations
- 3 Breastfeeding
- 4 Obesity and overweight
- 5 Oral health
- 6 Mental health and emotional well-being
- 7 Respiratory health.

What this review tells us

The importance of young children's health is difficult to overstate.

Future health and well-being have their origins in young children's health. In recent years, there has been increasing recognition of the importance of early childhood in providing a strong foundation for later life and as a crucial opportunity for reducing inequalities. This recognition comprises an understanding that health inequalities are a consequence of social inequalities (Marmot et al. 2010). Negative impacts on the health of young children are difficult to reverse. Much poor health in young children is preventable.

Young children are healthier than they were 20 years ago—but progress has stalled in recent years.

The indicators of young children's health assessed in this review provide evidence that more children are receiving a better start in life. Infant mortality rates have fallen.¹ Vaccination uptake rates have increased. Breastfeeding has increased. Tooth decay has declined. However, progress is not visible in all areas.

Rates of obesity and overweight in young children have been consistently too high and have soared during the pandemic. Over one quarter of four to five-year-olds in England, Wales and Northern Ireland are obese or overweight. During

the pandemic, the proportion of children in England aged four and five classified as obese has risen from 9.9% in 2019/20 to 14.4% in 2020/21 (NHS Digital 2021).

Declines in the infant mortality rate have slowed significantly, with only a small reduction from 4.3 to 4.0 deaths per 1,000 live births between 2010 and 2019 (Office for National Statistics (ONS) 2021). Of particular concern, the infant mortality rate increased three years in a row in England and Wales between 2015 and 2017 (ONS 2020a). The UK's infant mortality rate is 30% higher than the median rate across the EU15+ (Royal College of Paediatrics and Child Health (RCPCH) 2018) and the UK has one of the lowest exclusive breastfeeding rates among high income countries (WHO 2019). There have also been gradual declines in vaccine uptake rates in recent years.

Improvements in young children's health have not been felt equally—and in some instances, inequalities are growing. Across our indicators, we found associations between poor health and geographical area, ethnicity and level of deprivation. For example, in 2018, the infant mortality rate in England for those living in the most deprived areas was almost twice the rate of those living in the least deprived areas (ONS 2020a).

Since 2001/02, rates of overweight and obesity have increased among children living in the most deprived areas of Scotland, while rates have decreased for children in the least

1 Infant mortality refers to the death of a child under one year old. The infant mortality rate is defined as deaths under one year per 1,000 live births. Neonatal deaths refer to the death of an infant under 28 days.

deprived areas (Information Services Division Scotland 2019a). Similarly, the unprecedented increases in infant mortality in England between 2015 and 2017 disproportionately affected the poorest areas, with mortality rates in the richest unaffected (Taylor-Robinson et al. 2019).

The health of young children is being affected by the COVID-19 pandemic, with negative effects felt disproportionately by disadvantaged children. While we still do not know all of the impacts of COVID-19 on young children's health, three interrelated factors are having effects.

1 The pandemic and associated lockdowns have had negative effects

on young children's health, including insufficient physical activity and worsening mental health.

2 Reduced health services for young children, prompted by the National Health Service (NHS) undergoing unprecedented demands—in particular, reduced health visiting services.

3 The economic disruption, which creates conditions for poor health to proliferate among young children, including worsening parental mental health and increasing child poverty.

What needs to change?

The UK is now at a critical moment in securing the future of young children's health.

We know that improvements in young children's health are possible. Sustained country-level policies can improve young children's health (Struijs and Hargreaves 2019). In Scotland, we see the effect of a national infant feeding strategy that brings together political will, advocacy and sustained funding to promote and support breastfeeding. Inequalities in young children's health are not inevitable. The significant narrowing of the low birthweight gap between more and less

disadvantaged mothers between 2005 and 2011 was a substantial national achievement (Stewart and Reader 2021).

If young children are to be healthier 20 years from now, there are key questions for policy makers, commissioners, practitioners and researchers to consider and address.

1 Are young children receiving adequate universal services?

Effective universal services promote prevention and early intervention, and can improve outcomes for all while having the greatest impact on those most in need of help.² At a time

2 For example, Sure Start services reduced the likelihood of hospitalisation among children of primary school age, with children living in disadvantaged areas benefitting the most (Cattan et al. 2019).

of historically high public sector debt, and with COVID-19 putting the health and broader needs of adults in the spotlight, policy makers and commissioners have difficult decisions to make about the prioritisation of young children's needs relative to others, how to ensure services are proportionate to need, and whether services are adequately resourced to meet those needs.

2 What does an effective integrated system for young children and their families look like?

Considered from a family's perspective, effective health services for young children cannot be provided in isolation from a broader, well-integrated system that meets both the health and non-health needs of young children and their families. Families should not need to navigate complex systems or fall through gaps where services are unable to meet their needs. Professionals working in integrated systems have reported improved outcomes for children and their families, including general physical health (Messenger and Molloy 2014), and there is evidence that integrated care leads to cost savings and improvements to young children's quality of life (Wolfe et al. 2020).

Despite this emerging evidence, the process of integration is complex, with no simple off-the-shelf models to implement, requiring a sustained government commitment, quality leadership, and funding and resources to be used as a lever to incentivise reform (Pascal, Bertram, and Peckham 2019). Critically, integration for young children may look different to that for adults, with young children a distinct population who use a distinct health and care system with its own needs and challenges. Further evidence of what works, and lessons learnt in integrated services and in overcoming professional and institutional boundaries is essential.

3 How can we tackle the stark health inequalities of early childhood?

If young children are to be healthier in 20 years' time, health inequalities will need to be addressed. Across our indicators, there are associations between poor health and geographical area, ethnicity and level of deprivation. Addressing health inequalities cannot be achieved by improving health service provision alone. As the NHS' long-term plan acknowledges, 'Household income, education, housing, stable and loving family life and a healthy environment all significantly influence young people's health... By itself, better healthcare can never fully compensate for the health impact of wider social and economic influences' (National Health Service (NHS) 2019, p.45). While health services for young children can be improved, 'reducing child poverty would be a more far-reaching and effective strategy' (Marmot et al. 2020, p.41).

Addressing social inequalities will help address health inequalities between ethnic groups as these inequalities are, in part, a consequence of conditions such as some ethnic minority groups disproportionately living in deprived areas, with these conditions 'themselves the result of longstanding inequalities and structural racism' (Marmot 2021). Beyond tackling social inequalities and discrimination, there remains more for the NHS and other service providers to do to remove linguistic, cultural and digital barriers to accessing public health information and services (Lawrence 2020) and ensuring high-quality services for all.

4 What are the key data and evidence gaps?

There is still much we do not know about young children's health. There are significant gaps and limitations in the available data, preventing analysis across the full 20 years covered by this review and regional comparison. Young children's

mental health and emotional well-being, and young children's respiratory health, are two areas with a particular dearth of comparable, time series data. Further work is needed to conceptualise mental health and emotional well-being in young children and to move beyond diagnosable disorders. Our understanding of young children's health inequalities is limited by a lack of intersectional analysis. Limited research is available that explores how the associations between poor health and area, ethnicity, and level of deprivation intersect, compound and accumulate. Research to understand the lived experiences of young children and their families is essential.

In addition to strengthening our understanding of young children's health, more research is needed to evaluate the impact of interventions to strengthen health and their value for money.

While we know that some interventions to support young children's health work, there is a 'much wider set of activities that have not yet been evaluated, and so little is known about their impact' (Early Intervention Foundation n.d.).

Improving young children's health remains one of the most effective means of creating a strong and fair society. Investment in children's early years provides significant value for money (Marmot et al. 2020). The future health and well-being of adults—and our society as a whole—has its origins in young children's health. Improving young children's health is, however, about much more than simply improving health services, requiring sustained and integrated efforts to meet both the health and non-health needs of young children and their families.

Scope and methodology

The focus of this review is young children's health—the importance of which is difficult to overstate. The term 'young children' includes babies and children under the age of five. Future health and well-being have their origins in young children's health. Diet, obesity, physical activity, cognitive development and oral health in later life have roots in early childhood (HENRY n.d.). Negative impacts on the health of young children are difficult to reverse. For example, around only one in ten children who are obese at the age of five will return to a healthy weight by the end of primary school (Public Health England (PHE) 2017a). Much poor health in young children is preventable; what is needed is an understanding of the underlying causes of poor health and of what works to combat it, and a sustained commitment to improving the life chances of all young children.

To assess how young children's health has changed over the past two decades, this review focuses on seven key indicators:

- 1 Infant mortality**
- 2 Immunisations**
- 3 Breastfeeding**
- 4 Obesity and overweight**
- 5 Oral health**
- 6 Mental health and emotional well-being**
- 7 Respiratory health.**

Each indicator is fundamentally important in its own right—and together, the indicators help measure and illustrate the major trends in young children's health in recent years, as well as demonstrate the impact of both social determinants and policy interventions. The indicators align with those used by the Nuffield Trust and its ongoing work with the Health Foundation on the QualityWatch programme, which monitors the health and quality of care in the UK (Nuffield Trust 2021).

The indicators reflect the changing nature of the public health challenges of young children. There is a growing cohort of children with complex needs, many of whom may not have survived in previous generations. Compared with the post-war period—when the health challenges were defined by communicable diseases—the current health challenges young children face often require broader, more integrated responses, such as responding to obesity or improving mental health and emotional well-being.

Our research for this review is based on findings from a targeted literature review focusing on both academic and grey literature published in the UK from 2010 onwards. The literature review, which was designed to be informative rather than systematic, was strengthened by the extensive knowledge and libraries of our steering group, in particular the contribution from the Nuffield Trust

and colleagues who helped identify themes and gaps in the wider literature.

While the review aims to have a UK-wide focus, this was challenged due to data limitations—including comparability issues, and the absence of time-series data or disaggregated data by region, ethnicity and/or deprivation for some nations. The annex to this review provides an overview of available statistics for each of our indicators.

The review focuses on major population-level trends in data over the last 20 years—which we accept do not go far enough of themselves in understanding the varied lived experiences of young children.

While the review is not primarily focused on the effects of COVID-19 and its associated economic impacts, it draws on emerging data to highlight where young children’s health may be affected by the crisis. Given the limited data, the review only cautiously assesses the impact of the pandemic on young children’s health.

Where we refer to an ethnic group by name, we use the naming and categorisation of the cited research. Please refer to the cited research for an explanation of group definitions and methodology.

1 Policy and social context

1.1 Policy context

The last 20 years have been marked by significant shifts in public spending and social policies affecting early childhood, including young children's health.

These shifts have been stimulated by an increasing recognition of the importance of early childhood in providing a strong foundation for later life and as a crucial opportunity for reducing inequalities.

There has also been increasing recognition that addressing health inequalities requires action across the social determinants of health (Marmot et al. 2010), necessitating work across the whole of government, including efforts to integrate services.

The need for state intervention in early childhood is now well established, receiving substantial cross-party support (Stewart and Reader 2021). This consensus has been characterised by a range of policies aimed at strengthening early education, increasing the provision of childcare, and tackling child poverty—with successive governments prioritising these three goals to differing degrees. Fewer policy interventions have directly targeted young children's healthcare services, although health outcomes for young children have undoubtedly been affected

by wider efforts, such as those aimed at reducing poverty.

Reducing child poverty and the promotion of equality of opportunity for young children were consistent themes under the New Labour governments between 1997 and 2010. Government efforts included the flagship Sure Start children's centres, free early education for all three- and four-year-olds, more affordable and higher quality childcare, greater financial support for families with children, and longer maternity leave (Stewart 2013). These interventions were underpinned by significant increases in spending.³

The Labour government's policies for promoting young children's health were laid out in the National Service Framework for Children (Department for Education and Skills (DfES) and Department of Health (DoH) 2004), before the 2009 publication of Healthy Lives, Brighter Futures—the government's strategy for children and young people's health (DoH 2009). The strategy introduced a number of measures, including: development of the health visitor workforce to deliver the Healthy Child Programme, comprising screening, health and development reviews, immunisations, and parenting

3 Spending on early years education, childcare and Sure Start nearly quadrupled, and spending on cash benefits more than doubled in real terms, per child under five (Stewart 2013).

support (DoH 2009); expansion of the Family Nurse Partnership programme, providing targeted intensive support for vulnerable first-time young mothers; and strengthening the role of Sure Start centres in young children's health.

Sure Start centres provided several health-related services, including maternity services, breastfeeding support, baby clinics and immunisation sessions— with major health benefits for children in poorer neighbourhoods (Cattan et al. 2019). While health expenditure data does not permit easy analysis per age group, significant increases in expenditure on young children's health occurred under New Labour—as much as £932 per child per year (Stewart 2013).

Following the global financial crisis, the UK entered a period of 'austerity', aimed at reducing the public sector deficit. The Conservative–Liberal Democrat coalition government (2010–15) emphasised social mobility, and the importance of early childhood in its promotion.⁴ Reflecting this priority, health visitor numbers increased (under the 2011 Health Visitor Implementation Plan), the number of places on the Family Nurse Partnership programme doubled, an Early Intervention Foundation was established, and free early education places were extended to disadvantaged two-year-olds (Stewart and Obolenskaya 2015).

These efforts occurred alongside austerity measures, with tax-benefit reforms hitting families with children under five harder than any other household type. Those with a baby were particularly affected (Stewart and Obolenskaya 2015).⁵ Significant cuts to local authority budgets

affected early years services, with real spending per child on early education, childcare and Sure Start services falling by a quarter between 2009/2010 and 2012/13 (Stewart and Obolenskaya 2015).

Under the Conservative-led governments of 2015–2020, policies for young children emphasised supporting and expanding childcare for working parents, within a context of continuing austerity until 2018/19. Throughout the period, there were few policies of major significance specifically targeting the health of young children. Policies affecting young children's health comprised initiatives to strengthen maternity services (DoH 2017) and reduce childhood obesity (HM Government 2016).

The most significant policy for young children of the period was the introduction of 30 hours of free childcare per week (under the Childcare Act 2016), which has been complemented by the tax-free childcare scheme and childcare support through universal credit. These changes occurred in parallel with benefits cuts and reforms that have continued to affect families, including the two-child limit for tax credits and reduction in the benefit cap. Spending cuts continued and, in some areas, accelerated. Local authorities have seen annual reductions in the public health grant since 2015 (Harris, Hodge and Phillips 2019) and, between 2010/11 and 2018/19, total spending on Sure Start fell by 64% in real terms, falling faster between 2014/15 and 2018/19 than in the preceding period (Stewart and Reader 2021).

In 2019, NHS England released its new long-term plan, which included new actions to provide children and

4 For example, the 2010 spending review stated that 'at its [the review's] heart is social mobility' (HM Treasury 2010, p.7).

5 Cuts included the restriction of the Sure Start maternity grant to the first child, the abolishment of the baby tax credit and the health in pregnancy grant, and the narrowing of targeting of child tax credits.

young people with a ‘strong start in life’ (NHS 2019, p.45). The plan acknowledges improvements in certain services but a ‘mixed picture overall’ (NHS 2019, p. 45). In supporting children and young people, the plan requires the NHS to work closely with local government and other public services. The plan includes a commitment to achieve 50% reductions in stillbirth, maternal mortality, neonatal mortality and serious brain injury by 2025. The plan also includes a commitment to expand mental health services for children and young people. In 2021, the government published the report of its review into improving the health and development outcomes for babies and young children in England. Led by Andrea Leadsom MP, the review identified six action areas to improve support for families in the ‘1,001 critical days through pregnancy to the age of two.’ (HM Government 2021, p. 7).

Austerity has had significant impacts on the young children’s health workforce. General paediatric services, at the forefront of care for seriously unwell young children, are reportedly under-resourced, with the Royal College of Paediatrics and Child Health (RCPCH) estimating that an increase of 22% in the number of full-time equivalent general paediatric consultants is needed to meet current demand across the UK (2020a). The number of health visitors (full-time equivalents)—who support new parents and children from birth to five years old and provide a vital opportunity for early intervention and the uptake of a range of positive health behaviours, including

the promotion of breastfeeding and immunisation—fell by over a third between 2015 and 2020 (NHS Digital 2020a). Survey data suggests that the average health visitor caseload is increasing, and is far above the recommended maximum caseload of 250 children (Institute of Health Visiting (iHV) 2020a).

1.2 Social context

Health inequalities are a consequence of social inequalities (Marmot et al. 2010). Trends in young children’s health are, in part, a consequence of trends in the social determinants of health, such as child poverty and parental health.

Child poverty: Poverty has a profound impact on children’s immediate experiences and living standards, with indirect effects on mental health, family relationships and parenting—all of which affect young children’s health (Stewart and Reader 2021; Cooper and Stewart 2013; Oppenheim and Milton 2021).⁶

Over the past 20 years, relative child poverty rates have fluctuated significantly, falling overall between 1999/00 and 2019/20, but with a notable increase since 2013/14 (DWP 2021). This rise in poverty has been steeper for families where the youngest child is under five, rising from 30% in 2013/14 to 36% in 2019/20 (DWP 2021; Oppenheim and Milton 2021).⁷ This is primarily caused by reductions in social security payments for families with three or more

6 The third review in this series, *Changing patterns of poverty in early childhood*, provides a comprehensive analysis of trends in child poverty in the UK, including consideration of what works in addressing child poverty (Oppenheim and Milton 2021).

7 We define relative child poverty as children living in households where household income—adjusted for family size—is below 60% of average (median) contemporary income after housing costs. Absolute child poverty is defined as children living in households where household income—adjusted for family size—is below 60% of the 2010/11 median income (held constant in real terms after housing costs).

children (Stewart and Reader 2021). In addition, recent trends show a growing proportion of people falling into deep poverty, defined as living 50% below the poverty line (Social Metrics Commission 2020). This is concerning as the severity and duration of poverty are associated with more detrimental outcomes for young children.

Parental health: The health of parents is strongly associated with the health of their children.⁸ The causal link between parent health and child health is most clearly evident during pregnancy, when maternal health can mitigate (or exacerbate) the risk of children

being born prematurely or with a low birthweight. Beyond birth, parents’ smoking, alcohol and drug abuse and mental health problems can all negatively affect the health of young children and exacerbate health inequalities (Murphey et al. 2018).

Since 2000, there has been a significant decrease in the proportion of households with dependent children with a smoker—falling from 30.4% in 2000 to 16.5% in 2019 (ONS 2020b).⁹ Reductions in smoking during pregnancy are also visible, with the proportion of expecting mothers smoking during pregnancy decreasing from 18.3% to 14.6% in Scotland,

Figure 1: Proportion of children living in relative and absolute poverty in the UK (after housing costs). *Source: HBAI (DWP 2021). Note: Figures for Northern Ireland are only included in the Family Resources Survey (the source of HBAI) from 2002/03.*



8 Drawing on work on fathers by Burgess and Goldman (2018), we recognise the important role that step, adoptive and social parents can play.

9 Data (ONS 2020b) is for all families with dependent children and is not limited to young children.

11.7% to 10.6% in England, and 14.5% to 13.2% in Northern Ireland between 2014 and 2020 (RCPCH 2020b).¹⁰

There is insufficient trend data available to assess changes in the prevalence of alcohol and drug misuse among families with young children over the last 20 years.^{11,12} In 2019, the Children's Commissioner's Office for England estimated that 146,758 children aged 0–4 years old lived in households where parents suffer from alcohol or drug dependency—equivalent to 4.4% of England's young children (Children's Commissioner 2019).

While many parents with mental health problems are able to give their children safe and loving care, in some cases mental health problems can negatively affect young children, who are more likely to suffer poor health outcomes and adverse psychosocial development (Cleaver, Unell, and Aldgate 2011). The prevalence of children exposed to maternal mental illness has increased over time from 22.2% between 2005 and 2007 to 25.1% between 2015 and 2017 (Abel et al. 2019).¹³ Children in Northern Ireland and the north west of England are significantly more likely to be exposed to maternal mental illness than children born in London and the south east of England, with the areas with the highest

prevalence coinciding with areas of higher levels of deprivation (Abel et al. 2019).

Pregnancy and the first year of birth are a period of particular risk for maternal mental health, with perinatal mental health problems affecting up to 20% of women (Khan 2015). Critically, only around half of mothers with perinatal depression and anxiety are identified despite frequent routine contact with primary care services, with even fewer receiving adequate treatment (Khan 2015). The Children's Commissioner's Office for England estimates that 384,138 0–4 year olds live in a household with a parent suffering from a severe mental health problem—equivalent to 11.5% of England's young children (Children's Commissioner 2019).

We know much less about the mental health of fathers, despite its impacts on children's development (Fatherhood Institute 2019). It is estimated that at least one British father in 20—likely more—suffers significant psychological distress at some point during the year after birth, with higher levels in disadvantaged populations (Fatherhood Institute 2019). Research is needed to better understand fathers'—and others in parenting and caring roles'—mental health and well-being, and what works in early intervention and support.

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- 10 Expecting mothers who are heavy smokers are at greater risk of spontaneous abortion, stillbirth, premature delivery and low birthweight (Surgeon General 2004).
- 11 Alcohol misuse refers to individuals who drink over the recommended low-risk guidelines (NCCMH 2019). Drug misuse is a dependence on, or regular excessive consumption of, psychoactive substances.
- 12 Parental substance misuse can harm young children's health and development through exposure to toxins in utero (Guerrini, Thomson and Gurling 2006) and indirectly through effects on parenting capacity and the home environment (Cuthbert, Rayns and Stanley 2011).
- 13 All children under 18, rather than young children.

2 Trends in young children's health

In this section we assess the major trends in young children's health over the last 20 years across our seven indicators.

2.1 Infant mortality

Headline findings

- **There has been a significant decline in infant mortality in the UK over the last 50 years, though declines over the last 20 years have been more modest.**
- **The UK continues to have a relatively high rate of infant mortality compared to other countries.**
- **Over the last five years, however, declines in infant mortality have stalled and the rate has undergone unprecedented increases.**
- **Infant mortality rates are higher for disadvantaged families, with inequalities growing rather than shrinking in recent years.**
- **Infant mortality rates vary among ethnic groups, with markedly higher rates for ethnic minority groups.**

The death of every child is a tragedy, with children continuing to die of preventable causes (Roser, Ritchie, and Dadonaite 2019). During childhood, most deaths occur during the first year of life, with neonatal deaths in the first 28 days of life accounting for between 70% and 80% of infant deaths (Office for National Statistics (ONS) 2020a). Almost half of these 'neonatal' deaths are caused by conditions related to prematurity such as respiratory and cardiovascular conditions (ONS 2020a).¹⁴

There has been a significant decline in infant mortality in the UK over the last 50 years (Figure 2). Declines over the last 20 years have been more modest. The overall UK infant mortality rate has declined from 17.9 deaths per 1,000 live births in 1971 to 4.0 in 2019 (ONS 2021)—a significant improvement in the life chances of young children in the UK. The bulk of this decline occurred

14 Infant mortality refers to the death of a child aged under one year. The infant mortality rate is defined as deaths under one year per 1,000 live births. Neonatal deaths refer to the death of an infant under 28 days.

between 1971 and 1990. Over the last 20 years, the overall UK infant mortality rate has declined much more slowly, falling from 5.6 in 2000 to 4.0 deaths per 1,000 live births in 2019 (ONS 2021).

Over the last five years, declines in infant mortality have stalled and the rate has undergone unprecedented increases. The long-term trend of declining infant mortality belies a trend in recent years of stalled progress, increases, and unflattering international comparisons. After more than a hundred years of continuous improvement, declines in the infant mortality rate have slowed significantly—with only a small reduction from 4.3 to 4.0 deaths per 1,000 live births between 2010 and 2019 (ONS 2021). Of particular concern, the infant mortality rate increased three years in a row in England and Wales (as opposed to the UK

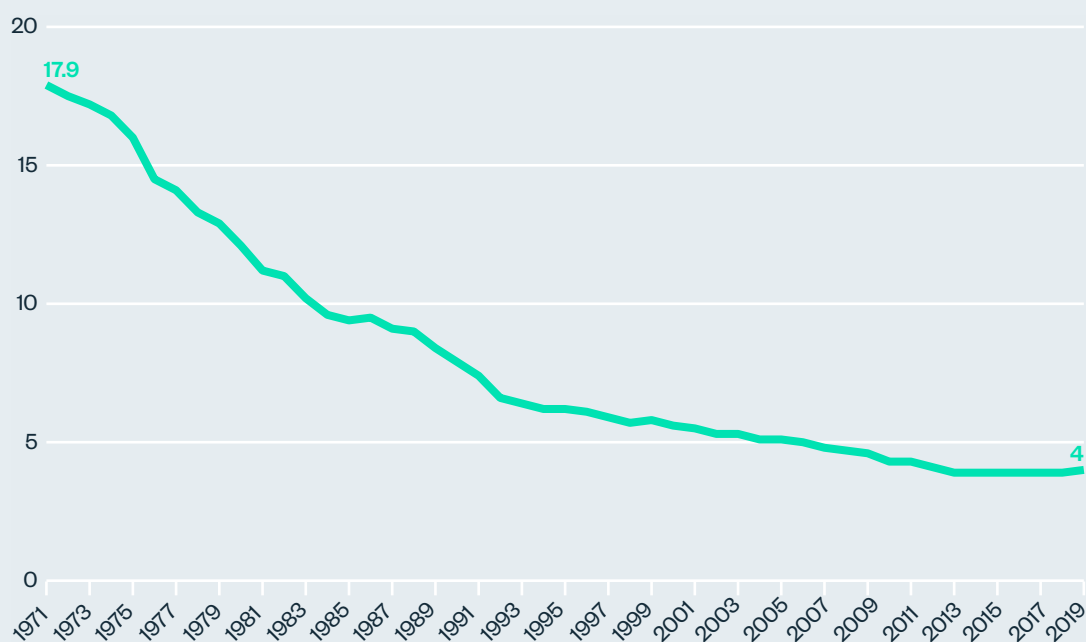
as a whole) between 2015 and 2017 (ONS 2020a)—an unprecedented multiyear increase—and increased in all four home nations between 2018 and 2019 (ONS 2021).

The UK's current infant mortality rate is 30% higher than the median rate across the EU15+. If UK infant mortality begins to decline again at its previous rate, the UK will be 80% higher than the EU15+ median in 2030. If the current 'stall' continues, then it will be 140% higher in 2030 (RCPCH 2018). The UK now has the highest infant mortality among selected high-income countries in Europe (Figure 3).

In their analysis of why England's infant mortality rate differs to Sweden's, Zylbersztejn et al. (2018) found that excess child mortality in England was largely explained by the presence of a higher proportion of unfavourable birth characteristics—such as preterm

Figure 2: Infant mortality rate in the UK per 1,000 live births.

Source: Office for National Statistics (ONS) 2021.



births. Reducing infant mortality in England could thus best be achieved by reducing unfavourable birth characteristics, through improving the health and well-being of women before and during pregnancy (Zylbersztejn et al. 2018).

Infant mortality rates are higher for disadvantaged families. Inequalities are growing rather than shrinking. As shown in Figure 6, between 2015 and 2017, the infant mortality rate in England for those living in the most deprived areas was almost twice the rate of those living in the least deprived areas (6.0 compared with 3.1 deaths per 1,000 live births) (PHE 2021a). Deaths after the first 28 days were 2.4 times higher in the most deprived areas than the least deprived areas (Nath et al. 2020).

Figures 4 and 5 show the local authorities in England with above average rates of income deprivation affecting children (the darker green areas in Figure 4), as well as the areas with above average rates of infant mortality (the areas in darker green in Figure 5). The maps highlight the clusters of local authorities—largely in and around urban areas—where there is both increased deprivation and increased mortality rates. Taylor-Robinson et al. (2019) have found that the unprecedented increases in infant mortality in England between 2015 and 2017 disproportionately affected the poorest areas, with mortality rates in the richest unaffected.

The link between socioeconomic status and infant mortality is complex.

Figure 3: International comparisons of infant mortality rate per 1,000 live births, 2018. *Source: Eurostat 2021.*

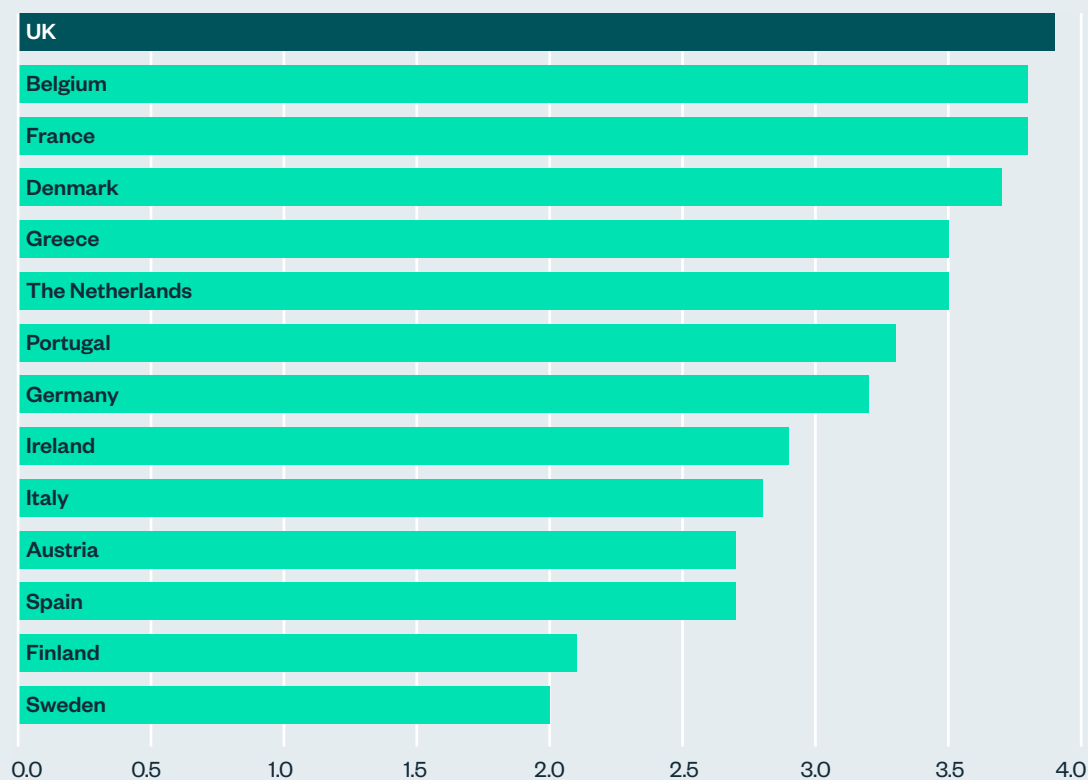


Figure 4: Map of lower tier local authorities (geographical boundaries post April 2021) in England for child poverty: income deprivation affecting children index (IDACI) (2019).
Source: PHE 2021a.

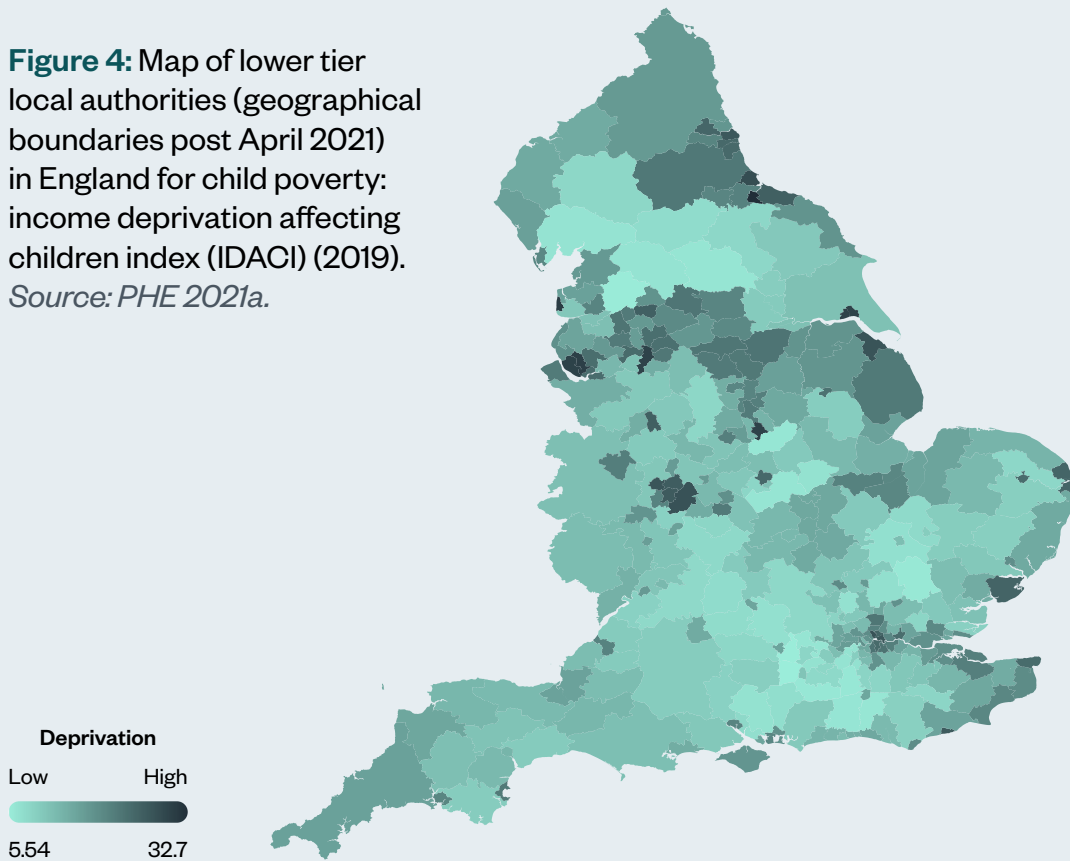
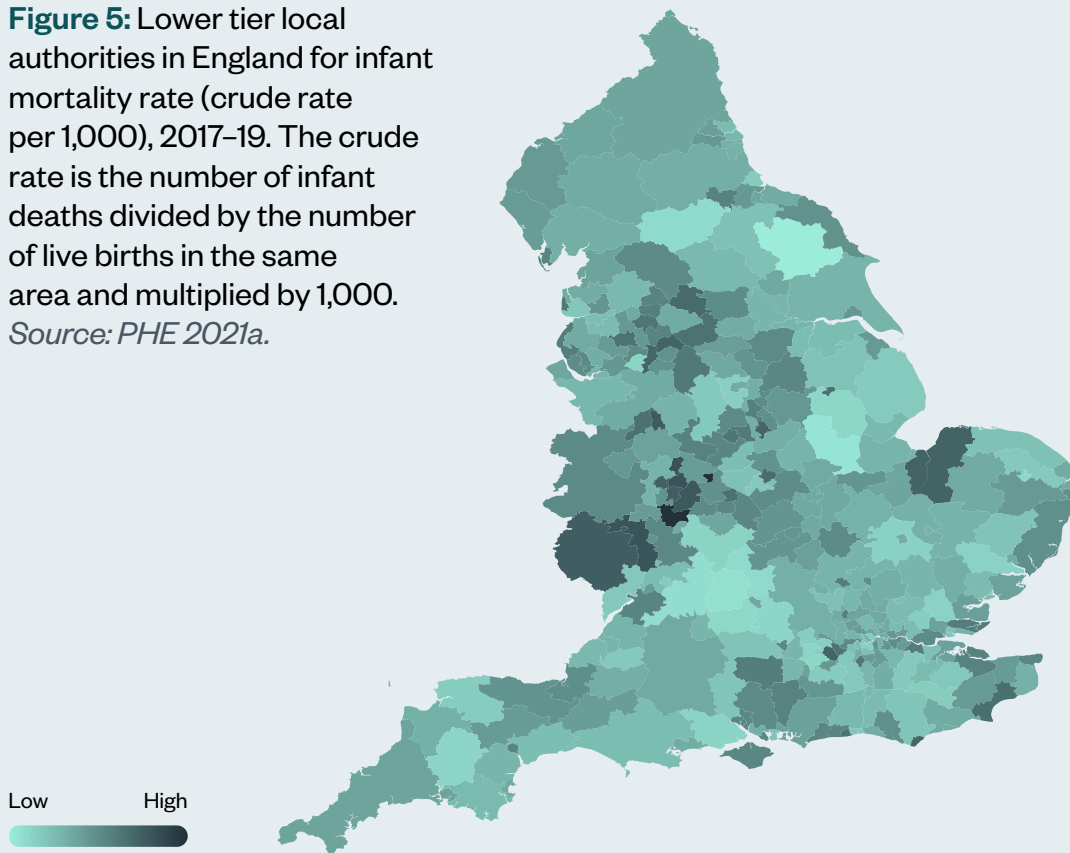


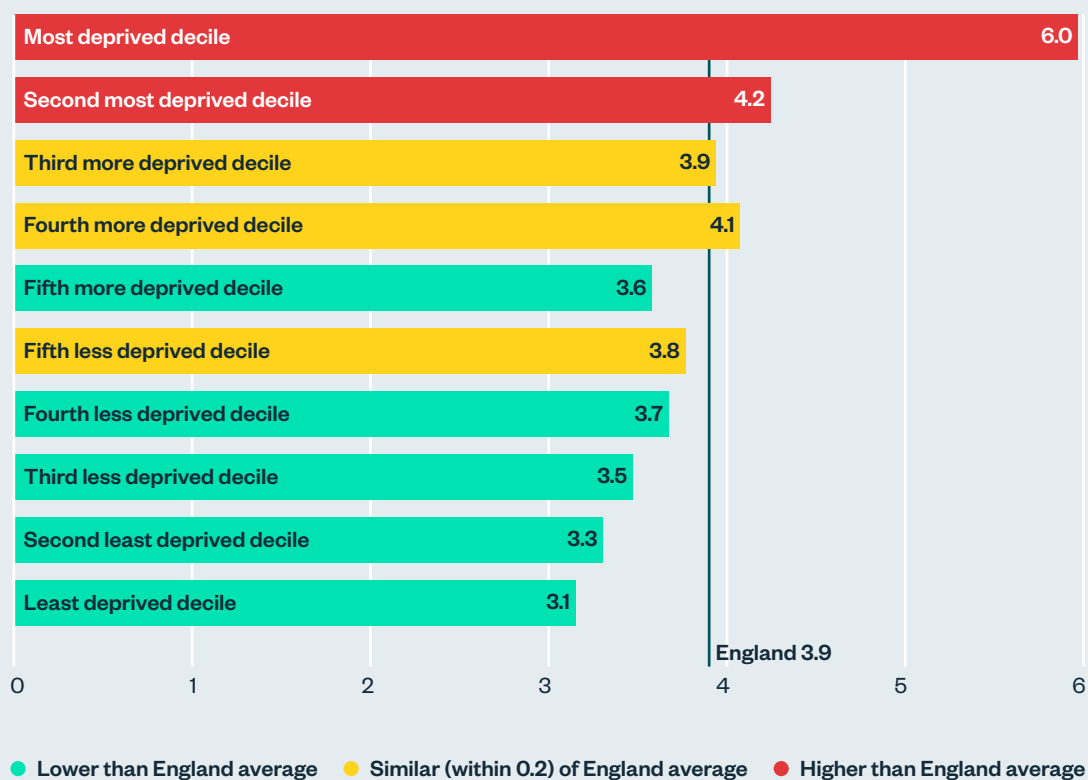
Figure 5: Lower tier local authorities in England for infant mortality rate (crude rate per 1,000), 2017–19. The crude rate is the number of infant deaths divided by the number of live births in the same area and multiplied by 1,000.
Source: PHE 2021a.



Several interrelated factors play a part prior to conception, during pregnancy and after birth, including maternal health (see Section 2), which in turn determine infant factors, such as prematurity, low birthweight, and congenital anomalies—all of which are influenced by socioeconomic factors (Nath et al. 2020).

Further evidence of the impact of disadvantage and growing inequality in infant mortality can be seen in relation to low birthweight rates.¹⁵ **Low birthweight is closely related to infant mortality and prematurity, as well as an important determinant of a broader range of health, social and economic outcomes through childhood and into adulthood.**

Figure 6: Infant mortality rate in England by county and unitary authority deprivation deciles in England, 2015–18. *Source: PHE 2021a.*



Note: Deprivation deciles are based on the Index of Multiple Deprivation 2019 (IMD19), which is the official measure of relative deprivation in England. Decile 1 represents the most deprived 10% of small areas in England and Decile 10 represents the least deprived 10% of small areas in England.

15 Low birthweight is classified as babies born weighing less than 2,500 grams. A large proportion of babies have a low birthweight because they are born prematurely.

Figure 7: Low birthweight (<2,500g) rates by social class in England and Wales, 2005–2018. *Source: Stewart and Reader (2021). Notes: In all years, combined occupational class is used, with the most advantaged of either parent’s occupation being coded.*

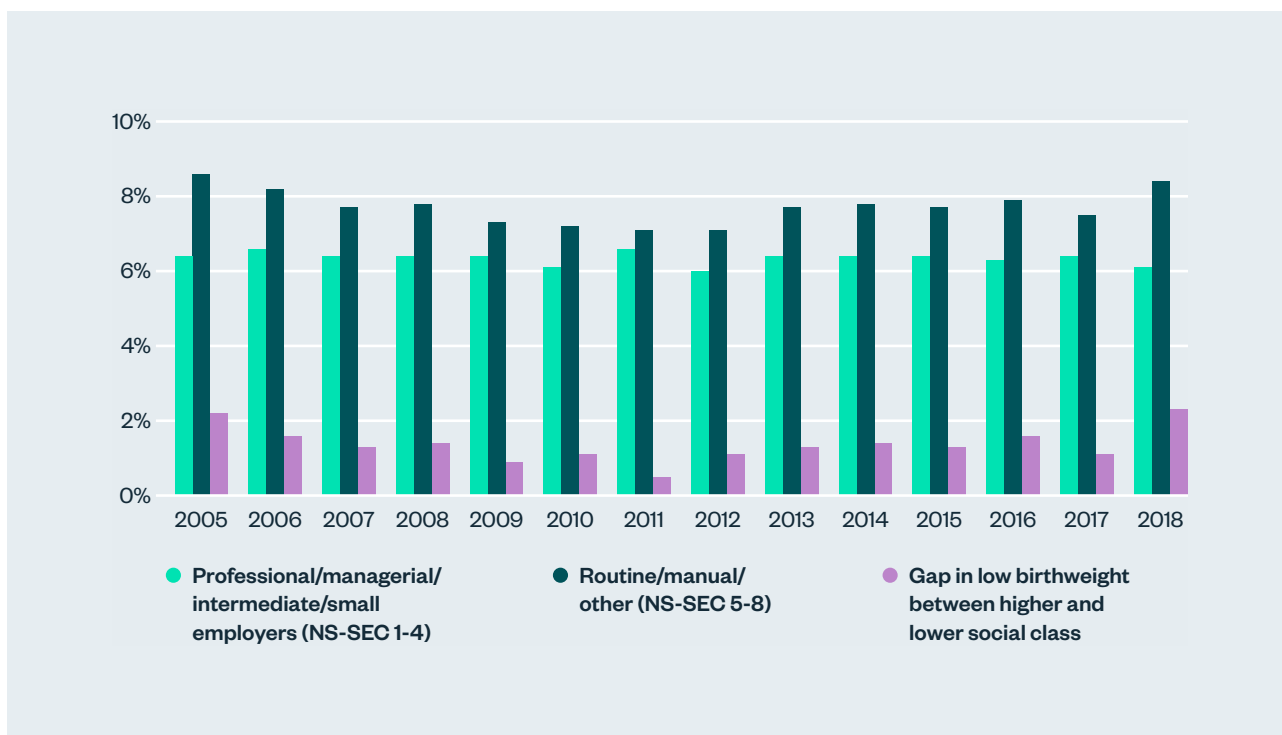
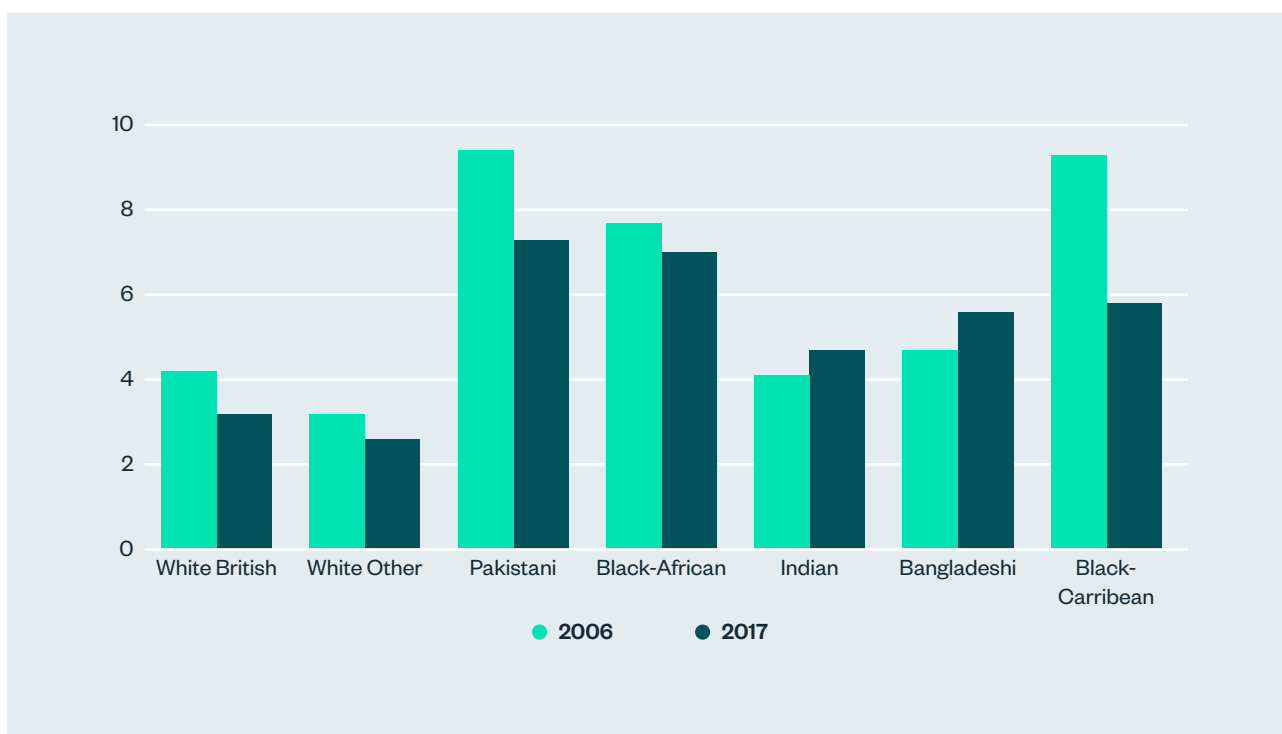


Figure 8: Infant mortality rates by ethnicity in England and Wales, 2006 and 2017. *Source: ONS 2020a.*



Findings from the new Organisation for Economic Co-operation and Development (OECD) international early learning and child well-being study highlight the powerful impact that low birthweight has on physical and cognitive development, as well as working memory at five years old (2021).

[Stewart and Reader 2021](#) found that, between 2005 and 2011, the birthweight gap narrowed significantly between lower and higher social classes.¹⁶ This pattern reversed after 2012, with low birthweight rates increasing for both groups, but more rapidly for the lower social classes. In 2018, rates of low birthweight and the gap between lower and higher social classes had returned close to 2005 levels (Figure 7).

Infant mortality rates vary among ethnic groups.¹⁷ In England and Wales in 2017, the latest year available in public

records, infants from a White Other background had the lowest infant mortality rate of 2.6 deaths per 1,000 live births (ONS 2020a). Infants from a Pakistani background had the highest rate at 7.3 deaths per 1,000 live births (Figure 8) (ONS 2020a)—almost three times that of those from a White Other background. Since 2006, infant mortality rates have decreased across all ethnic groups, with the exception of Bangladeshi and Indian ethnic groups. A significant fall in the infant mortality rate has occurred among Black-Caribbean and Pakistani groups (ONS 2020a). The underlying reasons for these disparities are not yet well understood and likely comprise a number of complex, interrelated factors. For example, children growing up in some ethnic minority groups experience much higher rates of poverty (Khan 2020).

2.2 Immunisations

Headline findings

- **Overall vaccination uptake rates have increased in the last 20 years but uptake has decreased in the last five years.**
- **There are notable variations in 5-in-1/6-in-1 vaccine uptake rates across the UK, with Scotland, Wales and Northern Ireland all witnessing**

significantly higher uptake rates than England.

- **Within England, there is also considerable regional variation in the take up of the MMR vaccine, with rates in London considerably lower than the national average.**

Immunisations play an essential role in protecting children from infectious and potentially serious diseases through

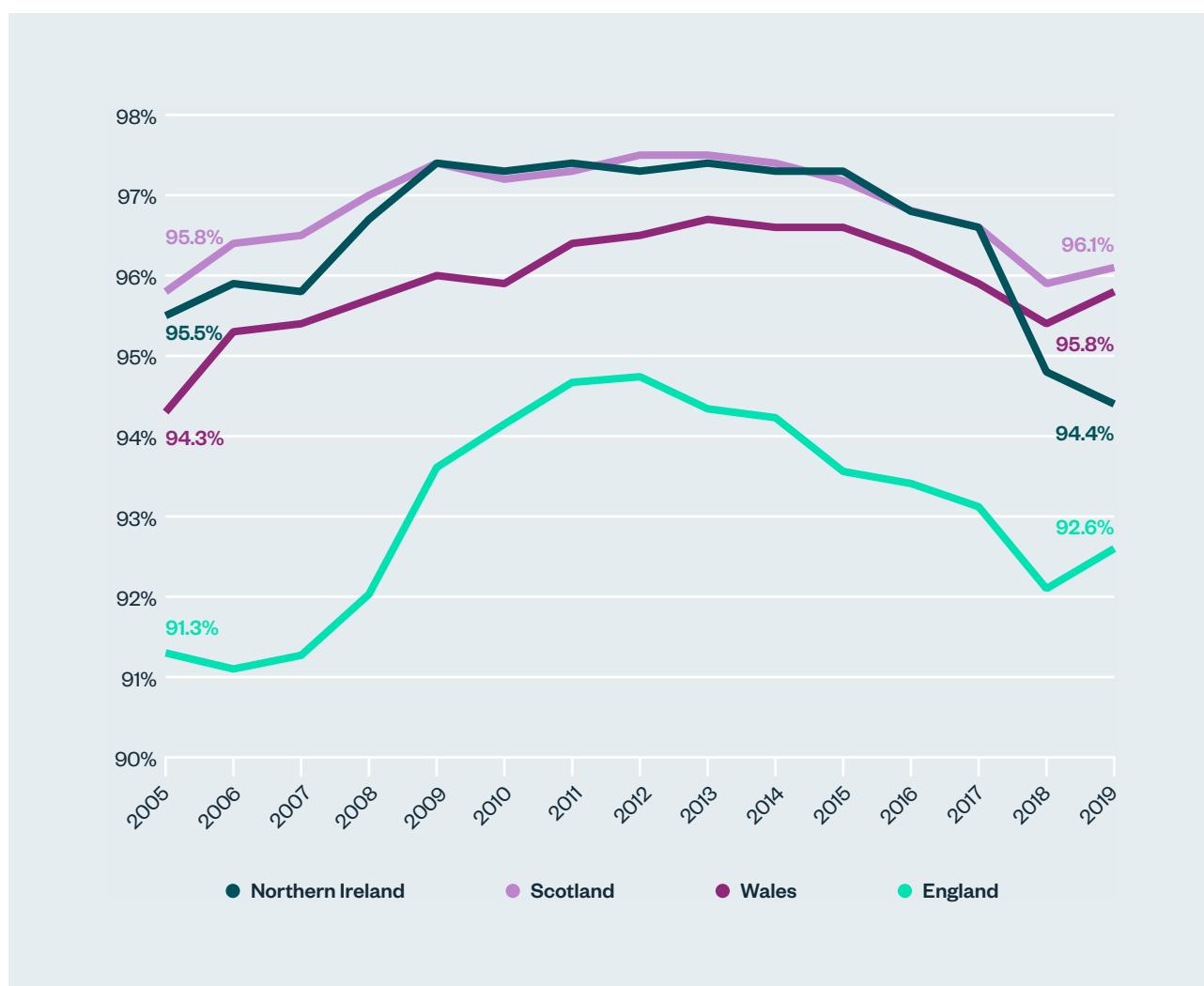
16 [Stewart and Reader 2021](#) use the standard occupational classification, with combined occupational class used, and the most advantaged of either parent's occupation being coded.

17 The ethnic group categories used here are derived from ONS classifications. The term 'White Other' is used to describe people who self-identify as White (chiefly European) who are not of the English, Welsh, Scottish, Northern Irish, Irish, Gypsy or Irish Traveller ethnic groupings. The category does not comprise a single ethnic group but is instead a method of identification for White people who are not represented by other White census categories.

early childhood and beyond. Mass childhood vaccination programmes have formed an important part of healthcare provision for children in the UK. The childhood immunisation schedule is

regularly updated as new vaccines are developed. In this section we focus on the 5-in-1 and 6-in-1 vaccines, and the measles, mumps and rubella (MMR) vaccine.¹⁸

Figure 9: 5-in-1/6-in-1 vaccination at 12 months uptake rate in the UK, 2005–2019. Sources: NHS Digital 2020b (for England); Public Health Agency (PHA) n.d. (for Northern Ireland); Public Health Scotland 2020 (for Scotland); and Public Health Wales 2020 (for Wales). Note: The 5-in-1 vaccine was replaced by the 6-in-1 vaccine in August 2017.



18 The 5-in-1 vaccine, introduced in the UK in 2004, protected against diphtheria, whooping cough (pertussis), tetanus, polio, and Hib (Haemophilus influenzae type b). In August 2017, the 6-in-1 vaccine was introduced, additionally providing protection against hepatitis B. The primary course for the 6-in-1 vaccine is at 8, 12 and 16 weeks old. The MMR vaccine was introduced into the UK in 1988. The first dose of the vaccine is scheduled at 12 months, with a second dose at three years and four months.

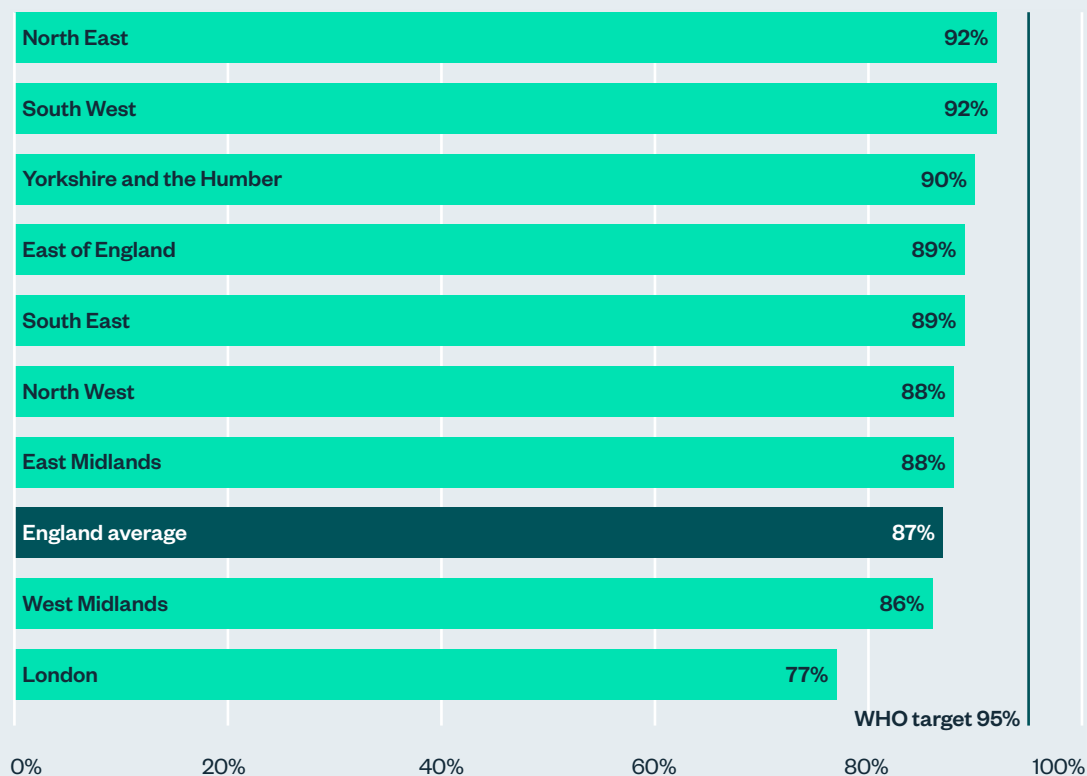
Overall, vaccination uptake rates have increased—but uptake has decreased in recent years. In 2019/20, 93% of children completed their course of 6-in-1 vaccine at 12 months of age in England (NHS Digital 2020b). This falls short of the 95% World Health Organization (WHO) target for achieving herd immunity. Uptake of the vaccine has, however, grown since its introduction in England in 2005, when uptake stood at 91%. Uptake grew to a peak of 95% in 2012, before subsequently declining (NHS Digital 2020b). This trend of steady growth, peak, then gradual decline has occurred in the rest of the UK (as shown in Figure 9)—with a small uptick across England, Scotland and Wales in 2019.

This trend is also representative of other early childhood vaccinations, with a dip in uptake over recent years observed across different vaccinations.

Vaccine uptake rates vary significantly across the UK. As shown in Figure 9, Scotland, Wales and Northern Ireland all have significantly higher uptake rates of the 5-in-1/6-in 1 vaccine compared with England. Importantly, coverage in Scotland and Wales is above the 95% required to achieve herd immunity.

Within England, there is also considerable regional variation in vaccination uptake (see Figure 10). None of England’s regions reached the WHO’s 95% vaccine coverage target, with only two regions with coverage of over 90%.

Figure 10: Percentage of children vaccinated with MMR 1 and MMR 2 by their fifth birthday in England, 2019/20. *Source: NHS Digital 2020b.*



Some groups of children are at greater risk of not being vaccinated than others. Within England's regions London is a notable outlier, with only 77% of children vaccinated by their fifth birthday (Figure 10). There are several reasons for these lower rates. Firstly, a lower proportion of people in London are registered with a GP—and there are lower levels of vaccination coverage among children who are not registered with a GP (Wagner et al. 2014).

Secondly, research has found that children from smaller ethnic groups, for example those from Somali and White-Polish backgrounds, have lower vaccination rates—and these ethnic groups are disproportionately located in London (Wagner et al. 2014). Where smaller ethnic groups make up a larger proportion of an area's overall population, vaccine coverage within those groups is closer to the average (Wagner et al. 2014). The research highlights the need for ensuring all children are registered with a GP as well as targeted efforts to increase vaccine confidence and

uptake with specific ethnic groups. This may include targeted information to address beliefs held by some individuals from some minority backgrounds (Forster et al. 2017).

Vaccine confidence in the UK is high, but loss of confidence remains a significant risk to vaccine uptake. In 2018, vaccine confidence in the UK was high compared with (the then) other European Union (EU) member states. 93% of respondents from the UK agreed that vaccines were important for children and 92% that vaccines were effective— respectively the tenth and fourth highest figures of the EU's (then) 28 members (Larson et al. 2018). However, confidence levels must be maintained and are susceptible to falling. For example, uptake of the MMR vaccine fell dramatically in the early 2000s, following the publication of a paper linking the vaccine to the development of autism. The paper was subsequently found to be fraudulent, with uptake rates increasing again with time (Godlee, Smith, and Marcovitch 2011).

2.3 Breastfeeding

Headline findings

- **Despite small increases in exclusive breastfeeding rates in the UK, they remain far below recommended levels.**
- **There are significant disparities in breastfeeding rates. Breastfeeding rates across the UK vary among geographic areas, with evidence that socioeconomic factors account for the majority of variation.**

During the first year of life, breastfeeding is an important source of nutrition. There is overwhelming evidence that it protects lives and improves the health of both babies and mothers. Babies that are breastfed are less likely to develop diarrhoea, respiratory tract and ear infections, and obesity and diabetes in later life (Victora et al. 2016). Breastfeeding helps relationship building between mother and baby in the first few months of life, and is associated with lower rates of postnatal depression (Kendall-Tackett,

Cong, and Hale 2011) and babies that are more responsive to their mothers (Wiesenfeld et al. 1985). Breastfeeding is also associated with promoting cognitive development (Schoon et al. 2013). Promoting exclusive breastfeeding can reduce health inequalities between advantaged and disadvantaged children (Robertson 2015). Both WHO and the National Institute for Health and Care Excellence (NICE) recommend that infants should be exclusively breastfed until six months of age (WHO n.d.; NICE 2014).

Despite increases in initiating breastfeeding rates in the UK, rates of exclusive breastfeeding remain far below recommended levels. While data limitations prevent analysis of trends over

the last 20 years, more recent trends can be identified. The UK has one of the lowest exclusive breastfeeding rates among high income countries. In 2010, only 1% of babies in the UK were exclusively breastfed until six months of age, compared with 29% of babies in Spain (WHO 2019). Across the UK, initiating breastfeeding after birth increased from 62% in 1990 to 81% in 2010 (Renfrew et al. 2012). However, this increase has not led to a proportionate increase in babies that are breastfed at six to eight weeks.

Rates of exclusive breastfeeding in England at six to eight weeks increased from 28% in 2015/16 to 32% in 2018/19 (PHE 2019a). Although not directly comparable, data from prior to 2015/16

Figure 11: Breastfeeding prevalence in Scotland at 6–8 weeks.
Source: Information Services Division Scotland 2019b.

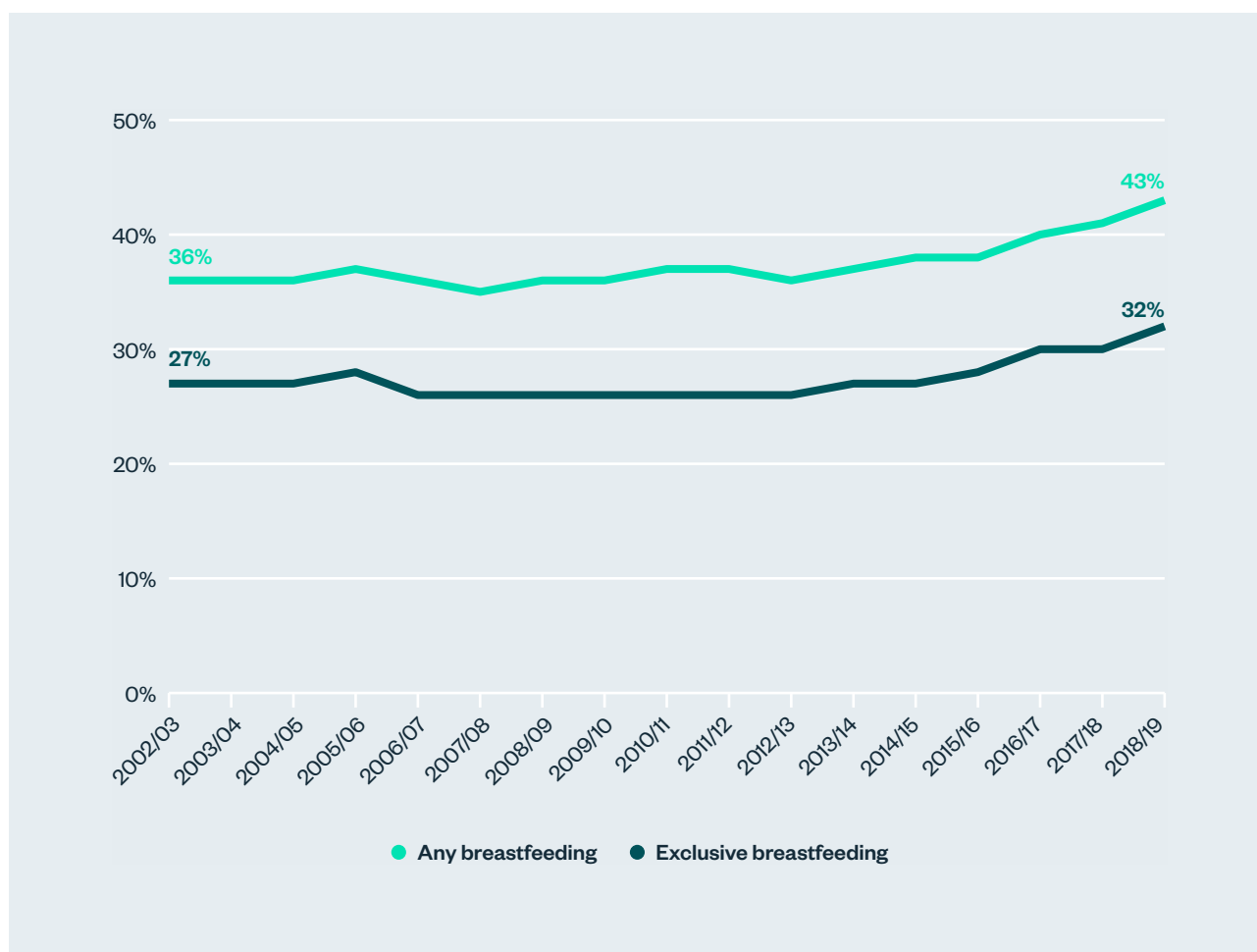
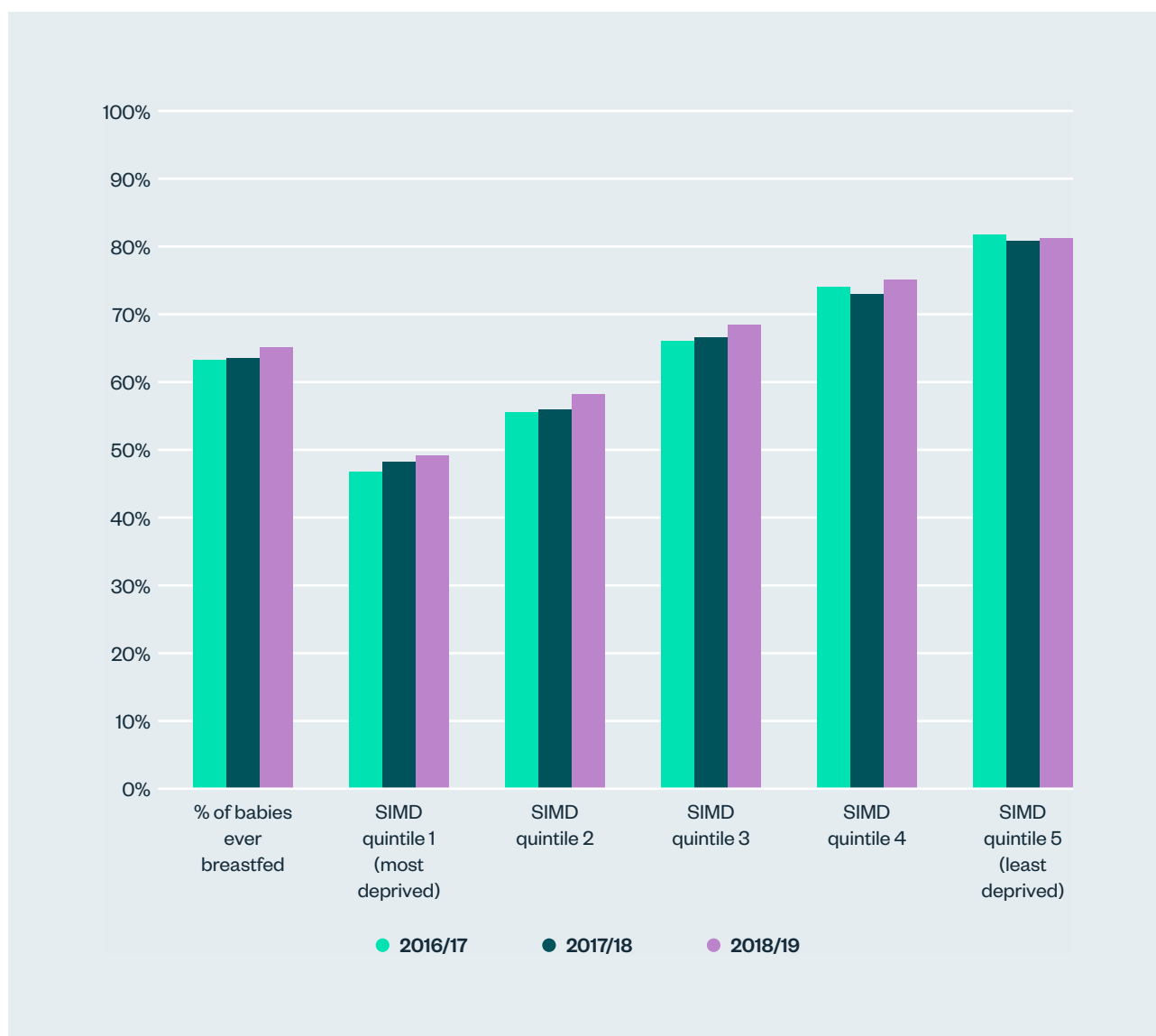


Figure 12: Breastfeeding initiation recorded at first visit by Scottish index of multiple deprivation (SIMD) quintile. *Source: Information Services Division Scotland 2019b.*



suggests a similar trend of incremental increases.¹⁹ This picture is also mirrored in Wales, where exclusive breastfeeding rates increased from 33% in 2015/16 to 35% in 2018/19 (StatsWales n.d.).

While exclusive breastfeeding rates remain lower than those in Wales

and England, rates in Scotland increased significantly from 27% in 2002/03 to 32% in 2018/19 (Figure 11). The Scottish Maternal and Infant Nutrition Survey shows marked improvements in breastfeeding rates, particularly in any breastfeeding at six months, which rose from 32% in

¹⁹ The method for measuring breastfeeding rates changed in 2015/16, so data prior to this is not directly comparable.

2010 to 43% in 2017 (Scottish Government 2018). Similar statistics for breastfeeding in England are not available because of the absence of a regular infant nutrition survey.

There are significant disparities in breastfeeding rates. Breastfeeding rates across the UK vary by region, mainly owing to socioeconomic factors. In an analysis of variance in breastfeeding rates across England, Oakley et al. (2013) found a relationship between breastfeeding rates and maternal age, ethnicity, and levels of deprivation. Older mothers were found to be more likely to breastfeed (Oakley et al. 2013)—a finding also supported by data from Scotland (Information Services Division Scotland 2019b).

Outside London, Oakley et al. (2013) observe that areas with higher proportions of the population from Black and Minority Ethnic groups were associated with increased rates of breastfeeding. While White women are less likely to breastfeed than women from ethnic minority backgrounds, White women in areas with more ethnically diverse populations are more likely to initiate and continue breastfeeding (Griffiths, Tate, and Dezateux 2006).

Higher levels of local deprivation are associated with reduced rates of breastfeeding, with mothers from lower socioeconomic backgrounds less likely to breastfeed. Oakley et al. (2013) find that women in areas in the most deprived quintile were between 21% and

32% less likely to breastfeed compared with areas in the least deprived quintile. A similar picture emerges in Scotland, where mothers from more deprived areas are less likely to breastfeed (see Figure 12). As shown by Figure 12, recent improvements in breastfeeding rates are being seen across most groups with, critically, a reduction in inequalities between more and less deprived groups.

Recent success in Scotland demonstrates the impact of effective infant feeding strategies. The boosting of overall breastfeeding rates and reduction in inequalities in Scotland demonstrate the effect of a national infant feeding strategy that brings together political will, advocacy, and sustained funding to promote, protect and support breastfeeding (Scottish Government 2019). The strategy includes a specific focus on ensuring equitable access to breastfeeding support. In 2018, Scotland became the first country in the UK to achieve 100% 'baby-friendly' accreditation for its maternity and community services, contributing to Scotland's recent success (UNICEF 2018).²⁰ In England, only 57% of babies are currently born in an accredited baby-friendly environment (NHS 2019). Across the UK, further work is needed to address cultural barriers to breastfeeding, to support breastfeeding at work and to tackle misinformation (PHE 2017b; McFadden et al. 2016; and WHO 1981).

20 The WHO/UNICEF Baby Friendly Initiative (BFI) outlines standards for good practice for maternity services, with services that meet best practice standards receiving the baby friendly award. See www.unicef.org.uk/babyfriendly/about.

2.4 Obesity and overweight

Headline findings

- **Between 2005 and 2019 rates of obesity and overweight in young children were largely static across the UK and remained far too high.**
- **Child obesity has soared during the pandemic. In England, the proportion of children aged four and five classified as obese has risen from 9.9% in 2019/20 to 14.4% in 2020/21. Rates of severe obesity almost doubled, rising from 2.5% to 4.7%. Around one in seven children are obese and one in 20 children are severely obese when they begin primary school.**
- **There are growing inequalities in rates of obesity. Children living in the most deprived areas are four times more likely to be severely obese, compared with children in the least deprived areas.**

Maintaining a healthy weight through childhood is critical for the short and long-term health of children. Obesity is associated with serious adverse health outcomes both in childhood and into adulthood, when obesity can lead to type 2 diabetes, heart disease and certain cancers.

Rates of obesity and overweight in young children are too high. While rates remained static across the UK between 2005 and 2019, child obesity has soared during the pandemic. Over one quarter of four to five-year-olds in England, Wales and Northern Ireland are overweight or obese. Rates of obesity rose from 9.9% in 2019/20 to 14.4% in 2020/21. Rates

of severe obesity almost doubled, rising from 2.5% in 2019/20 to 4.7% in 2020/21. This represents the largest single-year increase in prevalence since data collection began in 2005. Almost one in seven children are obese when they begin primary school in England, and one in 20 are severely obese (NHS Digital 2021) (see Figure 13).

There are growing inequalities in rates of obesity. In England, between 2006/7 and 2020/21 the obesity prevalence gap between young children living in the most and least deprived areas has more than doubled, increasing from 4.5 to 10.7 percentage points. In 2020/21, 20% of young children aged four and five living in the most deprived areas were obese, compared with 8% of children in the least deprived areas. **Those living in the most deprived areas are four times more likely to be severely obese, compared with children in the least deprived areas** (NHS Digital 2021).

Data in Scotland paints an even starker contrast (see Figure 14). In the first two years of data collection (2000/1 and 2001/2), children in the least deprived areas were marginally more likely to be overweight or obese than children in the most deprived areas. Since then, this relationship has reversed, with a widening gap between the most and least deprived (Information Services Division Scotland 2019a).

In addition to levels of deprivation, ethnicity is also associated with the prevalence of obesity in young children (PHE 2019b). Analyses of trend data from the Health Survey for England between 1998 and 2009 show that Black African

children had higher rates of overweight and obesity, and Black Caribbean children had higher rates of obesity, than other ethnic groups (Karlsen et al. 2014). Trends in overweight and obesity over time among ethnic minority groups do not follow those of White English children, which have peaked, with rates among Black Caribbean children, for example, continuing to rise (Karlsen et al. 2014).

Inequalities in obesity in children in their first year of primary school are closely linked to poverty and ethnicity (Khan 2020). The relationship between poverty and childhood

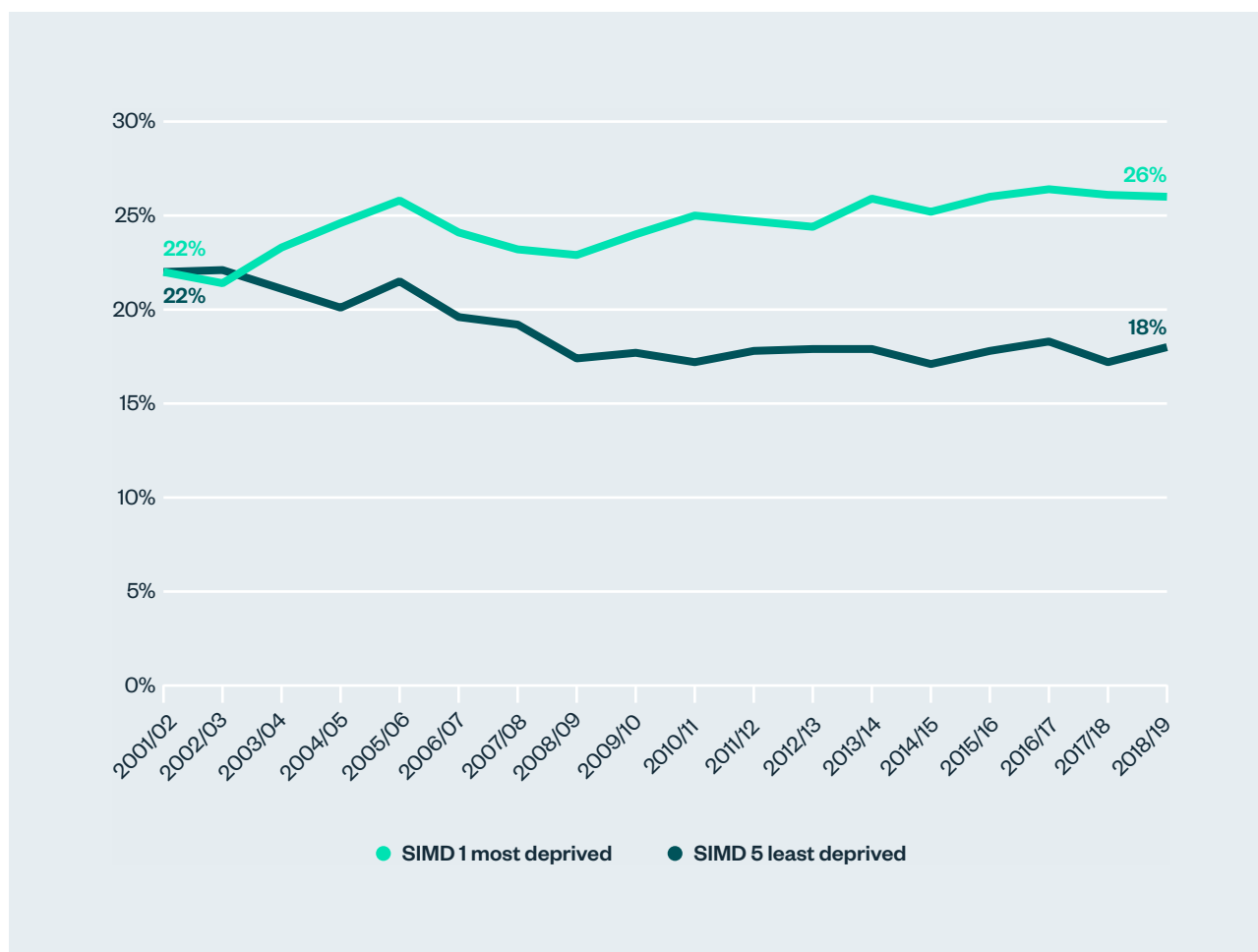
obesity is complex, with difficulties in measuring the particular effect of each contributing factor (Food Foundation 2019). Contributing factors include: a lack of access to, and affordability of, healthy food; a higher concentration of fast food outlets in deprived areas (PHE 2018a); less access to green space in deprived areas (de Zylva, Gordon-Smith, and Childs 2020); reduced prevalence of breastfeeding among mothers in poorer areas; and, differences in the quality of exercise and diet between children in the richest and poorest areas (Adams 2020).

Figure 13: Proportion of children (aged 4–5) overweight or obese in the UK, 2005/06–2019/20. Sources: NHS Digital 2021 (for England), Public Health Intelligence Unit 2018 (for Northern Ireland), Information Services Division Scotland 2019a (for Scotland) and Public Health Wales 2018 (for Wales).



Figure 14: Percentage of children in Scotland at risk of being overweight and obese combined in Primary 1, by deprivation quintile.

Source: Information Services Division Scotland 2019a.



2.5 Oral health

Headline findings

- **There have been significant declines in dental decay in young children over time. The pace of decline has slowed since 2014/15.**
- **There are significant inequalities in dental decay among young children by area, ethnicity, and level of deprivation.**

Poor oral health in young children can cause pain, loss of sleep, and affect school attendance and educational outcomes (PHE 2020a). Dental decay is a largely preventable disease. As such, measuring dental decay in five-year-olds provides a snapshot of young children's health, as well as a means for measuring the effectiveness of interventions aimed at improving both their general

health and oral health, including those designed to improve parenting and nutrition (PHE 2020a).

There have been significant decreases in dental decay in young children in the UK over time but the pace of this improvement has slowed in recent years (see Figure 15). For example, in England, the proportion of children with experience of dental decay decreased from 31% in 2008 to 25% in 2015 and then 23% in 2017 (PHE 2020a). There was, however,

no continuing improvement in results in 2019, with a negligible increase to 23% (PHE 2020a).

There are significant inequalities in dental decay by area, ethnicity and level of deprivation. Compared with the national average of 23%, prevalence varied among regions from a low of 18% in the South East, to 32% in the North West. Severity of decay in children who have experienced dental decay was five times higher in Norwich (average of 5.4 teeth with decay) than

Figure 15: Percentage of five-year-olds in the UK with obvious tooth decay. Sources: Public Health England (2021) (for England), Welsh Government (2017) (for Wales), NHS Digital (2015) (for Northern Ireland) and Information Services Division Scotland (2018) (for Scotland).



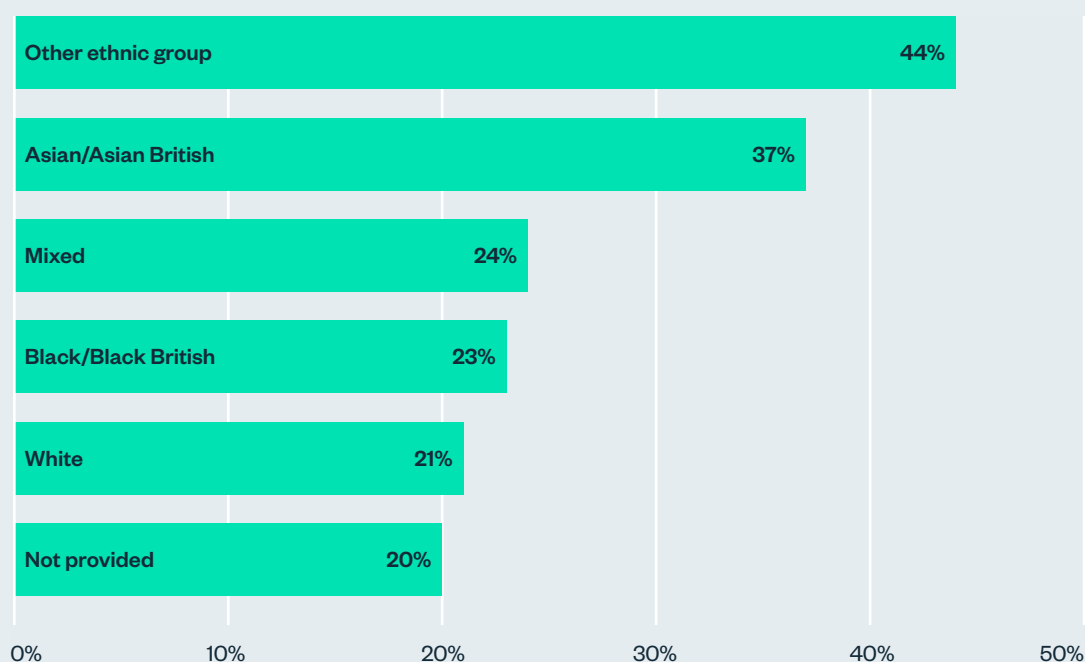
in Rushcliffe, Nottinghamshire (1.6 teeth) (PHE 2020a).

Inequalities by area are related to levels of deprivation. The prevalence of dental decay was nearly two and a half times higher in children from more deprived areas (34%) than in children from less deprived areas (14%) in England (PHE 2020a). A similar picture can be observed in Wales, where three times as many five-year-olds living in the poorest areas (30%) have severe or extensive decay compared with those (9%) living in the richest areas (Health and Social Care Information Centre (HSCIC 2015a)), and

Northern Ireland, where disparities are even greater—nearly four times as high, standing at 38% and 10% respectively (HSCIC 2015b). These inequalities are not related to access to a dentist (Ravaghi, Hargreaves, and Morris 2020). Inequalities in prevalence of dental decay decreased between 2008 and 2015, but there have been no further reductions since then, with slight increases in inequalities observed between 2017 and 2019 (PHE 2020a).

In 2019, dental decay was significantly higher in ‘Other ethnic groups’ (44%), and in the Asian/Asian British

Figure 16: Experience of dental decay (%) in five-year olds in England by ethnicity, 2019. *Source: PHE 2020a.*



Note: Ethnic groups defined as per national dental epidemiology programme for England (PHE 2020a). In this context ‘Other ethnic group’ includes people who identify their ethnic group as ‘Arab’ or ‘Any other ethnic group’ not covered within the four broad groups of: White; Mixed or Multiple ethnic groups; Asian or Asian British; or Black, African, Caribbean or Black British. See www.ethnicity-facts-figures.service.gov.uk/style-guide/ethnic-groups#list-of-ethnic-groups

ethnic group (37%), than in other ethnic groups (see Figure 16) (PHE 2020a).²¹ Inequalities can also be observed within ethnic groups, with the largest variation among the White ethnic group, ranging from 14% in the Irish ethnic group to 60% in the Gypsy/Irish traveller ethnic group. Within the Asian/Asian British ethnic group, children from the Indian ethnic group had a lower prevalence of dental decay than children from the other ethnic groups (PHE 2020a).

Interventions can improve young children’s oral health while reducing inequalities. In recent years, Scotland and Wales have introduced national oral health programmes (Childsmile and Designed to Smile).²² Since their introduction, the rate of improvement in children’s oral health has exceeded progress in England (RCPCH 2020b). A system-wide approach

combining early years, health visiting and dental services supports pathways that improve oral health and provide benefits to the most vulnerable.

Dental Check by One, launched in England in 2017, saw a 2.5% increase in the number of under two-year-olds accessing dentists in a single year (Holland 2019). Other potential interventions include the introduction of water fluoridation in areas that do not yet have it, which could tackle regional inequalities. Fluoridated water could reduce tooth decay in five-year-olds with the most tooth decay by 28% and reduce the need for hospital teeth removal by between 45% and 68% (PHE 2018b). The Department of Health and Social Care’s recent white paper includes a proposal to move the responsibility for water fluoridation in England from local authorities to central government (DHSC 2021a).

2.6 Mental health and emotional well-being

Headline findings

- **We know little about how young children’s mental health and emotional well-being have changed over the last 20 years.**
- **However, recent data that surveyed parents in 2017 to screen for potential mental health disorders found one in 18 young children in England (aged between two and**
- **four years of age) may have a mental health disorder (6%).**
- **The same survey also showed there are significant inequalities in mental health disorders among young children, with disorders more prevalent among young children of families with poor parental mental health, lower incomes, and in receipt of benefits.**

21 Ethnic groups defined as per national dental epidemiology programme for England (PHE 2020a). In this context ‘Other ethnic group’ includes people who identify their ethnic group as ‘Arab’ or ‘Any other ethnic group’ not covered within the four broad groups of: White; Mixed or Multiple ethnic groups; Asian or Asian British; or Black, African, Caribbean or Black British. See www.ethnicity-facts-figures.service.gov.uk/style-guide/ethnic-groups#list-of-ethnic-groups

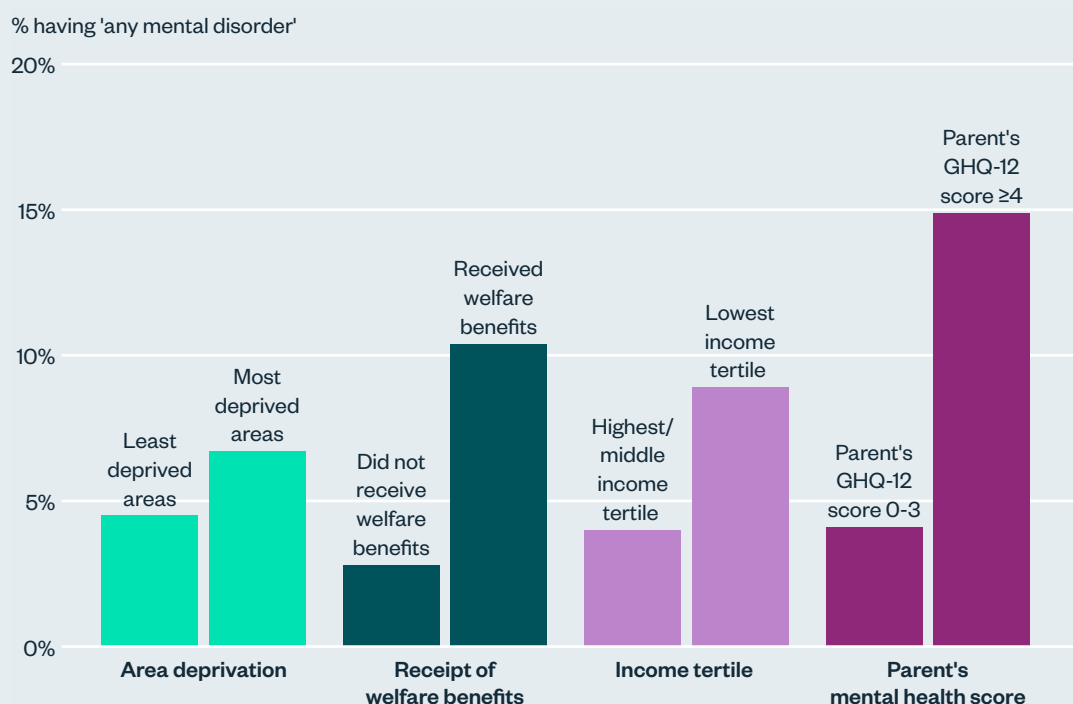
22 For information, see: www.child-smile.org.uk; and www.designedtosmile.org/welcome-croeso/welcome

In recent years, the importance of children and young people’s mental health has been increasingly recognised. In 2016, then-secretary of state for health Jeremy Hunt, stated that children’s mental health services were ‘the biggest single area of weakness in NHS provision’ (Gammie and Lintern 2016). The NHS long-term plan places a renewed emphasis on supporting children with mental health problems (NHS 2019). While early

intervention and quick access to good quality care is especially vital for children, including young children (Wave Trust 2013), most children and young people get no support (Mental Health Taskforce 2016).

We know little about how young children’s mental health and emotional well-being have changed over the past 20 years. While more comprehensive and longstanding data exists for children of school age, little

Figure 17: Prevalence of mental health disorder among 2–4-year-olds in England by household and parental characteristics, 2017. *Source: NHS Digital 2018.*



Note: The graph is based on a sample of 1,334 children aged between two and four years old. The parent or guardian who was interviewed, usually the mother, was asked about their own mental health using the General Health Questionnaire (GHQ-12). A GHQ-12 score of 4 or higher is considered indicative of having a common mental disorder. A household was classified as in receipt of 'low income benefits' if any resident adult with parental responsibility for the child reported being in receipt of any of: housing benefit, working tax credit, income support, universal credit, job seekers' allowance, or pension credit. Child tax credit did not count as the eligible income threshold for this is higher.

evidence has historically been collected for young children. Current available evidence—explored below—has only been collected over the last few years. This lack of evidence likely reflects the historically lowered importance attached to mental health relative to physical health and the perceived challenges in measuring mental health—particularly in young children, who do not display the classic symptoms of mental illness and well-being as older children. There remains a need for further research to understand both the presence of mental disorders in young children, as well as research to explore the broader emotional well-being of young children, and to map inequalities therein (Gleason, Zeanah, and Dickstein 2010).

There are significant inequalities in mental health disorders among young children.²³ The systematic surveying of parents to screen for early mental health outcomes (in children aged 2–4) was undertaken for the first time through the Mental Health of Children and Young People in England 2017 survey (NHS Digital 2018).²⁴ The survey considers the mental illness aspect of mental health, surveying for the presence of mental disorders in young children. It revealed one in 18 young children (aged 2–4) may have a mental health disorder (6%). The survey also provides evidence of significant inequalities. As Figure 17 shows, disorders were more prevalent among young children of families with lower incomes, and in receipt of benefits. Young children who live with a parent in receipt of benefits related

to low income and disability were over three times more likely to have a mental health disorder. Young children with a parent or guardian with a high mental health disorder score were three and a half times more likely to have a mental health disorder.

Inequalities are also present in relation to ethnic groups. Mental health disorders were more common in boys of White ethnic backgrounds (8%) than those of Black or other minority ethnic backgrounds (3%). However, rates of disorders were similar among girls, regardless of ethnicity. Regional inequalities are also present, with mental disorders more prevalent in the north of England (9%) than in other regions, with a low of 3% in the south of England. The survey finds a strong association between a child's general health and the presence of a mental health disorder. 22% of young children whose general health was reported as fair, bad or very bad were reported to have a mental disorder, compared with only 3% of young children whose general health was reported as very good. The causal connection between general health and the presence of a mental health disorder is not known (see Figure 17). All of these associations are worthy of further investigation, including evidence of what works in early diagnosis and intervention.

However, a greater proportion of young children are meeting expected levels of personal, social and emotional development by the age of five. The early

23 This review uses the term mental health disorder in line with the Mental Health of Children and Young People in England 2017 survey (NHS Digital 2018). Disorder groups comprise: emotional, including a range of anxiety and depressive disorders; behavioural, characterised by repetitive and persistent patterns of disruptive and violent behaviour, and; hyperactivity, characterised by developmentally inappropriate patterns of inattention, impulsively and hyperactivity.

24 These statistics remain experimental.

years foundation stage profile, conducted at the end of a child's first year of primary school (normally the year in which children turn five) since 2013, provides evidence of the broader emotional well-being of young children (Department for Education (DfE) 2020), including more positive aspects of mental health such as a child developing a positive sense of themselves, having confidence and managing their feelings.

In 2018/19, around 12% of children did not meet expected levels of personal, social and emotional development; this has decreased from 16% in 2013 (DfE 2020). With the published statistics, it is not yet possible to analyse how progress on the early learning goals related to personal, social and emotional development are associated with pupil characteristics and thus identify inequalities. However, there are notable inequalities in the

proportion of young children achieving 'a good level of development' (DfE 2019). Inequalities include a noticeable gap between children who receive free school meals and all other children. While this gap has narrowed since 2007 (Stewart and Reader 2021), it began to marginally increase in 2018, and by 2019 had returned to 2015 levels, so over this five-year period no progress was sustained in closing the gap. Smaller gaps are observable among ethnic groups, with the proportion of children from an Asian (69%) or Black (70%) family background reaching 'a good level of development' lower than for those from White (72%), Mixed (73%) and Chinese (74%) family backgrounds. Further, more detailed, analysis to assess the specific relationships between pupil characteristics and early learning goals related to personal, social and emotional development is required.

2.7 Respiratory health

Headline findings

- **There is limited data to assess whether the respiratory health of children under five is getting better or worse—largely because most respiratory conditions remain undiagnosed until after the age of five.**
- **There is some evidence to suggest young children's respiratory health is worsening—emergency admissions among young children in England found that three of the top five reasons for admission were for respiratory conditions.**

Most respiratory illness—linked to issues such as pollution, smoking and poor housing—is preventable and treatable. Tackling respiratory diseases is a priority of the NHS long-term plan, which notes that respiratory diseases affect one in five people in England and are the third biggest cause of deaths—almost 30% of preventable deaths in England are due to diseases attributed to air pollution (NHS 2019). The COVID-19 pandemic has put respiratory health at the forefront of public consciousness. The same plan notes that respiratory diseases are more prevalent in disadvantaged groups and areas of social deprivation (NHS 2019). Air pollution and its effect

on children was highlighted by the tragic death of Ella Adoo-Kissi-Debrah, who became the first person in the UK to have air pollution listed as a cause of death (BBC News 2020).

There is limited data to assess trends in the respiratory health of children under five. This is in part due to the fact that respiratory conditions often remain undiagnosed until after the age of five.²⁵ A better understanding of the respiratory health of young children is essential if the NHS is to meet its objective of doing more to detect and diagnose respiratory problems earlier (NHS 2019).

However, there is evidence to suggest that respiratory health is a significant form of ill health in young children and some to suggest that it is worsening. Recent research into emergency admissions among young children in England found that three of the top five reasons for admission were for respiratory conditions (Keeble and Fisher 2021).²⁶ While the researchers identify limitations in reviewing admissions data over time, short-stay emergency admissions

for acute bronchiolitis (unspecified) more than doubled between 2009/10 and 2018/19 (Keeble and Fisher 2021). Further evidence suggests that admissions for bronchiolitis in children under a year old increased by an average of 2% per year in England between 2004 and 2011 (Green et al. 2015).

There are significant inequalities in the respiratory health of young children. In their analysis of hospital admissions for bronchiolitis, Green et al. (2015) identify fivefold geographical variations in admissions, with young maternal age, low social class, low birthweight and maternal smoking all associated with an increased risk of hospital admissions for children. Further research has found that air pollution has an effect on admissions for bronchiolitis in children below the age of two, including an association in areas where measured concentrations of air pollutants are below WHO recommended levels (King et al. 2018). Pollution levels are worse in areas of highest deprivation compared with areas of lowest deprivation (Marmot et al. 2020).

2.8 Reflections on available data and priorities for research

There remains much we do not know about young children's health and, in particular, the nature of the inequalities

that hamper further improvements. Across our indicators, there are specific gaps and limitations that

25 For example, guidance for diagnosing asthma recommends that the symptoms of children under five with suspected asthma be treated and, if the child still has symptoms at five years, tests should be carried out (NICE 2017).

26 Acute upper respiratory infection, unspecified, was the second most common reason, acute bronchiolitis the third, and unspecified acute lower respiratory infection the fifth.

have prevented analysis across the full 20 years covered by this review and have prevented comparability of data among regions. For example, analysis of breastfeeding rates in England is hampered by the absence of a regular infant nutrition survey. Young children's mental health and emotional well-being and young children's respiratory health are two areas with a particular dearth of comparable, time series data. Further work is needed to conceptualise mental health and emotional well-being in young children and move beyond diagnosable disorders.

Our understanding of young children's health inequalities is limited by a lack of intersectional analysis. Across our indicators, associations between poor health and area, ethnicity and level of deprivation were found. Less research is available that explores how these associations intersect, including how dimensions of inequality intersect, compound and accumulate. Research to understand the lived experiences of young children and their families is essential. For example, the significant increases in infant mortality in Indian and Bangladeshi groups are an area for urgent further research. Research should include consideration of the particular barriers minority ethnic groups may face in accessing services.

Key questions

- How can we identify and better understand new and emerging health risks to young children, such as respiratory health, and complex health conditions, and their implications for the health system?
- How can we better understand the mental health and emotional well-being of young children? What do we know works in early diagnosis and intervention? How does adversity, poor mental health and well-being in early childhood impact future mental health and physical health conditions?
- How can we better understand the relationship between parental health, fathers as well as mothers—and the health of the broader family—and child health, including addressing the notable gaps in our understanding of paternal health and its relationship with young children's health?
- How can we better understand health inequalities and how dimensions of inequality intersect, compound and accumulate?
- How can we best address the data gaps in health expenditure on young children that inhibit our ability to understand the value for money of interventions?
- How can we better understand the links between children's health and broader outcomes such as educational attainment?²⁷

27 The new Children of the 2020s and Early Life Cohort Feasibility studies provide opportunities to better understand the determinants of early school success. For information see: <https://cls.ucl.ac.uk/cls-studies/children-of-the-2020s-study> and <https://cls.ucl.ac.uk/cls-studies/early-life-cohort-feasibility-study>

3 The impact of COVID-19

The COVID-19 pandemic and its profound impacts on our society and economy are changing the lives of young children in many ways—some of these are already visible, others may take time to appear and further research to properly understand.²⁸ Mercifully, young children have been spared the worst of the direct health impacts of COVID-19, with severe cases of the disease and mortality rarely seen in children (Ovali 2020). Nevertheless, **the health of young children is indirectly affected by the pandemic, with negative effects felt disproportionately by disadvantaged children.**

There is not yet sufficient evidence to systematically assess the effects of the pandemic on young children's health. While the majority of research on the health impacts of COVID-19 on children has focused on adolescents and school-age children, as the pandemic progresses, research from the UK and abroad is emerging that captures the effects on young children's health, including effects on the determinants of health.²⁹

The pandemic, lockdowns and other restrictions associated with managing the pandemic are negatively affecting the health of young children. Little evidence of the effects of the

measures taken to control the virus on young children's health in the UK has yet emerged. However, a review of available research has identified two major concerns: insufficient physical activity and negative effects on mental health (Stanford, Mulcahy, and Davie 2021; Lopez-Bueno et al. 2020). Obesity levels rose dramatically among reception-age children during the pandemic, from 9.9% in 2019/20 to 14.4% in 2020/21. Over the same period, the obesity prevalence gap between reception-age children living in the most and least deprived areas increased from 6.3 percentage points to 10.7 (NHS Digital 2021). Emerging research has also indicated that food security has worsened as a result of COVID-19, both globally and in the UK, where children who access free school meals and children from low-income households have been at greater risk of food insecurity (Stanford, Mulcahy, and Davie 2021).

The emotional and mental health of some young children will have undoubtedly been affected by COVID-related family bereavements—with children from ethnic minority or deprived families more likely to have suffered a bereavement (ONS 2020c). Beyond the effects of bereavement, health

28 The Nuffield Foundation is funding a range of projects exploring the implications of COVID-19, including on young children. See: www.nuffieldfoundation.org/research/covid-19

29 UNICEF has created a COVID-19 and children research library. See: www.unicef-irc.org/about-covid-children-library

visitors in the UK have reported increased rates of child behaviour problems (iHV 2020a). Over three-quarters of surveyed health visitors reported speech and communication delays (iHV 2020a). As a result of national restrictions, many young children left their early years settings—such as childminders and nurseries—with many not returning after restrictions were lifted (Ofsted 2020). Providers have reported concerns about young children's personal, social and emotional development with some children returning less confident and more anxious (Ofsted 2020).

Lockdowns may also have increased barriers to services and led to poorer outcomes for young children's health. For example, data from Manchester shows a decrease of more than 30% in children (of all ages) presenting at emergency departments during and following the first lockdown, which may mean that children who have serious health issues have gone untreated (Isba et al. 2020).

The unprecedented demands faced by the NHS during the pandemic have led to a reduction in services supporting young children's health. This is most clearly visible in relation to health visiting services, where the Institute of Health Visiting reports that in some areas, over 50% of health visitors were redeployed. The NHS categorisation of health visiting services as a 'partial-stop' service in prioritisation plans led to the needs of vulnerable children known to the service being prioritised. Only 17% of health visitors were able to offer all families a 9–12 month review themselves; and only 10% were able to offer all families a review at two to two-and-a-half-years.³⁰

In terms of numbers, 65% of health visitors report caseloads of over 300 children under five years old; 29% report caseloads of over 500 (iHV 2020a).

Emerging evidence has revealed the impact of reduced health visiting on breastfeeding. While 41.8% of new mothers reported positive impacts of lockdown in allowing them to spend more time with their babies and enabling breastfeeding, a significant minority (27%) reported more challenging experiences of feeling isolated and struggling to access breastfeeding services (Brown and Shenker 2020). This minority of mothers reported being more likely to stop breastfeeding earlier than they wanted. Mothers from ethnic minorities and those with lower levels of education were more likely to report difficulties with breastfeeding, which may lead to a widening of health inequalities (Brown and Shenker 2020).

The pandemic's impact on young children's health services extends beyond health visiting services. Fewer health and welfare checks mean fewer conditions are identified at an early stage and that the opportunity for early intervention could potentially be missed. During the initial lockdown, community paediatric services were put on hold and 46% of community paediatric trainees were redeployed to help in hospitals (RCPCH 2020c). Delays in accessing community paediatric services subsequently reduced access to wider support from specialists such as speech and language therapists (Royal College of Speech and Language Therapists 2021). Neurodevelopmental assessments for autism were put on hold during the initial lockdown and have still not reached full

30 For information on health and development reviews, see: www.nhs.uk/conditions/baby/babys-development/height-weight-and-reviews/baby-reviews

capacity, meaning young children may not receive the required support, which might in turn affect behaviour and school readiness. Young children's oral health has undoubtedly been affected by the fact that routine dental appointments were put on hold, including preventative and health promoting appointments (Association of Dental Groups 2020). Vaccination counts for young children in England were lower (by 3.8% for the 6-in-1 vaccine and 2.8% for MMR vaccines) in 2020 compared to 2019 (PHE 2020b).

The COVID-19 pandemic and related economic disruption are creating conditions that we know allow poor health in young children to proliferate.

Rising unemployment and income pressures are leading to increases in child poverty and child hunger. Levels of child food insecurity are increasing, with one in four children (three million in total) having faced some form of food deprivation in the six months following lockdown (Bhattacharya and Shepherd 2020). There is evidence that economic pressures and the stress and anxiety caused by the pandemic have led to increased rates of domestic violence and abuse, neglect, and parental mental health problems—with over three-quarters of health visitors reporting increases (iHV 2020a). As such, the negative effects of the pandemic are falling disproportionately on disadvantaged families.

The risks of young children suffering from maltreatment are further exacerbated by the reduction of the usual safeguarding mechanisms for early detection and prevention. The 'stay at home' directive has prompted less contact between young children and families and the outside world, including with health and education professionals who are critical for spotting and reporting signs of abuse and neglect (Rehill and Oppenheim 2021).

The pandemic may not have solely negative effects on young children's health. For some families with young children, lockdown and restrictions may have had positive effects. For example, more opportunities for quality family time, greater partner involvement, protected time to establish breastfeeding, and potentially reductions in premature births (Reed 2021). However, young children already experiencing disadvantage may be less likely to have seen many of these benefits (Reed 2021) and so this may lead to a widening of inequalities.

The pandemic may present opportunities for improving young children's health services. Measures taken by the government of the Netherlands to curb the spread of COVID-19 were linked to a substantial reduction in preterm births (Been et al. 2020). It is not yet clear why this reduction occurred, but this example—as with many others—may provide evidence that encourages the exploration of new approaches to young children's health. Examples of innovation and positive deviance should be captured to make the most of the unique circumstances facing young children's health services. For example, the Institute of Health Visiting has produced good practice case studies in health visiting during COVID-19 (iHV 2020b). While the pandemic has created a situation in which young children's health needs are at risk of being overlooked, it has also brought a renewed commitment to give all children the best start in life.

3.1 Reflections on available data and priorities for research

We still do not fully understand the impacts of COVID-19 on young children's health in the UK, which prompts a number of questions.

- What impact has the closing of paediatric dental services, reduced professional and informal support during the postnatal period, and the virtual provision of health visitor and midwifery services had on health outcomes? Have they exacerbated existing inequalities?
- As the COVID-19 restrictions are eased, and with an anticipated double burden on services as a result of a backlog in appointments and delays in seeking healthcare, what are the priorities for young children's health?
- How can research capture the diverging experiences of different families? Given the effects of the pandemic are unevenly felt, what do we know about what works in helping support disadvantaged families through this difficult period?

4 Conclusions and reflections

Young children today are healthier than they were 20 years ago. Infant mortality has fallen. Vaccination uptake rates have increased. Rates of breastfeeding have increased. Tooth decay has declined. Evidence from our indicators shows that, overall, more children are receiving a better start in life. The effects of this better start often last through childhood with improved educational outcomes, better employment prospects and happier lives.

Recent years and the pandemic have demonstrated that improvements in young children's health are not irreversible. The last five years have been marked, sadly, by a slowing of progress in some areas, deterioration in others, and evidence of widening inequalities. The three-year increase in infant mortality in England and Wales between 2015 and 2017 is symptomatic of worsening outcomes for young children in recent years. Widening inequalities across a range of indicators and in obesity rates, in particular, are of great concern. COVID-19 now presents momentous challenges to the health of young children, reducing services for young children and creating the conditions—increasing unemployment and child poverty—that we know cause poor child health to proliferate and inequalities to grow. Negative impacts

on the health of young children are difficult to reverse.

We know that improvements in young children's health are possible. In Scotland, we see the effect of a national infant feeding strategy that brings together political will, advocacy and sustained funding to promote and support breastfeeding. Inequalities in young children's health are not inevitable. The significant narrowing of the low birthweight gap between more and less disadvantaged mothers between 2005 and 2011 ([Stewart and Reader 2021](#)) was a substantial national achievement.

The UK is now at a critical moment in securing the future of young children's health. If young children are to be healthier 20 years from now, there are key questions for policy makers, commissioners, practitioners and researchers to consider and address.³¹

4.1 Are young children receiving adequate universal health services?

Effective universal services promote prevention and early intervention. Regular, sustained support for expectant and new parents is crucial in supporting maternal and infant health, providing

31 These questions were developed in consultation with our advisory group. They will also form the basis of a joint roundtable and ongoing conversation between the Nuffield Foundation, Nuffield Trust and representatives from integrated care systems across England.

advice and essential services such as routine immunisations, and ensuring opportunities for the early identification of additional needs.³² Universal services can improve outcomes for all while having the greatest impact on those most in need of help.³³ For young children and families in need of additional help, forming timely partnerships between families and service providers can improve health outcomes and offer value for money.^{34,35}

England's healthy child programme is being modernised, with reforms centring on 'universal reach—personalised response' (NHS England n.d), including a revised health visiting model that aims to ensure that 'interventions are personalised to respond to children and families' needs across time' (Nicholson 2021; PHE 2021b). These reforms complement the Early Years Healthy Development Review's vision for all local authorities to develop clear Start for Life 'Universal' and 'Universal+' offers, so that all families know what help they can expect (HM Government 2021). As local authorities develop their offer, there have been calls for increased numbers of visits and checks—including between the checks at the ages of one and two and a half years, and additional checks following the final two-and-a-half-year check and the start of school (Centre for Social Justice and Fabian

Society 2021). Broader reforms to the health system include the development of integrated care systems (DHSC 2021a) and the introduction—prompted by the pandemic—of a new Office for Health Promotion, charged with leading the improvement of health and prevention of illness (DHSC 2021b). **It is not clear how these broader reforms will consider meeting the specific needs of children, however, with the integrated care systems white paper making little reference to children** (DHSC 2021a).

As these reform processes proceed, there is a challenge in ensuring that universal services are sufficiently resourced to meet the needs of young children and their families. While calculating total health spending on young children is made difficult by the complexity of expenditure arrangements and limits in data quality, observable spending on primary care remained approximately constant in real terms between 2007/8 and 2015/16 in England, with a near 28% increase on secondary/community spending (Children's Commissioner 2018).³⁶ However, in recent years, funding pressures have led many local authorities to struggle to maintain early help and preventative services (National Audit Office (NAO) 2019; Early Intervention Foundation n.d.). Annual reductions to the public health grant since

32 The cornerstone of child health programmes are midwifery and health visiting services—in addition to GPs. The universal health promotion programme for children is the healthy child programme in England, the child health programme in Scotland, the healthy child Wales programme in Wales and Healthy Child, Healthy Future in Northern Ireland.

33 For example, Sure Start services reduced the likelihood of hospitalisation among children of primary school age, with children living in disadvantaged areas benefitting the most (Cattan et al. 2019).

34 For example, there is evidence that Family Nurse Partnerships reduce preventable child mortality, accident and emergency visits and hospitalisations, and have long-term positive impacts on children's mental health (Early Intervention Foundation 2017).

35 The cost of 'late' intervention was estimated as £17 billion per year across England and Wales by the Early Intervention Foundation in 2016 (Early Intervention Foundation 2018).

36 Primary care includes: GP, pharmacy, dental and optometry. Secondary/community care includes: hospital care, critical care, mental health and community care.

2015 (Harris, Hodge, and Phillips 2019)—which local authorities use to fund health visiting services—and the additional pressures of COVID-19 have reduced the amount of contact health visitors are able to have with families (iHV 2020a).

At a time of historically high public sector debt, and with COVID-19 putting the health and broader needs of adults in the spotlight, policy makers and commissioners have difficult decisions to make about the prioritisation of young children's needs relative to others and the resourcing to meet those needs. That being said, we now know that young children have been disproportionately affected by lockdown—their early physical and social development inhibited in this critical development window largely in order to protect older generations. In this context, there is a strong and compelling case for investing in their collective futures.

Key questions

- What reforms are needed to ensure that midwifery and health visiting services are equipped to meet the needs of all young children and families, including the most vulnerable, consistently from birth to starting school? Where are the gaps? Where is it working well?
- Do local agencies have sufficient discretion in determining how best to respond to the needs of their local areas and pursue place-based approaches? How can we empower local agencies to meet the needs of their populations?³⁷
- Are universal services inclusive? What are the barriers to inclusion?

Do universal services provide sufficient support to those most in need? How can we best support those most in need?

- How can we ensure that the needs of children are understood and sufficiently prioritised within health sector reforms (such as in the development of integrated care systems)?

4.2 What does an effective integrated system for young children and their families look like?

Considered from a family's perspective, effective health services for young children cannot be provided in isolation from a broader, well-integrated system that meets both the health and non-health needs of young children and their families. Families should not need to navigate complex systems in order to access services, or fall through gaps where services are unable to meet their needs.

The integration of services and systems requires consideration of how those working to meet the needs of young children and their families—including GPs, midwives, health visitors, child carers, early years education providers and social workers—can effectively and efficiently coordinate their support. This does not necessarily mean complex restructuring of organisations—a huge amount can be achieved by good working relations at the front line of delivery. There are a number of important dimensions to integration, including the following.

37 Place-based approaches comprise locally tailored responses to best meet the needs of local populations, and can achieve measurable improvements in health outcomes (PHE 2019c).

- How health service providers connect primary and specialist care and physical and mental health services in support of young children's health.
- How health, education, carers and social care services work together to jointly meet the needs of young children and their families, such as through the provision of co-located services and underpinning arrangements for data sharing.
- The linking of adult and child services within families, such as how services consider the impact of parental health issues on care for young children and ensure additional support for the broader family when addressing individual health needs.

Professionals working in integrated systems have reported improved outcomes for children and their families in cognitive performance, general physical health, social behaviour, and parenting or family relations (Messenger and Molloy 2014). There is also evidence that integrated care leads to cost savings and improvements to young children's quality of life (Wolfe et al. 2020).

The NHS and partners are in the process of creating integrated care systems to deliver the 'triple integration' of primary and specialist care, physical and mental health services, and health with social care (NHS 2019). DHSC's recent white paper outlines the government's proposals for supporting integrated care systems—both within the NHS and between the NHS and local government—including a duty for local authorities and the NHS to collaborate (2021a).

Despite the emerging evidence in favour of integration and recent policy

commitments, the process of integration is complex, with no simple off-the-shelf models to implement, requiring a sustained government commitment, quality leadership, and funding and resources to be used as a lever to incentivise reform (Pascal, Bertram, and Peckham 2019). For example, while the government has committed to work towards integrating the early years foundation stage education check for two-year-olds and the healthy child programme's health check at two to two-and-a-half years old, only 9% of checks at this age are delivered in an integrated way (Children's Commissioner 2020). **Critically, integrated services for young children may look different to integrated services for adults, with young children a distinct population who use a distinct health and care system with its own needs and challenges.**

Further evidence of what works and lessons learnt in integrated services and in overcoming professional and institutional boundaries is essential.

Key questions:

Across the dimensions of integration identified above.

- What does an effective integrated system for young children and their families look like in practice? What is the role for family hubs?
- What are the immediate priorities for integration? Are there low-hanging fruit that can be implemented comparatively easily and quickly?
- As integrated services are developed, how can we best monitor, learn and evaluate what works?
- What are the priorities for enhanced data sharing? What do we know about what works in facilitating effective data sharing?

4.3 How can we tackle the stark health inequalities of early childhood?

If young children are to be healthier in 20 years' time, health inequalities will need to be addressed. Across our indicators, there are associations between poor health and geographical area, ethnicity and level of deprivation. For example, in 2018, the infant mortality rate in England for those living in the most deprived areas was almost twice the rate of those living in the least deprived areas (ONS 2020a). With increasing child poverty, there is a distinct risk that a generation of children will have poorer health than their predecessors—with disproportionate effects on the most vulnerable.

Health inequalities among young children by ethnic group are particularly stark. The infant mortality rate among the Pakistani ethnic group is over double that of the White British ethnic group; since 2006, infant mortality rates have decreased across all ethnic groups with the exception of Bangladeshi and Indian groups (ONS 2020a).

Addressing health inequalities cannot be achieved by improving health service provision alone. As the NHS long-term plan acknowledges, 'Household income, education, housing, stable and loving family life and a healthy environment all significantly influence young people's health... By itself, better healthcare can never fully compensate for the health impact of wider social and economic influences' (NHS 2019, p. 45).

Addressing social inequalities will help address health inequalities among ethnic groups as these inequalities are, in part, a consequence of conditions such as ethnic groups disproportionately living in deprived areas, with these conditions

'themselves the result of longstanding inequalities and structural racism' (Marmot 2021). Beyond tackling social inequalities, there remains more for the NHS and other service providers to do to remove linguistic, cultural and digital barriers to accessing public health information and services (Lawrence 2020), and ensuring high-quality services for all. This includes supporting efforts to better understand the lived experiences of ethnic minorities in accessing health inequalities, including efforts such as the current Birthrights inquiry into racial injustice in maternity care (Birthrights 2021).

Key questions:

- What role can health service providers play in tackling health inequalities and particularly in relation to young children in, or at risk of, poverty and those from ethnic minority groups?
- What are the priorities for addressing the social inequalities that underpin health inequalities?
- How can health providers design culturally sensitive health promotion interventions that work with cultural and religious understandings and values while recognising intra-group diversity and avoiding stereotyping? What other measures should health service providers undertake to tackle racial discrimination?

4.4 What are the key data and evidence gaps?

There is still much we do not know about young children's health. Across our indicators, there are specific gaps and limitations that have prevented comprehensive analysis across the full 20 years covered by this review, and across nations and regions. For example, analysis

of breastfeeding rates in England—and hence comparison with other nations—is hampered by the absence of a regular infant nutrition survey.

Perhaps more significantly, there is a considerable dearth of comparable, time series data for understanding trends in young children’s mental health and emotional well-being, and respiratory health. Further work is needed to conceptualise mental health and emotional well-being in young children and move beyond diagnosable disorders.

Our understanding of young children’s health inequalities is limited by a lack of intersectional analysis. Research exploring how the associations between poor health and area, ethnicity, and level of deprivation intersect, compound, and accumulate is limited. Research to understand the lived experiences of young children and their families is also essential.

In addition to strengthening our understanding of young children’s health, more research is needed to evaluate the impact of interventions to strengthen health and their value for money. This may require the greater availability of detailed data on healthcare expenditure on young children. While we know that some interventions to support young children’s health work, there is a ‘much wider set of activities that have not yet been evaluated, and so little is known about their impact’ (Early Intervention Foundation n.d.). In the absence of evaluations, there is a risk that ‘services are prioritised because they feel like the right thing to do rather than

because there is evidence they help babies and families’ (HM Government 2021, p.102).

Key questions:

- What are the priorities for better understanding young children’s health? Where do we need new surveys or measures in administrative data?
- How are risks to young children’s health—such as prematurity, complex conditions, parental mental health, and environmental changes including respiratory risks—changing?
- How can we better understand health inequalities and how dimensions of inequality intersect, compound and accumulate?
- How can we routinely monitor, evaluate and learn from effective practice through light-touch means? What are the priorities for more thorough monitoring and evaluation, such as through randomised controlled trials?

Improving young children’s health remains one of the most effective means of creating a strong and fair society. Investment in children’s early years provides significant value for money (Marmot et al. 2020). The future health and well-being of adults—and our society as a whole—has its origins in young children’s health. Improving young children’s health is, however, about much more than simply improving health services, requiring sustained and integrated efforts to meet both the health and non-health needs of young children and their families.

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Overview of available data for indicators of young children's health

Nation	Measure	Source	Time series available?	Data available by region?	Data available by deprivation?	Data available by ethnicity?
Infant mortality						
UK	Infant mortality rate per 1,000 live births (first year of life)	ONS 2021	1971–2019, annually	Local authority	No	No
England	Infant mortality rate per 1,000 live births (first year of life)	ONS 2021	1971–2019, annually	Local authority	Yes	Yes (ONS 2020a)
Wales	Infant mortality rate per 1,000 live births (first year of life)	ONS 2021	1971–2019, annually	Local authority	Yes	Yes (ONS 2020a)
Scotland	Infant mortality rate per 1,000 live births (first year of life)	ONS 2021	1971–2019, annually	Local authority	No	Mother's country of birth
Northern Ireland	Infant mortality rate per 1,000 live births (first year of life)	ONS 2021	1971–2019, annually	No	No	No
International	Infant mortality rate per 1,000 live births (first year of life)	Eurostat 2020	N/A	N/A	N/A	N/A
Immunisations						
England	% MMR uptake	NHS Digital 2020b	Comparable data available 2005–2020, annually	Local authority; ONS region; NHS region	No	No

Nation	Measure	Source	Time series available?	Data available by region?	Data available by deprivation?	Data available by ethnicity?
Wales	% MMR uptake	Public Health Wales 2020	Comparable data available 2005–2019, annually	Local authority; Local health board	Yes	No
Scotland	% MMR uptake	Public Health Scotland 2020	Comparable data available 2005–2019, annually	NHS Board of Residence; Local authority	No	No
Northern Ireland	% MMR uptake	PHA n.d.	Comparable data available 2005–2019, annually	Health and Social Care Trust	No	No
England	% 6-in-1 uptake	NHS Digital 2020b	2005–2019, annually	Local authority; ONS region; NHS region.	No	No
Wales	% 6-in-1 uptake	Public Health Wales 2020	2005–2019, annually	Local health board; Local authority.	Yes	No
Scotland	% 6-in-1 uptake	Public Health Scotland 2020	2005–2019, annually	NHS Board of Residence; Local authority	No	No
Northern Ireland	% 6-in-1 uptake	PHA n.d.	2005–2019, annually	Health and Social Care Trust	No	No
Breastfeeding						
England	% of women exclusively breastfeeding at 6–8 weeks	PHE 2019a	New method of data collection in 2015/16, available 2015–2020, annually	Local authority	No	No
England	% of women mixed breastfeeding at 6–8 weeks	PHE 2019a	New method of data collection in 2015/16, available 2015–2020, annually	Local authority	No	No
Wales	% of women exclusively breastfeeding at 6 weeks	StatsWales n.d.	2004–2020, quarterly	Local health board	No	No

Nation	Measure	Source	Time series available?	Data available by region?	Data available by deprivation?	Data available by ethnicity?
Wales	% of women mixed breastfeeding at 6 weeks	StatsWales n.d.	2004–2020, quarterly	Local health board	No	No
Scotland	% of women exclusively breastfeeding at 6–8 weeks	Information Services Division Scotland 2019b	2004–2020, annually	NHS Board of Residence; Local authority	Yes	Yes
Scotland	% of women mixed breastfeeding at 6–8 weeks	Information Services Division Scotland 2019b	2004–2020, annually	NHS Board of Residence; Local authority	Yes	Yes
Northern Ireland	% of women exclusively breastfeeding at 6 weeks	PHA 2020	2011–2017, annually	Place of birth; Trust residence (of mother); Council area	Yes	Yes
Northern Ireland	% of women mixed breastfeeding at 6 weeks	PHA 2020	2011–2017, annually	Place of birth; Trust residence (of mother); Council area	Yes	Yes
Obesity/Overweight						
England	% overweight or obese at start of primary school (aged 4–5)	NHS Digital 2020c	2006–2019/20, annually	Local authority; ONS area	Yes	Yes
Wales	% overweight or obese at start of primary school (aged 4–5)	Public Health Wales 2018	2011–2017/18, annually	Local health board; local authority	Yes	Yes
Scotland	% overweight or obese at start of primary school (aged 4–5)	Information Services Division Scotland 2019a	2005–2018/19, annually	Local authority	Yes	No

Nation	Measure	Source	Time series available?	Data available by region?	Data available by deprivation?	Data available by ethnicity?
Northern Ireland	% overweight or obese at start of primary school (aged 4-5)	Public Health Intelligence Unit 2018	2011-2018/19	Trust of residence; council area	Yes	No
Oral health						
England	% obvious tooth decay age 5	NHS Digital 2015	Comparable data available 1983-2013, every 10 years	Yes (PHE 2020a)	Yes (from 2019, PHE 2020a)	Yes (PHE 2020a)
Wales	% obvious tooth decay age 5	NHS Digital 2015	Comparable data available 1983-2013, every 10 years. Different source: Oral health survey available 2013-2019, every 2 years	No	Yes (from 2013)	No
Scotland	% obvious tooth decay age 5	Information Services Division Scotland 2018	Data available 1988-2018, annually	Yes	Yes (from 2019)	Yes
Northern Ireland	% obvious tooth decay age 5	NHS Digital 2015	Comparable data available 1983-2013, every 10 years	No	Yes (from 2013)	No

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About the Nuffield Foundation

The Nuffield Foundation is an independent charitable trust with a mission to advance educational opportunity and social well-being.

We fund research that informs social policy, primarily in Education, Welfare and Justice. We also provide opportunities for young people to develop skills and confidence in science and research.

We are the founder and co-funder of the Nuffield Council on Bioethics, the Nuffield Family Justice Observatory and the Ada Lovelace Institute.

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