



Breaking the cycle


The economic cost of poor parental mental health

In association with Jon Franklin

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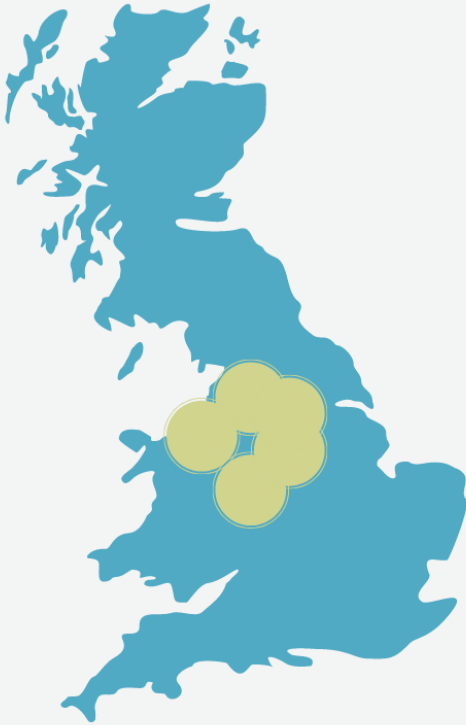


Pro Bono Economics uses economics to empower the social sector and to increase wellbeing across the UK. We combine project work for individual charities and social enterprises with policy research that can drive systemic change. Working with 400 volunteer economists, we have supported over 500 charities since our inception in 2009.



Our Time is a charity working with the children of parents with a mental illness. We give them the support they need - in their families and in their schools. We tackle the stigma around mental illness and show these children they are not alone. Our Time works to raise awareness of this group, and campaigns for better support.

This affects more children than the total populations of Birmingham, Liverpool, Bristol, Manchester, Sheffield and Leeds combined



1 in 3 children in the UK have a parent with poor mental health. That's

4 million
children

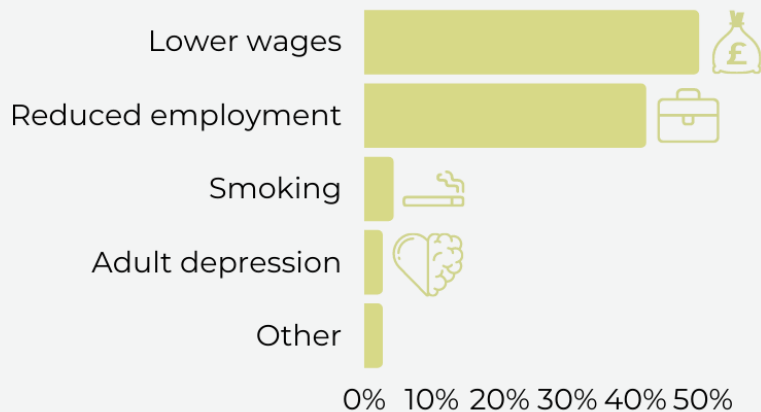
Children with parents who have a mental health condition are



more likely to develop a mental health condition themselves

The potential long-term economic costs for a child with a mother that has experienced depression is

£11,600



We estimate that the long-term costs for failing to support the 160,000 children leaving primary school this year who have a mother who has experienced depression could be as much as

£1.9 billion

Four million children in the UK are living with a parent with poor mental health

We have a growing mental health crisis in the UK. One in six of all adults in England have a common mental disorder, up from around one in seven in the early 1990s.¹ The added stresses and pressure of looking after children can make parents particularly susceptible to these challenges. In 2018-2019 nearly one in three children were found to have a parent with poor mental health and this has been rising over time.² This means that of the 12.7 million children aged under 18 in the UK, more than 4 million of them have a parent that is struggling with their mental health – this is more than the populations of Birmingham, Liverpool, Bristol, Manchester, Sheffield and Leeds combined.³

And these challenges have only been worsened by the pandemic. Studies have shown that not only were levels of anxiety and depressive symptoms higher for households with children throughout the pandemic but that worries about health, finances and home schooling made this situation worse during lockdown periods of 2020 and 2021.⁴ The impacts have been particularly acute for women who were disproportionately impacted by additional childcare responsibilities during the pandemic.⁵

Unfortunately, the lifting of restrictions doesn't appear to have reversed all of the negative impacts experienced during the pandemic. Latest wellbeing data for September 2021 suggested that general levels of life satisfaction and anxiety for adults in the UK had started to return towards

¹ McManus S, Bebbington P, Jenkins R, Brugha T. (eds.) (2016): *Mental health and wellbeing in England: Adult Psychiatric Morbidity Survey 2014*. Leeds: NHS Digital

² Public Health England (2021): *Statistical commentary: children living with parents in emotional distress, March 2021 update*, available here: <https://www.gov.uk/government/statistics/children-living-with-parents-in-emotional-distress-march-2021-update/statistical-commentary-children-living-with-parents-in-emotional-distress-march-2021-update> with details of definitions used available in: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/869785/Details_Methodology_and_Supporting_Information.pdf

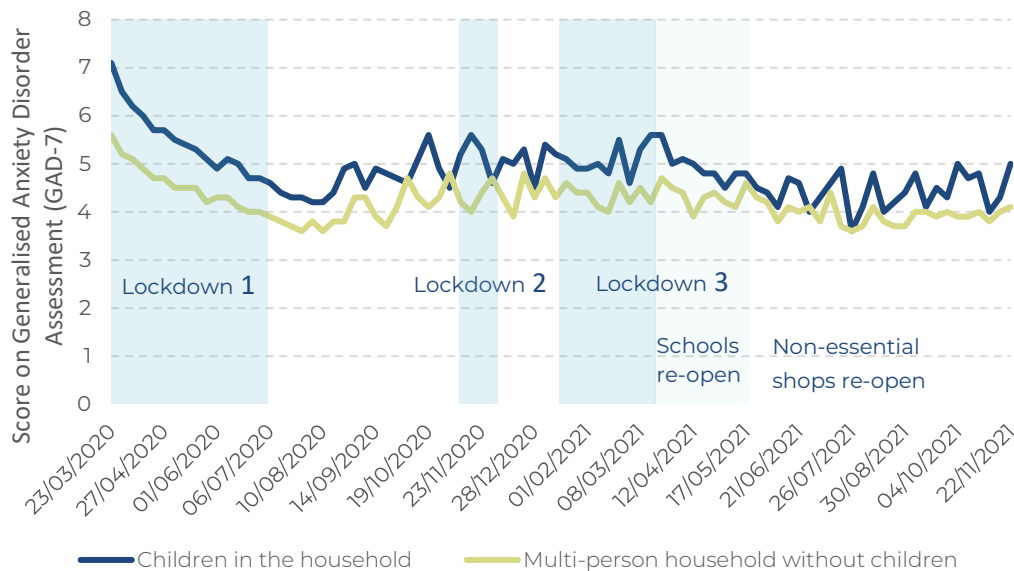
³ Office of National Statistics (2022a): *Population estimates - small area based by single year of age - England and Wales*, Nomis.

⁴ Office for Health Improvement & Disparities (2021): *Parents and carers Spotlight*, accessed here: <https://www.gov.uk/government/publications/covid-19-mental-health-and-wellbeing-surveillance-spotlights/parents-and-carers-spotlight>

⁵ Office of National Statistics (2022b): *Personal well-being in the UK, quarterly; April 2011 to September 2021*, accessed here: <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/personalwellbeingintheukquarterly/april2011toseptember2021>

pre-pandemic levels but that recovery is not a total one.⁶ The longer-term consequences of these effects are currently unknown but are only likely to exacerbate already challenging circumstances.

Figure 1. Parents have faced elevated anxiety throughout the pandemic



Mental illness can have knock-on consequences throughout families

A parent experiencing mental illness can have life-long consequences for the children involved. It's important to recognise that in many instances, with the right support, children with parents that experience poor mental health can develop the resilience and understanding to cope with their circumstances. And the exact impacts of parental mental health vary depending on the type and severity of mental health conditions that a parent is facing as well as environmental factors such as poverty and existing support systems for the family.

However, a range of potential impacts on a child's life have been reported, for example:

⁶ Office of National Statistics (2022b)

- increased anxiety and worse mental health if, for example, they feel they may be to blame for parent's illness, or worry about becoming ill themselves;
- struggling to connect with a parent who may be emotionally detached or distant;
- becoming more withdrawn, due to fears over the stigma of mental illness and needing to keep their family circumstances hidden;
- finding it difficult to concentrate on their school work, particularly when combined with an unstable family life and an increased risk of bullying and isolation due to the stigma associated;
- taking on caring and other responsibilities beyond their years, and becoming reluctant to trust other adults.^{7 8}

The latest comprehensive survey of children's mental health in the UK from NHS Digital highlighted that children whose parents were considered to have poor mental health were nearly three times more likely to have poor mental health compared to their peers with parents who had good mental health.⁹ And this relationship has consistently shown up in formal studies of emotional outcomes for children. One review identified 193 published studies establishing links between maternal mental health and childhood outcomes.¹⁰ It highlights that significant impacts have been found for a range of childhood outcomes and behaviours, with stronger effects for studies focused on families in poverty.

And these intergenerational impacts cannot simply be explained away by genetic inheritance. A study from the UK has demonstrated that, on average, children with mothers that have worse mental health still experience worse emotional outcomes even after controlling for genetic traits that are linked to an individual's likelihood of experiencing depression.¹¹

⁷ Royal College of Psychiatrists (2022): *Parental mental illness: the impact on children and adolescents: for parents and carers*, accessed here: <https://www.rcpsych.ac.uk/mental-health/parents-and-young-people/information-for-parents-and-carers/parental-mental-illness-the-impact-on-children-and-adolescents-for-parents-and-carers>

⁸ Manning C, Gregoire A (2006): *Effects of parental mental illness on children*, *Psychiatry* 5(1), 10-12

⁹ NHS Digital (2018): *Mental Health of Children and Young People in England, 2017 Predictors of mental disorders*, accessed here: <https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2017/2017>

¹⁰ Goodman S, Rouse M, Connell A, Broth M, Hall C, Heyward D (2010): *Maternal depression and child psychopathology: a meta-analytic review*, *Clinical Child and Family Psychology Review*, 14(1):1-27

¹¹ Clark A, D'Ambrosio C, Ghislandi S, Lepinteur A, Menta G (2021): *Maternal depression and child human capital: a genetic instrumental-variable approach*, Centre for Economic Performance Discussion Paper No.1749

The evidence for the impact of a father's mental health on childhood outcomes is less well developed and findings are more mixed. For example, one UK-based study highlighted that depression amongst fathers is related to worse development outcomes for children at age 3, particularly for boys, although these effects were not significant by the time the child was 7 years old.¹² However, other studies highlight the range of indirect effects that fathers' mental health can have through its impact on the support for mothers and the level of engagement with children.¹³

These impacts are likely to have long-lasting effects. There is a range of evidence which links lower childhood mental health and emotional outcomes to worse outcomes as an adult including: truancy, exclusions, academic attainment, depression as an adult, future earnings and likelihood of employment.^{14 15 16} Additionally, a recent study of "Adverse Childhood Experiences" that included "living with someone with poor mental health" highlighted that these types of childhood experiences are associated with a range of worse outcomes as an adult including: higher consumption of alcohol, smoking, drug use, anxiety and depression.¹⁷

The fact that poor parental mental health leads to worse outcomes for children has the potential to create a vicious cycle with long-term intergenerational effects.

¹² Ramchandani P, O'Connor T, Evans J, Heron J, Murray L, Stein A (2008): *The effects of pre-and postnatal depression in fathers; a natural experiment comparing the effects of exposure to depression on offspring*, The Journal of Child Psychology and Psychiatry, 49(10): 1069-1078

¹³ Khan L (2018): *Fatherhood; the impact of fathers on children's mental health*, Centre for Mental Health, accessed here: <https://www.eani.org.uk/sites/default/files/2018-11/The%20Impact%20of%20Fathers%20on%20Child%20Mental%20Health.pdf>

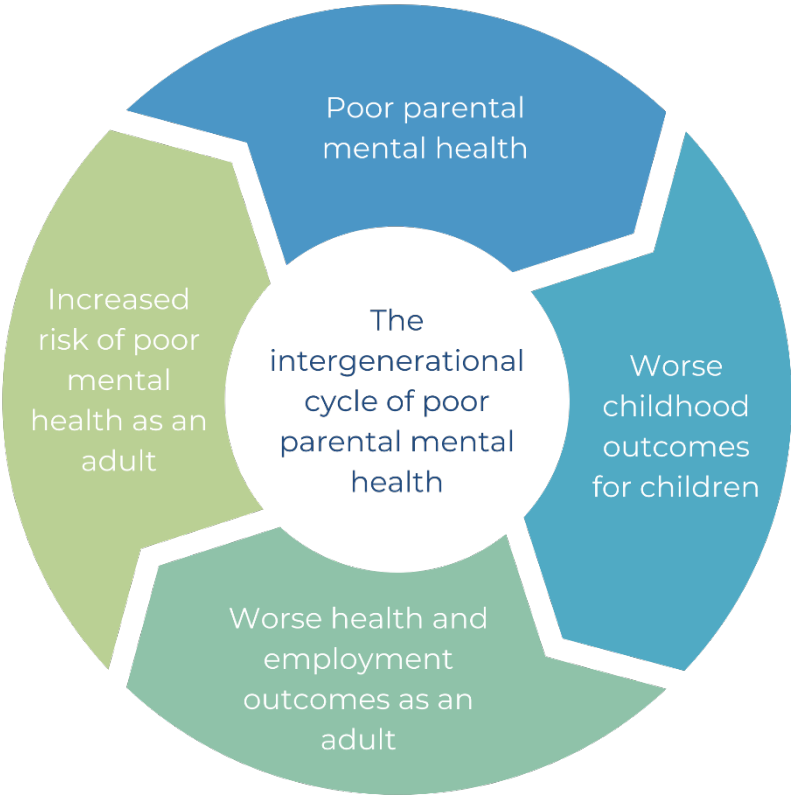
¹⁴ St John T, Leon L, McCulloch A (2004): *Lifetime impacts. Childhood and adolescent mental health; understanding the lifetime impacts*, Mental Health Foundation, accessed here: https://www.mentalhealth.org.uk/sites/default/files/lifetime_impacts.pdf

¹⁵ Paull G, Xu X, (2017): *Study of Early Education and Development (SEED): the potential value for money of early education*, Department for Education, accessed here: <https://www.gov.uk/government/publications/early-education-potential-value-for-money>

¹⁶ Smith N, Marshall L, Albakri M, Smuk M, Hagell A, Stansfield S (2021): *Adolescent mental health difficulties and educational attainment: findings from the UK household longitudinal study*, BMJ Open. [bmjopen-2020-046792](https://doi.org/10.1136/bmjopen-2020-046792)

¹⁷ Hughes K, Ford K, Kadel R, et al (2020): *Health and financial burden of adverse childhood experiences in England and Wales: a combined primary data study of five surveys*, BMJ Open;10:e036374. doi: 10.1136/bmjopen-2019-036374

Figure 2. The intergenerational cycle of poor parental mental health



Case Study – Juliet, now 19 years old

“When I was told as a child that my mum was in hospital, I was also told it wasn’t her fault. But I couldn’t understand why it ever would be her fault that she was in hospital - or mine either, which I was also reminded of daily. The topic of mental illness was, and remains to this day, a taboo subject for the adult world. But kids don’t understand taboo, so I was left wondering about the weird behaviour, and sudden absence, of my mum.

Why had she spent all day in her room? Why, when I came in to give her a hug and turn the light on, did she shout and throw things at me? Why, one afternoon on the drive back from school, did my dad tell me she had been taken away in an ambulance, that she wasn’t well? And why was I not able to visit her?

I have always put a guard up when it comes to discussing my mum’s illness and the effect it’s had on me. To an extent, I’ve always had to - the stigma surrounding mental illness makes it that much harder to have open conversations about it. Unfortunately, the responsibility of its awkward nature is too often directed back onto the person struggling. From a young age, I trained myself to make light of my situation, to not make the other person feel uncomfortable, to not engage too emotionally with my experiences, for fear of scaring people off.

It wasn’t until I started going to KidsTime Workshops when I was nine that I learned my mum’s illness had a name - bipolar disorder - and I understood that I was a young carer. Finally, the experiences that I had been struggling with internally, holding a confusing sense of shame that I didn’t properly understand, were normalised - and shared by the children and families around me.

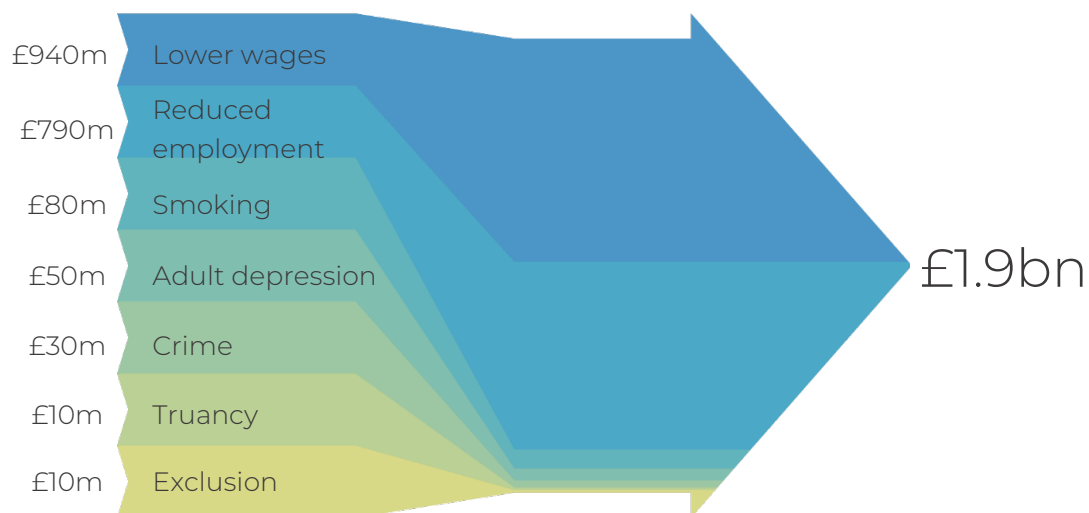
I’m now 19 years old, in my first year at university, and I’m not sure I would be here had it not been for the support I eventually received as a child. But there are so many other children in this country who deserve to have been given the same opportunities that I have - to be listened to, and to have a place that is just for them, where they get a break from the responsibility of having a parent struggling with a mental illness.”

A failure to break this cycle could cost the UK economy £ billions

The vicious cycle of worse parental mental health leading to worse outcomes for children is likely to be having significant consequences for the UK economy. We estimate that the long-term cost from the poorer social and emotional outcomes resulting from the average 11-year-old with a mother experiencing depression could be as much as £11,600.¹⁸ This results from increased costs to taxpayers from higher truancy rates and exclusions at school, increased need for mental health support as well as costs to the individual in the form of reduced income as a result of lower wages and worse employment outcomes.

This means that failing to provide specialist support for the 160,000 children leaving primary school this year with a mother who has experienced an episode of depression, could have long-term costs of as much as £1.9bn. It is important to note that the long-term costs of failure to support all children of parents with serious mental illness is likely to be much higher once other conditions and fathers are accounted for.

Figure 3. The long-term economic cost of not supporting a child with a mother that has experienced an episode of depression could be £1.9bn



¹⁸ Full details of our methodology are available in Annex A.

A proportion of children who live with a parent with a mental illness are likely to be receiving some sort of support. This could be if they reach the high threshold of need for Child and Adolescent Mental Health Services (CAMHS) or are considered “a child who is unlikely to achieve or maintain a reasonable level of health or development” and in need of support from Social Services or Early Help. This is also contingent on being identified as having a parent struggling with their mental health in the first place. This state of play presents several challenges.

Firstly, waiting to provide support at such a late stage when children are in serious need means that those individuals face longer with worsening wellbeing than if they’d received intervention earlier. This is likely to mean that they need more intensive and more costly support, as well as being of greater detriment to the individual.

Secondly, surveys of health trust leaders have highlighted that CAMHS provision is overstretched.¹⁹ This was a challenge prior to the pandemic, but in many parts of the country Covid has led to a worsening of pressures, with the average waiting time for children to receive two contacts reaching 81 days in the worst performing NHS trusts.²⁰

Steps which can lighten the load of CAMHS are clearly critical to explore. If earlier, targeted intervention can lighten the pipeline by ensuring children’s needs are met before they worsen, there are multiple benefits to be had. The high propensity of this group of children to struggle with their mental health means that there is a greater chance that they would gain from targeted support earlier.

Improving the life chances of children affected by poor parental mental health

While there is a good understanding of how many children across the country have parents with mental health difficulties, there is not a good understanding of who they are and where they live. This is a critical barrier to being able to coordinate the best possible care for them.

¹⁹ NHS Providers (2021): *Children and young people’s mental health services survey*, accessed here: <https://nhsproviders.org/media/691473/nhs-providers-children-and-young-peoples-mental-health-services-survey-appendix.pdf>

²⁰ Children’s Commissioner (2022): *Children’s Mental Health Services 2020/21*, accessed here: <https://www.childrenscommissioner.gov.uk/wp-content/uploads/2022/02/cco-briefing-mental-health-services-2021-22.pdf>

Some children affected will be picked up by adult or child mental health workers, or by social services, or others through an observant teacher or GP. But this only happens where there are procedures in place or when the threshold of need for Early Help is met or where practitioners already have a good understanding of the impact of parental mental health. And these factors can vary from area to area, and service to service.

Other countries take a much more proactive approach to ensure these children are identified and supported. In Norway, all professionals working in adult healthcare are required to identify the children of an adult with a mental illness and ensure they receive follow-up support.²¹ New Zealand has comprehensive guidance on how to support all families where there is mental ill-health in a parent covering training, resources and data collections as well as a requirement to link families to appropriate services.²²

A similar, rigorous and uniform requirement to identify and record all children living with parents with a mental illness would be an important first step in creating an understanding of how many there are in the school system, and whether they are better supported there or in the community.

Alongside identifying and counting these children, appropriate, accessible support tailored to this group's specific needs is also important. This is not consistently available at present, with a postcode lottery of provision across the UK. In some parts of the country, local authorities have prioritised this targeted approach. For example, in Westminster, Our Time has had a partnership operating with Westminster City Council for the last 6 years. Since 2020, Our Time's delivery of its KidsTime Workshop has been integrated into the council's provision of family hubs, allowing a joined-up approach and spreading access to specific, skilled family support.

However, in many other areas of the country, even if a child is identified as needing help due to their parent's mental health, there is often no appropriate support that is tailored to, and informed by, their needs. It is this lack of specialist intervention that can result in worsening difficulties and higher level, later stage and more costly interventions. Such limited

²¹ Ministry of Health and Care Services (2009): *Act on amendments to the Health Personnel Act etc. (follow-up of children as relatives)*, accessed here: <https://lovdata.no/dokument/LTI/lov/2009-06-19-70>

²² Ministry of Health (2015): *Supporting parents, healthy children*, accessed here: <https://www.health.govt.nz/publication/supporting-parents-healthy-children>

and patchy provision also means that it is more difficult to prove the effectiveness of an intervention, and so achieve sustainability of provision.

Madhu Chauhan, Head of Early Help, Westminster City Council

“We feel poor mental health is on the rise among parents in Westminster. It's often hidden, a problem that is not acknowledged, or families are reluctant to name it. It's been exacerbated by the pandemic, as it was more difficult for many families to connect with the networks they relied on for support. Mental illness in parents has a ripple effect, their children are inadvertent carers and need specific support. These young people are often more difficult to spot, the impact of living with parental mental illness is not always obvious and can show itself as a hypervigilance. We need to think about how to tackle the stigma around mental health, that speaking out about it could risk a child being removed.

That's why programmes such as KidsTime are really important, as they allow children to talk about it without stigma, and parents to see that other families experience the same thing. Hosting groups such as these in our Family Hubs is really beneficial, we use our existing sites where people visit frequently so they will be aware of the support on offer, and we can reach more people that way. Locating it with our other services encourages people to engage.”

Our Time is campaigning for better and more comprehensive support for these children. To accomplish this, there would need to be increased awareness and understanding of poor parental mental health and the signs of its impact amongst a range of public services. Widespread specialist training would be required for all relevant professionals - those who work directly with young people such as teachers, but also those who care for their parents such as GPs, adult mental health practitioners and others.

All those working in these different roles would need to work together, sharing information and coordinating responses. Crucially, the right

support would need to be available to them - tailored to their specific needs – no matter where in the country they live. Through this programme of preventative intervention, longer-term negative consequences could be headed off.

Achieving this vision is possible, with the right training and collaboration in place, and a firm commitment to providing appropriate and effective support. By acting to break the intergenerational cycle of mental ill health, an important constraint on social mobility would be lifted, wellbeing inequality addressed, and lives improved. Given the scale of the problem and the long-term costs involved, it is likely to have a material impact on the health and productivity of the UK economy that will be measurable for decades to come.

Annex A: Methodology for estimating economic costs of poor parental mental health

We take a three-step approach to estimating the long-term economic costs to children that have a parent that has experience of poor mental health:

- **Step 1:** Estimate the impact that having a parent with experience of poor mental health has on childhood Strengths and Difficulty Questionnaire (SDQ) scores.
- **Step 2:** Estimate the long-term economic costs of a change in SDQ score for a child that has a parent with poor mental health.
- **Step 3:** Estimate the total cost for a single cohort of children leaving primary school.

This annex provides details for our approach to each of these steps as well as discussing the impact of some of the key assumptions used in our analysis.

Step 1: Estimate the impact that having a parent with experience of poor mental health has on childhood Strengths and Difficulty Questionnaire (SDQ) score

Whilst there is significant evidence establishing a link between parental mental health and outcomes for children, we need to identify a study that can support the robust monetisation of long-term impacts.²³ In practice for the UK this often means assessing impacts on children based on the SDQ measure which has been linked to monetised outcomes in a study commissioned by the Department for Education.^{24 25}

We draw on a recent high-quality study that links depressive episodes amongst mothers to increases in their children's SDQ scores based on data

²³ For evidence on the range of impacts identified in studies, please see Goodman et al. (2010).

²⁴ SDQ is a brief behavioural screening questionnaire for children that has often been used as an indicator of socio-emotional outcomes. For more information, please see <https://www.sdqinfo.org/a0.html>

²⁵ Paull & Xu (2017)

from the Avon Longitudinal Study of Parents and Children (ALSPAC).^{26 27} This study uses a novel approach to controlling for genetic traits associated with increased risk of depression in order to isolate the impact of environmental factors linked to having a mother with depression rather than inherited factors. This is a more relevant study for our purposes as it captures the component of the impact on children's socio-emotional outcomes that could potentially be influenced with support (as opposed to genetic factors that cannot be altered).

The study suggests that each additional episode of maternal depression is associated with a 0.45 standard deviation increase in the SDQ Total Difficulties measure.

Step 2: Estimate the long-term economic costs of a change in SDQ score for a child that has a parent with experience of poor mental health

We link the change in SDQ scores identified in Step 1 to evidence on the long-term economic costs from a change in SDQ to estimate the average long-term economic costs for a child that has a mother with experience of depression.

Paull and Xu (2017) estimate the economic impact arising from a change in childhood SDQ score. Their approach is twofold:

1. They evidence the link between childhood development measures (including SDQ) at ages three and four with later life outcomes. They also use analysis of the National Pupil Database to link school achievements at age seven to later lifetime outcomes. This gives a set of later life outcome probabilities associated with a one standard deviation change in SDQ score at childhood.
2. They draw upon a variety of evidence sources to monetise these later lifetime outcomes associated with a change in childhood SDQ score. This allows for monetary estimates of the value of future outcomes associated with a one standard deviation change in SDQ.

The relevant relationships to later outcomes from Paull and Xu (2017) are shown in Figure 4 below. These show the change in the probability of each outcome associated with a one standard deviation increase in the SDQ

²⁶ Clark et al (2021)

²⁷ ALSPAC is a longitudinal study of a population of more than 12,000 children born to mothers residing in the Avon area of South West England in 1991/92. More details can be found here: http://doc.ukdataservice.ac.uk/doc/6147/mrdoc/pdf/alspac_overview_guide.pdf

score for children at age 11 (a worsening of socio-emotional outcomes). We have kept these probability estimates the same in our report in absence of any newer evidence linking SDQ outcomes to later outcomes.

Figure 4. Impact of a one standard deviation increase in the SDQ measure for children aged 11 on the probability of future outcomes

Outcome	Age	Change in probability
Truancy	11-16	+2.2%
Exclusion	11-16	+0.2%
Crime	16-42	+1.6%
Smoking	16-60	+1.3%
Depression	16-60	+1.9%
Employment	16-60	-2.1%
Wages	16-60	-2.5%

We have updated the monetary values associated with a change in childhood SDQ score in light of newer evidence on the following:

1. Values of outcomes
 - a. Employment – using ASHE data and Universal Credit basic rate data for October 2021.²⁸
 - b. Earnings – using the ASHE data on median earnings from 2021, and the National Insurance and Income Tax rates from HMRC²⁹
 - c. Smoking – using the ASH Ready Reckoner data on costs of smoking³⁰
 - d. Crime – using the Home Office Cost of Crime data³¹
2. Inflation – using the 2021 GDP deflator³² to present costs and benefits in 2021 price levels

²⁸ ONS (2021): *Earnings and hours worked, age group: ASHE Table 6*, accessed here: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/dataset/agegroupashtable6> and Universal Credit thresholds payments: <https://www.gov.uk/universal-credit/how-your-earnings-affect-your-payments>

²⁹ ONS (2021)

³⁰ ASH (2022): *ASH Ready Reckoner 2022*, available here: <https://ash.org.uk/ash-local-toolkit/ash-ready-reckoner-2022/>

³¹ Home Office (2018): *The economic and social costs of crime Second edition*, Research Report 99, accessed here:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/954485/the-economic-and-social-costs-of-crime-horr99.pdf

³² ONS (2022): *GDP deflators at market prices, and money GDP*, accessed here:

<https://www.gov.uk/government/collections/gdp-deflators-at-market-prices-and-money-gdp>

Figure 5 shows our updated estimates for the impact of a change in SDQ on longer-term economic outcomes, based on Table 7 of Paull and Xu (2017), alongside our estimated impact of a 0.45 standard deviation change resulting from having a mother that has experienced an episode of depression. All columns are expressed in 2021 prices.

Figure 5. Monetary value of a change in SDQ outcomes for children age 11 via associated future outcomes

Outcome	Estimated £ impact from 1 standard deviation change in SDQ at age 11	Estimated £ impact from 0.45 standard deviation change in SDQ at age 11
Truancy - government (age 11-16)	119	54
Exclusion - government (age 13-16)	85	38
Smoking - private (age 16-60)	536	241
Smoking - government (age 16-60)	-160	-72
Smoking - society (age 16-60)	625	281
Crime - government (age 16-60)	196	88
Crime - society (age 16-60)	254	114
Depression - government (age 16-60)	734	330
Employment - private (age 16-60)	6,630	2,983
Employment - government (age 16-60)	4,049	1,822
Wages - private (age 16-60)	9,780	4,401
Wages - government (age 16-60)	2,933	1,320
Total	25,780	11,601

We estimate that the average economic cost from the increase in SDQ outcomes at age 11 resulting from having a mother with depression is the equivalent of around £11,600.

Step 3: Estimate the total cost for a single cohort of children leaving primary school

Given that the evidence used in this estimate specifically focuses on the impacts of maternal depression, we need to estimate the number of children aged 11 that are likely to have experienced a mother with experience of depression.

We draw on a study based on UK primary care data that differentiates the prevalence of maternal depression by the age of the child.³³ This study suggests that for children aged 12-14 the prevalence was 20.0%.³⁴ Given that there were 817,000 11 year-olds in the UK in 2020, we estimate that 163,000 of them (20% of the total) will have a mother with depression.

If we multiply the total number of 11 year-olds that could be affected by the average cost from Step 2 we get an estimate that a failure to support these children could have long-term economic costs of £1.9bn.

Sensitivity of our analysis to key assumptions

It is important to understand the impact that the key assumptions of our analysis have on our conclusions:

- We have only identified sufficient high-quality evidence to estimate the likely economic impact of maternal depression. As such, we have not included potential costs from other mental health conditions or the potential impacts of paternal mental health on childhood outcomes. We assume that 20% of 11-year-olds are affected by poor maternal health and that this costs £1.9bn. However:
 - If a similar impact was seen for other maternal mental health conditions that affect 25% of children then this cost would increase to £2.4bn, and;
 - if a similar effect was seen for the 33% of children that have at least one parent facing emotional distress then the costs could be as much as £3.1bn.^{35 36}

³³ Abel K, Hope H, Swift E, Parisi R, Ashcroft D, Kosidou K, Osam C, Dalman C, Pierce M (2019): *Prevalence of maternal mental illness amount children and adolescents in the UK between 2005 and 2017: a national retrospective cohort analysis*, The Lancet Public Health, 4(6), E291-E300

³⁴ This appears broadly plausible and consistent with estimates from other sources, for example that 33% of children have at least one parent facing emotional distress from Public Health England (2021)

³⁵ Abel et al. (2019)

³⁶ Public Health England (2021): *Statistical commentary: children living with parents in emotional distress, March 2021 update*, available here: <https://www.gov.uk/government/statistics/children-living-with-parents-in-emotional-distress-march-2021-update/statistical-commentary-children-living-with-parents-in-emotional-distress-march-2021-update>

- Our methodology uses evidence from Paull and Xu (2017) linking childhood changes in SDQ score to later monetisable outcomes. Part of this link involves an estimated change in probability of a later outcome associated with a change in childhood SDQ. We have assumed that the estimated probabilities in experiencing these outcomes are the same for children affected by maternal depression as for the average student studied in Paull and Xu. However, this may not be accurate as Paull and Xu estimates are for the average child in England.

If we use the 95% confidence interval around the estimated relationships used in Paull and Xu's paper then it can give us an indication of the impact of uncertainty over these long-term relationships on our final estimates. This approach gives us a potential range of costs from £1.3bn to £2.5bn (compared to our central estimate of £1.9bn).

- We assume that the impact of maternal depression on children's SDQ scores estimated from the ALSPAC data in Avon is representative of the likely impacts on children across the whole of the UK.

We use the 95% confidence intervals estimated in Clark et al. (2021) to explore a range of potential assumptions for the strength of the impact of having a mother with experience of depression on children's SDQ scores. We find that total costs could range from £0.8bn to £2.9bn (compared to our central estimate of £1.9bn).

Whilst variation in our key assumptions can affect the estimated economic cost of poor parental mental health on children, it doesn't alter the broad conclusion that it is likely to cost society significant amounts over the longer term. Overall it is likely that our central estimates provide a relatively conservative estimate of the wider economic costs from poor parental mental health as they are focused solely on the impacts of maternal depression and, in addition, we have not included any costs for the reduced quality of life experienced by the children as a result of their lower socio-emotional outcomes.



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