The Consequences of Abuse and Neglect in Childhood on Adult Physical Wellbeing and Mortality

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30th September 2023

We thank Eirini Flouri, Carol Graham, Alan Piper, George Ploubidis, Nick Powdthavee, Doug Staiger and Sarah Stewart-Brown for helpful comments.

Abstract

Using cross-sectional data files for the United States and birth cohort data for Great Britain we show that difficulties experienced in childhood have a substantial and significant impact on both physical and mental health in adulthood – so-called Adverse Child Experiences (ACE). Our evidence for the US is taken from the BRFSS2009-2023 which contains a special supplement asking respondents about abuse in their childhood. We find these measures tend to have an impact on a range of physical outcomes years later raising the probability the respondent had asthma., diabetes, a heart attack, angina, arthritis, high blood pressure or skin cancer. There was further evidence that the ACEs were associated with restless sleep, difficulties walking and concentrating and raised the probability of smoking and drinking years later as well as. We then looked at physical impacts at age 55 in 2013 from childhood adversity using longitudinal data from the 1958 British NCDS birth cohort. We found evidence that abuse and bullying while young were associated with a higher probability of reporting having asthma, diabetes, backache and high blood pressure, worse health and even a higher BMI, even controlling for birthweight. In both surveys we found that ACEs were associated with a lower probability of having a job or being married as an adult. The impact of ACEs linger.

Key words: childhood adversity; family circumstances; bullying; physical health; work

In two recent papers we have examined the impacts of neglect and abuse in adulthood – so-called Adverse Child Experiences (ACE) – on adult outcomes. In Blanchflower and Bryson (2023a) we used data for Europe and the United States to examine their impact on wellbeing in later life. Death of a parent, parental separation or divorce, financial difficulties, the prolonged absence of a parent, quarreling between parents, parental unemployment, sexual assault, experiencing long-term health problems, and being bullied at school as does being beaten or punched as a child all have long-term impacts on wellbeing. The evidence of adverse childhood experiences impacting adult wellbeing outcomes we found was consistent across 47 different wellbeing measures we identify including individual sixteen positive affect measures including living standards, happiness, life satisfaction and satisfaction with family and social life, and twenty-three individual negative affect measures such as the GHQ6, high blood pressure, loneliness. down and depressed and tired. In addition, we find childhood adversity impacts views on the area where the respondent lives in eight variables, including unemployment, drugs, violence and vandalism plus democracy in their country.

In Blanchflower and Bryson (2023b) we made use of birth cohort data from the British National Child Development Study of everyone born in Great Britain in one week in March 1958. We were able to use characteristics from childhood including reports from a parent on whether the child was bullied at 7 and/or at age 11. Perhaps unsurprisingly, bullying makes adolescents at age sixteen more worried, miserable and tearful. But it has persistent effects on wellbeing across the life-course. We show bullying negatively impacts life satisfaction at ages 42, 46, 50 and 62 as well as several other wellbeing measures at ages 42, 50 and 55. It also significantly lowers the probability of having a job as an adult right through to age 62. These effects are independent of a number of other childhood experiences, such as whether the child reported that they got on well with their mother or father when they were 16, many of which also have persistent effects on outcomes in adulthood. A child who is bullied appears to carry scars for a lifetime.

In both of these papers the main emphasis was on mental health outcomes, although we did find that these ACE measures in the BRFSS data increased both the number of bad metal health days but also the number of physical health days in a month. We build on that evidence here by looking at additional outcome variables mostly relating to health including, asthma, diabetes and backache in adulthood.

Consistent with the finding of significant impacts of adversity in childhood on adult mental wellbeing we are mindful that there is a substantial literature showing that ACE can impact physical as well as emotional outcomes. Chen and Lacy (2018) found using the NCDS for the UK that ACS – measured as care placement, physical neglect, parental separation, family history of offences, mental illness, domestic conflict and alcohol mis- use across childhood (0–16 years) - were associated with inflammation. Inflammation was indicated from blood samples at age 44/45 and potentially, the authors suggest, can have consequences for chronic diseases, such as ischemic heart diseases and cancer.

ACEs suggest increased risk of depression, anxiety, aggression, suicide risk (Chapman et al., 2004, Turner et al., 2006), personality disorders (Afifi et al., 2010), and substance abuse (Mersky et al., 2013). There is a literature suggesting that poor parental treatment, such as physical abuse and neglect, has a major impact on adult mental health and well-being, see, for example, Afifi et al. (2008), Corso et al. (2009), Kessler et al. (1997) and Weich et al. (2009).

Kelly-Irving et al (2013) found in the NCDS that children with higher ACE scores had nearly double the risk of premature mortality through middle age fifty than children without ACE. Brown et al (2009) found that "*ACEs are associated with an increased risk of premature death*". A Danish study also found ACEs raised mortality (Østergaard al (2019).

Yu et al (2022) used a US birth cohort to examine 13 individual ACEs assessed between birth and age seven and at the start of the study respondents were age 12-20 in 1979 and followed them up in 2016 – more than three decades later - and observed that 3,344 had died from an overall sample of 46129. The authors found that "*higher ACE scores led to an increasing risk of premature mortality, with each additional adversity associated with about a 10% higher risk of premature mortality, and exposure to ≥4 ACEs associated with a 45% higher risk of premature mortality*" (p.7).

Felitti et al (1998) found a strong dose relationship between ACE and the presence of adult diseases including ischemic heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease as well as poor self-rated health. The findings they argue "*suggest that the impact of these adverse childhood experiences on adult health status is strong and cumulative"* (p.251)

Hughes et al (2017) performed a meta-analysis of the impacts of ACE and found increased risk among individuals with at least four ACEs compared with those reporting none. "*Associations were weak or modest for physical inactivity, overweight or obesity, and diabetes; moderate for smoking, heavy alcohol use, poor self-rated health, cancer, heart disease, and respiratory disease; strong for sexual risk taking, mental ill health, and problematic alcohol use; and strongest for problematic drug use and interpersonal and self-directed violence.*"

Swedo et al (2023) from the CDC have reported on these ACE data, averaged across the 2012-2020 BRFSS surveys (n=24,882), across twenty-five states that fielded these ACE questions. Overall, 64% of Americans reported at least one ACE. The authors note that the incidence – obtained by summing the individual scores - was especially high in Oregon and low in New Jersey. It was higher among women- and especially so for sexual abuse. The incidence was high among the least educated, the unemployed and those unable to work and those age less than 35. Merrick et al (2019) also examined ACE data (n=144,017) using the pooled 2015-2017 BRFSS and found that respondents with ACE had higher probabilities of being associated with worse health outcomes.[1] These included coronary heart disease, stroke, asthma, chronic obstruction pulmonary disease (COPD), cancer (excluding skin cancer), kidney disease, diabetes, being obese and depression. Cole, Armstrong, Giano and Hubach (2022) also examined the ACE data in the 2009-2018 BRFSS and found the highest incidence was among Native Americans and Alaska Natives.

Monnat and Chandler (2015) examined the impact on adult health from ACEs using data on 52,250 adults ages 18-64 using pooled 2009-2012 BRFSS data. They found that "*experiencing childhood physical, verbal, or sexual abuse, witnessing parental domestic violence, experiencing parental divorce, and living with someone who was depressed, abused drugs or alcohol, or who had been incarcerated were associated with one or more of the following health outcomes: self-rated health, functional limitations, diabetes, and heart attack*". We build on and extend their work using a larger and more recent BRFSS sample.

[1] These ACE variables for 2015-2017 are not available in the publicly available BRFSS data files.

Evidence for the United States from the BRFSS, 2009-2023

Here we examine evidence on as series of outcomes we did not analyze in Blanchflower and Bryson (2023a), with a pooled data file for the years 2009-2013from the BRFSS using the same module on adversity in childhood. The BRFSS data files includes data from respondents in only four states and the District of Columbia while the more recent file covers 32 states. All of the files contain information on eight adverse childhood experiences that respondents reported as an adult that occurred when they were a child.[2] The questions used are as follows.

a) Did you live with anyone who was depressed, mentally ill, or suicidal?
b) Did you live with anyone who was a problem drinker or alcoholic?
c) Did you live with anyone who used illegal street drugs or who abused prescription medications?
d) How often did anyone at least 5 years older than you or an adult, ever touch you sexually?
e) How often did anyone at least 5 years older than you or an adult, try to make you touch them sexually?
f) How often did anyone at least 5 years older than you or an adult, force you to have sex?
g) Before age 18, how often did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way? Do not include spanking.
h) Were your parents separated or divorced?

Sample sizes by year are as follows, noting that surveys also tend to have small numbers of observations in the following year, which is why there are 1388 observations in 2023.;

2009	11,473
2010	23,322
2011	46,288
2012	29,275
2013	912
2020	121,807
2021	54,296
2022	46,508
2023	1,388
Total	431,870

We also summed the eight questions to create an aggregate score which has a weighted mean of 1.3. Just under half of respondents reported none while 9% had four or more. The three variables relating to sexual abuse allowed the possibility of responding never, once or more than once. For simplicity we simply recoded all of these variables as (1,0) Yes/No dummies. It is clear that women report a higher incidence of sexual abuse. The three control variables relating to sexual

[2] Respondents were told the following in the 2010 BRFSS Questionnaire (https://www.cdc.gov/brfss/questionnaires/pdf-ques/2010brfss.pdf)
"*I'd like to ask you some questions about events that happened during your childhood. This information will allow us to better understand problems, that may occur early in life, and may help others in the future. This is a sensitive topic, and some people may feel uncomfortable with these questions. At the end of this section, I will give you a phone number for an organization that can provide information and referral for these issues. Please keep in mind that you can ask me to skip any question you do not want to answer. All questions refer to the time period before you were 18 years of age. Now, looking back before you were 18 years of age"*

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In Appendix 1 we report five wellbeing regressions using the same four variables examined in Blanchflower and Bryson (2023a) where results were reported for 2009-2013 and 2020-2023 separately. Here we estimate them for the number of bad mental health days in the last thirty, despair (where 30/30 were bad days) health status and having a depressive disorder. Here we have a larger sample size, and the results are the same – that ACE lowers adult wellbeing.

We also have data in the BRFSS on not just the number of bad mental health days in the last thirty but also on the number of bad physical heath days over the last thirty days. This matters because of the evidence that ACEs have impacts on physical health and even mortality. The exact question is as follows.

Q1. "Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?"

This question has been asked since 1993 and is plotted in Chart 1. Interestingly it declined during the COVID pandemic. We also plot the proportion of individuals reporting that all of the last thirty days were bad physical health days – we call this physical distress. This showed a comparable upward trend and a downtick in the COVID lockdowns in 2020 and subsequent rise in 2021 and 2022.

The number of bad physical health days and % saying every day was bad are markedly higher for those with a higher aggregate score as noted below. Here we use a cut-off of two or less (84%) and 3 and more (16%). There were declines for those with low or high ACE scores in 2020.

	# bad days		% all 30/30 bad days	
	Ace score 0-2	Ace score 3-8	Ace score 0-2	Ace score 3-8
2009	3.61	5.74	6.1	9.4
2010	2.93	5.69	4.9	9.5
2011	3.11	5.31	5.1	9.0
2012	3.49	5.59	6.4	9.6
2019	3.87	6.12	6.9	10.9
2020	3.01	5.14	5.4	9.2

2021	3.34	5.07	6.0	8.5
2022	3.81	6.01	6.4	10.1

In the sample of 423,100 we use that responded to the ACE questions two thirds of the weighted sample report zero bad days while 6.7% reported all thirty days.[3]

We include the eight ACE variables as controls in seven different regressions in Table 1 for 2009-2023 starting with 1) the number of bad physical health days and 2) physical distress, measured as a (1,0) dummy if the respondent reported all thirty days were bad and whether the respondent had ever been diagnosed with an anxiety or a depressive disorder.[4] Sample sizes are around 425,000 for both. Both equations show significant harmful impacts from abuse and neglect in childhood raising ill-being in adulthood.

We then move to estimate equations relating to five serious health outcomes – whether individuals report separately having had
1) angina,
2) a heart attack,
3) stroke,
4) asthma,
5) diabetes.

Once again sample sizes are around 430,000. The probability of each of these serious health outcomes is higher for those who had childhood ACEs.

Results are similar in Table 2 for a further seven variables and the findings are similar in every case that ACE raises the incidence.

6) skin cancer,
7) arthritis,
8) high blood pressure,
9) difficulty walking,
10) difficulty concentrating,
11) current smoker,
12) current drinker.

Table 3 provides further evidence of the harmful effect of ACE on obesity, measured with the BMI, whether the respondent had children in the household, had a job, had graduated from four year college or was neither married nor widowed.

[3] We use *_finalwt* and *_llcpwt* as the weights when estimating means and use unweighted data in the econometric analysis.
[4] Monnat and Chandler (2015) examined the BRFSS from what appears to be the 2010 and 2011 surveys with a few observations in 2012 (n=52,250) to examine the impact of ACEs on self-reported health, functional limitations plus diabetes and heart attacks, for individuals ages 18-64 and found strong negative effects. We are unable to exactly replicate this sample size. Sample size for those with responses for example to the live with anyone with depression variable ages 18-64 is 16371 in 2010; 33,324 in 2011 and 20438 in 2012.

Table 4 extends work done in Blanchflower and Bryson (2022) on sleep using the BRFSS. It shows that ACE lowers sleep time and increases short but not long sleep and increases restless sleep days over both a month and a fortnight.

ACE increases physical ill-health in the BRFSS sample examined here. We now turn to longitudinal data.

2) The British National Child Development Study 1958-

The National Child Development Study (NCDS) follows all those born in one week in March in England, Scotland and Wales in 1958 (see http://www.cls.ucl.ac.uk/ncds). Participants have been and continue to be, followed throughout their lives, with survey waves taking place at birth in the Perinatal Mortality Study (PMS) and then at ages 7, 11, 16, 23, 33, 42, 44, 46, 50, 55 and 62 making a total of twelve sweeps.[5] The survey includes data from the cohort member (CM), the CM's teachers and the CM's parents. We make use of data at age 7 from NCDS1, age 11 from NCDS2, the Biomedical study taken at age 42 and use them to predict a series of physical health outcomes at age 55 in NCDS9. In total there are 18,558 respondents including 619 stillbirths and neonatal deaths and around 9000 observations in NCDS9. Including data from earlier sweeps reduces sample sizes to around 6000.

Other studies that have used the NCDS include Brown and Taylor (2008), Flouri, E. (2004), Blundell, Dearden and Sianesi (2005), Gondek, Lacey, Blanchflower and Patalay (2021), Gondek, Bann, Patalay, Goodman, McElroy, Richards and Ploubidis (2020), Moulton, Sullivan, Patalay, Fitzsimons, Henderson, Bann and Ploubidis (2023). These papers have primarily studied mental impacts. Ploubidis et al (2020) have examined biomarkers and mortality.

We use four major sets of controls – along with gender, region and labor force status previously used in Blanchflower and Bryson (2023b).

i) *Bullying.* The parent was asked in 1965 and 1969 when the child was seven and eleven respectively, whether they were bullied by other children.

"Read this to the mother. Now I am going to mention some descriptions of behaviour shown by children. Could you tell me first whether these kinds of behaviour never happen with (child) or whether they happen sometimes or frequently ***at the present time*** *(n135 in NCDS1 and n1449 in NCDS2) - he or she "****is bullied in school.****"*

Responses are as follows (n=15,336). One in five are bullied are bullied sometimes or frequently. Twelve percent of respondents have no data as there was no parental interview or the answer was missing.

	No never.	sometimes	frequently	dk	missing	Total
No, never	6429	1126	152	910	742	9359
Yes, sometimes	2218	1105	203	410	312	4248

[5] The sweeps were as follows 1958 Birth – Perinatal Mortality Study; 1965 age 7 – NCDS1; 1969 age 11 – NCDS2; 1974 age 16 – NCDS3: 1981 age 23 – NCDS4; 1991 age 42 – NCDS5; 2000 age 42 – NCDS6; 2002 age 44 – Biomedical; 2004 age 46 – NCDS7; 2008 age 50 - NCDS8; 2013 age 55 – NCDS9; 2020 age 62 – NCDS COVID https://cls.ucl.ac.uk/cls-studies/1958-national-child-development-study/

Yes, frequently	270	248	121	81	56	776
DK	489	146	31	184	192	1042
Missing	663	199	35	316	1920	3133
Total	10069	2824	542	1901	3222	18558

Overall 11872 reported bullying at both 7 and 11 of which 1677 reported sometimes or frequent in both (1105+203+248+121) or 14.1%.

ii) A BAGC score of psychological symptoms.[6]

A question is what are a child's behavior and attitudes in particular settings? Available in the NCDS data at age 7 is a set of personality scores known as the BSAG - the 'Bristol Social-Adjustment Guide' which can be *used in the* NCDS to give a quantitative assessment of the child's behavior.[7] It is defined from the following twelve syndromes: Unforthcomingness; Withdrawal; Depression; Anxiety for acceptance by adults; Hostility towards adults; 'Writing off' of adults and adult standards; Anxiety for acceptance by children; Hostility towards children; Restlessness; Inconsequential behavior; Miscellaneous symptoms and Miscellaneous nervous symptoms". The higher the score, the more indications there are of problem behavior. See Engel (1959) and Stott and Sykes (1958).

We use the combined total score for all these syndromes (variable =*n455*). This takes values from 0-64. It has both a mean and standard deviation of 8.8. The distribution was 0=9.5%; 1=10.8%; 2=9.4%; 3=7.7%; 4=6%; 5-9=21.7%; 10-19=18.9%; 20-64=11.9%. Children that were bullied frequently had higher BSAG scores.

ii) IQ score at age 11. Children in the UK in the 1960s took the 11-plus to determine which type of high school they went to. This score is available in NCDS2 at age 11.

iv) Child adversity reported when respondent was age 42.

We make use of retrospective reports on four variables respondents provided when they were age 42.

The next few questions are about your childhood. Thinking about your childhood, up to the age of 16,… The following are statements about your childhood. For each, please say whether the statement applies to you.
a) I grew up in poverty or financial hardship – Yes/no (variable=poverty).
b) I suffered humiliation ridicule, bullying or mental cruelty from a parent (or parent-figure) – Yes/no (variable=humiliation).
c) I was physically abused by a parent - punched, kicked or hit or beaten with an object, or needed medical treatment Yes/no (variable=physical abuse).
d) I was sexually abused by a parent (or parent-figure) – Yes/no (variable=sexual abuse).

[6] As explained by Brown and Taylor in their footnote 12. We use the combined total score for all these syndromes (variable =*n455*).
[7] Peter Shepherd (2013), '1958 National Child Development Study Bristol Social Adjustment Guides at 7 and 11 years' https://cls.ucl.ac.uk/wp-content/uploads/2017/07/NCDS-Bristol-Social-Adjustment-Guides-final.pdf

The outcomes examined here are different from those examined by Blanchflower and Bryson (2023b), as above for the US we focus here on physical rather than mental health. In this case we focus on adult health outcomes at age 42 in the Biomedical Survey, at age 50 in NCDS8 and at age 55 in NCDS9. These ACE recall data were used by Takizawa, Maughan and Arseneault (2014) in their study of adult health outcomes using the NCDS. Respondents were asked twenty questions on adversity in their childhood. We include five ACE variables reported when the respondent was 42 years of age, showing that as a child they had been brought up in poverty, had been humiliated as a child; physically and/or sexually abused and was brought up in a family where there was conflict and tension.

a) Pain

We focus on pain at age 42 and 50, asthma, backache, high blood pressure at ages 50 and 55 plus obesity. We also look at the probability that the respondent was not married and/or depressed at age 55. In all instances we find ACE lowering wellbeing and increasing ill-being and mental ill-health. Childhood adversity lowers the probability that a respondent decades later will be married.

Table 5 examines nine outcomes on pain reported at age 42 in the Biomedical survey which also included the retrospective ACE variables. The first column refers to pain (variable=*be1*) that lasted for more than 1 day over the previous month. Conditional on having pain then a further eight questions were asked about the location of the pain. So in the case of "left upper" the variable was set to one if this was reported and 0 if it wasn't, plus also to zero if the respondent reported no pain. We did not include the bullying variables at age 7 or 11 or the BAGC score here as they were not significant. We also include a variable (n2317) from NCDS3 when the respondent was age reported by the school regarding if the child "often complains of aches or pains.[8] Overall 53% of respondents at age 42 reported pain lasting at least one day. For those at age 16 that the teacher reported 'certainly applies" 66% reported pain; and 62% for those the statement applied 'somewhat'. IQ at 11 – the 11-plus variable - was significantly negative in every column of the table. In column 1 we see that poverty, humiliation and physical abuse are all significant and positive as is the age 16 'aches and pains' variable. The poverty variable is significant and positive in all nine cases. There is a more mixed picture for the other controls across types. The surprise is the negative and significant sexual abuse variable for upper spine.

b) Pulse Rates and C-reactive Protein

Table 6 examines the impact of bullying on pulse rates and C-reactive protein. The former was examined in Blanchflower and Bryson (2022) and both in Blanchflower, Christakis and Oswald (2011).[9] C-reactive protein (CRP) is an acute phase response protein produced in the liver that indicates general systemic levels of inflammation. CRP is a general marker for inflammation and infection, and it has a number of functions related to immunity and host defense. CRP levels rise as part of the immune response to infection and tissue damage or injury and may be elevated due to the presence of chronic conditions, like diabetes, asthma, rheumatoid arthritis, and heart disease.

[8] The responses were does not apply 11319; 'applies somewhat' 869; 'certainly applies' -235 and 2231 not answered.
[9] Blanchflower Christakis and Oswald (2011) estimated a series of CRP equations using data from the English Health Surveys of 1998, 1999, 2003, 2004 and 2006. They found that it rose with age and BMI, was lower for men and was higher for the unemployed than the employed. It was lower for blacks than whites and for single people compared to married and with the number of children. It was negatively correlated with income and the consumption of fruit and vegetables.

Crimmins et al. (2008) explain that in an acute response the level of CRP can jump one thousand-fold but drops fairly quickly after an infection passes. For that reason, our later equations examine the logarithm of CRP. A blood level above 10 mg/dl is considered a sign of acute illness. CRP levels are also related to hormone levels in women and are elevated with the use of oral contraceptives or postmenopausal hormone replacement therapy. CRP can be used as a rough proxy for heart disease risk since it also rises in response to inflammation in coronary vessels (Koenig et al. 1999). Research has suggested that high levels of CRP, between 3 and 10 mg/dl, are related to the development of cardiovascular disease (Ridker et al. 2000) and cardiac events.

Chen and Lacey (2018) used the NCDs to look at the impact on adverse child experiences on C-reactive protein and fibrinogen at 42 using the NCDS. They used measures of ACE to include care placement, physical neglect, parental separation, family history of offences, mental illness, domestic conflict and alcohol misuse across childhood (0–16 years). They found that their ACE measures raised both but there was no significant effect with a full set of confounders including socio-economic status and health and psychological behaviors. They did not examine bullying. They concluded "*our findings suggest that the occurrence of ACE appears to set children down a path of life course disadvantage, particularly with regards to educational attainment, socioeconomic position and the uptake of risky health behaviors*" (p. 588).

Blanchflower and Bryson (2022b) examined pulse rates using the NCDS but did not examine early life impacts. Three pulse rate readings are taken at age 42 in the Biomedical Survey, and we average them in Table 7. We find that being bullied frequently at age 7 rises pulse rates and C-reactive protein levels thirty-five years later. BSAG scores also enter positively in both. In Table 7 we now focus on outcomes at age 50 using data from NCDS8 and include the bullying at age 7 and 1 variables described above. We start with pain and the following variable (*n8scq8*)

"How much bodily pain have you had during the past 4 weeks – none (28.6%); very mild (=29%); mild (17%); moderate (17%); severe (6%) and very severe (2%).

And
"Did you experience joint aches and pains in the last year (n8mens02)"

We find that poverty and humiliation are significantly positive in both and there is some role for being bullied at 7 and 11. We then focus in the final three columns on whether the respondent reported asthma, backache or high blood pressure. We find some role for the ACE variables including bullying at age 7.

In Table 8 we then move on adult outcomes at age 55 in NCDS9 where we have data on asthma, obesity, measured by the BMI, backache, whether the respondent divorced, separated or never married and finally depression. There is a role also for the four ACE variables reported at age 42. Being sexually abused raise the likelihood of being depressed and of not being married or widowed. Chandola. *et al. (2006*) in the NCDS found that lower IQ score at age 11 in childhood is associated with obesity and weight gain in adulthood. In the present study, this relation appears to be largely mediated via educational attainment and the adoption of healthy diets in later life.

We find impacts of the bullying variables for four of the five outcome variables but not obesity. Being bullied at 7 raises the likelihood of having asthma, backache, being unmarried and feeling depressed fifty years later.

c) Mortality

Ploubidis et al (2021) used NCDS biomarker data to examine mortality. They concluded "*we observed associations between early-life mental health with biomarkers in midlife as well as premature mortality… Experiencing the onset of mental health symptoms in the transition from childhood to adolescence was found to be detrimental with respect to both biomarkers and premature mortality" (pp. 43-44).*

Jokela, Ferrie and Kivimäki M (2009) also used data from the NCDS to examine the extent to which childhood problem behaviors assessed by teachers at ages 7 and 11 years and found they are associated with increased long-term mortality risk at age 46. They used the BSAG scores as we do. They did not examine bullying.

In Tables 9 and 10 we move on to look at mortality at NCDS8 at age 50 and in NCDS9 at age 55. We set to zero if there is a response to the relevant survey. We then set to 1 if the survey participant had died since the age of 16. Overall, there is a total of 18558 respondents minus 1143 with no information in the PMS. So sample is 17,415. The number of deaths and productive cases are as follows.

	Dead	Productive
Age 0	673	17,415
Age 7	821	15,425
Age 11	840	15,337
Age 16	873	14,654
Age 23	960	12,537
Age 33	1049	11,469
Age 42	1199	11,419
Age 44	1286	9,377
Age 46	1323	9,534
Age 50	1459	9,790
Age 55	1659	9,137

By 2012 1659 of the original cohort had died. We focus here on survival since age 16 in NCDS3. At that point there were a total of 873 deaths, so we focus on deaths since that point in adulthood through age 55. At NCDS8 we have 586 (1459-873) dead and at NCDS9 786 (1659-586) dead and 9137 productive. We estimate (1,0) equations to predict the probability of death, probit equations. The mean of the ncds8 variable is 5.6% and 7.9% for NCDS9. Table 9 is at age 50 and Table 10 is at age 55. The two sets of equations are similar.

Sample sizes are around 9000. First, we include controls in the PMS for female, birthweight in ounces which both enter negatively. We also include controls for social class of mother's husband reported in 1958. Death likelihood is lower the higher is the occupational ranking of the father's

occupation. Probabilities were highest for unskilled workers, and lowest for higher administrators and professionals.

We then add bullying frequently and sometimes at age 7 and find being bullied as a child lowers probabilities of being alive decades later. Column 3 adds test scores at age 7 and in both cases a higher reading scores lowers death probabilities.[10] Finally, in column 4 in both tables we add a 'physical abuse by parents' variable – reported retrospectively at age 42. This reduces sample sizes to just over 6000, because of on-responses to the NCDS Biomedical surveys. Physical abuse by parents raises prospects f death. In both cases the bullying variable is still significantly positive. Its addition though removes the significance of the reading test score.

Discussion

In previous papers we looked at the impact of Adverse Child Experiences (ACE) on adult wellbeing. In Blanchflower and Bryson (2023a) we used data for the US and Europe and showed broad based negative impacts on fifty different measures of wellbeing in Europe and the United States. In the second (Blanchflower and Bryson, 2023b) we made use of longitudinal data from the UK 1958 birth cohort, the National Child Development Study, to show the impact of one particular ACE, that of being bullied in school, as reported by a parent, when the respondent was ages 7 and 11.

Here we examine cross-section data from the United States from the BRFSS and longitudinal data once, again from the NCDS on physical wellbeing. In the BRFSS respondents are asked to recall a number of childhood experiences. In Blanchflower and Bryson (2023a) we showed these had large and significant impacts in adulthood, including on happiness, anxiety, depression, feeling tired, and trouble sleeping. Here we show the same variables raised the probability of poor physical outcomes years later. This includes having high blood pressure, angina, asthma, diabetes etc.

We then turned to the NCDS and used bullying data from childhood but also self-reports at age 42 of ACEs when they were a child including physical and sexual abuse by a parent which we showed increased the likelihood of reporting pain at age 42. We find that pulse rates and C-reactive protein levels are higher if a child was bullied or abused. This help us to understand the mechanism of ACEs to physical outcomes as they cause inflammation in the blood which generates poor physical outcomes. Bothe bullying and ACEs reported in midlife raise probabilities of reporting pain, asthma, backache and high blood pressure in midlife.

Finally we find that being bullied at school and/or abused physically by their parents as a child lowers the probability of being alive at both age 50 and age 55. ACE reduces life expectancy.

[10] Hawkes and Plewis (2006) found that non-response, rather than mortality was also higher for those with lower birthweight and reading test scores.

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Table 1. Wellbeing and childhood adversity and physical health, BRFSS 2009-2023

	#Bad physical health days	30/30 BPHD	Angina	Heart attack	Stroke	Asthma	Diabetes
Live with anyone depressed	.9947 (26.48)	.0152 (12.87)	.0076 (7.00)	.0010 (0.97)	.0035 (3.71)	.0499 (32.01)	.0013 (0.83)
Live with a problem drinker	.4474 (13.75)	.0097 (9.44)	.0094 (9.94)	.0088 (9.52)	.0047 (5.77)	.0141 (10.43)	.0015 (1.08)
Live with anyone uses illegal drugs	.2111 (4.35)	.0016 (1.02)	.0005 (0.35)	.0033 (2.36)	.0015 (1.24)	.0109 (5.41)	.0070 (3.39)
Parents divorced/separated	.4411 (7.64)	.0057 (5.70)	-.0017 (1.91)	.0060 (6.68)	.0026 (3.36)	.0072 (5.49)	.0004 (0.26)
Parent hurt you	.3592 (5.33)	.0185 (17.66)	.0117 (12.08)	.0151 (15.79)	.0062 (7.39)	.0190 (13.81)	.0177 (12.48)
Did anyone touch you sexually	.9811 (13.07)	.0056 (3.06)	.0056 (3.33)	.0013 (0.79)	.0039 (2.68)	.0245 (10.20)	.0034 (1.36)
Did anyone make you touch sexually	.9276 (27.92)	.0056 (2.66)	.0049 (2.49)	.0069 (3.56)	-.0003 (0.17)	.0097 (3.45)	.0065 (2.27)
Anyone forced you to have sex	.1474 (4.68)	.0207 (8.76)	.0149(6.82)	.0247 (11.44)	.0138 (7.36)	.0442 (14.17)	.0242 (7.58)
Female	.0876 (3.40)	-.0077 (9.41)	-.0400 (53.35)	-.0455 (62.61)	-.0085 (13.19)	.0362 (33.84)	-.0147 (13.42)
constant	.1828	-.0346	.0467	.0344	.0287	.1078	-.0989
Adjusted R^2	.1558	.0994	.0602	.0472	.0441	.0325	.0626
N	423,188	423,118	428,159	429,876	430,818	430,555	431,250
Mean	4.27	.067	.06	.06	.04	.14	.14

Notes: all equations include year, age and its square, grade of education, state of residence, labor force status and state dummies. T-statistics in parentheses.
Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good? Answer 0-30
Ever told you had angina or coronary heart disease? Yes/No
Ever told you had a heart attack, also called a myocardial infarction? Yes/No
Have you ever been told by a doctor that you have diabetes? Yes/No
Ever told you had a stroke? Yes/No
Have you ever been told by a doctor, nurse, or other health professional that you had asthma? Yes/No
Have you ever been told by a doctor, nurse, or other health professional that you had cancer? What type of cancer was it ..skin cancer? Yes/No

Table 2. Wellbeing and childhood adversity and physical health, BRFSS 2009-2023

	Skin cancer	Arthritis	High blood pressure	Difficulty walking	Difficulty concentrating	Current smoker	Current drinker
Live with anyone depressed	.0149 (6.79)	.0584 (28.27)	.0114 (3.82)	.0241 (13.17)	.0884 (56.14)	.0075 (4.82)	.0148 (6.79)
Live with a problem drinker	.0005 (0.28)	.0324 (18.15)	.0107 (4.15)	.0206 (12.90)	.0201 (14.70)	.0284 (21.01)	.0005 (0.28)
Live with anyone uses illegal drugs	.0224 (7.86)	.0060 (2.24)	.0024 (0.61)	.0053 (2.29)	.0289 (14.37)	.0651 (32.13)	.0223 (7.86)
Parents divorced/separated	.0071 (3.88)	-.0012 (0.71)	-.0023 (0.93)	.0045 (2.98)	.0024 (1.89)	.0410 (31.29)	.0071 (3.88)
Parent hurt you	.0075 (3.88)	.0408 (22.45)	.0181 (6.77)	.0357 (22.88)	.0402 (30.07)	.0266 (19.26)	.0075 (3.88)
Did anyone touch you sexually	.0073 (2.15)	.0398 (12.52)	.0061 (1.32)	.0143 (5.08)	.0349 (14.41)	.0092 (3.84)	.0072 (2.15)
Did anyone make you touch sexually	.0112 (2.85)	.0208 (5.61)	-.0003 (0.07)	.0059 (1.81)	.0286 (10.17)	.0241 (8.60)	.0112 (2.85)
Anyone forced you to have sex	.0437 (9.96)	.0282 (6.85)	.0164 (2.72)	.0479 (13.28)	.0640 (20.63)	.0523 (16.72)	-.0437 (9.96)
Female	.1026 (68.03)	.0525 (37.02)	-.0444 (21.35)	.0243 (19.36)	.0042 (3.92)	-.0213 (19.79)	-.1026 (68.03)
constant	.0423	-.2778	-.1763	.0690	.2425	-.1206	.3762
Adjusted R^2	.0857	.1838	.1586	.2046	.1289	.0959	.1205
N	395,757	410,650	212,430	319,490	318,923	429,717	428,023
Mean	.09	.34	.40	.17	.11	.44	.51
.09							

Notes: all equations include year, age and its square, grade of education, state of residence, labor force status and state dummies. T-statistics in parentheses. High blood pressure available in 2009, 2011, 2019, 2021

Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia? (Arthritis diagnoses include: rheumatism, polymyalgia rheumatica; osteoarthritis (not osteporosis); tendonitis, bursitis, bunion, tennis elbow; carpal tunnel syndrome, tarsal tunnel syndrome; joint infection, etc.)
Have you ever been told by a doctor, nurse or other health professional that you have high blood pressure? Yes/No
Do you have serious difficulty walking or climbing stairs? Yes/No
Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions? Yes/No
Have you smoked at least 100 cigarettes in your entire life? [Note: 5 packs = 100 cigarettes
Have you had at least one drink of alcohol in the past 30 days? Yes/No

Table 3. Wellbeing and childhood adversity and physical health, BRFSS 2009-2023

	BMI	Kids in household	Having a job	4yr college	Not married
Live with anyone depressed	.2194 (7.41)	-.0275 (15.71)	-.0219 (11.50)	.0878 (40.64)	.0054 (2.71)
Live with a problem drinker	.0011 (0.04)	-.0057 (3.80)	-.0098 (5.97)	-.0414 (22.07)	.0091 (5.24)
Live with anyone uses illegal drugs	-.0452 (1.18)	.0237 (10.46)	.0057 (2.34)	-.0580 (20.67)	.0077 (2.98)
Parents divorced/separated	.0408 (1.65)	.0279 (19.06)	.0019 (1.23)	-.0978 (54.07)	.0423 (25.26)
Parent hurt you	.4194 (16.00)	-.0012 (0.82)	-.0276 (16.33)	-.0448 (23.37)	.0285 (16.03)
Did anyone touch you sexually	.4746 (10.38)	-.0036 (1.37)	-.0102 (3.48)	.0200 (6.01)	.0158 (5.14)
Did anyone make you touch sexually	.3484 (6.54)	.0093 (2.98)	-.0041 (1.20)	.0017 (0.45)	-.0007 (0.20)
Anyone forced you to have sex	.5234 (8.83)	.0023 (0.66)	-.0741 (19.41)	-.0631 (14.58)	.0398 (9.92)
Female	-.4837 (23.74)	.0364 (30.28)	-.0775 (60.27)	.0056 (3.75)	-.0068 (4.95)
constant	21.3745	.6923	.2566	.0229	.8430
Adjusted R^2	.0603	.2486	.3265	.0756	.1293
N	408,250	431,832	431,855	430,933	429,738
Mean	28.0	.26	.50	.37	.31

Notes: all equations include year, age and its square, grade of education, state of residence, labor force status and state dummies. T-statistics in parentheses. Not married includes divorced, separated, and never married vs married and widowed.

Table 4. Wellbeing and childhood adversity and restless sleep, BRFSS 2009-2023

	Hours of sleep	Short sleep (<7)	Long sleep>10	Restless days/month 2009-2011	Restless days /fortnight 2010 and 2011
Live with anyone depressed	-.0432 (4.36)	.0131 (4.20)	-.0016 (2.16)	1.2179 (9.34)	.6316 (7.22)
Live with a problem drinker	-.0620 (7.13)	.0245 (8.96)	-.0005 (0.70)	.7224 (6.42)	.3289 (4.43)
Live with anyone uses illegal drugs	-.1255 (9.93)	.0479 (12.03)	-.0000 (0.03)	1.1283 (6.41)	.5602 (4.78)
Parents divorced/separated	-.0252 (3.08)	.0253 (9.82)	-.0007 (1.04)	.4826 (4.22)	.1595 (2.09)
Parent hurt you	-.0999 (11.54)	.0466 (17.06)	-.0018 (2.80)	1.3383 (9.99)	.8431 (9.98)
Did anyone touch you sexually	-.0047 (0.31)	.0066 (1.37)	.0002 (0.15)	.7805 (3.82)	.3797 (2.92)
Did anyone make you touch sexually	-.0823 (4.60)	.0294 (5.21)	-.0012 (0.88)	.4910 (2.01)	.6556 (4.21)
Anyone forced you to have sex	-.1860 (9.40)	.0655 (10.49)	-.0038 (2.52)	.9925 (3.52)	.9258 (5.17)
Female	.0286 (4.20)	-.0073 (3.39)	.0013 (2.53)	.9254 (10.16)	.3814 (6.29)
constant	7.6501	.1546	.96522	10.3233	1.5157
Adjusted R^2	.0333	.0353	.0107	.0893	.1048
N	197,526	197,526	197,526	47,385	19,697
Adjusted R^2	7.06	.32	.01	7.67	3.10

Notes: all equations include year, age and its square, grade of education, race, state of residence, labor force status and state dummies. T-statistics in parentheses.

Table 5. Wellbeing and childhood adversity and pain using NCDS at age 42 no evidence of bullying effects

	Pain >1 day	Left Upper	Right upper	Left lower	Right lower
Female	-.0183 (1.53)	.0173 (1.58)	.0250 (2.25)	-.0174 (1.69)	.0101 (0.97)
Poverty	.0645 (43.84)	.0536 (3.54)	.0700 (4.52)	.0610 (4.28)	.0795 (5.53)
Humiliation	.0652 (2.34)	.0616 (2.45)	.0942 (3.69)	.0367 (1.55)	.0104 (0.44)
Physical abuse	.1225 (4.01)	.0788 (2.87)	.0361 (1.26)	.0784 (3.42)	.1150 (4.41)
Sexual abuse	-.0481 (0.91)	-.0566 (1.19)	-.0420 (0.87)	-.0254 (0.57)	-.0742 (1.64)
IQ at 11	-.0015 (3.75)	-.0015 (4.22)	-.0010 (2.74)	-.0019 (5.71)	-.0022 (6.70)
Pain somewhat age 16 (n2317)	.0788 (2.84)	.1176 (4.72)	.1014 (4.00)	.0297 (1.27)	.0200 (0.84)
Pain certainly applies age 16	.1534 (2.83)	.1232 (2.53)	.1559 (3.12)	.1516 (3.30)	.0762 (1.64)
constant	.4732	.3119	.2997	.3102	.3170
Adjusted R^2	.0180	.0149	.0141	.0147	.0179
N	6,818	6,818	6,818	6,818	6,818

	Upper spine	Left low back	Lower spine	Right low back
Female	.0026 (0.28)	-.0397 (4.21)	-.0348 (3.40)	-.0324 (3.31)
Poverty	.0323 (2.53)	.0338 (2.59)	.0288 (2.03)	.0293 (2.16)
Humiliation	.0431 (2.03)	.0184 (0.85)	.0704 (2.99)	.0332 (1.47)
Physical abuse	.0203 (0.87)	.0351 (1.48)	.0341 (1.32)	.0306 (1.24)
Sexual abuse	-.0868 (2.17)	.0022 (0.05)	-.0270 (0.61)	-.0308 (0.72)
IQ at 11	-.0013 (4.19)	-.0018 (5.71)	-.0020 (6.00)	-.0015 (4.80)
Pain somewhat age 16	.0800 (2.89)	.0632 (2.93)	.0693 (2.96)	.0602 (2.69)
Pain certainly applies age 16	.0531 (1.94)	.0712 (1.69)	.1077 (2.35)	.0304 (0.70)
constant	.2155	.2699	.3201	.2747
Adjusted R^2	.0069	.0121	.0139	.0084
N	6,818	6,818	6,818	6,818

Notes: school reports NCDS3 child often complains of aches or pains. Include a missing variable

e3_acr1	byte	%8.0g	e3_acr1	sc1 (e3): acru pain definition - left upper
e3_acr2	byte	%8.0g	e3_acr2	sc1 (e3): acru pain definition - right upper
e3_acr3	byte	%8.0g	e3_acr3	sc1 (e3): acru pain definition - left lower
e3_acr4	byte	%8.0g	e3_acr4	sc1 (e3): acru pain definition - right lower
e3_acr5	byte	%8.0g	e3_acr5	sc1 (e3): acru pain definition - upper spine
e3_acr6	byte	%8.0g	e3_acr6	sc1 (e3): acru pain definition - left: low back
e3_acr7	byte	%8.0g	e3_acr7	sc1 (e3): acru pain definition - lower spine
e3_acr8	byte	%8.0g	e3_acr8	sc1 (e3): acru pain definition - right: low back

Table 6. Pulse rates and C-reactive protein levels at age 42 and childhood abuse reported at age and bullying reported at 7

	Pulse rates		Log C-reactive protein	
Female	2.1880 (9.26)	2.1719 (9.17)	.0959 (4.88)	.0960 (3.30)
Bullied frequently at age 7	1.2791 (2.30)	1.2154 (2.18)	.1670 (2.41)	.1605 (2.32)
Bullied sometimes at age 7	.4278 (1.60)	.4331 (1.61)	.0622 (1.88)	.0626 (1.89)
BSAG total score at age 7	.0563 (3.91)	.0498 (3.44)	.0109 (6.18)	.0104 (5.85)
Physical abuse by parents		1.6344 (3.23)		.2269 (3.64)
Constant	69.9815	69.9345	-.1266	-.1358
Adjusted R^2	.0113	.0123	.0073	.0090
N	8,280	8,184	6,867	6,831
Mean	71.67		.032	

Table 7. Wellbeing and childhood adversity and physical outcomes at age 50, NCDS8

	Pain	Joint aches and pains	Asthma	Backache	High blood pressure.
Female	.1578 (4.49)	.6883 (86.61)	.0256 (3.25)	-.0120 (1.19)	-.0384 (4.03)
Poverty	.2057 (4.66)	.0298 (2.67)	.0136 (1.38)	.0190 (1.51)	.0226 (1.91)
Humiliation	.1869 (2.58)	.0510 (2.77)	.0124 (0.76)	.0522 (2.52)	.0165 (0.84)
Physical abuse	.1332 (1.67)	.0283 (1.41)	.0479 (2.71)	.0052 (0.23)	.0069 (0.32)
Sexual abuse	.1428 (1.03)	.0128 (0.36)	-.0472 (1.50)	.0269 (0.67)	-.0070 (0.19)
IQ at 11	-.0037 (3.52)	-.0007 (2.83)	-.0009 (3.72)	-.0008 (2.52)	-.0009 (3.31)
Bullied sometimes at age 7	.1393 (3.76)	.0159 (1.68)	.0216 (2.60)	.0084 (0.79)	.0235 (2.34)
Bullied frequently at age 7	.1740 (2.22)	.0196 (0.98)	.0440 (2.49)	.0544 (2.41)	-.0127 (0.59)
Bullied sometimes at age 11	.0450 (1.05)	.0159 (1.47)	.0017 (0.18)	.0155 (1.27)	-.0010 (0.09)
Bullied frequently at age 11	.0332 (0.35)	.0469 (1.94)	.0238 (1.12)	-.0269 (0.99)	-.0069 (0.27)
constant	2.3806	.0164	.0884	.0342	.2149
Adjusted R^2	.1042	.5208	.0157	.0227	.0157
N	6450	7065	7069	7069	7069

Notes: all equations include region of residence and labor force status. T-statistics in parentheses. Excluded bullied never at 7 and 11
n8mens02 whether cm experienced joint aches and pains in last yr
n8khpb01 whether cm suffers health probs: asthma or wheezy bronchitis
n8khpb05 whether cm suffers health probs: backache, prldisc,sciatica
n8khpb09 whether cm suffers health probs: high blood pressure

Table 8. Wellbeing and childhood adversity and physical outcomes at age 55, NCDS9

	Asthma/Bronchitis	BMI	Backache	Depression
Female	.0380 (4.07)	-.5735 (3.43)	-.0517 (5.61)	.0459 (4.66)
Poverty	.0280 (2.37)	.7713 (3.78)	.0464 (3.98)	-.0078 (0.64)
Humiliation	.0301 (1.532	-.2984 (0.84)	.0223 (1.16)	.1147 (5.57)
Physical abuse	.0491 (2.29)	.7712 (1.98)	.0520 (2.47)	.0235 (1.04)
Sexual abuse	-.0264 (0.68)	.3329 (0.48)	-.0534 (1.55)	.1061 (2.60)
IQ at 11	-.0010 (3.46)	-.0227 (4.26)	-.0005 (1.81)	-.0001 (0.24)
BSAG total score at age 7	.0010 (1.77)	.0253 (2.51)	.0013 (2.43)	.0007 (1.13)
Bullied sometimes at age 7	.0239 (2.48)	.1571 (0.91)	.0130 (1.37)	.0165 (1.39)
Bullied frequently at age 7	.0345 (1.70)	-.0952 (0.26)	.0145 (0.72)	.0496 (2.19)
Bullied sometimes at age 11	.0141 (1.25)	.2103 (1.04)	.0035 (0.32)	.0324 (3.18)
Bullied frequently at age 11	.0101 (0.40)	.9256 (2.04)	-.0288 (1.16)	-.0120 (0.45)
constant	.0714	28.6166	.1737	.0691
Adjusted R^2	.0245	.0268	.0227	.1175
N	5,927	5,644	5,931	5,923

Notes: all equations include region of residence and labor force status. T-statistics in parentheses. Excluded bullied never at 7 and 11

n9khpb01 whether cm suffers health probs: asthma or wheezy bronchitis

n9khpb05 whether cm suffers health probs: backache, prolapsed disc, sciatica

n9khpb08 Health problems since last interview - Depression, emotional and psychiatric

n9khpb09 whether cm suffers health probs: high blood pressure

Table 9. Mortality at age 50, NCDS8 probits

Female	-.3019 (6.90)	-.2568 (5.42)	-.2677 (2.70)
Birthweight	-.0029 (2.48)	-.0022 (1.74)	-.0038 (1.46)
Bullied frequently at 7		.2462 (2.63)	.4522 (2.65)
BSAG total score at 7		.0134 (5.45)	.0093 (1.83)
Physical abuse			.3781 (2.50)
Sexual abuse			.3598 (1.20)
Semi-skilled	.0347 (0.44)	.0317 (0.38)	.0240 (0.14)
Constant	-1.1598	-1.4229	-2.0033
Pseudo R^2	.0266	.0366	.0401
N	9,496	8,607	6,419

Notes: includes controls for socio-economic status of mother's husband in the PMS 1958.
T-statistics in parentheses.

Table 10. Mortality at age 55, NCDS9 probits

Female	-.3023 (7.54)	-.2330 (5.38)	-.1562 (2.15)
Birthweight	-.0029 (3.22)	-.0024 (2.07)	-.0033 (1.71)
Bullied frequently at 7		.2488 (2.82)	.2889 (2.11)
Bullied sometimes at 7		.0085 (0.18)	.0264 (0.33)
BSAG total score at 7		.0170 (7.42)	.0087 (2.19)
Physical abuse			.3060 (2.44)
Sexual abuse			.4472 (2.01)
Constant	-.8491	-1.2127	-1.5969
Pseudo R^2	.0297	.0436	.0440
N	9100	8,258	6327

Notes: includes controls for socio-economic status of mother's husband in the PMS 1958.
T-statistics in parentheses.

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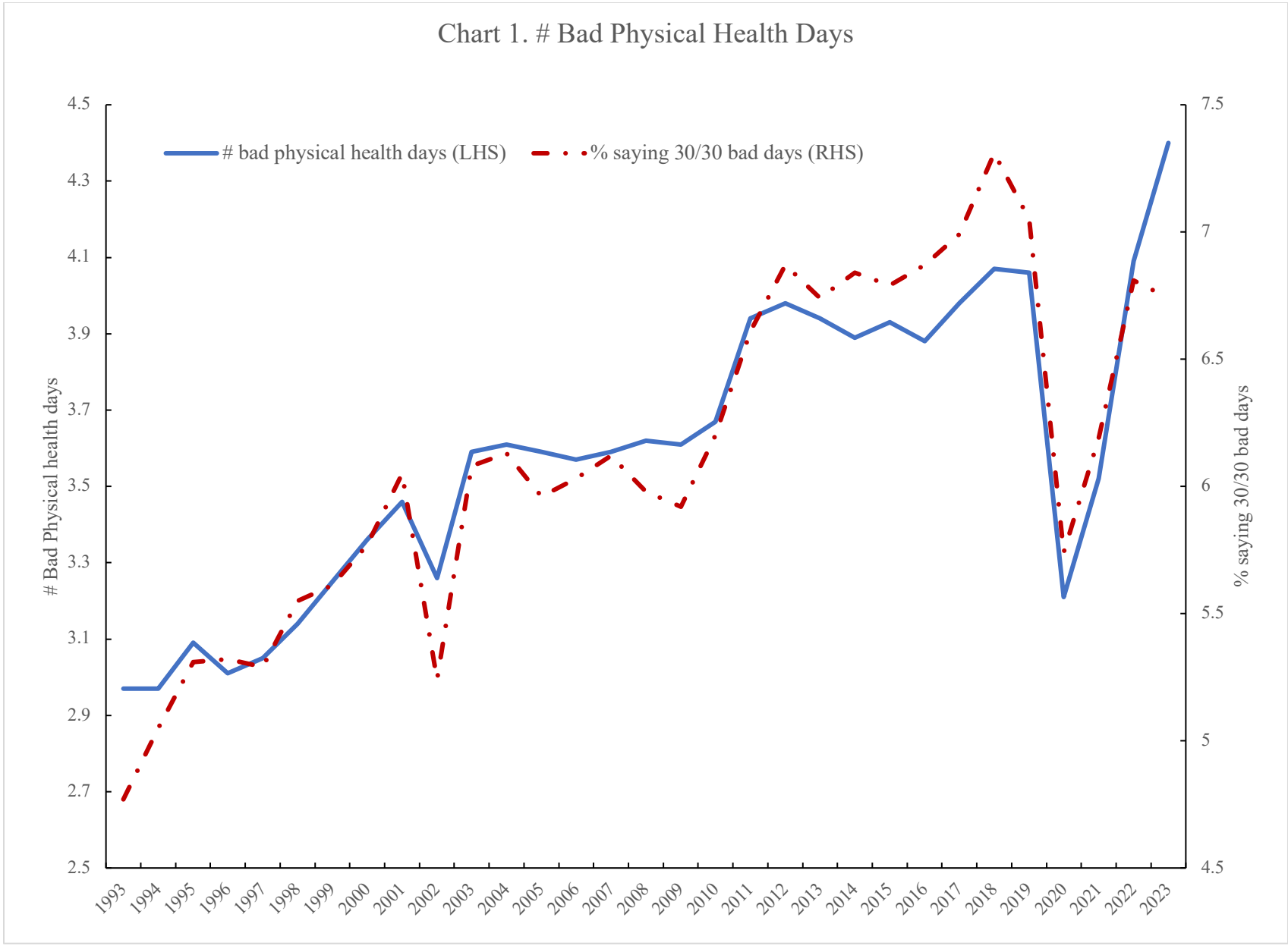
Chart 1. # Bad Physical Health Days
bad physical health days (LHS)
% saying 30/30 bad days (RHS)
# Bad Physical health days
% saying 30/30 bad days
4.5
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4.1
3.9
3.7
3.5
3.3
3.1
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Appendix Table 1. Wellbeing and childhood adversity and physical health, BRFSS 2009-2023

	Bad mental health days	Despair	Health status	Depressive disorder
Live with anyone depressed	2.5932 (74.77)	.0431 (41.47)	-.1340 (29.96)	.2053 (119.42)
Live with a problem drinker	.5968 (19.90)	.0101 (11.28)	-.0695 (17.98)	.0349 (23.55)
Live with anyone uses illegal drugs	.8777 (19.60)	.0201 (15.00)	-.0501 (8.68)	.0140 (6.32)
Did anyone touch you sexually	.8104 (15.21)	.0101 (6.32)	-.0626 (9.13)	.0768 (29.16)
Did anyone make you touch sexually	.8476 (13.64)	.0177 (9.52)	-.0451 (5.64)	.0370 (12.07)
Anyone forced you to have sex	1.4973 (21.63)	.0426 (20.54)	-.1066 (11.95)	.0641 (18.76)
Parents divorced/separated	1.1794 (38.50)	.0216 (23.57)	-.1306 (33.08)	.0542 (35.97)
Parent hurt you	.1258 (4.33)	.0043 (4.99)	-.0100 (2.68)	-.0063 (4.38)
Female	.9292 (39.08)	.0086 (12.06)	.0531 (17.34)	.0684 (58.18)
constant	-3.7123	.0097	3.5961	.0264
Adjusted R^2	.1372	.0638	.2002	.1541
N	424,721	424,721	430,868	415,230
Mean	3.71	.055	3.44	.19

Notes: all equations include year, age and its square, grade of education, state of residence, labor force status and state dummies. T-statistics in parentheses.

a) "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?"
b) Despair is a 1,0 dummy variable set to one if respondent replaies 30 to a) above, zero otherwise.
b) Has a doctor or other healthcare provider EVER told you that you have a depressive disorder (including depression, major depression, dysthymia, or minor depression)?
c) Would you say that in general your health is - excellent (=5), very good (=4), good (=3), fair (=2), poor (=1).