**The Minimum Wage and Children’s Mental Health**

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**Structured Abstract**

**Importance:** Mental health disorders are on the rise for children and adolescents in the U.S., with especially high rates for households living in poverty. State-level policies that raise the minimum wage have the potential to improve the mental well-being of children and adolescents.

**Objective:** To test the effect of state-level minimum wage policies on children’s mental health.

**Design:** A repeated cross-sectional study of children and adolescents using the National Survey of Children’s Health (2016–2020) and Youth Risk Behavioral Surveillance System (2001–2019).

**Setting:** Population-based study of state minimum wage policies in the U.S. from 2001 to 2020.

**Participants:** Combined national samples of 1,388,050 children and adolescents in the U.S.

**Exposure:** State-level minimum wage policies in the U.S. from 2001 to 2020.

**Main Outcomes and Measures:** We evaluate 15 mental health outcomes, including rates of depression, anxiety, ADD/ADHD, and behavioral disorders; mood symptoms; suicidality; health care utilization; substance use; violence; absenteeism; and employment. Individual-level covariates include age, sex, race/ethnicity, grade in school, family structure, parental education, and nativity, depending on the survey. State-level covariates include Medicaid income eligibility limits, earned income tax credit policies, and Temporary Assistance for Needy Families benefits. We estimate two-way fixed effects and difference-in-differences models with individual- and state-level controls.

**Results:** Of 1,388,050 children and adolescents between the two surveys, a weighted 49% were female and 44% were non-white, with a range of ages from 3–18. For all 15 outcomes, a $1 increase in the state-level minimum wage was not associated with a significant improvement in the mental health of children and adolescents. Nor were there significant associations when stratifying by household income, parental education, race/ethnicity, nativity, and age. For all outcomes, the confidence intervals were sufficiently precise to exclude meaningfully large effect sizes.

**Conclusions and Relevance:** Changes in state-level minimum wage policies were not associated with improvements in the mental health of children and adolescents for the wages, years, and settings that we considered. Despite many reasons to raise the minimum wage, state policy makers looking to improve the mental health of children might consider other structural interventions.

**Introduction**

Children and adolescents in the U.S. are facing a mental health crisis.1–6 Mood and anxiety disorders are on the rise in this population, with 3% of children aged 3–17 having depression and 9% having anxiety in 2016–2019.7 The COVID-19 pandemic has only accelerated the crisis.8 Poor mental health has pervasive impacts on a child’s quality of life and academic performance.9 It even has consequences lasting into adulthood, as adolescent depression has been associated with lower long-run educational attainment, higher rates of unemployment, and earlier parenthood.10

Poverty places an additional burden on families that adversely affects their children’s well-being,11 with children in poverty having higher rates of depression, anxiety, and other mental health disorders than higher-income families.12 Given this burden, changes in economic policy have the potential to improve children’s mental health.13,14 Indeed, evidence suggests that raising the minimum wage improves children’s physical health, including birth weights,15 infant mortality,15,16 school absenteeism,17 and indexes of overall health,17 especially for certain demographic subgroups.18,19 However, while the impact of changes to minimum wage laws on adults’ mental health has been studied,20–25 we do not yet know their impact on children’s mental health.

Children’s mental health may be especially responsive to changes in a family’s income. For example, children’s emotional and behavioral problems tend to worsen with household economic stress.12,26 And when families’ incomes rise, they disproportionately dedicate those resources to their children.27 Consequently, raising the minimum wage could meaningfully improve their mental health, whether by reducing household financial stress,26,28 meeting a child’s need for mental health care,12,29 or granting access to other resources that could improve their mental health, such as higher-quality housing, time for exercise and leisure, or better education.30,31

In this study, we use two national samples that together include over 1.4 million children and adolescents, aged 3 to 18, in the U.S. from 2001 to 2020 to estimate the impact of raising the minimum wage on children’s mental health. We examine several outcomes, including diagnoses, mood symptoms, health care utilization, school attendance, social life, and more. This study has important implications for the design of economic policy to improve the mental health of children, as well as the use of structural interventions to benefit vulnerable populations more generally.

**Materials and Methods**

***Study Populations***

We use two national surveys of children in the U.S.: the National Survey of Children’s Health (NSCH) and the Youth Risk Behavior Surveillance System (YRBSS). Each captures a different time period, population, and outcomes of interest. Together, they allow us to broadly characterize the relationship between the minimum wage and children’s mental health.

We used the 2016 to 2020 waves of the NSCH, a yearly national study of children’s physical and emotional well-being in the U.S. It samples households either known or projected to have a child based on Census data; then, parents or guardians report on one of their children. All analyses using the NSCH are weighted to be representative of all children in all state-years. Consistent with surveillance studies that estimate the prevalence of mood disorders starting at age 3,7 we include all children aged 3–17 whose parent or guardian provided complete information on all our models’ covariates and at least one of our outcomes, for a sample of 141,427 (**Table 1**).

Next, we used the 2001 to 2019 waves of the state-level YRBSS, a set of biennial, state-level surveys of mental health and risk behaviors in adolescents. As a school-based study, it samples classrooms in randomly selected schools; then, adolescents directly respond to the surveys. All analyses using the YRBSS are weighted to be representative of all students in grades 9–12 in each state-year. Of note, not all states participated in all years; the participation during our study period is detailed in **Table A1**. We include all adolescents who provided complete information on all our covariates and at least one of our outcomes, for a sample of 1,246,623 (**Table 2**).

***Exposure and Outcome Measures***

Our primary exposure is a state’s effective minimum wage per year in U.S. dollars. We use wage data from the Bureau of Labor Statistics and take the higher of a state’s minimum wage or the federal minimum wage. Descriptive statistics for the wages are provided in **Figure 1**. As outcomes, we examine 15 measures of mental health for children and adolescents, listed below. Together, they capture the clinical, behavioral, and social facets of a child’s mental well-being.

For the NSCH, all outcomes are reported by parents or guardians. We evaluate whether a child (1) has depression as diagnosed by a health care provider; (2) has diagnosed anxiety; (3) has diagnosed ADD or ADHD; (4) has behavioral problems as identified by a provider or educator; (5) has had chronic difficulty digesting food (e.g. stomach or intestinal problems, constipation, or diarrhea) in the past calendar year, a common manifestation of anxiety in children; (6) has not received necessary health care of any kind in the past year; (7) has not received necessary mental health services in the past year; (8) has missed 7 or more days of school in the past year (for children aged 6–17), which may result if a child has debilitating mental health problems; and (9) has participated in any formal or informal paid employment in the past year (also ages 6–17).

For the YRBSS, all outcomes are directly reported by adolescents. We evaluate whether an adolescent (1) has felt incapacitating sadness or hopelessness for two weeks or longer in the past calendar year, which is a diagnostic criterion for depression; (2) has considered suicide in the past year; (3) has attempted suicide in the past year; (4) has used alcohol in the past month; (5) has used marijuana in the past month; and (6) has been in a physical fight in the past year. The exact wording and coding of all survey questions are provided in the appendix (**Table A2**).

***Statistical Analyses***

First, to evaluate the degree to which rising wages might improve children’s mental health, we document the cross-sectional inequities in the NSCH outcomes between household federal poverty levels (FPL) using ordinary least squares (OLS) regressions. The YRBSS does not provide data on household income, so we cannot repeat the same procedure with it. These models allow us to compare the mental health of children in households with different income levels but similar demographic profiles, states, and years. They are fully described in the appendix.

Next, we test the impact of raising the state minimum wage on children’s mental health using OLS two-way fixed effects (TWFE) models. These models estimate the association between a $1 increase in the minimum wage and the percentage-point change in the prevalence of each outcome. They are akin to a difference-in-differences model when the treatment variable is continuous, and they allow us to use all states-years of available data. They include state fixed effects to account for time-invariant statewide social and policy characteristics, as well as year fixed effects to account for time-variant national economic trends. The YRBSS models also include age-by-year fixed effects to account for generational differences over the two decades of data.

We also adjust for competing time-variant state policies that might affect low-income families: (1) the state’s Medicaid income eligibility limits for children aged 1–5 and (2) 6–18; (3) whether the state has an earned income tax credit (EITC); (4) the state’s EITC as a percent of the federal EITC, (5) whether the state’s EITC is refundable; and (6) the state’s maximum Temporary Assistance for Needy Families benefits for a family of three. On the respondent level, the NSCH models are adjusted for each child’s age, sex, race/ethnicity, family structure, the highest level of educational attainment by any adult in the household, and nativity. The YRBSS models have fewer available covariates and are adjusted for age, sex, race/ethnicity, and grade in high school.

Of note, our main models include children of all income levels. This design is analogous to intention-to-treat, as a change in the minimum wage may affect any or all households in a state. Households earning near the minimum wage are mostly likely to see their take-home pay rise, but higher earners may experience spillover wage growth.32 Nevertheless, we also subset our data and estimate the associations for several sub-populations of children who are more likely to benefit from rising wages: in the NSCH, (1) households earning less than 200% FPL; (2) households whose adults have a high school education or less; (3) Black and Hispanic/Latino children; (4) first- or second-generation children; and (5) adolescents (aged 13–17), many of whom work minimum wage jobs; and in the YRBSS, Black and Hispanic/Latino adolescents.

We examine the sensitivity of our results using models with (1) corrections for multiple hypothesis testing; (2) inflation-adjusted minimum wages; (3) wages lagged by 1 year, in case gains in children’s mental health take time to manifest; (4) estimations by logistic regression, which provide the odds ratio for each outcome given a $1 increase in the minimum wage; and (5) the average minimum wage to which a child is exposed throughout their entire life.

Lastly, recent econometric evidence has shown that TWFE models can be biased when policies are implemented at different times.33–35 As such, we estimate simple difference-in-differences and event study models to test the unbiased effect of raising the minimum wage on children’s mental health. Given data constraints, we could only perform these analyses using the YRBSS. Using the waves from 2011–2019, we code 10 states that raised their minimum wage above the federal minimum during this period as the treatment group and 21 states that remained at the federal minimum as the control group. Then, we test how raising the minimum wage affects adolescents’ mental health outcomes. We describe these models in detail in the appendix.

All analyses use the NSCH or YRBSS weights to produce state-representative estimates, and all standard errors are clustered by state since the treatment is assigned at that level. Estimates using the survey’s nested clustered errors are provided in the appendix. We use the “lfe” package (v. 2.8) in R to estimate OLS models. Respondents missing information for a given outcome are dropped pairwise from those analyses. This study did not require institutional review board approval as it used public, de-identified data. All replication materials are available at X.

**Results**

***National Survey of Children’s Health (NSCH)***

From 2016–2020, the NSCH collected parent- and guardian-reported surveys on 141,427 children aged 3–17 that we included in our analyses (**Table 1**). In cross-sectional analyses, a weighted 3% had depression, 8% had anxiety, 9% had ADD/ADHD, 7% had behavioral problems, and 8% had chronic digestive issues. In the past year, 4% had not received necessary medical care of any kind, while 1% had not received necessary mental health services. Meanwhile, 10% had missed 7 or more days of school, and 22% had a job or some form of employment.

Children in lower-income households had higher rates of mental health disorders. For example, children living in poverty had a rate of depression that was 3 percentage points (pp) higher than that of children living above 400% FPL, after adjusting for age, sex, race/ethnicity, family structure, the highest education of any adult in the household, nativity, state, and year (**Figure A1**). The differences by income were similar for all outcomes. Meanwhile, children in poverty had less access to economic opportunities, being less likely to have jobs than wealthier children.

Despite the differences by income, there was little evidence that rising minimum wages from 2016­–2020 were associated with improvements in children’s mental health. During this period, the effective minimum wages ranged from $7.25 to $14 across states and Washington, D.C., with many states substantially raising their wages (**Figure 1**). Even so, for all outcomes except absenteeism, our confidence intervals exclude an improvement of 1 pp or less per $1 increase in the minimum wage. For absenteeism, they exclude an improvement greater than 1.4 pp.

Similarly, there was minimal evidence of an association when we examined several vulnerable sub-populations, including children living in households under 200% FPL, households whose adults have a high school education or less; Black and Hispanic/Latino children; first- or second-generation children; and adolescents aged 13–17 (**Figure A4**). Nor was there evidence of any association using several alternative specifications (**Figures A2, A6, A8, A10, A12**).

***Youth Risk Behavior Surveillance System (YRBSS)***

From 2001–2019, 1,246,623 adolescents were surveyed by the YRBSS and included in our analyses (**Table 2**). In cross-sectional analyses, a weighted 29% reported being sad or hopeless for 2+ weeks, 16% considered suicide, 9% attempted suicide, and 27% had been in a physical fight in the past year. In the past month, 35% had used alcohol and 20% had used marijuana.

From 2001–2019, the effective minimum wage ranged from $5.15 to $14 across states and Washington, D.C., and the federal minimum wage rose from $5.15 to $7.25 between 2008 and 2010 (**Figure 1**). Even so, there was little evidence that rising minimum wages during this period were associated with improvements in adolescents’ mental health (**Figure 3**). For all 6 outcomes, TWFE models ruled out an improvement of 1 pp or less per $1 increase in the minimum wage. Similarly, there was minimal evidence of benefits for Black and Hispanic/Latino children, specifically, nor in several alternative specifications (**Figures A3, A5, A7, A9, A11, A13**).

Lastly, we used difference-in-differences models to evaluate the unbiased effect of raising the minimum wage on adolescents’ mental health since the last raise in the federal minimum wage, i.e. 2011 to 2019. For all 6 outcomes, we saw little evidence of improvement, even when we evaluated the effects up to 5 years after a raise, and even when treated children were exposed to a mean wage increase of $3.63 over control children (**Table A7** and **Figures A14–A18**).

**Discussion**

In this national study, we find little to no evidence that state-level minimum wage increases over the past two decades have improved the mental health of children and adolescents in the U.S. We exclude meaningfully large effects using two national surveys, 15 outcomes capturing multiple facets of mental well-being, and several modeling approaches. We also fail to find evidence of benefit for several sub-populations, including lower-income and racially minoritized children.

Existing work on the minimum wage and mental health has focused primarily on adults and shown mixed results.20 A longitudinal study on minimum wages in the United Kingdom from 1994–2001 found substantial improvements in the mental health of lower-wage workers, relative to higher-wage ones.21 However, a subsequent study suggested that any improvements were short-lived.22 In the U.S., a repeated cross-sectional study on the minimum wage from 1993–2014 identified improvements in the mental health of less-educated women but not men,23 while another study in the U.S. identified null effects for less-educated adults.24 A recent paper on changes in state-level minimum wages in the U.S. from 2005–2014 identified an association with fewer stressful life events for pregnant persons in the year before delivery.25 Despite some evidence that rising minimum wages improve the mental health of vulnerable adults, our study suggests that similar benefits have not accrued to children and adolescents in the U.S. in recent decades.

Our findings also contrast with mixed but generally positive studies on rising minimum wages and children’s physical health. Increases in the minimum wage have been associated with improvements in birth weights,15 infant mortality,15,16 school absenteeism,17 and indexes of children’s overall health.17 Mixed results have been identified for the self-reported general health of working teens, with some demographic groups seeing improvements,19 and null results for various outcomes for the children of immigrants.18 However, all these studies use TWFE models yet predate econometric advances that have identified biases in these models.33–35 As such, it may be necessary to update existing work on the minimum wage and children’s physical health using unbiased approaches. Our study includes one such approach to identify its null results.

One concern might be that countervailing forces produced our observed nulls. That is, rising wages might enable families to seek medical care for their children and get overdue diagnoses, resulting in higher reported rates of disorders even as their mental well-being improves. However, we find no evidence of improvements in any domain that we examine, including self-reported diagnoses, symptoms, health care utilization, or impacts on school and work. Instead, it is more likely that raising the minimum wage — importantly, within the range of wages and settings that we consider in our analyses — was insufficient to meaningfully improve children’s mental health. This is despite the strong relationship between poverty and children’s mental health.11,12,26

Our study has several limitations. First, we do not consider city- or county-level minimum wages, only state-level policies. Several localities have passed minimum wages above and beyond their state’s,36 and evidence from some (but not all) cities has suggested that these policies can meaningfully affect the well-being of residents.37–39 It is possible that changes in local minimum wages produced meaningful improvements in children’s mental health that we failed to capture at the state level. However, in cases where the economic effects of local minimum wages have been compared to those of state-level policies, the two estimates have tended to be similar.40

Second, our study is based on survey data, which is vulnerable to sampling, response, and weighting biases. That said, we use two surveys with different sampling schemes and both parent- or guardian- and adolescent-reported outcomes; all of which can mitigate the risk of bias.41 Third, our study relies primarily on TWFE models, which may be biased when policies are implemented at staggered times.33–35 Even so, we were able to evaluate the YRBSS outcomes using an unbiased approach and still exclude meaningfully large effects. Given data limitations, we could not do the same with the NSCH. Lastly, while many of our nulls are precisely estimated, we cannot exclude the possibility of more modest but still positive effects on children’s mental health.

Taken together, our findings suggest that raising the minimum wage — within the range of wages that we consider — did not substantively improve children’s mental health. Importantly, we cannot exclude the possibility of very modest effects, nor can we comment on the potential consequences of more ambitious raises in the minimum wage. While there are many social, economic, and political reasons to raise the minimum wage, state policy makers looking to improve the mental health of children might consider an alternative set of structural interventions.

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**Table 1. Characteristics of children in the NSCH (2016–2020).**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Unweighted**  N=141,427 | | **Weighted** |
| **Child’s age\***  Mean (SD)  Range | 11.7 (4.4)  3–17 |  | 11.1 (4.3)  3–17 |
| **Child’s sex**  Male  Female | 72,965  68,462 | 52%  48% | 51%  49% |
| **Child’s race/ethnicity**  White, non-Hispanic/Latino  Black, non-Hispanic/Latino  Hispanic/Latino  American Indian or Alaska Native  Asian, Native Hawaiian, or Pacific Islander  Other or mixed race | 98,521  8,233  16,601  754  7,823  9,495 | 70%  6%  12%  1%  6%  7% | 52%  12%  25%  <1%  5%  5% |
| **Family structure**  Two parents, married  Two parents, not married  Single parent  Another family structure | 104,553  8,888  27,664  322 | 74%  6%  20%  <1% | 69%  8%  23%  <1% |
| **Highest education of any adult in household**  Less than high school  High school (including vocational or similar)  Some college or associate degree  College degree or higher | 3,144  17,225  32,379  88,679 | 2%  12%  23%  63% | 9%  19%  22%  51% |
| **Household nativity**  First-generation household  Second-generation household  Third-generation household or higher | 2,742  22,770  115,915 | 2%  16%  82% | 3%  25%  72% |
| **Federal poverty level of household**  Less than 100%  100% to 199%  200% to 299%  300% to 399%  400% or greater | 12,976  22,763  25,217  23,606  56,865 | 9%  16%  18%  17%  40% | 17%  22%  18%  14%  30% |
|  |  |  |  |

**Notes:** Estimates with and without the NSCH survey weights are provided. \*Age is shown as continuous but treated as categorical in all TWFE and difference-in-differences models.

**Table 2. Characteristics of adolescents in the YRBSS (2001–2019).**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Unweighted**  N=1,246,623 | | **Weighted** |
| **Adolescent’s age**  12 years old or younger  13 years old  14 years old  15 years old  16 years old  17 years old  18 years old or older | 3,068  3,746  168,397  331,359  330,158  280,056  129,839 | <1%  <1%  14%  27%  26%  22%  10% | <1%  <1%  11%  26%  26%  23%  14% |
| **Adolescent’s sex**  Male  Female | 609,783  636,840 | 49%  51% | 51%  49% |
| **Adolescent’s race/ethnicity**  White, non-Hispanic/Latino  Black, non-Hispanic/Latino  Hispanic/Latino  American Indian or Alaska Native  Asian, Native Hawaiian, or Pacific Islander  Other or mixed race | 709,581  167,313  212,717  28,604  69,540  58,868 | 57%  13%  17%  2%  6%  5% | 56%  17%  29%  1%  4%  2% |
| **Adolescent’s grade**  9th grade  10th grade  11th grade  12th grade | 355,005  337,188  304,791  249,639 | 28%  27%  24%  20% | 28%  26%  24%  22% |
|  |  |  |  |

**Notes:** Estimates with and without the YRBSS survey weights are provided.



**Figure 1. Effective minimum wages for each state from 2001 to 2020.**

**Notes:** We use the higher of a state’s minimum wage or the federal minimum wage, not adjusted for inflation, based on data from the Bureau of Labor Statistics. The range is $5.15 to $14.

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**Figure 2. Association between state minimum wages and the mental health outcomes of children, aged 3–17, in the NSCH from 2016–2020.**

**Notes:** The coefficients provide the percentage-point response in children’s mental health outcomes as a state’s effective minimum wage rises by $1. Based on OLS TWFE models using children aged 3–17 in the NSCH from 2016–2020 (except for absenteeism and employment, which were only asked of children aged 6–17). All models are adjusted for state and year fixed effects (FE). Fully adjusted models control for each child’s age, sex, race/ethnicity, family structure, parental education, and nativity, as well as state-level Medicaid income eligibility limits, several EITC policies, and TANF benefits for families of 3. Standard errors are clustered at the state level. 95% confidence intervals are provided. Exact values are provided in **Table A4**. Sx. = symptoms.



**Figure 3. Association between state minimum wages and the mental health outcomes of adolescents, aged 12–18, in the YRBSS from 2001–2019.**

**Notes:** The coefficients provide the percentage-point response in adolescents’ mental health outcomes as a state’s effective minimum wage rises by $1. Based on OLS TWFE models using adolescents aged 12–18 in the YRBSS from 2001–2019. All models are adjusted for state and age-by-year fixed effects (FE). Fully adjusted models control for each adolescent’s age, sex, race/ethnicity, and grade in high school, as well as state-level Medicaid income eligibility limits, several EITC policies, and TANF benefits for families of 3. Standard errors are clustered at the state level. 95% confidence intervals are provided. Exact values are provided in **Table A5**.