**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. More evidence is needed about the effects of economic policies, such as the minimum wage, on the mental well-being of children.

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

**Design:** Repeated cross-sectional study testing the association between state-level minimum wage policies and the mental health of children and adolescents from 2001 to 2020.

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

**Participants:** Nationally representative, stratified random samples of children, aged 3–17, from the National Survey of Children’s Health (N= 141,427; 2016–2020) and adolescents, aged 12–18, from the Youth Risk Behavior Surveillance System (N=1,246,623; 2001–2019).

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

**Main Outcomes and Measures:** We evaluate 15 mental health outcomes reported by either parents/guardians or adolescents from survey data, 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 and 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:** The nationally representative surveys included 141,427 children aged 3–17 from 2016–2020, and 1,246,623 adolescents aged 12–18 from 2001–2019. For all 15 outcomes, an increase in the state-level minimum wage was not associated with significant improvements in the mental health of children and adolescents. Nor were there significant associations when stratifying by household income, parental education, race and 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 over the past two decades were not associated with improvements in the mental health of children and adolescents. Policy makers looking to improve the mental health of children might consider other 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 Many of its consequences last into adulthood, as adolescent depression has been associated with lower long-run educational attainment, higher rates of unemployment, and chronic diseases.10,11

Poverty places an additional burden on families and adversely affects their children’s well-being.12 Children in poverty have higher rates of depression, anxiety, and other mental health disorders than children in higher-income families.13 Given this burden, changes in economic policy have the potential to improve children’s mental health.14,15 Indeed, evidence suggests that raising the minimum wage improves children’s physical health, including birth weights,16 infant mortality,16,17 school absenteeism,18 and indexes of overall health,18 especially for certain demographic groups.19,20 However, while the impact of the minimum wage on adults’ mental health has been well studied,21–26 limited research has examined its impact on children’s mental health.

Children’s mental health may be especially responsive to changes in a family’s income. Children’s emotional and behavioral problems tend to worsen with household economic stress.13,27 Meanwhile, higher incomes allow parents to invest more time and resources in their children’s well-being.28–30 Consequently, raising the minimum wage could meaningfully improve children’s mental health, whether by reducing household financial stress,27,31 meeting a child’s need for mental health care,13,32 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.33,34

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 their 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 well-being 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 the U.S. 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 for 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 participating states. Of note, not all states participated in all years, which we have detailed in **Table A1**. We include all adolescents who provided complete information for 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, as mental health disorders can have somatic or non-specific symptoms; (7) has not received necessary mental health services, specifically, 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), a potential mediator of the effects of minimum wage policies on a household’s financial and mental well-being.

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 motivate the need for economic policy to improve children’s mental health, we document the cross-sectional inequities in the NSCH outcomes by household federal poverty level (FPL) using ordinary least squares (OLS) regressions. These models allow us to compare the mental health of children with different household incomes but similar demographic profiles, states, and years. They are fully described in the appendix (**Section A4**). The YRBSS does not provide data on household income, so we cannot repeat the same procedure with this dataset.

Next, we test the impact of raising the state minimum wage on children’s mental health using OLS two-way fixed effects (TWFE) models, which estimate the association between a $1 increase in the minimum wage and the percentage-point change in the prevalence of each outcome.26 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. We 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.

On the respondent level, the NSCH models are adjusted for each child’s age, sex, race and ethnicity, family structure, the highest level of education by any adult in the household, and nativity. The YRBSS models have fewer available covariates and are adjusted for age, sex, race and ethnicity, and grade in high school. We also adjust for other 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 (TANF) benefits for a family of 3.16,18

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 might 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.35 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, similar to previous work on the relationship between minimum wages and physical health.18

Finally, recent econometric evidence has shown that TWFE models can be biased when policies are implemented at different times.36–38 As an additional robustness check, we use simple difference-in-differences models to estimate the unbiased effect of raising the minimum wage on children’s mental health. Using the YRBSS waves from 2011–2019, we code 10 states that raised their minimum wage above the federal minimum in 2014 or 2015 as the treatment group and 21 states that remained at the federal minimum as controls. Because these models only consider states that experienced treatment at a single time, they do not suffer from the potential biases of TWFE models. We describe these models in detail in the appendix (**Sections A9–A10**). We could only perform these analyses using the YRBSS given the limited available years of the NSCH.

All analyses use survey weights to produce representative estimates, at least for participating states, 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 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 XXX.

**Results**

***National Survey of Children’s Health***

From 2016–2020, our analyses included 141,427 children aged 3–17 in the NSCH (**Table 1**). A weighted 3% of children had active depression, 8% had anxiety, 9% had ADD/ADHD, and 7% had behavioral problems. In the past year, 8% had chronic digestive issues, 4% had not received necessary medical care of any kind, 1% had not received necessary mental health services, 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 significantly worse rates of mental health disorders, symptoms, access to care, absenteeism, and access to economic opportunities (**Figure A1**). For example, the rate of depression was 3 percentage points (pp) higher for children living in poverty than children living above 400% FPL, after adjusting for age, sex, race and ethnicity, family structure, the highest education of adults in the household, nativity, state, and year.

From 2016 to 2020, the effective minimum wages ranged from $7.25 to $14 across states and Washington, D.C., with some states raising their minimum wages by as much as $4.50 (**Figure 1**). Even so, rising minimum wages during this period were not associated with significant improvements in children’s mental health for any of our 9 outcomes. For all outcomes except absenteeism, our 95% 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 an association using the sensitivity analyses described above (**Figures A2, A6, A8, A10, A12**).

***Youth Risk Behavior Surveillance System***

From 2001–2019, our analyses included 1,246,623 high school-aged adolescents in the YRBSS (**Table 2**). In the past year, a weighted 29% of adolescents 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 month, 35% reported using alcohol and 20% reported using marijuana.

From 2001–2019, the effective minimum wage ranged from $5.15 to $14 across states and Washington, D.C. (**Figure 1**). Additionally, the federal minimum wage rose from $5.15 to $7.25 from 2008 to 2010. Nevertheless, 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, our 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 using several sensitivity analyses (**Figures A3, A5, A7, A9, A11, A13**).

Finally, we used simple 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 examined the effects 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 that capture multiple facets of mental well-being, and several modeling approaches. We also fail to find evidence of benefit for several subgroups, including lower-income and racially minoritized children.

Existing work on the minimum wage and mental health has focused primarily on adults and found mixed results.21 For example, a longitudinal study on minimum wages in the U.K. from 1994–2001 found substantial improvements in the mental health of lower-wage workers relative to higher-wage ones.22 However, a subsequent study suggested that these improvements were short-lived.23 In the U.S., a repeated cross-sectional study on minimum wages from 1993–2014 identified improvements in the mental health of less-educated women but not men,24 while another study in the U.S. identified null effects for less-educated adults.25 A recent paper on 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.26 Yet despite this evidence that rising minimum wages can improve the mental health of 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 the minimum wage and children’s physical health. Increases in the minimum wage have been associated with improvements in birth weights,16 infant mortality,16,17 school absenteeism,18 and indexes of children’s overall health.18 Mixed results have been identified for some demographic subgroups.19,20 However, many of these studies use TWFE models and predate recent discoveries of the potential biases in these models.36–38 By contrast, our work on the minimum wage and children’s mental health includes an unbiased approach, i.e. the difference-in-differences models with the YRBS.36–38

One concern might be our observed nulls resulted from countervailing forces. 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, our results suggest that state-level increases in the minimum wage — importantly, within the range of recent wage changes in the U.S. — were insufficient to meaningfully improve children’s mental health. This is despite the strong relationship between poverty and children’s mental health.12,13,27

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,39 and evidence from some (but not all) cities has suggested that these policies can meaningfully affect the well-being of residents.40–42 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.43

Second, our study is based on survey data, which is vulnerable to sampling, response, and weighting biases. Even so, we get similar results using two surveys with different sampling schemes and both parent- or guardian- and adolescent-reported outcomes, all of which help mitigate the risk of bias.44 Third, our study relies primarily on TWFE models, which may be biased when policies are implemented at staggered times.36–38 Even so, we get similar results when applying an unbiased approach to the YRBSS outcomes. Given data limitations, we could not do the same with the NSCH. Finally, 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 raises in the minimum wage over the past two decades in the U.S. did not substantively improve children's and adolescents’ mental health. 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. However, while there are many social, economic, and political reasons to raise the minimum wage, state policymakers looking to improve the mental health of children might consider an alternative set of interventions.

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**Table 1. Demographic characteristics of children in the National Survey of Children’s Health (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 and 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 survey weights are provided. \*Age is presented as continuous but treated as categorical in all two-way fixed effects and difference-in-differences models.

**Table 2. Demographic characteristics of adolescents in the Youth Risk Behavior Surveillance System (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 and 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 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 National Survey of Children’s Health 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. Estimates are based on two-way fixed effects models using children aged 3–17 included in the National Survey of Children’s Health 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 and 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 (see Methods for details). 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 Youth Risk Behavior Surveillance System 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. Estimates are based on two-way fixed effects models using adolescents aged 12–18 who responded to the Youth Risk Behavior Surveillance System 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 and 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 (see Methods for details). Standard errors are clustered at the state level. 95% confidence intervals are provided. Exact values are provided in **Table A5**.