The Effect of an Increased Minimum Wage on Infant Mortality and Birth Weight

Kelli A. Komro, PhD, MPH, Melvin D. Livingston, PhD, Sara Markowitz, PhD, and Alexander C. Wagenaar, PhD

Objectives. To investigate the effects of state minimum wage laws on low birth weight and infant mortality in the United States.

Methods. We estimated the effects of state-level minimum wage laws using a difference-in-differences approach on rates of low birth weight (<2500 g) and postneonatal mortality (28–364 days) by state and month from 1980 through 2011. All models included state and year fixed effects as well as state-specific covariates.

Results. Across all models, a dollar increase in the minimum wage above the federal level was associated with a 1% to 2% decrease in low birth weight births and a 4% decrease in postneonatal mortality.

Conclusions. If all states in 2014 had increased their minimum wages by 1 dollar, there would likely have been 2790 fewer low birth weight births and 518 fewer postneonatal deaths for the year. (Am J Public Health. 2016;106:1514–1516. doi: 10.2105/AJPH.2016.303268)
mortality and natality data (i.e., no sampling). They are consistently and comprehensively measured each month, making them ideal for a time-series study lasting several decades. On the basis of these files, we created frequencies and rates of low birth weight (<2500 g at birth) and postneonatal mortality (28–364 days) by state and month from 1980 through 2011. Postneonatal mortality is largely the result of the conditions in which infants live by contrast to neonatal mortality, which is often the result of a complex mix of genetic and health care delivery factors.3

State Minimum Wage and Covariates

To assess effects of state-level minimum wages on infant outcomes, we calculated the difference between state-level minimum wage and the federal minimum wage in each state and month from 1980 to 2011. We adjusted all calculations for inflation by expressing all differences in 2011 dollars.

State-level covariates included percentage African American and mean age of mothers from natality files, poverty rate from census data, and cigarette sales from Orzechowski and Walker.11

Statistical Analysis

We estimated the effects of state-level minimum wage using a quasieperimental difference-in-differences research design. In addition to our state-level minimum wage variable, we included a full set of year and state fixed effects. The year fixed effects accounted for any changes over time in infant outcomes common across states, whereas the state fixed effects control for any time-invariant differences between states. Thus, this research design efficiently controls for a host of other factors affecting the outcomes, both measured and unmeasured. Remaining covariates that are a potential threat to validity are only those that change close in time to a state wage policy change and only in that particular state.

Almost all the common covariates change quite slowly over time, and trends in these factors are rarely limited to 1 state but reflect broader regional or national trends. For these reasons, even if they are important causal factors driving the outcomes, they are adequately controlled for by counterfactuals in the research design (i.e., other states not changing minimum wage at the same time). However, to be conservative, we included the following covariates in the models in addition to year- and state-level fixed effects: poverty rate, cigarette sales, percentage African American mothers, and mean age of mother. We conducted additional analyses lagging the state minimum wage and covariates by 12 months to account for potential delays in the effect of state minimum wage policy on pregnancy-related outcomes.

We conducted all analyses using generalized estimating equations using PROC GENMOD in SAS. We weighted observations by the number of live births in each state and month in all analyses to accurately reflect the underlying individual-level data. To account for within-state autocorrelation, we used state-clustered SEs when calculating all tests and confidence intervals. We calculated percentage changes using model estimates and the mean infant outcome in state-months that had a minimum wage at the federal level.

RESULTS

There were 206 legal changes in state minimum wage (independent of federal changes), with the value averaging $7.01 (SD = 0.72) and ranging from $5.58 to $10.44 (in 2011 dollars). For state-months in which the state minimum wage differed from the federal standard, the difference averaged $1.03 (SD = 0.68) and ranged from $0.03 to $3.10 (in 2011 dollars).

Our results show a consistent pattern of health improvement associated with a state minimum wage above the federal minimum (Table 1). All models show statistically significant effects, with the sole exception of 1 adjusted lagged model, in which $P = .06$. Across all models, a dollar increase in the minimum wage above the federal level is associated with a 1% to 2% decrease in low birth weight births and a 4% decrease in postneonatal mortality.

DISCUSSION

Our results provide empirical evidence that increased state minimum wages are associated with reduced low birth weight births and reduced postneonatal infant deaths. On the basis of the findings, if all states in 2014 had increased their minimum wages by 1 dollar there would likely have been an estimated 2790 fewer low birth weight births and 518 fewer postneonatal deaths for the year.

The analyses were at the state level; therefore, we were unable to control for potential individual-level level covariates or assess multilevel mediators of the effects of minimum wage laws on birth outcomes. However, we designed a strong...
quasiexperiment, analyzing 206 legal changes in minimum wage across 30 years and 50 states, analyzed higher time-resolution monthly (rather than annual) observations, included state and year fixed effects to efficiently control for a host of potential confounders, and replicated the results across 2 distinct infant health indicators.

Our results add to a growing scientific literature on the beneficial effects of various income supports on improved birth outcomes.12,13

PUBLIC HEALTH IMPLICATIONS

The implications of these findings for policymakers, advocates, and public health practitioners are noteworthy. The annual social and health cost of preterm or low birth weight births in the United States was at least $26.2 billion in 2005.14 The pain and suffering from the deaths of so many infants in their first year of life are incalculable. That past modest changes to state minimum wage laws appear to have had such important effects bodes well for possible beneficial effects of a range of minimum wage increases currently under active public discussion and policymaker consideration.

Public health professionals have long studied and long lamented the severe deleterious health effects of poverty. It is now time to move directly into developing, testing, and evaluating the health effects of specific public policies affecting poverty. There are a host of public policies that shape the socioeconomic environment of children and adults. Our study is a small start that we hope will spur many other epidemiologists and related scientists to study specific ways to ameliorate poverty and its deleterious health effects. AJPH

CONTRIBUTORS

K. A. Komro and M. D. Livingston drafted the article. M. D. Livingston analyzed the data. All authors conceptualized and designed the study, interpreted the results, contributed to writing the article, and reviewed and approved the final article.

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HUMAN PARTICIPANT PROTECTION

This research made use of publicly available data sets and was determined to be exempt by the Emory University and University of North Texas institutional review boards.

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