Associations Between Minimum Wage Policy and Access to Health Care: Evidence From the Behavioral Risk Factor Surveillance System, 1996–2007

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Objectives. We examined whether minimum wage policy is associated with access to medical care among low-skilled workers in the United States.

Methods. We used multilevel logistic regression to analyze a data set consisting of individual-level indicators of uninsurance and unmet medical need from the Behavioral Risk Factor Surveillance System and state-level ecological controls from the US Census, Bureau of Labor Statistics, and several other sources in all 50 states and the District of Columbia between 1996 and 2007.

Results. Higher state-level minimum wage rates were associated with significantly reduced odds of reporting unmet medical need after control for the ecological covariates, substate region fixed effects, and individual demographic and health characteristics (odds ratio=0.853; 95% confidence interval=0.750, 0.971). Minimum wage rates were not significantly associated with being uninsured.

Conclusions. Higher minimum wages may be associated with a reduced likelihood of experiencing unmet medical need among low-skilled workers, and do not appear to be associated with uninsurance. These findings appear to refute the suggestion that minimum wage laws have detrimental effects on access to health care, as opponents of the policies have suggested. (*Am J Public Health.* 2011;101:359–367. doi:10.2105/AJPH.2006.108928)

Minimum wage laws have long been advanced as policy mechanisms to improve the economic conditions of the working poor. Recently, questions have been raised about the true net benefit of such policies for low-skilled workers. Although income gains arising from minimum wage increases are clearly beneficial, these policies may also have secondary effects that could negatively affect low-skilled workers.

The adverse effect most commonly considered is a potential contraction of employment in the low-wage sector as firms employ fewer workers or limit hours to offset the added payroll. Of particular interest in the realm of public health, however, is the possibility that minimum wage laws may substantially reduce access to health care. Research has yet to clarify this relationship.

Competing hypotheses have been advanced that describe both positive and negative effects of minimum wage increases on health care access. Proponents of higher minimum wage laws suggest that the direct income-increasing effect of such interventions may be improvements in access to care, as workers are better able to afford out-of-pocket health care expenses such as insurance premiums, deductibles, and copayments. With greater disposable income available following wage hikes, affected workers would then be less likely to experience cost-related barriers to accessing medical care. These hypotheses, building on recent empirical literature documenting associations between higher income and better access to health care,[1–5] propose that increases in workers' hourly wage will bolster their health care access.

Alternatively, opponents of the policies warn that higher minimum wages will lead to unintended effects that will directly and indirectly weaken access to care for the working poor. Some economists have argued that employers may offset increases in the minimum wage directly by cutting health insurance benefits or by offering less generous benefit plans.[6–8] Minimum wage opponents have also argued that increases in the minimum wage depress employment, which could result in a net worsening in access to health care and in the economic conditions of vulnerable populations through a reduction in low-wage employment opportunities.

After remaining at $5.15 since 1997, the federal minimum wage increased to $5.85 in July 2007 as part of a 3-step increase to the current $7.25 rate. During the 10 years between increases, the real value of the minimum wage had eroded to equal its lowest point in the preceding 50 years, whether defined in real terms or as a proportion of average wages.[9] In many areas of the United States, even this newly increased minimum wage was not enough to keep workers and their dependents out of poverty, as the $12 168 earned by a full-time minimum wage earner in 2007 represented only 70% of the federal poverty limit of $17 170 for a family of three.[10]

In response to the diminishing real value of the federal standard between 1997 and 2007, many states and municipalities enacted policies mandating higher minimum wages for workers in their jurisdictions. At the time of the 2007 federal wage hike, 31 states and the District of Columbia had passed laws setting higher wage standards, none of which was surpassed by the federal increase.[9]

At this intersection of poverty and health care access, the minimum wage may be a policy tool with potential implications for health outcomes, but little empirical evidence currently exists to clearly determine whether access to care for low-skilled workers will be helped or harmed by changes to minimum wage policy. Although the employment effects of minimum wage laws have been extensively researched, the exact nature of the relationship between the policies and employment opportunities is hotly

debated among economists. Whereas some researchers have found that minimum wage hikes lead to a rise in unemployment,[11–15] others have found that they enhance employment.[16–20]

Far less empirical attention has been paid to other effects of minimum wages, such as the potential effect on access to health care. Simon and Kaestner[21] used data from the 1979–2000 Current Population Survey (CPS) to investigate the association between the minimum wage and workers' receipt of fringe benefits such as health insurance and pensions. They found that increased minimum wages were associated with an increased probability of receiving health insurance and pensions, but concluded that the absence of a consistent differential effect between low- and high-skilled workers suggested "that the minimum wage had no causal effect on low-wage workers' fringe benefit receipt."[21(p52)]

Simon and Kaestner's study appears to be the only one published to directly examine the association between minimum wages and provision of employer-sponsored health insurance, and to our knowledge none has examined other measures of health care access. We sought to extend this line of empirical research into the effects of the minimum wage and fill the gap in the literature by building on prior works in several important ways.

First, we employed more recent data that capitalize on the proliferation of state-level minimum wage laws between 2000 and 2007 to capture greater variance in minimum wage rates throughout the United States. Second, whereas earlier work focused on receipt of health insurance as a fringe benefit, we focused our analysis more directly on access to care by examining both a broader measure of health insurance coverage and an additional direct measure of access: reporting cost-related barriers to receiving needed medical care. Finally, we included more comprehensive sets of individual and state-level covariates in addition to state and regional fixed effects and time trends.

Using 12 years of data from the Behavioral Risk Factor Surveillance System (BRFSS)[22] and several additional sources, we examined associations between state-level minimum wage policies and respondent-level indicators of access to health care. Given the competing hypotheses about the potential effects of minimum wage policy, this analysis provides unique empirical evidence on an important policy whose theoretical effects have been hotly contested.

METHODS

To examine associations between minimum wage policies and access to health care, we analyzed a data set consisting of measures of health care access from the BRFSS and state-level data from other sources covering the period from 1996 to 2007. We constructed a data set consisting of pooled cross-sectional observations at the individual level that were combined with state-level data on the prevailing minimum wage rate and several other policy, demographic, and labor force characteristics that vary over time and across states. These ecological data were collected from the US Census Bureau, the Bureau of Labor Statistics, and other sources as summarized in Table 1.

The 2 indicators of health care access that we examined as outcomes in this analysis were derived from the yearly survey data from the BRFSS, which is the primary health behavior and risk factor surveillance system of the civilian noninstitutionalized adult population in the United States. It is conducted yearly by state health departments, with technical and methodological assistance provided by the Centers for Disease Control and Prevention.

Because we were most interested in the potential effects of the minimum wage on health care access for covered workers, the BRFSS data set was limited to individuals between the ages of 18 and 64 years who were economically active. Respondents who reported their employment status as homemaker, unable to work, retired, or unemployed for longer than 1 year were removed. Finally, we limited the sample to only those who reported educational attainment of high school (or General Educational Development test) or lower to retain a higher percentage of unskilled workers in the analytic sample.

Outcome Variables

We assessed 2 outcome variables separately in our regression models. Lack of health insurance (uninsurance) was a binary indicator of a negative response to the BRFSS question, "Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?" The wording of this item remained unchanged during the 12-year analytic period, and data are thus available for respondents from all 612 state–year combinations. Because this question was focused on a respondent's current state at the time of the interview, no adjustment for the reference period was made.

The cost-related unmet medical need indicator was based on a positive response to the BRFSS item, "Was there a time during the last 12 months when you needed to see a doctor but could not due to the cost?" The wording of this item underwent changes during the period of our analysis. From 1996 to 2000, the item was worded as above. From 2003 to 2006, the item was worded, "Was there a time *in* the past 12 months when you needed to see a doctor but could not *because of* the cost?" (Italics added to indicate changed wording.) In 2001 and 2002, no comparable question was asked as part of the core BRFSS survey. As a result, the unmet medical need variable is present for respondents from 510 state–year combinations in the data set.

Because the BRFSS is administered on a rolling basis throughout the year, and this question asks respondents to reference the "last 12 months," we used an adjustment for the reference period. Individuals completing their BRFSS survey in January through June of each year were matched with the previous year's state-level data. Respondents surveyed between July and December were matched with state-level data for the year in which they were interviewed.

Independent Variable

The state-specific minimum wage rate data used as the independent variable in our study are published yearly by the US Department of Labor in the January issue of *Monthly Labor Review*.[23] We used the larger of the state or federal wage rate as the prevailing minimum wage for each state–year observation between 1996 and 2007.

Although most changes to the wage rate during our analytic period occurred on January 1 of each particular year, there were 18

TABLE 1—Summary of Study Outcome and Predictor Variables and Time-Varying Ecological Covariates Used in Regression Analyses: United States, 1996 to 2007

Variable	Source	Minimum (State, Year)	Maximum (State, Year)	Effective Minimum Wage Is at Federal Level, Mean (SD) (n = 447)	State Minimum Wage Surpasses Federal Level, Mean (SD) (n = 165)
Primary predictor variable: effective minimum wage rate, $/hr	US Department of Labor, *Monthly Labor Review*[23]	4.38 (AL, 1996)	7.93 (WA, 2007)	5.07 (0.24)	6.25 (0.75)
Outcome variables					
Indicator of no health coverage, %	CDC Behavioral Risk Factor Survey[22]	5.5 (HI, 1998)	49.5 (TX, 2005)	25.8 (0.07)	23.3 (0.07)
Indicator of unmet medical need during previous 12 mo, %	CDC Behavioral Risk Factor Survey[22]	6.2 (HI, 2000)	47.8 (AZ, 1997)	16.4 (0.05)	15.2 (0.04)
Time-varying covariates					
Characteristics of state labor force					
Below federal poverty limit, %	US Census Bureau, Current Population Survey[24]	4.50 (NH, 2000)	25.50 (NM, 1996)	12.31 (3.40)	11.05 (2.95)
Unemployed, %	US Bureau of Labor Statistics[26]	2.26 (CT, 2000)	8.52 (DC, 1996)	4.60 (1.08)	5.00 (1.31)
Member of labor union, %	US Bureau of Labor Statistics[27]	2.30 (SC, 2005)	26.80 (NY, 1996)	10.64 (5.22)	15.98 (4.64)
Represented by labor union, %	US Bureau of Labor Statistics[28]	3.30 (SC, 2005)	28.20 (NY, 1996)	12.15 (5.22)	17.45 (4.70)
Aged ≥25 y and completed high school, %	US Census Bureau, Current Population Survey[25]	73.80 (SC, 1996)	93.00 (MN, 2006)	84.69 (4.33)	86.66 (3.31)
Aged ≥25 y with bachelor's degree	US Census Bureau, Current Population Survey[25]	14.20 (WV, 1996)	49.10 (DC, 2006)	24.24 (4.54)	29.78 (5.28)
Income inequality, Gini coefficient	Frank[29]	0.52 (WV, 1997)	0.67 (WA, 1999)	0.58 (0.03)	0.59 (0.03)
State-level generosity					
EITC supplement, % of federal EITC	State EITC Online Resource Center[30]	0.00 (443 state–year observations)	50.00 (MD, 1997)	0.03 (7.36)	8.85 (11.72)
EITC refundable,[a] %	State EITC Online Resource Center[30]	NA	NA	15.2	31.8
TANF benefit income eligibility limit, $/mo	Urban Institute Welfare Rules Database[31]	0.00 (WI, 1998–2007)	1641.00 (HI, 2002–2007)	660.54 (263.52)	874.58 (353.74)
TANF maximum monthly benefit, $	Urban Institute Welfare Rules Database[31]	120.00 (MS, 1996–1998)	923.00 (AK, 2007)	357.10 (117.60)	549.96 (154.87)
TANF work requirements,[a] %	Urban Institute Welfare Rules Database[31]	NA	NA	0.7	12.1
TANF benefit time limits,[a] %	Urban Institute Welfare Rules Database[31]	NA	NA	89.0	73.0
State-level health care characteristics					
Hospital beds/1000 population, no.	American Hospital Association Annual Survey Data[32]	1.70 (WA, 2006)	10.55 (MS, 1998)	3.83 (1.14)	3.27 (1.76)
Per capita yearly health care expenditures, $	Centers for Medicare and Medicaid Services[33]	2431.00 (UT, 1996)	8295.00 (AR, 2003)	4102.42 (792.41)	4712.30 (1138.02)
Avg outpatient reimbursement per medicare enrollee, $	Dartmouth Health Atlas[34]	277.56 (NV, 1996)	1421.80 (AK, 2007)	654.05 (202.00)	787.12 (232.69)
State Supplemental Health Insurance Program (Medicaid expansion or state-funded program),[a] %	Kaiser Commission on Medicaid and the Uninsured[35]	NA	NA	15.0	37.0
High-risk health insurance pool,[a] %	Kaiser Family Foundation[35]	NA	NA	60.1	47.3

Note. CDC = Centers for Disease Control and Prevention; EITC = Earned Income Tax Credit; NA = not available; TANF = Temporary Aid to Needy Families. Ecological covariates represent 612 state–year combinations, including data from the 50 states and the District of Columbia over the 12 years from 1996 through 2007.

[a]Binary indicators coded as 0 (characteristic not present) or 1 (characteristic present).

instances of state-level rate changes taking effect midyear. To account for the time spent under each rate within a given year, we prorated the value on the basis of the number of months spent at each rate within that year.

Ecological Covariates

Although we were primarily interested in the associations between minimum wage policies and our 2 different measures of health care access, we also included in our models several time-varying ecological covariates to lessen the likelihood that observed associations were spurious. These variables each varied across states and over time, and were potentially associated with the states' decisions to enact a state-level minimum wage law (or to modify it over time) or with availability of or access to medical care. Table 1 presents each of these covariates and describes the source of the data.

First, we included 3 variables from the US Census Bureau's yearly CPS data that captured state economic and labor force characteristics: (1) the percentage of state population below the federal poverty limit,[24] (2) the percentage of state population aged 25 years or older completing high school, and (3) the percentage of the state population aged 25 years or older completing a college degree.[25] Using data from the US Bureau of Labor Statistics, we included the yearly average of each state's unemployment rate,[26] and the percentage of workers who were labor union members or (separately) covered by a collective bargaining agreement.[27,28] We also included a yearly estimate of the state-level Gini coefficient from Frank's[29] panel of income inequality measures derived from Internal Revenue Service data.

Second, we included variables characterizing several state-level welfare and assistance policies to capture the degree of state-specific generosity. The first of these variables gauges the presence of a state supplement to the federal Earned Income Tax Credit (EITC), and is operationalized as the percentage of the federal EITC that the state offers as a supplement (if no state supplement exists, the variable is coded as zero). The second variable is an indicator of whether the state supplement is refundable.[30]

We also included 2 variables to capture state-level generosity in policies related to the Temporary Aid to Needy Families programs as summarized in the Urban Institute's Welfare Rules Database[31]: (1) the income threshold for benefit eligibility and (2) the maximum monthly benefit amount in place for each state–year combination. In addition, we included indicators for whether each state had mandated a work requirement time limit (i.e., a binding amount of time before nonworking recipients of Temporary Aid to Needy Families were sanctioned) or a benefit time limit (i.e., an amount of time, either periodic or lifetime, that limited the number of months benefits could be received) in each year.

Finally, we included a series of covariates to describe key state-level health care characteristics that could potentially affect access to health care for low-skilled workers. Data from the American Hospital Association's Annual Survey, as compiled in the Area Resource File,[32] was used to reflect the number of hospital beds per 1000 population. To account for variation in the cost of health care, we also included data on per capita health care spending from all payers in each state–year combination from the Centers for Medicare and Medicaid Services[33] as well as the average Medicare reimbursement per enrollee for outpatient services compiled by the Dartmouth Health Atlas.[34] Lastly, we included 2 variables capturing the generosity and availability of health insurance for the poor or underserved in each state: (1) an indicator of whether the state had expanded health insurance coverage through either a separate state-funded plan or an expansion of the state's Medicaid program and (2) an indicator of whether the state sponsored a high-risk insurance pool for the medically uninsurable.[35]

Individual Covariates

In addition to the state-level covariates described, we also included each respondent's gender, race, age, household size, marital status, education, employment status, smoking status, body mass index (defined as weight in kilograms divided by height in meters squared), and self-reported health as covariates in our regression models because each is potentially associated with economic factors such as employment status and income and also with the need for or access to health care.

Research Design and Statistical Analysis

We employed logistic regression models with state or substate regional fixed effects and linear time trends to estimate the association between state and federal minimum wage polices and the 2 indicators of health care access, all of which vary across states and over time. The use of state-level fixed effects controls for any time-invariant state differences in political culture or economic environment that is unmeasured but that would otherwise confound the analysis. In selected models, we substituted the state fixed effects with fixed effects for the substate BRFSS region to capture these unmeasured time-invariant characteristics at a level more closely related to each respondent's local economic and political environment.

To appropriately adjust for the complex survey design and weight for the sampling probabilities of the data, we used the sampling and poststratification weights provided by the BRFSS in all analyses, as well as the Huber-White estimator of variance.[36,37] We employed these adjustments through the SVY command subgroup in Stata version 10 (StataCorp LP, College Station, TX).

We excluded all respondents missing outcome data or variables used to restrict the analytic sample (age, education, and employment) from all analyses. This led to the removal of approximately 0.46% of all respondents. All other individual-level variables were modeled with "Don't Know" and "Refused" responses, collapsed together as "Missing" and treated as a valid response category. We adjusted all monetary variables using the consumer price index (1982–1984=1.0) and expressed them in real terms in the regression analyses.

RESULTS

Table 2 shows sociodemographic characteristics of the respondents in our analytic sample. In bivariate comparisons, there were several statistically significant differences between respondents from state–year combinations with minimum wage rates at the federal level and those from state–year combinations with minimum wage rates exceeding the federal level, indicating that multilevel models are needed to effectively control for the likelihood of confounding by these respondent-level factors.

Minimum Wage and Insurance Status

The simple bivariate comparisons (Table 2) indicated that significantly greater proportions

TABLE 2—Sociodemographic Characteristics of Economically Active Respondents Aged 18–64 Years With Less Than College Degree, by Minimum Wage Policy of State of Residence: Behavioral Risk Factor Surveillance System (BRFSS), 1996–2007

Sociodemographic Characteristics	Total Sample (n = 600 252)	No State Minimum Wage (Defaults to Federal Rate) (n = 428 790)	State Minimum Wage Exceeds Federal (n = 171 462)
Age, y,*** mean (SD)	37.18 (0.03)	37.37 (0.03)	36.66 (0.07)
Male,*** %	57.16	56.53	58.93
Race/ethnicity,*** %			
White, non-Hispanic	62.67	66.66	51.48
Black, non-Hispanic	11.86	13.44	7.45
Hispanic	20.58	15.77	34.10
Other	4.45	3.70	6.56
Refused/missing	0.43	0.44	0.41
Marital status,*** %			
Married	58.84	59.07	58.19
Divorced, separated, widowed	15.25	15.69	14.00
Never married	25.75	25.09	27.59
Refused/missing	0.17	0.15	0.22
No. of adults in household,*** mean (SD)	2.45 (0.004)	2.38 (0.003)	2.64 (0.01)
Education,*** %			
Some high school or less	23.71	22.05	28.38
High school graduate	76.29	77.95	71.62
Employment,*** %			
Employed for wages	77.42	78.20	75.22
Self-employed	11.05	10.95	11.33
Unemployed < 1 y	6.39	6.06	7.30
Student	5.15	4.79	6.15
Smoking status, %			
Current smoker***	33.47	34.99	29.17
Missing/refused	0.27	0.27	0.26
BMI, %			
< 30***	72.92	73.33	71.77
> 30	22.59	22.34	23.30
Missing/refused	4.48	4.32	4.93
Health status, %			
Poor***	1.73	1.69	1.86
Fair	12.39	11.61	14.56
Good	35.40	35.50	35.13
Very good	31.57	32.21	29.78
Excellent	18.71	18.78	18.50
Missing/refused	0.20	0.21	0.17
Health care access,** %			
No health coverage	27.03	26.82	27.61
Cost barrier to health care in last year	16.97	16.77	17.49

Note. BMI = body mass index. BMI was defined as weight in kilograms divided by height in meters squared. Percentages are weighted for BRFSS sampling stratification.
*$P < .05$; **$P < .01$; ***$P < .001$, for difference between wage policy groups.

of unskilled workers from states with minimum wages exceeding the federal level reported being uninsured. Table 3 shows the estimates from 6 models regressing lack of health insurance on the minimum wage, beginning with a simple unadjusted model and adding additional elements to each subsequent model. The minimum wage was significantly associated with the odds of being uninsured in the unadjusted and partially adjusted models (models 1–4), but it did not remain a statistically significant predictor of uninsurance when state (model 5) or regional (model 6) fixed effects components were introduced (odds ratio [OR]=0.960; 95% confidence interval [CI]=0.863, 1.069)

Minimum Wage and Cost-Related Unmet Medical Need

Bivariate comparisons (Table 2) indicated that larger proportions of unskilled workers from states with minimum wages exceeding the federal level also reported experiencing cost-related unmet medical needs. We report the regression estimates for this indicator of health care access in Table 4. The level of the prevailing minimum wage was associated with significantly reduced odds of experiencing cost-related unmet medical need in models controlling for ecological covariates, individual demographic and health characteristics, and either state fixed effects (model 5; OR=0.865, 95% CI=0.766, 0.977) or regional fixed effects parameters (model 6; OR=0.853; 95% CI=0.750, 0.971).

DISCUSSION

In this study, we drew on nationally representative survey data covering 12 years to examine associations between minimum wage policies and 2 key measures of health care access. We used multilevel models with both ecological and individual-level control variables to lessen the likelihood of spuriousness in our estimates. Our study provides evidence that minimum wage policies do not adversely affect health care access. In fact, we found evidence that higher minimum wages are significantly associated with reduced odds of workers reporting cost-related barriers to needed medical care. We found no significant effect of the level of the minimum wage on the odds of being uninsured.

With these findings, this study makes an important contribution to the policy debate over minimum wage law; the lack of evidence for the detrimental effects of higher minimum wages on health insurance and access suggests that the fears evinced by opponents of minimum wage increases are misplaced. These

TABLE 3—Regression-Adjusted Odds Ratios for Being Uninsured: Behavioral Risk Factor Surveillance System (BRFSS), 1996–2007

Regression Covariate	Model 1, OR (95% CI)	Model 2, OR (95% CI)	Model 3, OR (95% CI)	Model 4, OR (95% CI)	Model 5, OR (95% CI)	Model 6, OR (95% CI)
Minimum wage	0.638*** (0.617, 0.658)	0.743*** (0.711, 0.776)	0.570*** (0.544, 0.597)	1.155*** (1.087, 1.227)	0.999 (0.903, 1.107)	0.960 (0.863, 1.069)
Below federal poverty limit, %	. . .	. . .	. . .	1.020*** (1.016, 1.024)	1.008** (1.002, 1.013)	1.007* (1.002, 1.013)
Unemployed, %	. . .	. . .	. . .	1.041*** (1.033, 1.049)	1.021*** (1.011, 1.032)	1.023*** (1.012, 1.034)
Member of labor union, %	. . .	. . .	. . .	0.947*** (0.935, 0.958)	0.990 (0.97, 1.01)	0.989 (0.968, 1.009)
Represented by labor union, %	. . .	. . .	. . .	1.039*** (1.026, 1.051)	1.001 (0.983, 1.019)	1.003 (0.985, 1.021)
Aged ≥25 and completed high school, %	. . .	. . .	. . .	1.009*** (1.006, 1.012)	1.003 (0.998, 1.009)	1.003 (0.997, 1.009)
Aged ≥25 with bachelor's degree, %	. . .	. . .	. . .	0.981*** (0.979, 0.983)	0.998 (0.992, 1.003)	0.997 (0.992, 1.003)
Income inequality (Gini coefficient)	. . .	. . .	. . .	7.073*** (5.598, 8.935)	1.425 (0.96, 2.114)	1.200 (0.794, 1.814)
State EITC supplement (% of federal EITC)	. . .	. . .	. . .	1.002** (1.001, 1.003)	0.995*** (0.992, 0.997)	0.995*** (0.992, 0.997)
Refundability status of state EITC supplement[a]	. . .	. . .	. . .	0.956*** (0.932, 0.98)	1.016 (0.979, 1.055)	1.022 (0.983, 1.063)
TANF benefit income eligibility	. . .	. . .	. . .	0.999*** (0.999, 0.999)	1.000 (1, 1)	1.000 (0.999, 1)
TANF maximum monthly benefit	. . .	. . .	. . .	0.949** (0.917, 0.981)	0.873*** (0.789, 0.966)	0.922 (0.828, 1.027)
TANF work requirements[a]	. . .	. . .	. . .	0.751*** (0.712, 0.793)	1.048 (0.968, 1.135)	1.065 (0.982, 1.155)
TANF benefit time limits[a]	. . .	. . .	. . .	1.067*** (1.041, 1.093)	0.999 (0.953, 1.048)	1.000 (0.953, 1.049)
No. of hospital beds per 1000 population	. . .	. . .	. . .	0.970*** (0.961, 0.978)	1.023* (0.991, 1.057)	1.018 (0.985, 1.052)
Per capita health care expenditures	. . .	. . .	. . .	0.576*** (0.533, 0.622)	0.822* (0.681, 0.991)	0.836 (0.687, 1.017)
Avg Medicare outpatient reimbursement per enrollee	. . .	. . .	. . .	1.295*** (1.227, 1.366)	1.236*** (1.135, 1.345)	1.260*** (1.154, 1.377)
State expansion to Medicaid[a]	. . .	. . .	. . .	0.955*** (0.937, 0.974)	0.955*** (0.93, 0.982)	0.954** (0.928, 0.981)
State has high-risk pool[a]	. . .	. . .	. . .	1.061*** (1.044, 1.077)	0.962 (0.923, 1.003)	0.963 (0.922, 1.005)
Parameters included in regression models						
Time trend	No	Yes	Yes	Yes	Yes	Yes
Individual controls	No	No	Yes	Yes	Yes	Yes
Time-varying state covariates	No	No	No	Yes	Yes	Yes
State fixed effect	No	No	No	No	Yes	No
Substate region fixed effect	No	No	No	No	No	Yes

Note. CI = confidence interval; EITC = Earned Income Tax Credit; OR = odds ratio; TANF = Temporary Aid to Needy Families. Ellipses indicate variable not included in model. Sample included 600 252 individual BRFSS respondents observed within 612 state–year combinations from the 50 states and the District of Columbia over the 12 years from 1996 through 2007. Outcome variable is an indicator of a negative response to the question, "Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?" Some models also include adjustment for respondents' age, gender, race, and marital status as individual controls.

[a]Binary indicator: variable coded as 0 (item not present) or 1 (item present).

*P < .05; **P < .01; ***P < .001.

TABLE 4—Regression-Adjusted Odds Ratios for Reporting Unmet Medical Need: Behavioral Risk Factor Surveillance System (BRFSS), 1996–2007

	Model 1, OR (95% CI)	Model 2, OR (95% CI)	Model 3, OR (95% CI)	Model 4, OR (95% CI)	Model 5, OR (95% CI)	Model 6, OR (95% CI)
Minimum Wage	0.547*** (0.526, 0.568)	0.759*** (0.721, 0.8)	0.681*** (0.645, 0.72)	1.073 (0.999, 1.152)	0.865* (0.766, 0.977)	0.853* (0.75, 0.971)
Below federal poverty limit, %	. . .	. . .	. . .	1.018*** (1.013, 1.023)	1.012** (1.005, 1.019)	1.011** (1.004, 1.018)
Unemployed, %	. . .	. . .	. . .	1.074*** (1.064, 1.084)	1.059*** (1.045, 1.073)	1.059*** (1.045, 1.073)
Member of labor union, %	. . .	. . .	. . .	0.991 (0.976, 1.006)	1.027* (1.001, 1.053)	1.028* (1.001, 1.055)
Represented by labor union, %	. . .	. . .	. . .	0.998 (0.983, 1.013)	0.973 (0.951, 0.995)*	0.974 (0.952, 0.997)*
Aged ≥25 and completed high school, %	. . .	. . .	. . .	1.015*** (1.011, 1.019)	1.016*** (1.009, 1.024)	1.015** (1.007, 1.023)
Aged ≥25 with bachelor's degree, %	. . .	. . .	. . .	0.986*** (0.983, 0.988)	0.985*** (0.979, 0.992)	0.986*** (0.979, 0.993)
Income inequality (Gini coefficient)	. . .	. . .	. . .	1.995*** (1.491, 2.669)	1.221 (0.756, 1.974)	1.145 (0.7, 1.872)
State EITC supplement (% of federal EITC)	. . .	. . .	. . .	1.002** (1.001, 1.004)	1.002 (1.000, 1.005)	1.002 (1.000, 1.005)
Refundability status of state EITC supplement[a]	. . .	. . .	. . .	0.991 (0.962, 1.021)	1.058** (1.009, 1.11)	1.048* (0.996, 1.103)
TANF benefit income eligibility	. . .	. . .	. . .	1.000** (0.999, 1.000)	1.000 (0.999, 1.000)	1.000 (0.999, 1.000)
TANF maximum monthly benefit	. . .	. . .	. . .	0.864*** (0.828, 0.901)	0.946 (0.839, 1.067)	0.976 (0.858, 1.109)
TANF work requirements[a]	. . .	. . .	. . .	0.992 (0.931, 1.057)	1.166** (1.063, 1.279)	1.172** (1.068, 1.287)
TANF benefit time limits[a]	. . .	. . .	. . .	1.060** (1.028, 1.092)	1.032 (0.977, 1.091)	1.032* (0.976, 1.091)
No. of hospital beds per 1000 population	. . .	. . .	. . .	0.936*** (0.925, 0.946)	0.983 (0.946, 1.021)	0.979* (0.942, 1.018)
Per capita health care expenditures	. . .	. . .	. . .	0.800*** (0.728, 0.878)	0.907 (0.727, 1.133)	0.944 (0.751, 1.186)
Avg Medicare outpatient reimbursement per enrollee	. . .	. . .	. . .	0.836*** (0.781, 0.894)	0.857** (0.766, 0.959)	0.863* (0.768, 0.97)
State expansion to Medicaid[a]	. . .	. . .	. . .	0.986 (0.963, 1.009)	1.009 (0.975, 1.043)	0.992 (0.958, 1.027)
State has high risk pool[a]	. . .	. . .	. . .	1.000 (0.98, 1.02)	1.058* (1.004, 1.114)	1.052* (0.996, 1.11)
Parameters included in regression models						
Time trend	No	Yes	Yes	Yes	Yes	Yes
Individual controls	No	No	Yes	Yes	Yes	Yes
Time-varying state covariates	No	No	No	Yes	Yes	Yes
State fixed effect	No	No	No	No	Yes	No
Substate region fixed effect	No	No	No	No	No	Yes

Note. CI = confidence interval; EITC = Earned Income Tax Credit; OR = odds ratio; TANF = Temporary Aid to Needy Families. Ellipses indicate variable not included in model. Sample included 485 177 individual BRFSS respondents observed within 510 state–year combinations from the 50 states and the District of Columbia from 1996 through 2007, excluding 2001–2002, when the outcome variable was not assessed as part of the core BRFSS survey. Outcome variable is an indicator of a positive response to the question, "Was there a time during the last 12 months when you needed to see a doctor but could not due to the cost?"

[a]Binary indicator: variable coded as 0 (item not present) or 1 (item present).

*P < .05, **P < .01, ***P < .001.

findings provide evidence to refute the suggestion by some economists that higher minimum wages are likely to result in loss of health insurance benefits for unskilled laborers and the working poor. Rather, the finding of statistically significant reductions in the odds of experiencing cost-related unmet medical needs suggests that with a higher minimum wage, unskilled workers can better afford out-of-pocket health care costs.

On the issue of health insurance coverage, our findings appear consistent with other recent research examining the effects of minimum wage policy on employer-sponsored health insurance that also found little evidence of such detrimental effects.[21] By using more recent data and assessing an additional health care access outcome, we were able to expand on previous work to provide stronger evidence on the relationship between wage policy and health care access.

This research is especially relevant in the current tumultuous economic climate, as debate over the potential benefits and detriments of higher minimum wages are likely to occur as policymakers explore additional mechanisms to improve economic conditions for working families.

Limitations

There are several limitations that must be considered when interpreting our findings. First, although the known limitations of the BRFSS survey have been discussed in detail elsewhere,[38] the survey's vulnerability to selection bias is especially relevant given the population we sought to examine. In addition to missing individuals without home telephones, surveys such as the BRFSS may also underrepresent members of the low-wage workforce who may work atypical hours, regularly work overtime, or hold more than 1 job, which may attenuate the associations found in our analysis.

The large shift in the minimum wage coefficient when state fixed effects are added suggests that there are unobserved attributes of states that are associated with both higher minimum wages and lower rates of insurance and access. Such attributes may be associated with local economic structures and policymaking processes that attempt to address structural problems through the minimum wage.

A related limitation of this analysis is that it ignores the possible influence of local minimum wage ordinances and "living wage" policies, which often set a higher wage standard than the state-level laws assessed by our models. Approximately 130 different municipalities enacted such ordinances between 1996 and 2007, mandating minimum wages ranging from $6.25 to over $12.00 per hour.[39] The widely varying features of these ordinances make it difficult to reliably identify the respondents in the BRFSS data set that are likely to be directly affected by local minimum wage laws, so these policies were not incorporated into our current analyses. However, because of their narrow scope, the overall proportion of workers covered by local living wage ordinances during the period of our analysis was likely quite low. A review in late 2002 estimated that approximately 100 000 workers nationwide had received wage increases under living wage ordinances as of that year, which represents just over one tenth of 1% of the estimated 72.7 million workers paid hourly rates in 2002.[40,41]

Finally, there are limitations related to the use of the BRFSS insurance status variable as an outcome. Because the prevalence of uninsurance has been known to vary according to the particular assessment methods used,[42] it is unclear how the use of different survey items or methods to quantify the uninsured might alter the findings of our study. Although it provides a clear point-in-time estimate of individuals who have no health insurance, it does not assess the type of insurance plans held by those who are insured. Therefore, a situation in which an individual lost his or her employer-sponsored coverage but was eligible for a government-funded plan to replace it would not be captured in our data, nor would an individual who had been uninsured in the recent past but had gained coverage prior to being surveyed.

Nonetheless, because previous work has focused exclusively on employer-sponsored health insurance to assess the association with minimum wages, we believe our study provides a strong complement that helps to establish a fuller understanding of the relationships.

Conclusions

Our study provides evidence that higher minimum wages (1) are associated with a reduced likelihood of unskilled workers experiencing cost-related barriers to needed medical care and (2) are not associated with lack of health insurance. These findings appear to refute the suggestion that minimum wage laws have detrimental effects on access to health care, as opponents of the policies have previously suggested. ■

About the Authors

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Contributors

K.P. McCarrier assembled the data set, completed the analysis, and led the writing. K.P. McCarrier and F.J. Zimmerman conceptualized the study. F.J. Zimmerman, J.D. Ralston, and D.P. Martin provided critical review of the manuscript. All authors collaborated on analytic design.

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Human Participant Protection

No specific protocol or institutional review board approval was required for this study because the Behavioral Risk Factor Surveillance System data used in the analyses had been determined to be eligible for research use without review as a "public data set" by the Human Subjects Division of the University of Washington.

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