Calvin Burzynski
DA 401
9/21/2025

Domain Review: Minimum Wage Policy and Poverty Reduction among Full-Time Low-Wage Workers in the U.S.

Introduction

Minimum wage policies continue to shape debates about economic fairness and poverty in the United States. While most research evaluates employment impacts, far less focus has been devoted to whether higher wages actually lift full-time low-wage workers out of poverty. This review examines the academic literature surrounding minimum wage regulation with an emphasis on poverty outcomes for full-time low-wage workersnaf at the state level. By integrating studies on wage policy, hardship, and health with new DiD and clustering methods, the review situates the study within current research. Research on state-level heterogeneity (Wang et. al, 2019) and evidence of both the potential (Arranz, 2025; Winkler et. al, 2025) and constraints (Sabia & Burkhauser, 2010) of raising the minimum wage are utilized as core sources to guide this project. To address gaps in poverty and state minimum wage policies, additional sources outline the tools guiding this study, such as formal parallel-trend testing, modern DiD estimators, and classifying states according to common characteristics. Understanding how state minimum wage policies affect poverty requires examining both the evidence and methodologies. Research across economics, social outcomes, and policy shows wage increases' promise and limits, revealing wide variation across states and workers and forming the basis for this review.

Minimum Wage and Poverty Outcomes

Although minimum wage laws have been extensively researched as a possible anti-poverty measure, the results vary depending on situation. Numerous studies test whether higher wages reduce poverty. Arranz (2025) used household microdata with propensity-score DiD to

show that Spain's national wage hike raised household income and improved poverty metrics for minimum-wage families, though effects varied by region. The results reinforce using state-level DiD models to assess similar U.S. policy changes. In contrast, Sabia and Burkhauser (2010) analyzed state-level panels with fixed effects from 2004 to 2008 to test whether a higher federal minimum wage (e.g. $9.50) reduced poverty among the working poor, finding little to no effect on poverty, concluding that minimum wage alone is a limited anti-poverty tool. This study intends to examine the ways in which minimum wages impact poverty in relation to state features, time, and demography.

Research on food insecurity highlights another dimension of how wage policies affect material hardship. Winkler et. al (2025) used national survey data with two-way fixed effects and state-clustered inference to test whether more generous state minimum-wage policies reduce food insecurity among households with children. The results were that higher state minimum wages correlated with lower food insecurity, especially among economically vulnerable families. These findings guide my methodology, highlighting the need to measure tangible outcomes like poverty with reliable panel methods. Taken together, these studies reveal both the potential and limits of minimum wage policies. International evidence suggests wage hikes raise incomes and cut poverty, while U.S. results are mixed. Food-security research suggests material hardship may respond differently than income measures. Guided by this evidence, this study intends to use robust panel methods to measure poverty outcomes for full-time low-wage workers.

Broader Social Outcomes and Labor Effects

Beyond direct poverty measures, minimum wage policies can reshape the broader landscape of work and well-being. Research in this domain investigates whether pay increases have an impact on public health outcomes, pay distributions, and work structures; these factors

all have an indirect impact on poverty risk. Border-county comparisons show that raising minimum wage doesn't necessarily reduce employment and does increase earnings in low-wage sectors. Dube, Lester, and Reich (2010) compared contiguous county pairs that straddle state borders with different minimum wage levels (1990-2006), using county-level data on restaurant earnings and employment, and controlling for local economic conditions, spatial heterogeneity, and spillovers. They discovered pronounced wage increases but little employment benefits, highlighting the necessity for panel/DiD approaches that take local variability into account and indicate that poverty reduction, not unemployment, is the more practical objective. Health outcomes also improve following wage increases. Narain (2019) analyzed state-level data from 1993 to 2014 using fixed effects regression to estimate how changes in minimum wage correlate with self-reported health, physical health days, hypertension, and mental health days. The study found that states raising their minimum wages experienced modest reductions in poor physical health days, lower hypertension prevalence, and fewer days of poor mental health in lower-income populations. Overall, these studies show that minimum wage policies can raise earnings without reducing employment and may also improve health outcomes for vulnerable populations. These insights guide this project to examine poverty within broader well-being indicators using panel methods to capture economic and social effects among full-time low-wage workers.

Heterogeneity Across States

Research increasingly shows that minimum wage effects are not uniform across the United States. State-level evidence underscores the need to account for heterogeneity in minimum wage studies. Wang, Phillips, and Su (2019) used a panel heterogeneity framework with fixed effects grouping to estimate state-specific responses to minimum wage increases. Significant cross-state variations were discovered, including both positive and negative impact

clusters. My project incorporates this insight by classifying states based on economic and demographic characteristics and then applying difference-in-differences estimation to determine how much minimum wage changes affect poverty among full-time low-wage workers.

Methodological Foundations

Modern methods enable evaluation of complex policy environment like state minimum wage changes. Innovations in clustering, difference-in-differences estimation, and parallel-trend testing strengthen causal inference and improve our ability to capture heterogeneity across states and groups. Choosing the right clustering level is crucial for credible inference in panel analyses. Mackinnon, Nielsen, and Webb (2023) use wild-bootstrap tests to identify optimal clustering and prevent distorted errors. Their analysis indicates that mis-specifying clustering can lead to incorrect statistical findings. To make sure that standard errors grouped at the state level are suitable and to modify clustering if diagnostics show that a different level is more accurate, my project intends to use these checks.

Recent reviews of difference-in-differences methods highlight the need for robust estimation under staggered policy adoption. Feng et al. (2024) synthesize advances in event-study diagnostics, heterogeneity-robust estimators, and improved inference procedures to handle serial correlation and heterogeneous treatment effects. Their review shows how traditional two-way fixed effects difference-in-differences can misstate effects under these conditions and outlines recommended estimators. Building on these insights, this study intends to use event-study models with leads/lags and heterogeneity-robust estimators to capture more accurate poverty effects.

Testing the parallel-trends assumption is credibly valid to DiD analysis. Bilinski and Hatfield (2018) propose a non-inferiority and equivalence-testing framework that rules out

substantively large violations and compares flexible versus frugal pre-trend models. Their approach reframes pre-trend testing as a diagnostic of assumption validity. I incorporate this approach by estimating bounds and flexible pre-trend models to demonstrate that the poverty estimates are not driven by pre-existing state differences.

Clustering methods can uncover meaningful state groups. Jain (2010) surveys five decades of clustering research, including k-means, hierarchical, and density-based algorithms, and emphasizes the need for robust validation to avoid spurious results. This supports meaningful data segmentation before analysis. My project leverages these techniques to cluster states based on economic and demographic indicators and then apply difference-in-differences to estimate heterogeneous poverty effects within these clusters.

Conclusion

The research on minimum wage legislation shows a shift from employment-focused studies to more thorough assessments of income, poverty, and other well-being indicators. Results are still mixed, with some research showing income improvements and hardship reductions, while others indicate limited or context-dependent impacts. The need for robust estimating procedures and subgroup analysis is highlighted by evidence of significant state-level heterogeneity and advancements in difference-in-differences approaches. Building on these findings, this study intends to evaluate state minimum wage changes' impact on poverty using parallel-trend testing, contemporary DiD, and clustering. In doing so, the project addresses persistent gaps in the existing scholarship and produces a more nuanced, policy-relevant understanding of the conditions under which minimum wage increases succeed as an anti-poverty tool.

Works Cited

Arranz, J. M., & García-Serrano, C. (2025). Assessing the impact of an increase in the minimum wage on household income and poverty. *Social Science Research, 127,* 103143. https://doi.org/10.1016/j.ssresearch.2025.103143

Bilinski, A., & Hatfield, L. A. (2020). Nothing to see here? Non-inferiority approaches to parallel trends and other model assumptions. *arXiv*. https://arxiv.org/abs/1805.03273

Feng, S., Ganguli, I., Lee, Y., Poe, J., Ryan, A., & Bilinski, A. (2024). Difference-in-differences for health policy and practice: A review of modern methods. *arXiv*. https://arxiv.org/abs/2408.04 617

Dube, A., Lester, T. W., & Reich, M. (2010). MINIMUM WAGE EFFECTS ACROSS STATE BORDERS: ESTIMATES USING CONTIGUOUS COUNTIES. *The Review of Economics and Statistics*, *92*(4), 945–964. http://www.jstor.org/stable/40985804

Jain, A. K. (2010). Data clustering: 50 years beyond K-means. *Pattern Recognition Letters, 31*(8), 651–666. https://doi.org/10.1016/j.patrec.2009.09.011

MacKinnon, J. G., Nielsen, M. Ø., & Webb, M. D. (2023). Testing for the appropriate level of clustering in linear regression models. *Journal of Econometrics, 235*(2), 2027–2056. https://doi.org/10.1016/j.jeconom.2023.03.005

Narain, K. D. C., & Zimmerman, F. J. (2019). Examining the association of changes in minimum wage with health across race/ethnicity and gender in the United States. *BMC Public Health, 19*(1), 1069. https://doi.org/10.1186/s12889-019-7376-y

Sabia, J. J., & Burkhauser, R. V. (2010). Minimum Wages and Poverty: Will a $9.50 Federal Minimum Wage Really Help the Working Poor? *Southern Economic Journal*, *76*(3), 592–623. http://www.jstor.org/stable/27751487

Wang, W., Phillips, P. C. B., & Su, L. (2019). The heterogeneous effects of the minimum wage on employment across states. *Economics Letters, 174,* 179–185. https://doi.org/10.1016/j.econlet. 2018.11.002

Winkler, M. R., Clohan, R., Komro, K. A., Livingston, M. D., & Markowitz, S. (2025). State minimum wage and food insecurity among US households with children. *JAMA Network Open, 8*(3), e252043. https://doi.org/10.1001/jamanetworkopen.2025.2043