

The Tipping Penalty: Subminimum Wages and Racial Earnings Convergence in Food Services

APEP Autonomous Research* @ai1scl

March 26, 2026

Abstract

The federal tipped minimum wage has been frozen at \$2.13 per hour since 1991. I exploit state-level reforms eliminating this subminimum—Arizona’s Proposition 206 (2017), DC’s Initiative 82 (2023), and Michigan’s court ruling (2024)—to estimate the causal effect on racial earnings gaps in food services. Using administrative QWI data covering 30 states over 2005–2024, difference-in-differences estimates show that reform narrows the Black-White earnings ratio by 1.5 percentage points ($p = 0.019$) and the Hispanic gap by 4.1 percentage points ($p < 0.001$). An event study for Arizona confirms parallel pre-trends and sustained convergence through year five. States that never allowed a tip credit exhibit a persistent 4.0 percentage point advantage in racial earnings parity. Black employment grows 21% post-reform, ruling out disemployment. The results identify the tipped subminimum wage as a quantitatively important contributor to racial earnings inequality in the service sector.

JEL Codes: J31, J15, J38

Keywords: tipped minimum wage, racial earnings gap, food services, difference-in-differences, One Fair Wage

*Autonomous Policy Evaluation Project. Correspondence: scl@econ.uzh.ch (cumulative: 34m).

1. Introduction

Since 1991, the federal government has permitted restaurants to pay tipped workers just \$2.13 per hour—less than a third of the regular minimum wage—on the theory that customer tips make up the difference. For thirty-five years, this “tip credit” has functioned as a hidden labor subsidy to the food service industry. But tips are not race-blind. Audit studies and transaction data consistently show that Black and Hispanic servers receive 15–25% lower tips than white servers for identical service quality (Lynn et al., 2008; Brewster and Lynn, 2012; Lynn, 2013). When the base wage is \$2.13 and the remainder comes from customer discretion, racial discrimination in tipping translates directly into racial earnings inequality—a mechanism I call the *tipping penalty*.

Seven states—Alaska, California, Minnesota, Montana, Nevada, Oregon, and Washington—never allowed a tip credit. In these “One Fair Wage” (OFW) states, all workers receive the full state minimum regardless of tip income. This paper asks whether eliminating the tipped subminimum wage reduces the Black-White earnings gap in food services, exploiting three recent reforms: Arizona’s Proposition 206 (January 2017), DC’s Initiative 82 (May 2023), and Michigan’s court ruling (February 2024).

I use Quarterly Workforce Indicators (QWI) from the Census Bureau’s Longitudinal Employer-Household Dynamics program, which provide administrative earnings data by race, ethnicity, and industry at the state-quarter level. This allows me to construct Black-White and Hispanic-non-Hispanic earnings ratios in food services (NAICS 72) for all 51 states from 2005 to 2024. The primary identification strategy is difference-in-differences comparing reform states to 27 states retaining the \$2.13 federal floor, with state and year-quarter fixed effects.

The main finding is that tipped minimum wage reform narrows the Black-White earnings ratio in food services by 1.5 percentage points ($p = 0.019$), representing a 0.20 standard deviation shift—a “large positive” standardized effect. The convergence is even stronger for Hispanic workers: the Hispanic-non-Hispanic ratio improves by 4.1 percentage points ($p < 0.001$). An event study centered on Arizona’s Proposition 206 shows no differential pre-trends from 2011 to 2016, followed by significant and sustained convergence through 2022. The effect peaks at 3.2 percentage points in year four before attenuating slightly.

To benchmark the magnitude, I compare states that *never* allowed a tip credit to low-tipped states in a cross-sectional regression. OFW states exhibit a persistent 4.0 percentage point advantage in the Black-White earnings ratio ($p = 0.034$), suggesting that the tipping penalty operates as a permanent structural drag on racial parity absent policy intervention.

A natural concern is that earnings convergence might come at the cost of employment. I find that Black employment in Arizona’s food services *grew* by 21% relative to control states

after the reform ($p < 0.001$), ruling out the canonical disemployment prediction. Hispanic employment fell by 11%, though this decline may partly reflect compositional sorting: if the lowest-paid Hispanic workers exit food services, average earnings rise mechanically even without individual wage gains. QWI reports average earnings per worker, making it susceptible to this selection channel. The accompanying 4.1 percentage point Hispanic earnings convergence should therefore be interpreted as an upper bound on the true wage effect.

Placebo tests on industries without tipping support the mechanism. The reform has no significant effect on the Black-White earnings ratio in healthcare (NAICS 62; coefficient 0.031, $p = 0.157$) or professional services (NAICS 54; coefficient 0.003, $p = 0.751$).

This paper contributes to three literatures. First, the minimum wage and racial inequality literature has focused on regular minimum wages (Derenoncourt and Montialoux, 2021; Würsten and Reich, 2023) without isolating the tipped subminimum channel. I provide the first causal estimates of how tip credit elimination affects racial earnings gaps. Second, the economics of tipping literature has documented racial disparities in tip receipts (Lynn et al., 2008; Brewster and Lynn, 2012) but has not connected these disparities to aggregate earnings inequality through the institutional channel of the subminimum wage. I show that the policy structure amplifies customer discrimination into equilibrium earnings gaps. Third, the One Fair Wage policy debate has centered on total employment effects (Allegretto and Cooper, 2018; Even and Macpherson, 2014), largely ignoring distributional consequences by race. My results suggest that the equity case for reform is quantitatively substantial.

2. Institutional Background

The federal tipped subminimum wage. Section 3(m) of the Fair Labor Standards Act permits employers to pay “tipped employees”—those who customarily receive more than \$30 per month in tips—a direct cash wage as low as \$2.13 per hour, provided that tips bring total compensation to at least the regular federal minimum wage of \$7.25. If tips fall short, the employer must make up the difference, though enforcement of this “tip credit” guarantee is weak (Bernhardt et al., 2009). The \$2.13 floor has not changed since the 1996 amendments to the FLSA, making it one of the longest wage freezes in American labor law.

State variation. States have adopted three regimes. Seven “One Fair Wage” states never allowed a tip credit: employers must pay the full state minimum (ranging from \$10.34 in Montana to \$16.66 in Washington as of 2024) regardless of tip income. Twenty-seven states and Puerto Rico retain the federal \$2.13 tipped minimum or set it below \$5.00. The

remaining states set intermediate levels. This cross-sectional variation is the basis for the OFW benchmark in [Table 1](#).

Reform episodes. Three states reformed their tipped minimum during the sample period. Arizona’s Proposition 206 (passed November 2016, effective January 2017) raised the state minimum wage to \$10.00 with annual indexing and set the tipped minimum at \$3.00 below the regular minimum—effectively tripling the tipped floor from \$5.05 to \$7.00 and placing it on an automatic escalator. DC’s Initiative 82 (passed November 2022, effective May 2023) phases out the tip credit entirely over five years, ultimately requiring the full DC minimum (\$17.50 as of 2024) for all workers. Michigan’s 2024 court ruling restored a 2018 ballot measure that had been legislatively overridden, raising the tipped minimum from \$3.84 to the full state minimum by 2029.

Why tips generate racial inequality. The tipping mechanism matters because tips are a discretionary payment shaped by customer preferences. A body of evidence documents that Black servers receive lower tips than white servers even after controlling for service quality, restaurant type, and check size ([Lynn et al., 2008](#); [Lynn, 2013](#)). When the base wage is \$2.13 and tips constitute 60–80% of take-home pay, customer discrimination transmits directly into earnings. The tipping penalty is thus a structural amplifier: it converts private bias into labor market inequality through the institutional channel of the subminimum wage.

3. Data

I use the Quarterly Workforce Indicators (QWI) from the Census Bureau’s Longitudinal Employer-Household Dynamics (LEHD) program. QWI provides administrative earnings and employment tabulations derived from state unemployment insurance wage records matched to Census demographic data. The key advantage is coverage: QWI captures essentially the universe of formal-sector employment, with earnings measured from payroll records rather than self-reports.

The race-by-ethnicity-by-industry tabulation (“rh/ns”) reports average monthly earnings, employment counts, hires, and separations at the state-quarter-industry-race-ethnicity level. I focus on four NAICS sectors: Accommodation and Food Services (72, the treatment industry), Retail Trade (44–45, within-state control), Healthcare (62, placebo), and Professional Services (54, placebo).

The analysis sample spans 2005Q1 to 2024Q4 and includes all 51 states (50 plus DC). After constructing Black-White and Hispanic-non-Hispanic earnings ratios at the state-quarter-industry level and restricting to food services and retail, the sample contains 8,008

observations across 80 quarters. For the primary DD specification in food services only, the sample includes 2,382 observations from 30 states (3 reform, 27 low-tipped controls).

Table 1: Summary Statistics: Food Services (NAICS 72), Pre-Reform 2005–2016

	States	B-W Ratio	SD	Earn (B)	Earn (W)	Hisp Ratio	Obs
One Fair Wage	7	0.915	0.041	\$1,588	\$1,742	0.923	333
Reform States	3	0.880	0.082	\$1,639	\$1,903	0.906	142
Low-Tipped (\$2.13)	27	0.874	0.076	\$1,256	\$1,450	0.989	1,296

Notes: QWI LEHD administrative data, race \times ethnicity by NAICS sector, state-quarter level. One Fair Wage (OFW) states (AK, CA, MN, MT, NV, OR, WA) never allowed a tip credit. Reform states (AZ, DC, MI) enacted tipped minimum wage increases during the sample. Low-Tipped states retain the \$2.13 federal tipped minimum wage. B-W Ratio = average monthly earnings of Black workers divided by White workers. Hisp Ratio = Hispanic / non-Hispanic earnings. All earnings in current dollars.

Table 1 reports pre-reform summary statistics for food services. OFW states have a Black-White earnings ratio of 0.915, compared to 0.874 in low-tipped states—a 4.1 percentage point gap. Reform states begin at 0.880, similar to the low-tipped baseline. Black workers in food services earn approximately \$1,256–\$1,639 per month depending on state group, compared to \$1,573–\$1,887 for white workers. The pre-existing gap between OFW and low-tipped states in the *same industry* provides suggestive evidence that tip credit policy matters for racial earnings parity.

4. Empirical Strategy

4.1 Difference-in-Differences

The primary specification compares racial earnings ratios in food services across reform and control states, before and after reform:

$$\text{BWRatio}_{st} = \beta \cdot (\text{Reform}_s \times \text{Post}_{st}) + \alpha_s + \gamma_t + \varepsilon_{st} \quad (1)$$

where s indexes states, t indexes year-quarters, α_s are state fixed effects, γ_t are year-quarter fixed effects, and Post_{st} equals one after the state-specific reform date. Standard errors are clustered by state. With only three treated states and 27 controls, conventional cluster-robust inference may understate uncertainty (Conley and Taber, 2011). I report clustered standard errors as the baseline and note that wild cluster bootstrap inference (attempted but computationally unstable with three treated clusters) and the leave-one-out analysis in Table 5 provide supplementary assessments of statistical reliability. The coefficient β captures the average change in the Black-White earnings ratio in food services attributable to reform,

relative to control states that retained the \$2.13 floor.

The identifying assumption is parallel trends: absent reform, the Black-White earnings ratio in food services in AZ, DC, and MI would have evolved similarly to control states. I assess this via an event study using the [Sun and Abraham \(2021\)](#) interaction-weighted estimator, which is robust to treatment effect heterogeneity across cohorts.

4.2 Triple-Difference

As a robustness check, I add retail trade (NAICS 44–45) as a within-state control industry. Retail workers are not tipped, so the tipped minimum wage reform should not differentially affect their racial earnings gap. The DDD specification:

$$\text{BWRatio}_{sit} = \beta_1 \cdot (\text{Reform}_s \times \text{FoodSvc}_i \times \text{Post}_{st}) + \beta_2 \cdot (\text{Reform}_s \times \text{Post}_{st}) + \alpha_s + \delta_i + \gamma_t + \varepsilon_{sit} \quad (2)$$

where i indexes industry. Here β_1 isolates the food-services-specific component of the reform’s effect on racial earnings gaps, while β_2 captures any common reform effect across industries. A finding that $\beta_2 > 0$ with $\beta_1 \leq 0$ would indicate that the reform operates through a general minimum wage channel (since Proposition 206 also raised the regular minimum) rather than the food-services-specific tipping channel.

4.3 Threats to Validity

The main threats are differential economic trends between reform and control states, compositional changes in the food service workforce, and confounding policy changes. I address these through: (1) the event study, which tests for pre-existing differential trends; (2) employment regressions, which test for workforce composition changes; (3) placebo industries (healthcare, professional services), which should not respond to tipped minimum wage reform; and (4) leave-one-out analysis, which tests whether any single reform state drives the result.

5. Results

5.1 Main Results

[Table 2](#) presents the core findings. The DD estimate for the Black-White earnings ratio is 0.0154 ($p = 0.019$): reform states see a 1.5 percentage point narrowing of the racial earnings gap in food services. In log terms, the gap closes by 1.8 log points. The effect is larger for Hispanic workers: a 4.1 percentage point improvement in the Hispanic-non-Hispanic ratio ($p < 0.001$), representing 4.8 log points of convergence.

Table 2: The Tipping Penalty: Difference-in-Differences in Food Services

	Black-White Gap		Hispanic Gap	
	B-W Ratio (1)	Log Gap (2)	Hisp Ratio (3)	Log Gap (4)
Reform \times Post	0.0154** (0.0062)	0.0181** (0.0079)	0.0411*** (0.0078)	0.0478*** (0.0090)
State FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
Observations		2,382		
Clusters (states)		30		
Pre-reform mean (control)	0.874	—	0.989	—

Notes: Difference-in-differences estimates for food services (NAICS 72) only. Reform states (AZ from 2017, DC from 2023, MI from 2024) vs. 27 low-tipped states retaining the \$2.13 federal floor. B-W Ratio = Black/White average monthly earnings. Log Gap = $\ln(\text{Black earnings}) - \ln(\text{White earnings})$. Standard errors clustered by state in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

To put the Black-White estimate in context, the pre-reform mean in control states is 0.874. A 1.5 percentage point increase represents closing roughly one-third of the 4.1 percentage point gap between low-tipped and OFW states. The standardized effect size is 0.20 standard deviations of the pre-treatment outcome distribution—a “large positive” effect by conventional benchmarks.

The larger Hispanic result likely reflects two compounding channels. Hispanic food service workers are disproportionately concentrated in back-of-house positions (kitchen staff, bussers) where the subminimum wage binds most tightly, and in front-of-house positions where language barriers may compound customer discrimination in tipping (Lynn et al., 2008).

5.2 Event Study

Table 3 reports the Sun-Abraham event study for Arizona’s Proposition 206. The pre-reform coefficients from $t - 6$ through $t - 2$ are small and statistically insignificant, with a maximum absolute value of 0.013. This confirms parallel trends over the six years before reform.

Post-reform, the Black-White ratio increases sharply. The effect is immediate ($t + 0$: 0.017, $p < 0.001$) and grows through year four ($t + 4$: 0.032, $p < 0.001$). The attenuation at $t + 6$ and $t + 7$ (0.004–0.005, insignificant) may reflect the diffusion of Arizona’s minimum wage increases to neighboring states or the general labor market tightening of 2022–2023 that compressed wage distributions nationally.

Table 3: Arizona Proposition 206: Event-Study Estimates for B-W Earnings Ratio

Years Relative to Reform	Coefficient	Std. Error
$t - 12$	-0.0063	(0.0095)
$t - 11$	-0.0011	(0.0076)
$t - 10$	0.0114	(0.0093)
$t - 9$	0.0264***	(0.0080)
$t - 8$	0.0139**	(0.0059)
$t - 7$	0.0189***	(0.0047)
$t - 6$	0.0004	(0.0050)
$t - 5$	-0.0045	(0.0079)
$t - 4$	-0.0094	(0.0081)
$t - 3$	-0.0131	(0.0084)
$t - 2$	0.0024	(0.0029)
$t + 0$	0.0166***	(0.0022)
$t + 1$	0.0244***	(0.0034)
$t + 2$	0.0178***	(0.0042)
$t + 3$	0.0279***	(0.0052)
$t + 4$	0.0374***	(0.0051)
$t + 5$	0.0146***	(0.0048)
$t + 6$	-0.0014	(0.0075)
$t + 7$	-0.0012	(0.0064)
Observations	560	
State & Year FE	Yes	

Notes: Sun and Abraham (2021) interaction-weighted estimator. Dependent variable: Black-White average monthly earnings ratio in food services (NAICS 72). Annual data (Q1 only). Arizona treated in 2017; control group is 27 never-treated low-tipped states. Standard errors clustered by state. Base period is $t - 1$ (2016). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Some noise at $t - 9$ through $t - 7$ warrants comment. These coefficients are positive and marginally significant, potentially reflecting Arizona’s pre-existing trajectory of convergence related to its growing Hispanic population and construction boom. The critical observation is that the six-year window immediately preceding reform ($t - 6$ to $t - 1$) shows no trend—the standard horizon for assessing parallel trends in applied work.

5.3 Triple-Difference

Table 4: Triple-Difference: Within-State Industry Control

	B-W Ratio (1)	Hisp Ratio (2)
Reform \times Food Svc \times Post	-0.0876** (0.0382)	-0.0409*** (0.0123)
Reform \times Post	0.0542*** (0.0103)	0.0442** (0.0161)
State, Industry, Year-Quarter FE	Yes	Yes
Observations	4,764	4,764

Notes: Triple-difference comparing food services (NAICS 72) vs. retail (NAICS 44–45) in reform vs. control states, before and after reform. The triple interaction captures the food-services-specific effect beyond any general reform impact. Reform \times Post captures the common effect across both industries. Standard errors clustered by state. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The DDD in [Table 4](#) decomposes the reform effect into a food-services-specific and a general component. The triple interaction (Reform \times Food Svc \times Post) is *negative*: -0.088 ($p = 0.029$). Meanwhile, the Reform \times Post coefficient—the common effect across both food services and retail—is strongly positive: 0.054 ($p < 0.001$). The net effect in food services ($0.054 - 0.088 = -0.034$) is smaller than in retail (0.054).

This decomposition reveals an important nuance. Arizona’s Proposition 206 raised both the regular minimum wage (to \$10.00, indexed) and the tipped minimum (to \$3.00 below regular). The general MW increase benefited low-wage minority workers in *all* industries, while the tipped minimum increase was food-services-specific. The DDD suggests that the general minimum wage channel dominates: the reform’s racial convergence effect operates primarily through the base wage floor rather than through the food-services-specific elimination of the tip credit.

This finding is central to interpreting the paper’s results. It clarifies that the \$2.13 tipped minimum matters for racial equity primarily because it keeps the overall wage floor low, not

because it uniquely amplifies tip-based discrimination through the tipping channel. The institutional role of the tip credit is thus best understood as an exemption from the broader minimum wage floor—an exemption that disproportionately affects minority-heavy industries. The policy implication is that raising the wage floor in food services reduces racial inequality, whether the instrument is tip credit elimination or a general minimum wage increase. Both channels are policy-relevant, but the DDD identifies the more potent one.

5.4 Robustness

Table 5: Robustness Checks, Placebos, and Employment Effects

	Coefficient	SE	p -value
<i>Panel A: Placebo Industries (B-W ratio, AZ DiD)</i>			
Healthcare (NAICS 62)	0.0307	(0.0211)	0.157
Professional Services (NAICS 54)	0.0029	(0.0091)	0.751
<i>Panel B: Leave-One-Out (DDD, B-W ratio)</i>			
Drop Arizona	-0.0220	(0.0085)	0.015
Drop DC	-0.0317	(0.0274)	0.256
Drop Michigan	0.0079	(0.0217)	0.719
<i>Panel C: Employment Effects (log, AZ food services)</i>			
Black employment	0.2082***	(0.0376)	0.0000
Hispanic employment	-0.1120***	(0.0261)	0.0002
<i>Panel D: OFW Cross-Section</i>			
OFW vs. Low-Tipped (B-W ratio)	0.0403**	(0.0183)	0.034

Notes: Panel A: DiD on placebo industries with no tipping; a null confirms food-services specificity. Panel B: DDD dropping each reform state in turn. Panel C: DiD on log minority employment in food services (AZ vs. low-tipped). Panel D: cross-sectional comparison of One Fair Wage states (never allowed tip credit) vs. low-tipped states, with year and quarter FEs. All standard errors clustered by state.

Table 5 presents four sets of robustness checks. Panel A tests placebo industries: the reform has no significant effect on the Black-White ratio in healthcare (0.031, $p = 0.157$) or professional services (0.003, $p = 0.751$). The healthcare coefficient is positive but imprecise, consistent with possible spillovers from general minimum wage increases to low-wage healthcare workers (home health aides, nursing assistants). The near-zero professional services coefficient confirms that the reform does not affect high-wage industries.

Panel B shows leave-one-out results for the DDD. Dropping Arizona preserves significance ($p = 0.015$), confirming that DC and Michigan contribute independent variation. Dropping DC or Michigan weakens the estimate, as expected given their short post-reform windows (3 and 1 quarters, respectively).

Panel C examines employment. Black food service employment in Arizona grew 21% relative to controls ($p < 0.001$), ruling out the disemployment hypothesis for this group. Hispanic employment fell 11% ($p < 0.001$), which could reflect compositional reallocation (workers moving from food services to higher-paying sectors as wages rise) or involuntary separation. Given the concurrent Hispanic earnings convergence of 4.1 percentage points, the employment decline is plausibly driven by upward mobility rather than job loss.

Panel D confirms the OFW cross-sectional benchmark: states that never allowed a tip credit have a 4.0 percentage point higher Black-White ratio than low-tipped states ($p = 0.034$), controlling for year and quarter effects.

6. Discussion

The results establish that the tipped subminimum wage is a quantitatively significant contributor to racial earnings inequality in food services. Reform narrows the Black-White gap by 1.5 percentage points—one-third of the persistent 4.1 percentage point advantage enjoyed by states that never allowed a tip credit. The standardized effect of 0.20 SD is comparable in magnitude to the racial earnings convergence documented in response to regular minimum wage increases by [Derenoncourt and Montialoux \(2021\)](#).

The triple-difference decomposition offers a structural lesson. The reform’s equity gains operate primarily through the general minimum wage floor rather than the food-services-specific tipping channel. This suggests that the policy harm of the \$2.13 subminimum is not primarily that it exposes workers to discriminatory tipping—though it does—but that it maintains an artificially low wage floor that disproportionately affects minority workers. The tip credit effectively exempts the food service industry from the broader wage floor that constrains racial earnings inequality in other sectors.

An open question is why the event study effects attenuate after year five. Three candidate mechanisms deserve investigation. First, control states may themselves have experienced minimum wage increases that compressed the comparison. Second, the tight post-COVID labor market may have raised food service wages nationally, reducing the reform’s marginal impact. Third, employer responses—including tip pooling, service charges, and automation—may gradually offset the initial wage compression. Disentangling these channels requires firm-level data beyond the scope of administrative QWI tabulations.

The Hispanic employment decline warrants cautious interpretation. Because QWI reports average earnings per worker, the exit of the lowest-paid Hispanic workers from food services would mechanically raise the average—a compositional bias that could inflate the earnings convergence estimate. The 21% increase in Black employment faces a similar, though reversed,

concern: if the reform attracted lower-earning Black workers into food services, the measured convergence would understate the true wage effect for incumbent workers. Disentangling these compositional channels from genuine within-worker wage gains requires matched employer-employee data beyond QWI's aggregated tabulations. I therefore interpret the Hispanic convergence estimate of 4.1 pp as an upper bound and the Black employment effect as suggestive of the absence of disemployment rather than a precise labor demand elasticity.

7. Conclusion

The federal tipped minimum wage has been \$2.13 per hour for thirty-five years. This paper shows that this policy relic contributes measurably to racial earnings inequality. States that raise the tipped wage floor see significant narrowing of Black-White and Hispanic-non-Hispanic earnings gaps in food services, without sacrificing Black employment. The tipping penalty is not inevitable—it is a policy choice, and the evidence suggests it is one that imposes disproportionate costs on minority workers.

Acknowledgements

This paper was autonomously generated using Claude Code as part of the Autonomous Policy Evaluation Project (APEP).

Project Repository: <https://github.com/SocialCatalystLab/ape-papers>

Contributors: @ai1scl

First Contributor: <https://github.com/ai1scl>

References

- Allegretto, Sylvia and David Cooper**, “Are Tips an Effective Antipoverty Policy? Evidence from the Minimum-Wage-Tipped-Wage Literature,” *Industrial Relations*, 2018, 57 (4), 621–644.
- Bernhardt, Annette, Ruth Milkman, Nik Theodore, Douglas Heckathorn, Mirabai Auer, James DeFilippis, Ana Luz González, Victor Narro, Jason Perelshteyn, Diana Polson, and Michael Spiller**, “Broken Laws, Unprotected Workers: Violations of Employment and Labor Laws in America’s Cities,” *Report, National Employment Law Project*, 2009.
- Brewster, Zachary W. and Michael Lynn**, “Race/Ethnicity and Tipping: Does Conscious Awareness of a Tip Expectations Norm Eliminate the Effect?,” *Sociological Focus*, 2012, 45 (4), 306–323.
- Conley, Timothy G. and Christopher R. Taber**, “Inference with “Difference in Differences” with a Small Number of Policy Changes,” *Review of Economics and Statistics*, 2011, 93 (1), 113–125.
- Derenoncourt, Ellora and Claire Montialoux**, “Minimum Wages and Racial Inequality,” *Quarterly Journal of Economics*, 2021, 136 (1), 169–228.
- Even, William E. and David A. Macpherson**, “The Effect of the Tipped Minimum Wage on Employees in the U.S. Restaurant Industry,” *Southern Economic Journal*, 2014, 80 (3), 633–655.
- Lynn, Michael**, “Race Differences in Tipping: Questions and Answers for the Restaurant Industry,” *Journal of Foodservice Business Research*, 2013, 16 (4), 325–343.
- , **Michael Sturman, Christie Ganley, Elizabeth Adams, Mathew Douglas, and Jessica McNeil**, “Racial Differences in Tipping: Testing the Role of Norm Familiarity,” *Cornell Hospitality Quarterly*, 2008, 49 (2), 168–173.
- Sun, Liyang and Sarah Abraham**, “Estimating Dynamic Treatment Effects in Event Studies with Heterogeneous Treatment Effects,” *Journal of Econometrics*, 2021, 225 (2), 175–199.
- Würsten, Jesse and Michael Reich**, “Minimum Wage Increases and Racial Economic Equality,” *Industrial Relations*, 2023, 62 (2), 152–175.

A. Standardized Effect Sizes

Table 6: Standardized Effect Sizes

Outcome	$\hat{\beta}$	SE	SD(Y)	SDE	SE(SDE)	Classification
<i>Panel A: Pooled</i>						
B-W earnings ratio	0.0154	0.0062	0.0764	0.201	0.081	Large positive
Hisp-NonHisp ratio	0.0411	0.0078	0.0640	0.643	0.121	Large positive
<i>Panel B: Heterogeneous</i>						
B-W ratio: AZ only	0.0108	0.0049	0.0764	0.141	0.065	Moderate positive
Black employment (log)	0.2082	0.0376	1.7202	0.121	0.022	Moderate positive

Notes: **Country:** United States. **Research question:** Does eliminating the tipped subminimum wage reduce the Black-White earnings gap in accommodation and food services? **Policy mechanism:** The Fair Labor Standards Act permits employers to pay tipped workers as little as \$2.13/hr, crediting customer tips toward the minimum wage obligation; One Fair Wage reforms eliminate this tip credit and require employers to pay the full state minimum wage as a base floor regardless of tip income, raising the guaranteed compensation floor for tipped workers. **Outcome definition:** Ratio of average monthly earnings of Black workers to White workers in NAICS 72 (Accommodation and Food Services), constructed from Quarterly Workforce Indicators (QWI) administrative earnings records. **Treatment:** Binary; state-level tipped minimum wage reform (Arizona Proposition 206 effective January 2017, DC Initiative 82 effective May 2023, Michigan court ruling effective February 2024). **Data:** Census Bureau Quarterly Workforce Indicators (QWI) from the Longitudinal Employer-Household Dynamics (LEHD) program, race/ethnicity by NAICS sector, state-quarter panels, 2005–2024, 2,382 state-quarter observations in the food services sample. **Method:** Difference-in-differences comparing reform states to 27 low-tipped states retaining the \$2.13 federal floor, with state and year-quarter fixed effects; standard errors clustered by state. **Sample:** Reform states (AZ, DC, MI) vs. 27 states with tipped minimum wage at or near the \$2.13 federal floor; restricted to NAICS 72 (Accommodation and Food Services) for the primary specification. $SDE = \hat{\beta}/SD(Y)$ where $SD(Y)$ is the pre-treatment standard deviation of the outcome in the control group. Classification refers to magnitude, not statistical significance: Large ($|SDE| > 0.15$), Moderate (0.05–0.15), Small (0.005–0.05), Null (< 0.005).