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Do Higher Tipped Minimum Wages Reduce Race, Ethnic, or Gender Earnings Gaps for Restaurant Workers?

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Executive Summary

In recent years, labor activists have invested considerable financial resources in campaigns to eliminate what's known as the tip credit.

The tip credit represents the difference between a set base hourly wage for restaurant employees who regularly earn substantial tips, and the regular minimum wage rate. This difference counts regular tip income toward the minimum wage requirement. Legally, the Fair Labor Standards Act (FLSA) and other state and local laws protect tipped employees: if they do not earn enough tips to put them at the regular hourly minimum wage rate, employers must make up the difference. The tip credit allows tips to count toward the regular minimum wage requirement, but all tipped restaurant employees are legally ensured to earn at least that base rate.

Restaurants, which employ most tipped workers, operate on characteristically minimal profit margins – as low as 3%.[1] By counting tips toward the minimum wage, restaurants can offer tipped customer service positions while also providing competitive wages for non-service employees including kitchen staff. At the same time, tipped employees typically earn far more than the minimum wage rate, estimated at $27 per hour on average.[2]

Yet activists outside of the industry and not connected to tipped employees argue upending this earnings system will target alleged discrimination or inequity. For instance, Saru Jayaraman, president of One Fair Wage, testified that "ending the subminimum wage…improves all these concerns,"[3] and her organization One Fair Wage claims eliminating tip credits is "a gender and racial equity cornerstone for restaurant workers."[4] The Center for American Progress claims that "ending the tipped minimum wage will reduce poverty and inequality." The National Employment Law Project argues eliminating tip credits "would take steps toward a more equitable and fair society."[5]

The latest research by Dr. David Neumark and Emma Wohl of the University of California Irvine adds to existing research surrounding the impacts of tip credit elimination policy.

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1 https://epionline.org/app/uploads/2023/06/230530_EPI_PolicyMemo_HistoryOfTippingSystem.pdf

2 https://restaurant.org/nra/media/downloads/pdfs/advocacy/tip-credit.pdf#:~:text=Restaurants%20face%20financial%20penalties%20if%20they%20do%20not%20pay%20tipped%20employees%20accurately.&text=Waitstaff%20at%20fullservice%20restaurants%20earn,paid%20tipped

3 https://www.legis.state.pa.us/WU01/LI/TR/Transcripts/2021_0056_0008_TSTMNY.pdf

4 https://web.archive.org/web/20211027121437/https://onefairwage.site/wp-content/uploads/2021/01/OFW_FactSheet_USA.pdf

5 https://www.nelp.org/wp-content/uploads/NELP-Testimony-in-Support-of-One-Fair-Wage-in-Massachusetts.pdf

Contrary to activist arguments, eliminating the tip credit does not have any discernable impact on eliminating earnings gaps between minority, female, and White male employees. Their study of federal Census Bureau data over two decades finds:

- Tipped minimum wage hikes *have not increased* total weekly earnings for women or minority tipped employees.
- In fact, tipped wage hikes are shown to *increase* the hourly wage gaps for minority tipped employees without increasing weekly earnings for these employees.
- Should policymakers increase the overall minimum wage, keeping tip credits intact is statistically more efficient at raising wages and reducing earnings gaps for tipped employees.

On the contrary, previous economic research spanning decades finds existing schemes to compromise tip credits have resulted in fewer jobs for tipped employees and reduced overall earnings. [6] Additional research finds this also results in closed restaurants.[7]

Neumark and Wohl's research contributes to a growing body of research that eliminating tip credits fails to deliver intended wage boosts, and in various ways could leave employees worse off than before. While there may be other factors and bad actors at play in the dynamics of the restaurant industry, eliminating the tip credit does not change these factors and in fact stands to hurt employees and restaurants by taking away jobs and earnings.

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6 https://epionline.org/app/uploads/2022/07/220502_EPI_Study_NeumarkTippedWorkers.pdf

7 https://www.nber.org/papers/w25806

Abstract

One of the arguments increasingly made to support large minimum wage increases is that they decrease wage or earnings gaps for minorities or women (e.g., Derenoncourt and Montialoux, 2021). The argument is often made with particular reference to higher tipped minimum wages for restaurant workers, because of discrimination in tipping that is immune to equal pay policy requirements. Of course, even if higher tipped minimum wages reduce hourly pay differences between groups, increases in tipped minimum wages can reduce employment or hours among restaurant workers (Neumark and Yen, 2023), and these effects could differ by race and gender, so implications for hourly earnings do not necessarily extend to overall earnings. We estimate the impact of variation in tipped minimum wages – or, equivalently, tip credits – on earnings of restaurant workers (which ignores employment variation but incorporates hours variation). We find that tipped minimum wages raise hourly earnings of women, but not of Blacks or Hispanics. But tipped minimum wages generally do not raise weekly earnings for these groups (because of hours declines for women). In contrast, regular minimum wages boost hourly and weekly earnings of all three groups of restaurant workers, with the effects arising from non-tipped workers.

* Neumark is a Distinguished Professor of Economics at UCI. Wohl is a Ph.D. student at UCI. We are grateful to Bill Even for helpful comments. Wohl's work on this project was supported by a grant from the Employment Policies Institute (EPI). The views expressed are our own, and not necessarily those of EPI. EPI had no control over the content or publication of this paper; EPI only had the right to provide comments, which we as authors could choose to incorporate/respond to or not.

Introduction

Minimum wage tip credits allow employers to pay workers a guaranteed hourly wage, often referred to as the cash wage, which is less than the statutory minimum wage as long as tips bring the worker up to the minimum wage; if tips leave the employee short of the minimum wage, employers have to make up the difference. The current U.S. federal minimum wage is $7.25 for non-tipped workers, while the required hourly minimum wage for tipped workers is $2.13; equivalently, the tip credit is 70.6%.

Some of the motivations and debate surrounding the tipped minimum wage are no different from those surrounding the regular minimum wage. Advocates tend to focus on arguments about reducing wage inequality by boosting wages of low-wage workers, and reducing poverty. They also generally discount the possibility of job loss that could offset these potential gains (e.g., Center for American Progress, 2021; Simet and McConnell, 2022). However, the most recent evidence on the effects of tipped minimum wages (Neumark and Yen, 2023) points to adverse employment effects from raising the tipped minimum wage, with an employment elasticity of around –0.08 in the full-service restaurants where tips are prevalent. The estimated effects on total earnings are negative (albeit not statistically significant). And there is little robust evidence that higher tipped minimum wages reduce the incidence of extreme poverty, poverty, or near-poverty.[8] The same conclusions are generally true of the effects of regular minimum wages, although to be sure, this literature is contested (Burkhauser et al., 2023; Neumark and Shirley, 2022).[9]

A newer and different argument increasingly made to support large minimum wage increases is that they decrease wage or earnings gaps for minorities or women (e.g., Derenoncourt and Montialoux, 2021). This is a potentially important policy argument, which in weighing up the costs and benefits of a higher minimum wage can shift the balance towards a more positive assessment of the net benefits. Derenoncourt and Montialoux report that the large minimum wage increases in the late 1960s and early 1970s contributed

8 Extreme poverty is defined as 50% of the poverty line, and near-poverty as 150% of the poverty line. The evidence on the latter distributional effects is less robust than the employment and earnings effects; hence our summary that there is not robust evidence of benefits.

9 Similarly, there is some conflicting evidence on the effects of tipped minimum wages in the restaurant sector. For example, Allegretto and Nadler (2015) do not find adverse employment effects in the full-service relative to limited-service sector when they implement estimators beyond the standard two-way fixed effects model (including using border-county pairs). But these other approaches have been criticized for creating positive bias in estimated minimum wage effects (e.g., Jha et al., forthcoming; Neumark et al., 2014). Other work on the restaurant sector found adverse employment effects on full-service vs. limited-service employment (Even and Macpherson, 2014).

significantly to the decline in the earnings difference between Black and White workers. And in their results, there is no offsetting decline in employment (which could be important since earnings data are conditional on employment). On the other hand, Bailey et al. (2021) find similar earnings effects, but report offsetting disemployment effects that were larger for Black men (compared to the overall modest effects).[10] Blau et. al. (2023) find evidence that higher minimum wages decrease inequality between White, Black, and Hispanic workers and between male and female workers up to the 20th percentile of the wage distribution. Increases in the minimum wage after 2007 in particular reduced the White-Hispanic wage gap up to the median of the wage distribution, due in part to Hispanics' geographic concentration in states with large minimum wage increases over the period. Blau et al. do not specifically consider tipped workers – but their results are robust to the inclusion or exclusion of tipped workers.

A similar argument is increasingly made about the need to raise tipped minimum wages, or to eliminate the tip credit in minimum wage legislation. For example, advocates of raising tipped minimum wages point out that women and minorities are a disproportionate share of the tipped workforce (National Women's Law Center, 2021), and that "tipping … amplifies racial inequality" because of smaller tip payments to minority servers (Dixon, n.d.). There is research to support the claim about tipping behavior, with evidence of racial and gender discrimination in tipping at restaurants (Brewster and Lynn, 2014; Bujisic et al., 2013; and Lynn et al., 2008) and for taxicabs (Ayres et al., 2005).

Thus, it is argued, to address earnings differences between minorities and Whites, and between women and men, minimum wage tip credits should be reduced or eliminated (Boesch et al., 2021; National Women's Law Center, 2019). For example, the National Women's Law Center (2019) notes that, in 2017, in states with equal tipped and non-tipped minimum wages, "the gender wage gap [was] 31% smaller than in states with a $2.13 tipped minimum wage." A 2014 White House report on minimum wage effects for women stated that "[r]aising the full minimum wage and the tipped minimum wage will help reduce poverty among women and their families, as well as make progress toward closing the gender pay gap." The same report claimed that "raising the tipped minimum wage would benefit low-wage tipped workers – the majority of whom are women – without providing a windfall to higher-wage workers or adversely affecting employment."

The idea that higher tipped minimum wages, by reducing the share of income of tipped workers that comes from tips, will reduce pay differences between women, minorities, and White men in the restaurant industry, is embodied in the Raise-the-Wage Act of 2021.[11] This Act called for a five-year increase in the federal minimum wage to $15, and eventually

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10 Bailey et al. consider the conflicting evidence on employment and point out that the lack of employment impact in Derenoncourt and Montialoux is quite fragile and depends on a number of factors including excluding from the model state-by-birth cohort effects and a GSP control, and using a likely noisier reference week rather than annual employment measure (Table 2 and Appendix).

11 See https://www.congress.gov/bill/117th-congress/house-bill/603.

(over 7 years) bringing the tipped minimum wage to this same level – eliminating minimum wage tip credits.[12]

Of course, these arguments for higher tipped minimum wages ignore evidence that increases in tipped minimum wages can reduce employment (or hours) in the full-service restaurant sector, with adverse effects on the affected workers. They also ignore the fact that the earnings gaps by gender and between minorities and Whites do not necessarily decline with a higher tipped minimum wage, and the extent to which this happens depends on the value of tips and whether they change with the minimum wage.

Regardless, the central question we study is the impact of variation in tipped minimum wages (or, equivalently, tip credits) on earnings of workers in this sector, and in particular on earnings gaps by gender and between minorities and Whites. This question, by construction, ignores employment variation; but it does incorporate hours variation. And of course, the analysis of earnings captures effects on both tip and non-tip income.

We do this using policy variation in tipped (and regular) minimum wages over time and across states, and Current Population Survey (CPS) data on workers in the restaurant industry, including data on who receives tips and tipped income. We devote considerable effort to exploring the measurement of tipped income in the CPS, concluding that the data are likely sufficiently reliable to obtain convincing evidence on the effects of variation in tipped minimum wages on earnings.

Among restaurant workers, we find that tipped minimum wages raise hourly earnings of women, but not Blacks or Hispanics. But tipped minimum wages generally do not raise weekly earnings of these groups (because of hours declines for women). In contrast, regular minimum wages boost wages and weekly earnings of all three groups of restaurant workers, with the effects arising from non-tipped workers.

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12 Another argument we do not consider in this paper is that elimination of the tip credit may reduce administrative burden on employers and mistaken or intentional underpayment to employees. In a 2010-2012 compliance sweep of nearly 9,000 full-service restaurants by the U.S. Department of Labor's Wage and Hour Division, 1,170 tip credit violations were identified which totaled nearly $5.5 million in back wages (Allegretto and Cooper, 2014). More than 1 in 10 workers in predominantly tipped occupations reported hourly earnings, including tips, below the full federal minimum wage, while just 4% of all workers reported hourly earnings below the minimum wage, using CPS data (White House, 2014). In 2017, the New York State Department of Labor held hearings with tipped workers in miscellaneous industries, who expressed confusion over whether they were eligible for the minimum wage and noted that elimination of the tip credit would increase income predictability and simplify wage calculations (New York State Department of Labor, 2019). As a result of these hearings, the New York State Department of Labor recommended eliminating the tip credit for miscellaneous industry workers. Elimination of the tip credit would also reduce the vulnerability some workers face in their role as a tipped employee: the National Women's Law Center notes that poverty-level wages heighten women's reliance on tips and may compel them to tolerate sexual harassment or inappropriate behavior from customers (National Women's Law Center, 2019).

Policy Variation

The federal tipped minimum wage of $2.13 currently prevails in 16 states (as of the end of 2023). In 14 of these, the regular federal minimum wage ($7.25) binds, and in two of these the state minimum wage is higher, but the tipped minimum wage is still $2.13 (so the minimum wage tip credit is higher as a percentage of the minimum wage). There are six states where the regular federal minimum wage still prevails, but the tipped minimum wage is higher. Finally, there are 29 states (including the District of Columbia) where both minimum wages are higher, and in seven of these the two are the same, so there is no minimum wage tip credit.

Table 1 display information on variation in the two types of minimum wages over time. Table 1 displays, for 2019, the regular minimum wage (MW) prevailing in the state (the higher of the state or federal minimum wage) and the prevailing tipped minimum wage, as well as changes over our sample period (1994-2019). It groups states based on their comparison to the federal policy. For example, the first group (Panel A), consists of 15 states where the federal regular minimum wage and tipped minimum wage were binding, and the fourth group (Panel D), consists of 21 states where both the state minimum wage and tipped minimum wage were higher than the federal regular and tipped minimum wage, but there are tip credits. The last group (Panel E) consists of seven states where the state minimum wage exceeded the federal minimum wage, and there is no tip credit, so the tipped minimum wage was the same as the (higher) state minimum wage.[13] Figure 1 displays examples of different types of changes: states where the regular minimum wage has risen absent changes in the tipped minimum wage (Kansas), states where both have risen but a tip credit remains (Illinois), states where the tipped minimum wage has sometimes risen faster than the minimum wage (South Dakota), and states where the tip credit has been eliminated (Washington State).

13 We present information on state minimum wage and tipped minimum wages through 2023, instead, in Appendix Table A1.

Prior Research on Tipped Worker Income and Tipping Behavior

DESCRIPTIVE EVIDENCE ON TIPPED WORKERS

Based on evidence reported in past work, overall, tipped workers earn less per hour than other workers. For example, during the period 2011-2013, waiters and bartenders in states with a tipped minimum wage equal to $2.13 earned a median $9.52 per hour (including tips) and tipped workers as a whole earned $9.80, compared to median hourly pay of $15.63 for all workers in these states (Allegretto and Cooper, 2014, Table 4). Interestingly, though, these differences were similar in states with tipped minimum wages greater than $2.13 but below the regular state minimum wage ($10.20, $10.31, and $16.87), and in states with no minimum wage tip credits ($11.48, $11.19, and $17.41). Thus, the absolute amounts of the hourly pay differences across the three groups of states are similar – e.g., for waiters and bartenders relative to the average, about $6. But the percentage differences vary a bit; for example, the median hourly pay of waiters and bartenders in states with a $2.13 tipped minimum wage was 60.9% of overall median hourly pay. In states with no minimum wage tip credit, the corresponding figure is 65.9%. Overall, though, these figures suggest that the tip credit does not affect the relative hourly pay of tipped workers very much, which perhaps is not surprising because employers do have to make up the difference between the tipped minimum wage and the regular minimum wage if tips are not sufficient to do so.[14]

Tipped workers are disproportionately female and Hispanic. For example, Allegretto and Cooper (2014) report that, in 2011-2013, the percentage female in the overall workforce was 48.3%, versus a much higher 66.6% among all tipped workers and 68.5% among waiters and bartenders. The corresponding percentages Hispanic were 15.6%, 17.7%, and 17.7% – not as striking as the gender difference. In contrast, Black workers are substantially underrepresented among tipped workers and waiters/bartenders.

14 The higher hourly wages for tipped workers in the states without minimum wage tip credits, coupled with a fixed nominal national poverty line applicable to all states, lead to a lower poverty rate for tipped workers in states with no minimum wage tip credits, while there is not much difference in poverty rates for non-tipped workers in these states (Allegretto and Cooper, 2014). That does not imply that raising the tipped minimum wage in states with high tip credits will lower poverty, and indeed the evidence in Neumark and Yen (2023) does not point to a clear effect in reducing poverty.

RACE/ETHNIC AND GENDER DIFFERENCES IN TIPPED INCOME

Some prior research using observational data on tips indicates that women and Blacks tend to receive less in tips than White male tipped workers (Brewster and Lynn, 2014; Bujisi et al., 2013; Parrett, 2011; Lynn et al., 2008; Ayres et al., 2004). Brewster and Lynn (2014) conducted an exit survey of diners at a restaurant in a larger (unnamed) northern U.S. city, gathering information on tip percentage, diners' perception of service quality, and server race. Customers were asked to report how large their bills and tips were (in dollars and cents), to assign scores to measures of server skill including friendliness and attentiveness, and to assign scores for food quality and dining atmosphere. Brewster and Lynn estimated regressions of tip percentage on server race (and gender, although that is not their focus), customer race, the interaction of server and customer races, and controls for server skills, restaurant food and atmosphere quality, customer demographics, and bill and dining party size, as reported by responding customers. They found that Black servers received tips that were approximately 1.2 percentage points (or 6.2 percent) lower than those received by White servers.[15] After controlling for service quality, the results indicated that Black servers received tips that were 1.5 percentage points lower than those received by White servers, and the effect was found among both Black and White diners.

Lynn et al. (2008) conducted a similar study in one restaurant in an unnamed city in the southern United States. Diners were asked to complete a questionnaire regarding server performance, perceptions of the meal and restaurant, server and diner demographic characteristics, bill size, and tip amount. In a regression of tip percentage on server race (and gender), server skills, the interaction of server race and service quality, and controls for restaurant food and atmosphere quality, customer demographics, and bill and dining party size, they found that Black servers received lower tip percentages than did White servers. Additionally, they found that the race effect was stronger at higher levels of perceived service quality – for White servers, tips increased from 16.8% of bill size with less than perfect service to 23.4% of bill size with a perfect service rating, while Black servers received tips of 16.6% of bill size for perfect and less than perfect service ratings. With the caveat that their sample comes from only one restaurant, they concluded that both White and Black diners tip Black servers less than White servers, although the differential appears, for some reason, mainly when service is top-notch.

In some cases, tip disparities appeared only among some groups of servers or customers. Bujisi et al. (2013) collected daily tip data from restaurant servers, bartenders, and room service staff of a large convention hotel in the southeastern United States. They used separate regressions to estimate the effects of employee gender on the tipping rate in each department and found that male bartenders received larger tips than female bartenders, and male restaurant servers received larger tips than female servers (though this effect was only marginally significant). But they found no statistically significant difference for room service staff. The authors note that the inclusion of only one hotel in the analysis should control for

15 Black servers received tips that were on average 19.3% of the bill (compared to 20.5% for White servers). The 1.2 percentage point difference is 6.2% of 19.3.

overall quality of hotel service; however, they did not control for other factors that may affect tip percentage, such as individual server quality.[16] This analysis is suggestive of gender differences in tips received for some tipped workers but does not account for other factors that could influence tip percentages. Parrett (2011) collected survey data from patrons of five Richmond, Virginia, restaurants on tip and bill values, server gender and race, perceived server productivity, and customer characteristics including method of payment, dining frequency, age, and race. He found no evidence of tip discrimination in the full sample of diners, but among less-frequent diners, male servers received more in tips than female servers.

On the other hand, some studies find no evidence of tip disparities by race or gender. Lynn and Simons (2000) collected daily tip data and self-assessed survey data on experience, attentiveness, speed, friendliness, and knowledge from servers at a restaurant in Houston, Texas. They also photographed each server and assigned attractiveness ratings, separately for waiters and waitresses, based on the evaluations of 10 judges. They regress tip averages on total sales, self-assessed service quality, years of experience, and attractiveness, and found that server sex was unrelated to tip averages.[17] In separate analyses by sex, they found that physical attractiveness was a better predictor of tips for waitresses than for waiters (more attractive waitresses received larger tips), while self-rated service was a better predictor of average tips for waiters than for waitresses. While this study does not find evidence of tip disparities by sex, it does suggest that customers may make tipping decisions based on different factors for male and female servers.

The preceding studies all used observed tip data and small, local samples. In contrast, Brewster et al. (2022) conducted survey experiments of U.S. consumers in an effort to identify effects from a larger and more diverse sample. They conducted three online surveys designed to generate geographically and demographically diverse samples, where respondents were provided with information on a hypothetical server's gender and race and then were asked how much they would tip given the bill total and a given level of satisfaction with the service. The authors included service quality both in light of prior research that finds stronger race effects when service quality was rated highly, and to facilitate a within-subject experiment of tip differences.[18] Across surveys, the authors did not find evidence of server race effects on tip values; they found that respondents reported they would leave a hypothetical Black server a mean tip of $6.42 compared to $6.29 for White servers, a modest difference of 13 cents. In one survey they found a significant effect of the intersection of race and sex on tip amounts, driven by smaller tip amounts for Black waitresses compared to White waitresses but larger tip values for Black waiters compared to White waiters. In contrast to the previous studies,

16 Brewster and Lynn (2014) and Lynn et. al. (2008) found larger race effects on tips when considering service quality; the same could be true of gender effects.

17 However, since perceived attractiveness could differ systematically by gender, attractiveness may be a bad control for estimating gender differences in tips.

18 In two of the three surveys, subjects were asked to indicate how much they would tip if they were satisfied with both food and service quality, dissatisfied with both food and service quality, satisfied with food quality but not service quality, and satisfied with service quality but not food quality.

most of which found evidence of tip disparities, this study is based on far larger and more representative and diverse samples of respondents.[19] These samples may provide results that are more generalizable to the United States as a whole – and results are less indicative of disparities. However, since this study is experimental, it is not clear if the estimates obtained differ from previous studies because respondent's answers differ from real-life tipping practices, perhaps owing to social desirability biases.

Finally, in a different setting, Ayres et al. (2004) collected data on more than 1,000 tips received by 12 taxicab drivers in New Haven, Connecticut. Drivers were instructed to complete a survey after dropping off each passenger. The survey covered passenger and driver race and age, pick-up and drop-off locations, trip time and length, whether the passenger was a repeat customer, and whether the driver and passenger engaged in conversation. In a regression with these controls, Ayres et al. find that Black drivers were tipped 9.1 percentage points (45%) less than White drivers (the mean tip percentage was 20.3%). However, they note that the data rely on driver self-reporting, and may not be complete, controls for passenger socioeconomic status were poor (consisting of location of pick-up and drop-off and passenger dress), and the regressions do not control for driver quality.

Summing up, several studies indicate that White servers tend to receive larger tips than Black servers, regardless of service quality. Additionally, some evidence exists that waiters receive larger tips than waitresses, and that customers determine their tipping decisions using different criteria for waiters (service quality) and waitresses (attractiveness). However, these studies tend to have small sample sizes, often collecting data from one city or one restaurant, and often rely on self-reported data from servers or customers. Additionally, while these studies attempted to control for server quality, it is not clear to what extent this was successful. In one study that uses an experimental ("vignette") design (a potential disadvantage) and a large, geographically and demographically diverse sample (an advantage), no evidence of tip disparities was found. Overall, then, this literature suggests there may be race and gender disparities in tips, and certainly more evidence points in that direction. Note, though, that in contrast to our analysis that follows, none of these studies compares overall earnings including tips and wages.

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19 The first survey included responses from 702 members of Survey Sampling International's (SSI) U.S. consumer panel in 48 states and the District of Columbia, with 202 White, 151 Black, 164 Asian, and 158 Hispanic participants. The second and third surveys recruited participants via Amazon Mechanical Turk. The second survey included 1,356 respondents from all 50 states, the District of Columbia, and Puerto Rico, and was nearly 70% non-Hispanic White, 10.6% Asian, 10.1% non-Hispanic Black or African American, 8% Hispanic or Latino, and 2.7% of another race/ethnic group. The third survey included 417 respondents from all 50 states, the District of Columbia, and Puerto Rico, and was nearly 70% non-Hispanic White, 12% Asian, 11% non-Hispanic Black or African American, 6% Hispanic or Latino, and 2.4% of another race/ethnic group.

The Potential for Higher Minimum Wages to Reduce Earnings Gaps

Given this evidence, it is possible that raising tipped minimum wages (reducing tip credits) will boost the relative earnings of women and minorities, as the importance of this discretionary component of pay on which customers can discriminate would become less important. And given the over-representation of at least some lower-paid groups (women and Hispanics) in the tipped workforce, this could potentially have substantial effects on earnings gaps.

However, the effects of reducing or eliminating tip credits are complicated. They depend on whether prior to the policy change tips plus the tipped minimum wage exceed the regular minimum wage, and also on whether customers respond to higher tipped minimum wages by reducing tips.[20] Some representative calculations are presented in Table 2.

First, if tips are low enough that employers still have to make up the difference between the regular minimum wage and the tipped minimum wage plus tips (scenario 1), then eliminating the tipped minimum wage can actually increase the earnings gap. Suppose that initially the tipped minimum wage is $2.13 in a state where the regular federal minimum wage of $7.25 prevails, and a waitress earns $2 per hour in tips whereas a waiter earns $4 per hour. In this case, because the employer has to top up the hourly wage to $7.25 for both women and men, there is no gender difference in wages. When the tip credit is eliminated two things happen (assuming tips are unchanged). First, the gender difference in tips is now reflected in the difference between pay of women and men, so that women are now paid less relative to men. On the other hand, hourly earnings of women increase. In scenario 2, only women earn tips plus wages below the regular minimum wage ex ante; again the earnings gap increases.

There is a more positive outcome for the gender earnings gap in scenario 3. Here both earn above the regular minimum wage after tips. In this case, because the increase in the minimum wage is equal for women and men, the gender gap in pay declines. Essentially, as long as the tip difference persists, the increase in the component of pay that is the same for women and men (the tipped minimum wage) reduces the gender pay difference. In scenario 4, tips adjust downward when the minimum wage goes up, possibly because customers realize that workers are earning more before tips. Of course, what happens depends on how tips change for women and men. Here we assume equal percentage declines in tips (by 25%). In this case, the gender earnings gap declines by more, precisely because now the

20 We are not aware of evidence of this. However, there is anecdotal evidence that increases in tipped minimum wages led some restaurant owners to try to reduce the use of tips (Cohen, 2015), because the higher tipped minimum wage led them to raise prices.

decline in tips further increases the share of pay that is determined by the minimum wage – which treats women and men the same. In the example (and others), hourly pay increases. Scenarios 3 and 4 may be what most advocates for higher tipped minimum wages have in mind; women (or minorities) are tipped less, and the higher tipped minimum wage reduces the share of pay that reflects the tip difference.

Thus, there is not a sharp prediction that earnings gaps must decline when minimum wage tip credits are reduced or eliminated (or equivalently the tipped minimum wage is increased).[21] In general, this will happen more to the extent that minimum wages become an increasing share of compensation, since the minimum wage is the same for all groups (as in scenarios 3 and 4). Of course, the effects may also differ for hourly versus total earnings, if hours adjust.[22]

Finally, an additional implication of Table 2 is that the elimination (or reduction) of minimum wage tip credits may have a larger impact on the somewhat higher-paid tipped workers who are not just receiving the regular minimum wage after tips.[23] In addition to the kinds of examples in Table 2 where a higher minimum wage does not reduce the wage gap, this channel of influence may further mute the positive impact of eliminating minimum wage tip credits on the lowest-paid workers.

Data

We use CPS Outgoing Rotation Group (ORG) data from 1994 to 2019. We start with 1994 because it is the first year with data on eligibility for tips, overtime, and commissions. We end in 2019 to avoid the impact of the pandemic. We restrict attention to "White" (non-

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21 One can see the ambiguity by defining as the tipped minimum wage, and and as hourly tips for women and men, and writing the gender gap as:

$$\frac{w_m - w_f}{w_m} = \frac{MW_T + T_m + \max\{7.25 - (MW_T + T_m), 0\} - [MW_T + T_f + \max\{7.25 - (MW_T + T_f), 0\}]}{MW_T + T_m + \max\{7.25 - (MW_T + T_m), 0\}}$$

If the max terms equal zero for both women and men, meaning there is no top up, then this reduces to:

$$\frac{T_m - T_f}{MW_T + T_m}$$

This is clearly declining in MW_T (as long as $\frac{dT_m}{dMW_T} = \frac{dT_f}{dMW_T} = 0$). But other cases are more complicated, even if tips do not respond to the tipped minimum wage.

22 We do not study the employment margin in this paper, because we do not use matched CPS data to study employment changes among previously tipped workers.

23 Neumark and Yen (2023) documented that there are some high-wage and high-income tipped workers.

Hispanic), Hispanic, and "Black" (non-Hispanic Black) individuals, grouping the data into these three categories. Households in the CPS are surveyed each month for four consecutive months, not surveyed the next eight months, then surveyed again each month for four consecutive months. Detailed earnings data are collected from interviewees in survey months 4 and 8 (the "outgoing rotation" groups), which comprise the data we analyze given that we require this earnings information.

Our sample period spans two sets of industry and occupational codes (1990 and 2000). Because occupation codes change for the restaurant industry, we present results using both sets of codes.[24] We define restaurant workers based on both their industry and occupation. Restaurant workers are those categorized as working in the "eating and drinking places," "restaurants and other food services," or "drinking places, alcoholic beverages" industries. The occupations we include in our definition of restaurant workers are listed in Table 3.

The ORG collects information on hourly wages, usual weekly hours worked, and weekly earnings. Respondents are asked to report total weekly earnings, inclusive of both wage and non-wage earnings (such as tips, overtime, or commission). We use this information, as well as information on hourly wages and hours worked, to measure hourly wages exclusive of tips ("hourly wages"), "hourly pay" (hourly wages plus hourly tips), and "weekly earnings" inclusive of tips (from which we can then calculate tips). We calculate weekly wage earnings as the product of hourly wages and usual weekly hours worked. The ORG provides hourly wage data for individuals who report that they are paid by the hour, so our analysis is conditional on workers being paid hourly.[25] This is the case for 85.7% of the restaurant workers in our sample. For workers who report that their usual weekly hours vary (6.2% of hourly-paid restaurant workers in our sample) or that usual weekly hours equal zero, hours worked in the week prior to the survey are used in place of usual hours. To calculate weekly tip (i.e., nonwage) earnings, we take the difference between reported weekly earnings and calculated weekly wage earnings. Thus, weekly nonwage earnings can be estimated for workers who report usual work hours (or hours worked last week), hourly wages, and weekly earnings.[26] We convert these to hourly measures, using the same hours measures.

In some cases, calculated nonwage earnings are negative. Since nonwage earnings cannot be negative, we presume these estimates are due to data errors in one or more of the variables we use to estimate weekly nonwage earnings. In several cases, negative nonwage estimates resulted from data that appeared to have a decimal in the wrong place: for example, reported hourly wages of $75.00 that resulted in negative nonwage

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24 The 2000 occupation codes contain additional and finer categories of restaurant occupations. For example, the 1990 codes include a category for "cooks," while the 2000 occupation codes retain the category of "cooks" and add "chefs."

25 Hourly wage data is not collected from individuals who report not being paid by the hour, so it is not possible to separate wage earnings and tip earnings for these workers.

26 If a respondent reports not being paid by the hour (and thus does not report an hourly wage), does not report usual or last week's work hours, or does not report weekly earnings, we do not estimate nonwage earnings for that respondent. We estimate nonwage earnings for 2,440,767 respondents.

estimates.[27] In other cases, negative nonwage estimates appeared to result from rounding (for example, reported hourly earnings of $7.50 and 35 usual weekly hours resulting in weekly wage estimates of $262.50, but reported weekly earnings of $262.00). When a nonwage estimate was between –35 and 0, we set it equal to zero.[28] When we are not able to identify an apparent data error, we set these estimates equal to missing and exclude these observations from all of our regressions.[29]

We identify tipped workers in our data in two different ways. The first is based on an explicit reported variable; respondents are asked if they are regularly eligible for overtime, tips, or commissions. In the restaurant industry, we presume that this generally pertains to tips. First, commissions are used primarily in sales jobs. Second, only about 5% of hourly-paid restaurant workers in our sample report usually working more than 40 hours per week, so overtime is not common. Thus, we treat restaurant workers who respond "yes" to this question as "tip-eligible" workers. Additionally, we identify tipped workers based on calculating nonwage weekly earnings as described above. We consider all workers who have calculated nonwage weekly earnings greater than zero to be "tipped." In our regressions, we combine these two definitions and divide workers into two groups: 1) those who report regularly being eligible for tips and have positive calculated tips, and 2) those who report not regularly being eligible for tips and have calculated tips equal to zero.[30]

VALIDATING DATA ON TIPPED INCOME

Because the CPS does not identify tips separately from weekly earnings, we calculate tips as described above. Challenges in measuring tips include measurement errors in the CPS data, and potential misreporting of tips. Accurately measuring tips, particularly cash tips, for the purposes of tax compliance is a documented challenge, and there is research that tries to estimate both compliance rates and true tip income (Treasury Inspector General For Tax Administration, 2018; Johns and Slemrod, 2010; Anderson and Bodvarsson, 2005; Macnaughton and Veall, 2001). Tipped workers may underreport tip income due to difficulty

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27 We correct 614 weekly earnings values that are missing a zero and 195 hourly wage values that have an extra zero. These numbers constitute a very small share of the problematic values.

28 Hourly wages are reported in cents, while in most cases weekly earnings are reported in dollars. If hourly wages are misreported by at most one dollar, the difference between wage earnings and weekly earnings may be miscalculated by up to one dollar multiplied by usual hours (given that we do not know how people round). Median usual weekly hours among restaurant workers are 35 hours.

29 515,589 (21.1%) of calculated non-wage values are negative. Of those, 245,532 (47.6%) are greater than –35 in absolute value, and we set those equal to missing. Appendix Table A2 reports the same information as Table 5 (on tip eligibility and demographics, discussed below) for the observations dropped as a result of this rule. They are somewhat more likely to be male, and somewhat more likely to be Hispanic or Black. Among restaurant workers, they are less likely to report that they are eligible for tips.

30 We drop the ambiguous cases, which comprise 15.8% of all workers and 11.5% of restaurant workers.

in calculating tip income received throughout the tax year or in an effort to reduce tax liability. Our data, which relies on survey responses, is likely less vulnerable to this underreporting, since respondents are asked about "usual" weekly earnings, and their answers are not relevant to their tax burden. However, misreporting may carry over to the survey responses.

We thus, in this section, report information on the different components of earnings for workers and show that the data suggest our measurement of tip income is reasonably reliable. Table 3 presents the rates of tip-eligible and tipped employees by restaurant occupation, sorted by the tip eligibility rate in the first column.[31] We also report, at the bottom of the table, these rates for retail and all other workers (where this can reflect commissions or overtime). Waiters and bartenders report the highest rates of eligibility for tips (62 to 75%, depending on the job and years of occupation codes) and have the highest rates of positive tips (65 to 75%). These percentages are lower for other restaurant workers, more so for those who seem less likely to earn tips (such as dishwashers or cashiers). They are also much lower for workers outside the restaurant sector.[32] This evidence is consistent with our expectation that waiters and bartenders are the restaurant occupations that are most commonly tipped, and that these jobs would be much more likely to receive tips, commissions, or overtime than workers outside the restaurant sector. In our view, this provides strong validation of our ability to identify tipped workers in the CPS data, and in the restaurant sector in particular.

Table 3 also presents rates of positive tips for workers who report that they are regularly eligible for tips. These percentages are high; across all the job categories shown, at least 79% of workers who report that they are eligible for tips have tips greater than zero, and most percentages are a good deal higher. Tip-eligible waiters and bartenders have among the highest rates of positive tips (94% or more). These results indicate that the calculated nonwage weekly earnings estimates (or at least whether they are positive) are consistent with expected tip earnings; those who report eligibility for tips are likely to have calculated positive tips.

Finally, Table 4 presents means of nonwage earnings as a percentage of total reported weekly earnings, by restaurant occupation and for retail workers and other workers not in the retail or restaurant industries. As expected, waiters and bartenders have the highest shares of nonwage earnings relative to their total earnings. Nonwage earnings comprise about 41 to 52% of total weekly earnings for waiters and bartenders who report that they are regularly eligible for tips or who have calculated positive nonwage earnings. Other restaurant occupations have lower rates of nonwage earnings as a percentage of total earnings, and retail and non-restaurant workers have rates of nonwage earnings as a share of total earnings of approximately 20% (among hourly workers in these sectors). We view these results as further validating our ability to measure tips for restaurant workers – and not just their presence or absence but also their amounts.

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31 The sorting by having positive tips, in the second column, would be very similar.

32 We define retail workers as all workers who have 1990 industry codes from 580 to 691 (classified under "Retail Trade"), excluding those working in eating and drinking places, and 2002 industry codes from 4670 to 5790 (classified under "Retail Trade"). The percentages in retail and among all other workers may seem high but recall that these calculations are for hourly workers only.

Do Higher Tipped Minimum Wages (Lower Minimum Wage Tip Credits) Increase Earnings of Minority and Female Restaurant Workers and Reduce Earnings Gaps?

We now turn to our main analysis. We first characterize the demographics of our restaurant industry workforce and earnings differences by race, ethnicity, and sex, to better understand the potential for higher tipped minimum wages to impact different groups. We then present our regression results for the effects of tipped and regular minimum wages on earnings gaps between groups.

DEMOGRAPHIC DIFFERENCES IN DEPENDENCE OF EARNINGS ON TIPS

Table 5 summarizes the demographic composition of restaurant occupations. Waitstaff are disproportionately likely to be women (between 73 and 81% of waiters/waitresses are women, and 57 to 60% of bartenders). Waiters and bartenders are less likely to be Black or Hispanic (for example, between 3 and 8% of waiters and bartenders in our sample are Black, compared to 12% of retail workers and 14% of non-restaurant and non-retail workers). Thus, the most tipped occupations (waiters and bartenders report tip eligibility between 62 and 75%, the highest of all restaurant occupations) include relatively more women and relatively fewer Blacks and Hispanics. Similar disproportionalities exist in other restaurant occupations: e.g., 28% of hosts are tipped, and hosts are 86% female, while 7% of dishwashers are tipped while they are 40% Hispanic. We might therefore expect more impact of tipped minimum wages on female restaurant workers than on minority restaurant workers (and this is confirmed in the results that follow).

Figure 2 presents a graphical representation of some of this evidence. The figure plots restaurant occupations, retail industry workers, and all other (non-restaurant and non-retail) workers by the percent of workers reporting that they are usually eligible for tips, overtime, and commission and the percent White workers. Restaurant occupations with a greater percentage of White workers also have a greater percentage of workers reporting that they receive tips. In addition, restaurant occupations where a low percentage of worker receive tips often have lower shares White than retail and all other jobs.[33]

33 Appendix Figures A1 and A2 present the same type of evidence, but with percent Hispanic and percent Black on the horizontal axis. The figures show similar evidence of higher minority percentages in restaurant occupations where tips are less common.

EARNINGS DIFFERENCES

Table 6 presents mean earnings differences by gender and race/ethnicity for hourly-paid, tipped restaurant workers. White male workers receive lower wages than Hispanic or Black workers ($8.81 versus $9.73 and $9.77, respectively) but greater tips per hour ($8.82 versus $7.59 and $7.44, respectively), with the net result that hourly pay is higher for Whites. White males work somewhat fewer hours, so that their weekly earnings are slightly lower ($554 versus $594 and $584, respectively).[34]

The same pattern exists for women across race/ethnicity groups. White, female workers earn less in hourly wages than Hispanic and Black women ($6.86 versus $7.74 and $7.61, respectively), but more in hourly tips ($8.61 versus $7.66 and $7.48, respectively). Although their combined hourly pay is higher, White women work somewhat fewer hours than Hispanic and Black women, and thus receive slightly less in weekly earnings ($419 versus $456 and $452, respectively).

Finally, by gender the differences are much less ambiguous. For Whites, Blacks, and Hispanics hourly wages are always lower for women, and hourly tips are lower for White women than for White men. Overall hourly pay is lower for women in every group, as are weekly earnings (but also hours).[35]

Table 7 presents mean earnings differences by gender and race/ethnicity for non-tipped restaurant workers. Looking at males, Hispanics receive the highest hourly wages ($11.36), with White and Black males receiving on average equal hourly wages ($10.70). Hispanic males also work more weekly hours and thus earn higher weekly earnings ($406) than White or Black males ($317 and $349). Similarly, Hispanic women receive greater hourly wages ($10.32) than White or Black women ($10.23 and $10.10), though the difference is smaller than among men. Hispanic women similarly work longer hours and earn the highest weekly earnings among women ($326 versus $281 for White women and $312 for Black women). Finally, among non-tipped workers women earn less in hourly wages and weekly earnings than men in each race/ethnic group. The implication of this last result is that any impact of tipped minimum wages on gender gaps will be mitigated by the likelihood that these minimum wages do not impact gender pay gaps for non-tipped restaurant workers.

It is also of interest to compare Tables 6 and 7. While hourly wages are lower for all groups among tipped than non-tipped restaurant workers, hourly pay once tips are included is much higher for tipped restaurant workers. For example, for White males the comparison is $17.63 vs. $10.71. This suggests that tipped minimum wages are not targeting the lowest-paid restaurant workers. Moreover, hourly pay for retail workers is lower than for tipped restaurant workers, and hourly pay for all other workers (outside of restaurants and retail) is not that much higher than for tipped restaurant workers (and very similar for Hispanic men and women). For example, Black male tipped restaurant workers earn $17.21 per hour, Black male retail workers earn $13.96 per hour, and Black male hourly workers in other sectors earn $18.27 per hour.[36]

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34 All figures are in 2019 dollars.

35 Appendix Table A3 shows very similar results if we restrict attention to tipped waiters and bartenders; the only qualitative difference is that now Hispanic women and Black women also have lower hourly tips than Hispanic men and Black men.

36 See Appendix Tables A4 and A5.

In contrast, Black male non-tipped restaurant workers earn only $10.70 per hour. Comparisons are similar for other groups and indicate that if there are any restaurant workers whose hourly pay lags substantially behind other workers, it is the ones who do not earn tips and who would presumably be little affected by higher tipped minimum wages. This suggests that regular minimum wages may do more to increase earnings of restaurant workers overall, with the effect arising for non-tipped restaurant workers. This is indeed exactly what we find.

REGRESSION FRAMEWORK FOR ESTIMATING EFFECTS OF TIPPED MINIMUM WAGES

We present our core regression specification below, which we use to estimate the effects of both tipped minimum wages and regular minimum wages on earnings-related outcomes by gender and by race/ethnicity. For each of our outcomes (the alternative earnings measures, and hours), we estimate the following model:

$$Y_{iost} = \alpha + \beta_1 TMW_{st} + \beta_2 TMW_{st} \cdot Hispanic_i + \beta_3 TMW_{st} \cdot Black_i + \beta_4 TMW_{st} \cdot Female_i$$

$$+\gamma_1 MW_{st} + \gamma_2 MW_{st} \cdot Hispanic_i + \gamma_3 MW_{st} \cdot Black_i + \gamma_4 MW_{st} \cdot Female_i$$

$$\lambda_1 Hispanic_i + \lambda_2 Black_i + \lambda_3 Female_i + X_{it}\pi + D_s\delta + D_t\theta + D_o\rho + \varepsilon_{iost}$$

Y_{iost} is the log of the outcome for individual *i* working in occupation o and state *s* in time t. TMW_{st} is the log tipped minimum wage by month and MW_{st} is the log regular minimum wage by month.[37] The minimum wage variables are each separately interacted with dummy variables for if an individual is Hispanic, Black, or female.[38] X_{it} is a vector of individual-level controls, including age, marital status, metropolitan status, and education level.[39] D_s represents state fixed effects, D_t represents month-year fixed effects (i.e., dummy variables for every unique month in the sample), and D_o represents occupation fixed effects.[40] Standard errors are clustered by state.[41]

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37 We do not use substate minimum wages, in part because we do not know where people work in the CPS, only where they live, and even then, not all areas are identified.

38 Both minimum wage variables are always demeaned, so that the effects of the demographic variables reflect their effects at the means of the minimum wage variables.

39 Specifically, we include dummy variables for whether a respondent is married, whether they reside in a metropolitan area as defined by the U.S. Office of Management and Budget or a non-metropolitan area (and leave the remainder as the omitted group), and whether their highest level of education is a high school diploma, some college, a bachelor's degree, or master's degree or more. We include controls for both age and age squared.

40 The occupation dummy variables distinguish by year of occupation codes, as in, e.g., Table 3.

41 We do not delve into issues of pre-trends and heterogeneous (dynamic) treatment effects for three reasons. First, we have a large number of treatment effects. Second, our core concern is with effects on earnings gaps, and there is not much reason to think treatment effects on earnings gaps are not fairly instantaneous. Third, in large part we focus on relative effects of the two types of minimum wages – on tipped and non-tipped restaurant workers, on minority/female vs. White male workers, and on restaurant vs. retail and all other (hourly) workers. These different comparisons net out any common shocks/changes for the restaurant sector, demographic subgroups, or the low-wage sector.

In this regression, β_1 and γ_1 identify the effect of the tipped minimum wage and the regular minimum wage, respectively, for White male workers. β_2 through β_4, and γ_2 through γ_4, identify differential effects of the tipped minimum wage and minimum wage, respectively, for each interacted demographic category, relative to the effect for White males. β_1 or γ_1 plus these coefficients measures the overall effects of the tipped minimum wage or minimum wage on minorities or women. For example, for Hispanic women the effect of changes in the tipped minimum wage equals $(\beta_1 + \beta_2 + \beta_4)$.

As discussed earlier, it is possible that changes in the tipped minimum wage increase earnings for, e.g., minority workers, while also increasing the earnings gap. Suppose, for example, that increases in the tipped minimum wage increase hourly wages for all restaurant workers (with no change in hours worked), but tip earnings decrease for female Hispanic workers. In an analysis of total weekly earnings, β_1 is positive and β_2 and β_4 (or their sum) are negative. If $(\beta_2 + \beta_4)$ is smaller in absolute magnitude than β_1, Hispanic women would experience an increase in earnings from the higher tipped minimum wage, but the earnings gap relative to White males would increase. Thus, it is important to track both types of impacts – relative and absolute – although much of the impetus for raising tipped minimum wages is to reduce earnings gaps for minorities and women.

Our outcomes of greatest interest are hourly pay, weekly earnings, and weekly hours, as these determine how much a worker earns, and how much they earn per hour (as well as why weekly earnings might change). But we also report results for hourly wages. In discussing our results, we focus most on the effects on hourly pay and weekly earnings. Hourly pay is the sum of hourly wage and hourly tips, and thus reflects changes in both and can be used to easily compare differences in compensation per hour. Additionally, weekly earnings reflect changes in both hourly pay and usual hours worked.

ESTIMATED EARNINGS DIFFERENCES BY DEMOGRAPHIC GROUP

We first estimate regressions without including the minimum wages, to estimate demographic earnings differences and the effects of our other control variables. Among all restaurant workers (Table 8), Black workers earn a 1.6% higher hourly wage than White workers, but 1.1% lower hourly pay. Female workers earn an 8.1% lower hourly wage than male workers, and 7.5% lower hourly pay. Hispanic workers earn 15.9% greater weekly earnings than White workers, resulting from 16.7% greater usual weekly hours. Black workers also work greater hours (7.3%) and report weekly earnings 6.2% higher than White workers. Female workers have 15.4% lower weekly earnings than male workers and work 7.9% fewer hours per week.[42]

42 These percentages are approximations based on the log specification.

ESTIMATED MINIMUM WAGE EFFECTS

We now turn to our estimated effects of tipped minimum wages, as well as regular minimum wages. Table 9 presents earnings regressions for all restaurant workers of effects of the tipped minimum wage and minimum wage, with the effects of minimum wages constrained to be the same across demographic groups. Hourly wages increase a good deal more than hourly pay from increases in the tipped minimum wage (elasticities of 0.096 and 0.047), consistent with hourly pay exceeding hourly wages (Table 6) so the latter is affected relatively more when the tipped minimum wage increases. The effects of regular minimum wages on hourly wages and hourly pay are quite similar (elasticities of 0.111 and 0.130, respectively), which makes sense because regular minimum wages largely affect untipped workers for whom hourly wages and hourly pay are similar. Weekly earnings increase with the minimum wage (elasticity of 0.203), while the tipped minimum wage has no discernible impact. Usual weekly hours decrease with the tipped minimum wage (elasticity of –0.026, significant only at the 10% level) but increase with the minimum wage (elasticity of 0.073).

We next examine effects of the two types of minimum wages on retail and on all other workers. We would expect to see little if any effect of the tipped minimum wage on retail workers, and evidence consistent with this expectation would bolster the interpretation of our estimates of tipped minimum wages on restaurant workers as causal. Similarly, we would expect little or no effect of either minimum wage on all other workers, given their higher wages; evidence consistent with this would help rule out interpretations of our results for restaurant workers as spurious. Table 10 presents earnings regressions for retail workers, and non-restaurant and non-retail workers, of effects of the tipped minimum wage and minimum wage. For retail workers, hourly wages and hourly pay increase with the minimum wage (elasticities of 0.065 and 0.055, respectively) but there is no discernible effect of the tipped minimum wage. We also find that weekly earnings increase with the minimum wage (elasticity of 0.092). We find a weakly significant negative impact of the tipped minimum wage on weekly earnings (elasticity of –0.032, significant at the 10% level), the combined effect of small, negative, but insignificant effects on hourly pay and weekly hours. For all other workers, we find no significant effects of either type of minimum wage on any of the outcomes we study, consistent with the higher pay of these workers.[43]

ESTIMATED MINIMUM WAGE EFFECTS ON MINORITIES AND WOMEN

We now turn to our main question – how minimum wages affect pay of minorities and women. Table 11 presents estimated effects of the tipped minimum wage and minimum wage on all restaurant workers, tipped or non-tipped, with demographic interactions. The top panel shows the estimated minimum wage effect for the reference category – White males – as well as the interactions with the minimum wage variable that capture differences in effects on minorities and women. The lower panel ("Total Elasticities") are the combined main and interactive effects, and thus the overall effects on each group.

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43 See Appendix Tables A3-A5.

The results in the top panel indicate that both tipped minimum wages and regular minimum wages increase hourly wages and hourly pay (which includes tips) for the reference group of White males. The hourly wage elasticities in both cases are around 0.1. The hourly pay elasticity is very similar for regular minimum wages (0.112 vs. 0.117), but the hourly pay elasticity is lower for tipped minimum wages, consistent with only part of hourly pay (cash wages, but not tips) being directly influenced by the tipped minimum wage.[44]

Looking at the interactions with Hispanic and Black, for the tipped minimum wage, both the hourly wage and hourly pay effects are largely offset, with negative interactions of roughly similar absolute value to the positive effects for White males. This is reflected in the total elasticity estimates in the lower panel for hourly wages and hourly pay, which for both Hispanics and Blacks are close to zero and insignificant. (Regular minimum wages do more to increase Hispanic and Black hourly wages and pay.) Put differently, higher tipped minimum wages exacerbate hourly pay gaps for minorities relative to Whites.

In sharp contrast, tipped minimum wages have positive impacts on hourly wages and hourly pay of women. The total elasticities for both hourly wages and hourly pay are higher for White women – 0.169 and 0.077, respectively – than for White males, though, similarly, the elasticity for hourly wages is approximately double that of hourly pay.[45] Black women similarly see an increase in hourly wages and hourly pay, while Hispanic women experience an increase in hourly wages. In contrast, the effect of the regular minimum wage on hourly wages (but not hourly pay) is lower for women than for White men.

Thus, in terms of hourly wages or hourly pay, tipped minimum wages do not help Hispanics or Blacks, but do help women – and the positive impacts for women are larger than for White men.[46] This might be viewed as indicating – at least for women – the beneficial effects of higher tipped minimum wages. However, Table 11 also shows that weekly earnings are not increased significantly for women (or for minorities) from higher tipped minimum wages. For women, the positive hourly pay impact is largely offset by the negative hours impact (elasticity of –0.052 for White women). Thus, tipped minimum wages reduce hourly pay gaps between women and men, but not weekly earnings gaps; of course, the higher hourly

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44 We also considered whether there was some "re-classification" of tipped restaurant workers to non-tipped as a result of increases in the tipped minimum wage. Appendix Table A6 reports estimated effects of tipped (and regular) minimum wages on both measures of tip eligibility/receipt. We estimate regressions with and without occupation controls, as re-classification by tipped status may influence occupation. There is little indication that higher tipped minimum wages reduce the likelihood that workers are tipped, with only one coefficient out of 16 (for females, based on positive calculated tips and including occupation controls) significant at the 10% level.

45 For Black and Hispanic women, total elasticities are equal to the total elasticity for White women, plus the total elasticity for either Black or Hispanic. We report the significance of these elasticities in Tables 11-14 and related appendix tables using † symbols.

46 In Appendix Figure A3, we plot wage distributions of restaurant workers by race, ethnicity, and sex. Women in the restaurant industry are more likely to be receiving wages at or below the tipped minimum wage (if tipped) or minimum wage (if not tipped) than White male workers. This is consistent with a larger response elasticity to minimum wages.

pay is still valuable. Indeed, none of the demographic groups have their weekly earnings raised by tipped minimum wages. All three estimates in the lower panel of column 3 are near zero and statistically insignificant. (The effect for White males, in the top row of the table, is small, positive, and only weakly significant – with an elasticity of 0.031.)

In contrast, regular minimum wages boost weekly earnings of all three groups (as well as White males), with the largest elasticity for White women (0.240), and the elasticities for Whites, Blacks, and Hispanics tightly clustered between 0.149 and 0.197, although the elasticities for Hispanic and Blacks are lower (0.164 and 0.149).[47]

Thus, overall, there is little clear positive impact from higher tipped minimum wages, with the exception of higher hourly pay for women.[48] In contrast, minority and female restaurant workers are helped by higher regular minimum wages – in terms of higher hourly pay and weekly earnings.[49] Note that this is not a statement that regular minimum wages are more effective than tipped minimum wages when considering low-wage workers as a whole (a point considered in Neumark and Yen, 2023). Rather, this is a statement that regular minimum wages are more effective than tipped minimum wages at raising pay of *restaurant* workers.[50]

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47 In Appendix Table A7, we show that these results are robust to estimating the weekly earnings models adding back the observations dropped because of large negative values of reported minus calculated weekly earnings.

48 In Appendix Table A8, we restrict our sample of restaurant workers to only waiters and bartenders (tipped or non-tipped). Consistent with this group being composed of a higher share earning tips, we find positive effects of the tipped minimum wage on hourly wages for all groups and on hourly pay for White and Black men and for women and generally little to no effects of the regular minimum wage (compare to Table 11). However, we are ultimately more interested – from a policy perspective – in effects across all restaurant occupations, not solely waiters and bartenders. (Note also that we find similar results when restricting to all tipped restaurant workers, without regard to specific occupation; see Table 12, discussed below.)

49 In Appendix Table A9, we drop observations with wages below the tipped or regular minimum wage, restricting our sample of restaurant workers to those who report hourly wages greater than the rounded-down tipped minimum wage (if tipped) or rounded-down minimum wage (if not tipped) and hourly pay greater than or equal to the rounded-down minimum wage; in both cases, we use the nearest whole-dollar amount below the minimum wage. Rounded-down minimum wages are used to allow for potential data misreporting or non-adherence to the minimum wage. We find qualitatively consistent and larger effects compared to those reported in Table 11. Additionally, Black workers see a small increase in weekly earnings from the tipped minimum wage (elasticity of 0.049, significant at the 10% level). Because we do not know that these lower minimum wages are necessarily data errors, we think the most policy-relevant estimates are those that do not impose these exclusions.

50 In Appendix Table A10 we restrict our sample of restaurant workers to those with self-reported, non-imputed earnings information and find generally similar results, though some estimates become statistically insignificant due to the smaller sample size (N=37,791, compared to N of 145,014 in Table 11). In our sample, 37.7% of restaurant workers self-reported earnings information, 97.0% had non-imputed usual weekly hours, 70.7% had non-imputed hourly wages, and 69.0% had non-imputed weekly earnings. Bollinger and Hirsch (2007) note that approximately half of CPS records are based on self-responses, and earnings nonresponse (for which responses will be imputed) is 30 percent. We find somewhat lower levels of self-response among restaurant workers in our sample, but consistent rates of imputation.

In Tables 12 and 13 we report estimates of the same models as in Table 11, but disaggregating tipped and non-tipped restaurant workers. We find more evidence of beneficial effects of higher tipped minimum wages for tipped workers in isolation (Table 12), with positive weekly earnings effects for White males, Blacks and females, with the estimate for Blacks larger than for White males (0.138 vs. 0.069). Again, we find larger elasticities of hourly wages than of hourly pay, consistent with only part of hourly pay (cash wages) being directly influenced by the tipped minimum wage.[51] And we find that the beneficial effects of regular minimum wages largely arise for non-tipped restaurant workers (Table 13), although the regular minimum wage also boosts weekly earnings for tipped White and Hispanic women. These results are consistent with what we would expect regarding which workers are affected by which types of minimum wages.

Digressing slightly, note that Table 12 includes hourly tips as an outcome, which provides evidence of potential discrimination in tips. Black, Hispanic, and female tipped workers receive approximately 7.4 to 11.8% lower tips per hour than White, male tipped workers. This is consistent with some tip discrimination literature which finds that women and Blacks receive less in tips than White male workers (Brewster and Lynn, 2014; Bujisic et al., 2013; Parrett, 2011; Lynn et al., 2008; Ayres et al., 2004).

Reinforcing the conclusion about minimum wage effects from Tables 12 and 13, Table 14 reports estimates of the same specifications for retail workers and all other workers. As expected, we see little to no evidence of tipped minimum wages. With respect to regular minimum wages, the main positive effects are for women in the retail sector, with, for example, a weekly earnings elasticity of 0.145 for White women (compared to the estimate for the restaurant sector of 0.240 in Table 11). Thus, higher regular minimum wages are most advantageous to workers in the restaurant industry – whereas there is little evidence of beneficial effects of tipped minimum wages.[52]

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51 Recall that we are not estimating employment effects, although Neumark and Yen (2023) found that higher minimum wages reduced tipped employment. We find positive effects of the tipped minimum wage on tips for White workers; if employment declines, then tips would increase. The negative effects of the regular minimum wage on hourly wages of Blacks and women could arise from them being reclassified to tipped workers. Note that we discussed, in relation to Appendix Table A6, the possibility of reclassification of workers. We did not find any effects there. However, this may not be captured very well in the data. Finally, we are less concerned that our data are producing anomalous results, because the latter adverse effects on hourly wages are found only for tipped workers. Minimum wage effects for non-tipped workers (Table 13, column 1) are standard.

52 This evidence on earnings effects is consistent with the fact that many restaurant workers are not tipped, and minimum wages are more binding for workers in the restaurant sector than in the retail sector, as shown in Appendix Figure A4.

Conclusions

Proponents of eliminating tip credits – or equivalently increasing tipped minimum wages – argue that this will reduce earning disparities among restaurant workers by race, ethnicity, and gender, in part by reducing reliance on tips which can themselves reflect discrimination. There is some prior evidence (and new evidence we present) that Black and female workers receive lower tips than White male workers. However, the actual effects of increasing tipped minimum wages are not clear. For example, we show (based on CPS data) that Black and Hispanic workers tend to be concentrated in restaurant occupations that are less likely to receive tips, so the effects of higher tipped minimum wages on minority versus White earnings gaps may be weaker than effects of regular minimum wages. Moreover, we clarify that the predicted effects of higher tipped minimum wages on earnings gaps are ambiguous, depending in part on how tipping responds.

We use CPS data to calculate tip earnings for restaurant workers. We document that the CPS data appear to reliably detect who is tipped and measure tipped earnings. Our analysis of the impact of tipped and regular minimum wages on wage and earnings differences indicates that there is little clear positive earnings impact for minorities or women from higher tipped minimum wages, while regular minimum wages deliver some benefits. First, higher tipped minimum wages increase, rather than decreasing, hourly pay gaps between minorities and Whites; regular minimum wages, in contrast, decrease these gaps. Higher tipped minimum wages do, though, reduce the gender gap in hourly pay. Evidence on overall earnings effects, and not just earnings gaps, reinforces this conclusion. Higher tipped minimum wages do not increase hourly pay or weekly earnings of minorities. Women's hourly earnings are increased, although weekly earnings are not increased because of hours reductions.

In contrast, higher regular minimum wages increase hourly and weekly earnings of both minority and female restaurant workers – with the effects driven by the impact of regular minimum wages on non-tipped restaurant workers. Thus, the tipped minimum wage is a largely ineffective tool for reducing earnings disparities among restaurant workers, or for raising pay of minority or female restaurant workers. Regular minimum wages have more promise – although with the important caveat that while increasing relative earnings of minorities and women, they can reduce employment.

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TABLE 1: STATE MINIMUM WAGES AND TIP CREDITS (2019)

State	MW (2019)	Tipped MW (2019)	MW-TMW (2019)	MW (2019 – 1994)	TMW (2019 – 1994)
A. States with federal regular MW ($7.25) and federal tipped MW ($2.13) (15)					
Alabama, Georgia, Indiana, Kansas, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Utah, Virginia, Wyoming	7.25	2.13	5.12	3	0
B. States with federal regular MW but higher tipped MW (6)					
Idaho	7.25	3.35	3.9	3	0.16
Iowa	7.25	4.35	2.9	2.6	1.56
New Hampshire	7.25	3.26	3.99	3	1.13
North Dakota	7.25	4.86	2.39	3	2.01
Pennsylvania	7.25	2.83	4.42	3	0.49
Wisconsin	7.25	2.33	4.92	3	0
C. States with MW higher than federal, federal tipped MW (2)					
Nebraska	9.00	2.13	6.87	4.75	0
New Mexico	7.50	2.13	5.37	3.25	0
D. States with MW higher than federal, higher tipped MW than federal (21)					
Arizona	11.00	8.00	3	6.75	5.87
Arkansas	9.25	2.63	6.62	5	0.5
Colorado	11.10	8.08	3.02	6.85	5.95
Connecticut	10.33	6.38	3.95	6.07	3.49
Delaware	8.88	2.23	6.65	4.63	0
District of Columbia	13.63	4.17	9.46	8.38	1.81
Florida	8.46	5.44	3.02	4.21	3.31
Hawaii	10.10	9.35	0.75	4.85	5.7
Illinois	8.25	4.95	3.3	4	2.82
Maine	11.00	5.50	5.5	6.75	3.37
Maryland	10.10	3.63	6.47	5.85	1.5
Massachusetts	12.00	4.35	7.65	7.75	2.22
Michigan	9.42	3.58	5.84	5.17	1.07
Missouri	8.60	4.30	4.3	4.35	2.17
New Jersey	9.43	2.38	7.05	4.38	0.25
New York	11.10	7.50	3.6	6.85	5.37
Ohio	8.55	4.30	4.25	4.3	2.17
Rhode Island	10.50	3.89	6.61	6.05	1.58
South Dakota	9.10	4.55	4.55	4.85	2.42
Vermont	10.78	5.39	5.39	6.53	3.26
West Virginia	8.75	2.62	6.13	4.5	0.49
E. States with MW higher than federal, no tip credit (7)					
Alaska	9.89	9.89	0	5.14	6.04
California	12.00	12.00	0	7.75	8.65
Minnesota	9.86	9.86	0	5.61	5.61
Montana	8.50	8.50	0	4.25	4.25
Nevada	8.25	8.25	0	4	4.9
Oregon	11.00	11.00	0	6.25	8.87
Washington	12.00	12.00	0	7.1	9.7

MW is calculated as average monthly minimum wage over the year. States are in alphabetical order within each panel. There are some differences in minimum wages in some states based mainly on employer size but also some other features. For example, as of February 2024, New Jersey had slightly lower minimum wages for employers with fewer than 6 employees. However, New Jersey appears to have the same tipped minimum wage regardless of employer size. Other differences include a lower minimum wage if health insurance is provided (Nevada), a lower minimum wage for firms below a sales threshold (Minnesota, Missouri, and Ohio), and a lower minimum wage for workers under age 18 (Minnesota, see https://www.dol.gov/agencies/whd/minimum-wage/state). We do not incorporate such information on lower minimum wages since we are not using data on individual firms, nor do we know this information. We also ignore city minimum wages (although see Neumark & Yen, 2022 for evidence on these). Regardless, with a couple of exceptions (San Francisco, Santa Fe, and Albuquerque), most city minimum wages were implemented only in the mid-2010s or later.

TABLE 2: TIPS, ELIMINATING TIP CREDITS, AND EARNINGS GAPS, EXAMPLES

Group	Tipped minimum wage	Regular minimum wage	Hourly tips	Tipped minimum wage plus tips	Hourly earnings after top up	Earnings gap
Scenario 1: both earn tips + wages < regular minimum wage						
Female	$2.13	$7.25	$2	$4.13	$7.25	0%
Male	$2.13	$7.25	$4	$6.13	$7.25	
Eliminated tipped minimum wage, tips remain the same						
Female	$7.25	$7.25	$2	$9.25	$9.25	17.8%
Male	$7.25	$7.25	$4	$11.25	$11.25	
Scenario 2: only female earns tips + wages < regular minimum wage						
Female	$2.13	$7.25	$4	$6.13	$7.25	10.8%
Male	$2.13	$7.25	$6	$8.13	$8.13	
Eliminated tipped minimum wage, tips remain the same						
Female	$7.25	$7.25	$4	$11.25	$11.25	15.1%
Male	$7.25	$7.25	$6	$13.25	$13.25	
Scenario 3: both earn tips + wages > regular minimum wage						
Female	$2.13	$7.25	$6	$8.13	$8.13	19.7%
Male	$2.13	$7.25	$8	$10.13	$10.13	
Eliminated tipped minimum wage, tips remain the same						
Female	$7.25	$7.25	$6	$13.25	$13.25	13.1%
Male	$7.25	$7.25	$8	$15.25	$15.25	
Scenario 4: both earn tips + wages > regular minimum wage *and tips decline*						
Female	$2.13	$7.25	$6	$8.13	$8.13	19.7%
Male	$2.13	$7.25	$8	$10.13	$10.13	
Eliminated tipped minimum wage, tips decline						
Female	$7.25	$7.25	$4.50	$11.75	$11.75	11.3%
Male	$7.25	$7.25	$6	$13.25	$13.25	

TABLE 3: TIP ELIGIBILITY AND ESTIMATED POSITIVE TIPS FOR RESTAURANT INDUSTRY WORKERS BY OCCUPATION CODES, RETAIL INDUSTRY WORKERS, AND WORKERS IN ALL OTHER INDUSTRIES

Occupation	Tip Eligible (%)	Positive Tips (%)	Positive Tips if Tip Eligible (%)
Waiter (1990)	74.69	75.46	96.12
Bartender (2000)	66.01	67.77	94.68
Bartender (1990)	65.15	66.19	94.94
Waiter (2000)	61.82	64.50	94.17
Waiter Assistant (1990)	45.71	48.81	93.25
Server Non-Rest (2000)	34.17	39.96	90.74
Attendant (2000)	33.80	39.07	90.76
Host (2000)	28.33	34.39	90.13
Manager (1990)	26.86	32.79	87.07
Supervisor (1990)	25.67	33.10	90.74
Manager (2000)	22.11	31.96	87.85
Supervisor (2000)	21.99	31.56	88.71
Chef (2000)	18.72	29.77	90.47
Prep (2000)	15.15	24.27	87.33
Counter (2000)	10.98	19.36	87.32
Prep/Serve (2000)	10.94	21.53	90.45
Cook (1990)	10.84	18.54	83.72
Prep (1990)	10.35	17.34	88.41
Cook (2000)	9.82	20.41	85.99
Counter (1990)	8.70	17.26	81.23
Cashier (2000)	7.42	17.27	80.06
Other (1990)	7.23	15.95	83.98
Cashier (1990)	7.06	16.84	80.19
Dishwasher (2000)	6.80	18.15	79.30
Other (2000)	5.14	21.69	100.00
Retail	12.52	23.25	85.65
All Others	17.31	29.46	87.62
N: Restaurants	163,951	163,951	50,822
N: Retail	317,556	317,556	41,030
N: All Others	1,713,728	1,713,728	302,466

Sample includes hourly-paid individuals with non-missing calculated nonwage earnings (see text for details). Restaurant industries include "eating and drinking places," "restaurants and other food services," and "drinking places, alcoholic beverages." Standard Occupational Classification (SOC) codes changed over the sample period, so restaurant workers are categorized according to 1990 SOC codes and 2000 and later SOC codes. Rows are sorted by percentage eligible for tips. We define retail workers as all workers who have 1990 industry codes from 580 to 691 (classified under "Retail Trade"), excluding those working in eating and drinking places, and 2002 industry codes from 4670 to 5790 (classified under "Retail Trade"). Weighted by Outgoing Rotation Group weights.

TABLE 4: TIP EARNINGS AS PERCENTAGE OF TOTAL EARNINGS FOR RESTAURANT INDUSTRY WORKERS BY OCCUPATION CODES, RETAIL INDUSTRY WORKERS, AND WORKERS IN ALL OTHER INDUSTRIES

Occupation	Tip Percent if Tip Eligible	Tip Percent if Positive Tips	Tip Percent if Tip Eligible and Positive Tips
Waiter (1990)	50.81	52.33	52.86
Bartender (2000)	48.00	49.23	50.70
Bartender (1990)	40.68	42.14	42.85
Waiter (2000)	51.17	52.25	54.33
Waiter Assistant (1990)	43.39	44.22	46.53
Server Non-Rest (2000)	36.72	34.69	40.47
Attendant (2000)	37.28	37.70	41.08
Host (2000)	37.50	37.69	41.61
Manager (1990)	20.00	23.53	22.97
Supervisor (1990)	30.03	30.98	33.09
Manager (2000)	21.03	23.49	23.94
Supervisor (2000)	23.73	23.23	26.75
Chef (2000)	22.32	24.75	24.67
Prep (2000)	23.36	24.30	26.75
Counter (2000)	21.71	24.76	25.93
Prep/Serve (2000)	34.40	28.00	38.03
Cook (1990)	29.24	28.67	33.49
Prep (1990)	22.05	28.82	24.94
Cook (2000)	24.50	24.13	28.49
Counter (1990)	29.90	31.76	36.81
Cashier (2000)	18.98	25.88	23.66
Other (1990)	22.27	25.95	26.52
Cashier (1990)	26.53	25.56	33.46
Dishwasher (2000)	19.46	22.98	24.31
Other (2000)	22.41	18.60	22.41
Retail	16.92	19.98	19.75
All Others	17.36	20.33	19.82
N: Restaurants	50,822	61,951	46,920
N: Retail	41,030	74,736	35,294
N: All Others	302,466	511,693	265,514

TABLE 5: DEMOGRAPHICS OF RESTAURANT INDUSTRY EMPLOYEES BY OCCUPATION CODE, RETAIL INDUSTRY EMPLOYEES, AND EMPLOYEES IN ALL OTHER INDUSTRIES

Occupation	Tip Eligible Percentage	Male	Female	White	Hispanic	Black
Waiter (1990)	74.69	18.68	81.32	86.43	8.96	4.61
Bartender (2000)	66.01	40.44	59.56	84.92	11.26	3.81
Bartender (1990)	65.15	42.99	57.01	91.13	6.28	2.59
Waiter (2000)	61.82	26.46	73.54	75.67	16.71	7.62
Waiter Assistant (1990)	45.71	55.73	44.27	71.04	20.41	8.56
Server Non-Rest (2000)	34.17	49.02	50.98	57.81	24.19	18.00
Attendant (2000)	33.80	72.44	27.56	58.38	35.28	6.34
Host (2000)	28.33	14.36	85.64	76.99	15.07	7.94
Manager (1990)	26.86	41.87	58.13	75.96	10.60	13.44
Supervisor (1990)	25.67	22.91	77.09	79.50	10.40	10.10
Manager (2000)	22.11	42.06	57.94	67.01	20.12	12.87
Supervisor (2000)	21.99	39.25	60.75	65.53	19.08	15.38
Chef (2000)	18.72	80.76	19.24	54.35	30.35	15.30
Prep (2000)	15.15	45.04	54.96	58.65	29.90	11.45
Counter (2000)	10.98	32.64	67.36	71.85	16.19	11.96
Prep/Serve (2000)	10.94	42.68	57.32	63.76	18.85	17.39
Cook (1990)	10.84	65.31	34.69	62.56	20.98	16.46
Prep (1990)	10.35	40.18	59.82	72.46	15.05	12.49
Cook (2000)	9.82	68.99	31.01	47.48	36.67	15.85
Counter (1990)	8.70	31.28	68.72	78.13	9.84	12.03
Cashier (2000)	7.42	22.43	77.57	48.78	26.91	24.30
Other (1990)	7.23	72.25	27.75	58.49	29.14	12.38
Cashier (1990)	7.06	19.89	80.11	56.07	16.92	27.01
Dishwasher (2000)	6.80	82.38	17.62	48.65	40.04	11.31
Other (2000)	5.14	51.21	48.79	39.99	34.04	25.97
All Restaurant	30.43	42.70	57.30	64.73	22.82	12.45
Retail	12.52	45.20	54.80	72.64	15.05	12.31
All Others	17.31	51.06	48.94	68.38	17.48	14.14

See Table 3 notes. Sample sizes are the same as those reported in columns 1 and 2 of Table 3.

TABLE 6: EARNINGS MEANS FOR HOURLY PAID, TIPPED RESTAURANT WORKERS

	White, Male	White, Female	Hispanic, Male	Hispanic, Female	Black, Male	Black, Female
Hourly Wage	8.81	6.86	9.73	7.74	9.77	7.61
	(0.06)	(0.03)	(0.11)	(0.08)	(0.26)	(0.12)
Hourly Tips	8.82	8.61	7.59	7.66	7.44	7.48
	(0.10)	(0.07)	(0.35)	(0.19)	(0.32)	(0.29)
Hourly Pay	17.63	15.46	17.32	15.41	17.21	15.09
	(0.11)	(0.08)	(0.36)	(0.20)	(0.40)	(0.30)
Weekly Earnings	554.46	418.83	594.64	455.88	584.96	452.43
	(3.68)	(1.64)	(6.90)	(5.20)	(12.24)	(7.77)
Usual Hours	31.80	28.38	35.70	30.96	35.05	31.38
	(0.11)	(0.06)	(0.20)	(0.19)	(0.35)	(0.27)
N	10,943	27,814	2,806	3,037	865	1,455

Means reported, with standard errors in parentheses. Sample includes hourly-paid workers with non-missing calculated nonwage earnings and consistent reported tip eligibility and tip values (see text for details). Earnings reported in 2019 dollars using CPI data. Weighted by Outgoing Rotation Group weights.

TABLE 7: EARNINGS MEANS FOR HOURLY PAID, NON-TIPPED RESTAURANT WORKERS

	White, Male	White, Female	Hispanic, Male	Hispanic, Female	Black, Male	Black, Female
Hourly Wage	10.71	10.23	11.36	10.32	10.70	10.10
	(0.03)	(0.02)	(0.04)	(0.03)	(0.05)	(0.05)
Weekly Earnings	316.79	280.95	405.96	325.50	348.84	312.13
	(1.44)	(1.03)	(1.90)	(1.63)	(2.90)	(2.49)
Usual Hours	27.98	26.48	35.02	31.01	31.39	30.02
	(0.07)	(0.06)	(0.09)	(0.10)	(0.14)	(0.12)
N	27,514	36,750	11,773	10,199	5,122	6,740

See Table 6 notes.

TABLE 8: ALL RESTAURANT WORKERS (WITHOUT MINIMUM WAGE VARIABLES)

	Hourly Wage (1)	Hourly Pay (3)	Weekly Earnings (4)	Weekly Hours (5)
Hispanic	0.005	-0.007	0.159***	0.167***
	(0.016)	(0.011)	(0.019)	(0.012)
Black	0.016**	-0.011**	0.062***	0.073***
	(0.007)	(0.004)	(0.010)	(0.008)
Female	-0.081***	-0.075***	-0.154***	-0.079***
	(0.003)	(0.003)	(0.006)	(0.005)
Age	0.014***	0.018***	0.071***	0.053***
	(0.001)	(0.001)	(0.002)	(0.001)
Age Squared	-0.0001***	-0.0002***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.007**	0.011***	-0.010	-0.021**
	(0.003)	(0.003)	(0.010)	(0.008)
Metropolitan	0.001	0.031**	0.014	-0.017
	(0.012)	(0.014)	(0.023)	(0.017)
Non-Metropolitan	-0.025**	-0.024*	-0.064**	-0.040**
	(0.012)	(0.014)	(0.024)	(0.019)
High School Degree	0.051***	0.070***	0.206***	0.137***
	(0.004)	(0.003)	(0.012)	(0.012)
Bachelor's Degree	0.101***	0.182***	0.311***	0.130***
	(0.008)	(0.005)	(0.013)	(0.010)
Master's Degree	0.112***	0.160***	0.233***	0.072***
	(0.022)	(0.015)	(0.022)	(0.019)
Supervisor (1990)	0.276***	0.081***	0.150***	0.070***
	(0.023)	(0.017)	(0.023)	(0.017)
Bartender (1990)	0.244***	0.088***	0.112***	0.024*
	(0.023)	(0.012)	(0.018)	(0.013)
Cook (1990)	0.220***	0.049***	0.177***	0.127***
	(0.018)	(0.009)	(0.014)	(0.010)
Counter (1990)	0.175***	0.024**	0.027	0.003
	(0.015)	(0.011)	(0.024)	(0.020)
Prep (1990)	0.188***	0.013	0.035*	0.022
	(0.018)	(0.013)	(0.021)	(0.019)
Waiter Assistant (1990)	0.102***	-0.006	-0.041*	-0.035***
	(0.018)	(0.019)	(0.022)	(0.012)
Cashier (1990)	0.196***	0.025	0.086***	0.061***
	(0.019)	(0.016)	(0.026)	(0.016)
Manager (1990)	0.491***	0.239***	0.529***	0.290***
	(0.025)	(0.015)	(0.025)	(0.018)
Other (1990)	0.137***	-0.021*	0.011	0.032**
	(0.016)	(0.011)	(0.019)	(0.014)
Chef (2000)	0.933***	0.641***	0.805***	0.163***
	(0.041)	(0.025)	(0.055)	(0.040)
Supervisor (2000)	0.919***	0.622***	0.822***	0.200***
	(0.038)	(0.025)	(0.058)	(0.043)
Cook (2000)	0.773***	0.528***	0.583***	0.055
	(0.037)	(0.024)	(0.052)	(0.038)
Prep (2000)	0.751***	0.487***	0.456***	-0.031
	(0.034)	(0.025)	(0.052)	(0.038)

(continues)

	Hourly Wage (1)	Hourly Pay (3)	Weekly Earnings (4)	Weekly Hours (5)
Bartender (2000)	0.681***	0.578***	0.550***	-0.029
	(0.044)	(0.028)	(0.056)	(0.040)
Prep/Serve (2000)	0.709***	0.477***	0.471***	-0.006
	(0.035)	(0.025)	(0.055)	(0.043)
Counter (2000)	0.724***	0.483***	0.362***	-0.121***
	(0.036)	(0.025)	(0.053)	(0.039)
Waiter (2000)	0.538***	0.480***	0.417***	-0.063
	(0.044)	(0.030)	(0.053)	(0.038)
Non-restaurant Server (2000)	0.759***	0.514***	0.439***	-0.076
	(0.040)	(0.045)	(0.065)	(0.054)
Attendant (2000)	0.692***	0.460***	0.284***	-0.176***
	(0.037)	(0.026)	(0.051)	(0.037)
Dishwasher (2000)	0.681***	0.459***	0.386***	-0.073**
	(0.038)	(0.024)	(0.049)	(0.035)
Host (2000)	0.751***	0.520***	0.335***	-0.185***
	(0.041)	(0.030)	(0.055)	(0.037)
Cashier (2000)	0.744***	0.497***	0.466***	-0.031
	(0.036)	(0.024)	(0.056)	(0.043)
Manager (2000)	1.039***	0.728***	0.952***	0.224***
	(0.038)	(0.026)	(0.055)	(0.040)
Other (2000)	0.705***	0.471***	0.467***	-0.004
	(0.094)	(0.061)	(0.111)	(0.077)
Tipped	-0.355***	0.327***	0.380***	0.053***
	(0.031)	(0.010)	(0.008)	(0.004)
Constant	6.015***	1.495***	3.746***	2.251***
	(0.034)	(0.026)	(0.053)	(0.041)
N	145,014	145,014	145,014	145,014

Each regression uses the same sample of hourly-paid workers in the restaurant industry with non-missing calculated nonwage earnings and consistent reported tip eligibility and tip values (see text for details). Hourly pay is hourly wages plus hourly tips. Earnings and hours variables are measured in logs. Estimates for effects on hourly tips for this group are not presented, because estimates could be computed only for tipped workers, given the use of log earnings. Regressions include state and month-year fixed effects. Standard errors are clustered by state. Omitted occupation is Waiter (1990). Weighted by Outgoing Rotation Group weights.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 9: RESTAURANT WORKERS (MINIMUM WAGE VARIABLES, WITHOUT INTERACTIONS)

	Hourly Wage (1)	Hourly Pay (2)	Weekly Earnings (3)	Weekly Hours (4)
TMW	0.096***	0.047***	0.020	-0.026*
	(0.015)	(0.010)	(0.015)	(0.013)
MW	0.111***	0.130***	0.203***	0.073***
	(0.028)	(0.031)	(0.042)	(0.020)
Hispanic	0.005	-0.008	0.159***	0.167***
	(0.016)	(0.011)	(0.019)	(0.012)
Black	0.016**	-0.011***	0.062***	0.073***
	(0.007)	(0.004)	(0.010)	(0.008)
Female	-0.081***	-0.075***	-0.154***	-0.079***
	(0.003)	(0.002)	(0.006)	(0.005)
N	145,014	145,014	145,014	145,014

See Table 8 notes. Control variables (for which coefficients are not reported) include age, marital status, metropolitan status, education level, tipped status, and restaurant occupations.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 10: RETAIL AND ALL OTHER WORKERS (MINIMUM WAGE VARIABLES, WITHOUT INTERACTIONS)

	Retail				All Other			
	Hourly Wage (1)	Hourly Pay (2)	Weekly Earnings (3)	Weekly Hours (4)	Hourly Wage (5)	Hourly Pay (6)	Weekly Earnings (7)	Weekly Hours (8)
TMW	-0.015	-0.016	-0.032*	-0.016	0.003	0.003	0.000	-0.002
	(0.012)	(0.012)	(0.016)	(0.015)	(0.014)	(0.014)	(0.015)	(0.008)
MW	0.065**	0.055**	0.092**	0.037	-0.002	-0.001	0.005	0.007
	(0.026)	(0.025)	(0.037)	(0.028)	(0.029)	(0.031)	(0.038)	(0.013)
Hispanic	-0.027***	-0.025***	0.058***	0.083***	-0.074***	-0.073***	0.005	0.078***
	(0.005)	(0.005)	(0.011)	(0.008)	(0.006)	(0.006)	(0.008)	(0.005)
Black	-0.024***	-0.022***	0.021***	0.043***	-0.061***	-0.057***	0.003	0.060***
	(0.003)	(0.004)	(0.005)	(0.004)	(0.003)	(0.004)	(0.005)	(0.003)
Female	-0.079***	-0.085***	-0.177***	-0.092***	-0.104***	-0.106***	-0.178***	-0.072***
	(0.002)	(0.002)	(0.004)	(0.003)	(0.004)	(0.004)	(0.005)	(0.002)
N	272,274	272,274	272,274	272,274	1,430,555	1,430,555	1,430,555	1,430,555

See Table 8 and Table 9 notes.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 11: ALL RESTAURANT WORKERS

	Hourly Wage (1)	Hourly Pay (2)	Weekly Earnings (3)	Weekly Hours (4)
TMW	0.098***	0.050***	0.031*	-0.018
	(0.021)	(0.011)	(0.017)	(0.012)
Hispanic·*TMW*	-0.121***	-0.063***	-0.021	0.041**
	(0.026)	(0.021)	(0.027)	(0.018)
Black·*TMW*	-0.101***	-0.046***	0.003	0.048**
	(0.013)	(0.010)	(0.024)	(0.018)
Female·*TMW*	0.071***	0.028***	-0.006	-0.034***
	(0.006)	(0.005)	(0.009)	(0.009)
MW	0.117***	0.112***	0.197***	0.085***
	(0.032)	(0.029)	(0.048)	(0.025)
Hispanic·*MW*	0.120**	0.105***	-0.033	-0.138***
	(0.045)	(0.039)	(0.043)	(0.029)
Black·*MW*	0.019	-0.002	-0.048*	-0.046*
	(0.020)	(0.015)	(0.027)	(0.024)
Female·*MW*	-0.052***	-0.011	0.043**	0.054***
	(0.014)	(0.011)	(0.018)	(0.018)
Hispanic	0.012	-0.006	0.163***	0.169***
	(0.009)	(0.009)	(0.021)	(0.013)
Black	0.006	-0.015***	0.062***	0.077***
	(0.011)	(0.005)	(0.011)	(0.008)
Female	-0.083***	-0.076***	-0.154***	-0.078***
	(0.008)	(0.003)	(0.006)	(0.005)
Total Elasticities				
Hispanic·*TMW*	-0.024††	-0.013	0.010	0.023
	(0.022)	(0.018)	(0.029)	(0.022)
Black·*TMW*	-0.003†††	0.004††	0.034	0.030
	(0.021)	(0.014)	(0.030)	(0.023)
Female·*TMW*	0.169***	0.077***	0.025	-0.052***
	(0.020)	(0.012)	(0.015)	(0.011)
Hispanic·*MW*	0.237***,†††	0.217***,†††	0.164**,†††	-0.053
	(0.048)	(0.053)	(0.069)	(0.033)
Black·*MW*	0.136***,††	0.110***,†††	0.149***,†††	0.039†††
	(0.034)	(0.027)	(0.050)	(0.033)
Female·*MW*	0.065*	0.100***	0.240***	0.139***
	(0.033)	(0.028)	(0.042)	(0.027)
N	145,014	145,014	145,014	145,014

See Table 8 and Table 9 notes. Minimum wage variables are demeaned using weighted means.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The † symbols indicate the same levels of significance for the sums of the female and minority total elasticities.

TABLE 12: TIPPED RESTAURANT WORKERS

	Hourly Wage (1)	Hourly Tips (2)	Hourly Pay (3)	Weekly Earnings (4)	Usual Hours (5)
TMW	0.196***	0.184**	0.093***	0.069**	-0.024
	(0.045)	(0.074)	(0.020)	(0.034)	(0.027)
Hispanic·*TMW*	-0.075***	-0.168***	-0.043*	-0.011	0.031*
	(0.019)	(0.045)	(0.021)	(0.029)	(0.017)
Black·*TMW*	-0.029	-0.072	-0.006	0.069	0.074**
	(0.038)	(0.077)	(0.027)	(0.053)	(0.035)
Female·*TMW*	0.121***	-0.038	0.036**	0.007	-0.029**
	(0.017)	(0.051)	(0.015)	(0.024)	(0.012)
MW	0.036	-0.122	0.030	0.138*	0.108**
	(0.079)	(0.200)	(0.065)	(0.074)	(0.049)
Hispanic·*MW*	0.055	0.345***	0.104**	0.015	-0.089**
	(0.041)	(0.093)	(0.039)	(0.046)	(0.035)
Black·*MW*	-0.172**	0.096	-0.162***	-0.220***	-0.057
	(0.066)	(0.138)	(0.051)	(0.058)	(0.039)
Female·*MW*	-0.102**	-0.059	-0.030	0.021	0.051*
	(0.043)	(0.083)	(0.035)	(0.041)	(0.025)
Hispanic	0.036***	-0.118***	-0.035***	0.087***	0.122***
	(0.010)	(0.019)	(0.012)	(0.020)	(0.010)
Black	0.074***	-0.074***	-0.005	0.065***	0.070***
	(0.020)	(0.026)	(0.011)	(0.020)	(0.013)
Female	-0.116***	-0.078***	-0.105***	-0.196***	-0.091***
	(0.012)	(0.019)	(0.006)	(0.010)	(0.007)
Total Elasticities					
Hispanic·*TMW*	0.121**,†††	0.015	0.050†††	0.058†	0.008
	(0.046)	(0.066)	(0.031)	(0.050)	(0.031)
Black·*TMW*	0.167**,†††	0.112	0.087**,†††	0.138***,†††	0.051
	(0.068)	(0.080)	(0.035)	(0.046)	(0.035)
Female·*TMW*	0.317***	0.146**	0.128***	0.076***	-0.052**
	(0.041)	(0.059)	(0.018)	(0.021)	(0.021)
Hispanic·*MW*	0.091	0.223	0.134	0.153††	0.019
	(0.090)	(0.182)	(0.085)	(0.098)	(0.061)
Black·*MW*	-0.136††	-0.026	-0.133*,††	-0.082	0.051†
	(0.095)	(0.210)	(0.071)	(0.075)	(0.058)
Female·*MW*	-0.066	-0.181	-0.000	0.158***	0.159***
	(0.071)	(0.202)	(0.053)	(0.056)	(0.043)
N	46,920	46,920	46,920	46,920	46,920

See Table 8, Table 9, and Table 11 notes.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The † symbols indicate the same levels of significance for the sums of the female and minority total elasticities.

TABLE 13: NON-TIPPED RESTAURANT WORKERS

	Hourly Wage (1)	Weekly Earnings (2)	Usual Hours (3)
TMW	0.021	0.003	-0.018
	(0.013)	(0.022)	(0.014)
Hispanic·*TMW*	-0.032*	0.007	0.039**
	(0.018)	(0.027)	(0.019)
Black·*TMW*	-0.026**	0.013	0.039
	(0.012)	(0.031)	(0.024)
Female·*TMW*	0.013***	-0.020**	-0.033***
	(0.004)	(0.009)	(0.010)
MW	0.171***	0.247***	0.075*
	(0.032)	(0.057)	(0.038)
Hispanic·*MW*	0.063*	-0.081*	-0.142***
	(0.033)	(0.041)	(0.028)
Black·*MW*	-0.002	-0.041	-0.037
	(0.012)	(0.028)	(0.026)
Female·*MW*	0.008	0.060***	0.051***
	(0.010)	(0.018)	(0.018)
Hispanic	0.004	0.186***	0.181***
	(0.008)	(0.020)	(0.014)
Black	-0.015***	0.067***	0.082***
	(0.005)	(0.013)	(0.009)
Female	-0.064***	-0.140***	-0.075***
	(0.002)	(0.006)	(0.005)
Total Elasticities			
Hispanic·*TMW*	-0.011	0.010	0.022
	(0.015)	(0.023)	(0.021)
Black·*TMW*	-0.005	0.016	0.022
	(0.016)	(0.029)	(0.022)
Female·*TMW*	0.033**	-0.018	-0.051***
	(0.014)	(0.021)	(0.014)
Hispanic·*MW*	0.233***,†††	0.166**,†††	-0.067*
	(0.049)	(0.070)	(0.035)
Black·*MW*	0.169***,†††	0.206***,†††	0.038††
	(0.032)	(0.058)	(0.040)
Female·*MW*	0.179***	0.307***	0.126***
	(0.034)	(0.061)	(0.044)
N	98,094	98,094	98,094

See Table 8, Table 9, and Table 11 notes. The only difference is that there is no tipped worker control.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The † symbols indicate the same levels of significance for the sums of the female and minority total elasticities.

TABLE 14: RETAIL AND ALL OTHER WORKERS

	Retail Workers				All Other Workers			
	Hourly Wage (1)	Hourly Pay (2)	Weekly Earnings (3)	Usual Hours (4)	Hourly Wage (5)	Hourly Pay (6)	Weekly Earnings (7)	Usual Hours (8)
TMW	-0.009	-0.012	-0.023	-0.011	-0.001	-0.001	-0.003	-0.002
	(0.012)	(0.011)	(0.017)	(0.015)	(0.014)	(0.014)	(0.017)	(0.009)
Hispanic·*TMW*	-0.011	-0.010	0.012	0.022*	-0.025	-0.026	-0.000	0.026***
	(0.010)	(0.011)	(0.013)	(0.012)	(0.019)	(0.020)	(0.016)	(0.007)
Black·*TMW*	-0.015**	-0.016**	-0.008	0.007	-0.011	-0.008	0.015	0.023***
	(0.008)	(0.007)	(0.012)	(0.009)	(0.008)	(0.009)	(0.011)	(0.008)
Female·*TMW*	-0.006	-0.005	-0.017	-0.012	0.013	0.012	-0.001	-0.012**
	(0.005)	(0.004)	(0.011)	(0.007)	(0.011)	(0.010)	(0.014)	(0.006)
MW	0.026	0.019	0.068	0.049	-0.030	-0.026	-0.019	0.007
	(0.026)	(0.025)	(0.041)	(0.032)	(0.029)	(0.031)	(0.038)	(0.014)
Hispanic·*MW*	0.041*	0.036	-0.056**	-0.092***	0.067**	0.063*	-0.005	-0.068***
	(0.022)	(0.025)	(0.023)	(0.022)	(0.032)	(0.033)	(0.030)	(0.012)
Black·*MW*	-0.017	-0.025	-0.056**	-0.032*	-0.051***	-0.057***	-0.083***	-0.026*
	(0.015)	(0.016)	(0.024)	(0.017)	(0.010)	(0.011)	(0.012)	(0.010)
Female·*MW*	0.065***	0.064***	0.077***	0.014	0.044***	0.043***	0.076***	0.033***
	(0.010)	(0.010)	(0.020)	(0.013)	(0.014)	(0.013)	(0.013)	(0.010)
Hispanic	-0.028***	-0.027***	0.059***	0.086***	-0.075***	-0.073***	0.005	0.078***
	(0.005)	(0.005)	(0.012)	(0.008)	(0.006)	(0.006)	(0.009)	(0.005)
Black	-0.025***	-0.023***	0.020***	0.043***	-0.062***	-0.058***	0.004	0.062***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)	(0.005)	(0.003)
Female	-0.080***	-0.086***	-0.178***	-0.092***	-0.104***	-0.107***	-0.178***	-0.071***
	(0.002)	(0.002)	(0.004)	(0.003)	(0.002)	(0.002)	(0.004)	(0.002)
Total Elasticities								
Hispanic·*TMW*	-0.020	-0.022	-0.011	0.011	-0.026	-0.027	-0.004	0.023**
	(0.017)	(0.017)	(0.022)	(0.019)	(0.023)	(0.024)	(0.023)	(0.010)
Black·*TMW*	-0.024†	-0.027*,††	-0.031††	-0.004	-0.012	-0.008	0.012	0.021
	(0.015)	(0.014)	(0.023)	(0.019)	(0.017)	(0.018)	(0.021)	(0.013)
Female·*TMW*	-0.015	-0.016	-0.040**	-0.024	0.012	0.011	-0.004	-0.015*
	(0.013)	(0.012)	(0.017)	(0.015)	(0.016)	(0.016)	(0.018)	(0.009)
Hispanic·*MW*	0.067*,†††	0.055†††	0.012††	-0.043	0.037††	0.037†	-0.024	-0.061***
	(0.039)	(0.040)	(0.050)	(0.034)	(0.047)	(0.051)	(0.057)	(0.017)
Black·*MW*	0.009†††	-0.006†††	0.012†	0.018	-0.081**	-0.083**	-0.102**	-0.019
	(0.022)	(0.022)	(0.050)	(0.037)	(0.031)	(0.033)	(0.040)	(0.016)
Female·*MW*	0.091***	0.082***	0.145***	0.063**	0.014	0.016	0.057	0.040**
	(0.025)	(0.024)	(0.038)	(0.029)	(0.025)	(0.025)	(0.034)	(0.018)
N	272,274	272,274	272,274	272,274	1,430,555	1,430,555	1,430,555	1,430,555

See Table 8, Table 9, and Table 11 notes.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The † symbols indicate the same levels of significance for the sums of the female and minority total elasticities.

FIGURE 1: FEDERAL AND STATE REGULAR AND TIPPED MINIMUM WAGES IN SELECTED STATES, 1994–2019

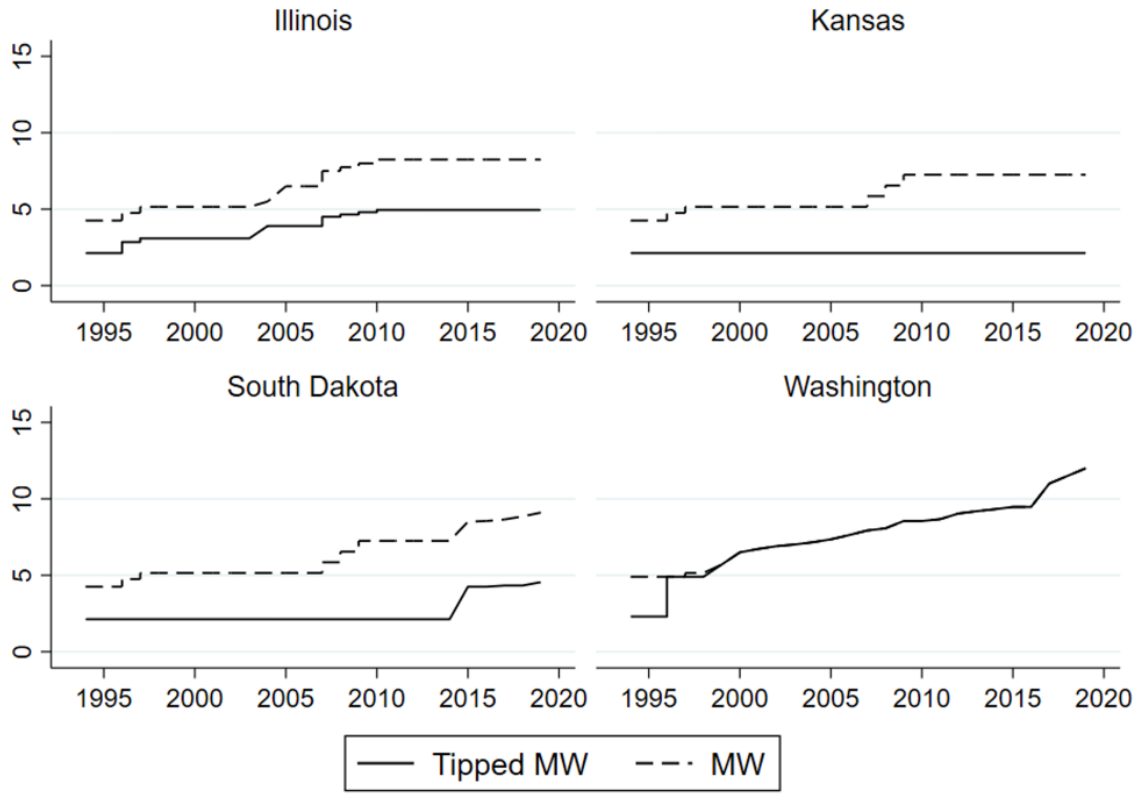
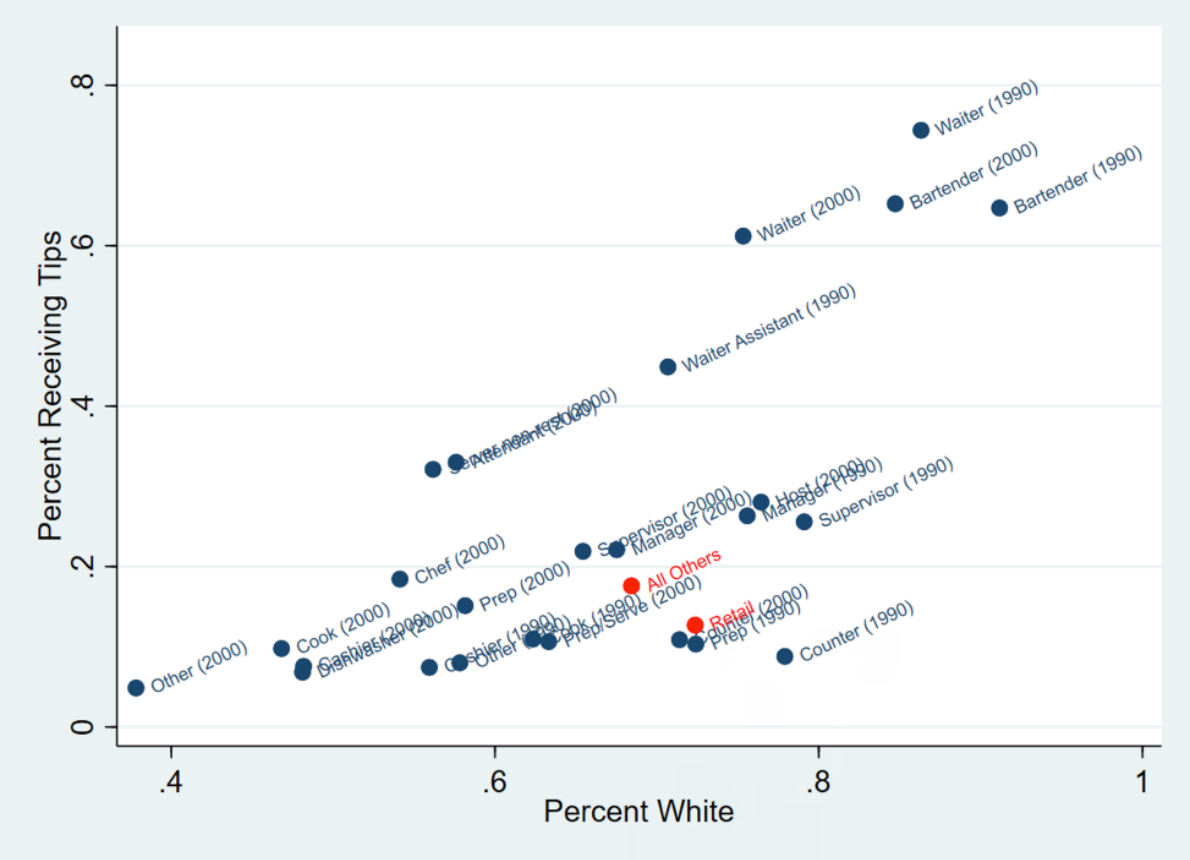


FIGURE 2: RESTAURANT OCCUPATIONS BY PERCENT REPORTING TIPS AND PERCENT WHITE



Sample includes all hourly-paid restaurant workers with non-missing calculated nonwage earnings and consistent reported tip eligibility and tip values (see text for details).

Appendix

SUPPLEMENTAL TABLES AND FIGURES

APPENDIX TABLE A1: STATE MINIMUM WAGES AND TIP CREDITS (2023)

State	MW (2023)	Tipped MW (2023)	MW-TMW (2023)	MW (2023 – 1994)	TMW (2023 – 1994)
A. States with federal regular MW ($7.25) and federal tipped MW ($2.13) (14)					
Alabama, Georgia, Indiana, Kansas, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Utah, Wyoming	7.25	2.13	5.12	3	0
B. States with federal regular MW but higher tipped MW (6)					
Idaho	7.25	3.35	3.9	3	0.16
Iowa	7.25	4.35	2.9	2.6	1.56
New Hampshire	7.25	3.26	3.99	3	1.13
North Dakota	7.25	4.86	2.39	3	2.01
Pennsylvania	7.25	2.83	4.42	3	0.49
Wisconsin	7.25	2.33	4.92	3	0
C. States with MW higher than federal, federal tipped MW (2)					
Nebraska	10.50	2.13	8.37	6.25	0
Virginia	12.00	2.13	9.87	7.75	0
D. States with MW higher than federal, higher tipped MW than federal (22)					
Arizona	13.85	10.85	3	9.6	8.72
Arkansas	11.00	2.63	8.37	6.75	0.5
Colorado	13.65	10.63	3.02	9.4	8.5
Connecticut	14.58	6.38	8.20	10.32	3.49
Delaware	11.75	2.23	9.52	7.5	0
District of Columbia	16.55	6.78	9.77	11.30	4.42
Florida	11.25	8.23	3.02	7.00	6.10
Hawaii	12.00	11.00	1	6.75	7.35
Illinois	13.00	7.80	5.2	8.75	5.67
Maine	13.80	6.90	6.9	9.55	4.77
Maryland	13.25	3.63	9.62	9	1.5
Massachusetts	15.00	6.75	8.25	10.75	4.62
Michigan	10.10	3.84	6.26	5.85	1.33
Missouri	12.00	6.00	6	7.75	3.87
New Jersey	14.13	5.26	6	7.75	3.87
New Mexico	12.00	3.00	9	7.75	0.87
New York	14.20	9.45	4.75	9.95	7.32
Ohio	10.10	5.05	5.05	5.85	2.92
Rhode Island	13.00	3.89	9.11	8.55	1.58
South Dakota	10.80	5.40	5.4	6.55	3.27
Vermont	13.18	6.59	6.59	8.93	4.46
West Virginia	8.75	2.62	6.13	4.5	0.49
E. States with MW higher than federal, no tip credit (7)					
Alaska	10.85	10.85	0	6.1	7
California	15.50	15.50	0	11.25	12.15
Minnesota	10.59	10.59	0	6.34	6.34
Montana	9.95	9.95	0	5.7	5.7
Nevada	10.88	10.88	0	6.63	7.53
Oregon	13.85	13.85	0	9.10	11.72
Washington	15.74	15.74	0	10.84	13.44

See Table 1 notes.

APPENDIX TABLE A2: DEMOGRAPHICS OF RESTAURANT INDUSTRY EMPLOYEES BY OCCUPATION CODE (FOR DROPPED OBSERVATIONS WITH LARGE NEGATIVE VALUES OF REPORTED WEEKLY EARNINGS MINUS CALCULATED WEEKLY WAGE EARNINGS)

Occupation	Tip Eligible Percentage	Male	Female	White	Hispanic	Black
Waiter (1990)	63.53	26.26	73.74	82.57	9.54	7.90
Bartender (1990)	52.91	26.28	73.72	92.21	6.02	1.76
Bartender (2000)	49.78	42.78	57.22	80.87	15.51	3.62
Waiter (2000)	47.95	27.90	72.10	68.28	22.68	9.04
Host (2000)	24.16	15.17	84.83	69.02	21.23	9.75
Supervisor (1990)	23.82	34.81	65.19	71.50	18.41	10.09
Waiter Assistant (1990)	22.89	61.42	38.58	61.23	24.17	14.61
Other (1990)	22.56	79.52	20.48	45.38	44.11	10.51
Manager (2000)	22.11	42.69	57.31	71.61	19.93	8.46
Manager (1990)	21.71	49.69	50.31	72.33	15.01	12.66
Supervisor (2000)	21.06	41.69	58.31	64.53	19.63	15.84
Attendant (2000)	18.35	71.21	28.79	43.30	45.87	10.84
Chef (2000)	15.68	82.87	17.13	52.01	30.81	17.18
Prep (2000)	14.82	45.72	54.28	52.42	33.67	13.91
Cashier (1990)	14.41	15.24	84.76	53.61	18.77	27.63
Cook (1990)	12.65	69.94	30.06	58.97	25.01	16.02
Counter (1990)	11.12	33.51	66.49	72.09	14.78	13.13
Prep (1990)	10.00	58.83	41.17	71.28	12.22	16.50
Cook (2000)	9.38	70.13	29.87	39.92	41.86	18.22
Counter (2000)	9.21	20.89	79.11	41.28	30.48	28.24
Cashier (2000)	9.20	31.87	68.13	64.25	23.94	11.82
Prep/Serve (2000)	7.25	39.99	60.01	58.16	19.93	21.92
Dishwasher (2000)	7.14	84.24	15.76	41.87	44.68	13.44
Server non-rest (2000)	3.60	70.89	29.11	33.33	31.75	34.93
Other (2000)	0.00	0.00	100.00	0.00	0.00	100.00
All Restaurant	20.75	47.30	52.70	55.72	29.05	15.23
Retail	14.77	47.90	52.10	69.33	17.72	12.94
All Others	19.93	53.12	46.88	68.88	17.39	13.73
N: Restaurants	11,444					
N: Retail	28,199					
N: All Others	206,382					

Table corresponds to Table 5, except includes only dropped observations. Sample includes individuals with missing nonwage earnings due to large negative calculated values.

APPENDIX TABLE A3: EARNINGS MEANS FOR HOURLY PAID, TIPPED WAITERS AND BARTENDERS

	White, Male	White, Female	Hispanic, Male	Hispanic, Female	Black, Male	Black, Female
Hourly Wage	7.41	6.21	8.10	6.80	8.20	6.51
	(0.07)	(0.03)	(0.16)	(0.10)	(0.44)	(0.14)
Hourly Tips	10.87	9.22	9.76	8.84	9.55	8.58
	(0.15)	(0.08)	(0.58)	(0.26)	(0.48)	(0.35)
Hourly Pay	18.28	15.43	17.86	15.64	17.74	15.09
	(0.16)	(0.08)	(0.60)	(0.28)	(0.66)	(0.36)
Weekly Earnings	548.03	412.45	574.03	442.50	547.23	430.63
	(4.66)	(1.76)	(10.70)	(6.06)	(17.21)	(9.91)
Usual Hours	30.76	28.09	34.00	30.20	32.05	29.87
	(0.13)	(0.07)	(0.28)	(0.22)	(0.49)	(0.33)
N	6,101	21,841	1,222	2,078	352	864

See Table 6 notes.

APPENDIX TABLE A4: EARNINGS MEANS FOR RETAIL WORKERS

	White, Male	White, Female	Hispanic, Male	Hispanic, Female	Black, Male	Black, Female
Hourly Wage	14.48	12.72	13.84	12.15	13.23	11.96
	(0.02)	(0.02)	(0.05)	(0.04)	(0.06)	(0.04)
Hourly Tips	1.01	0.48	0.68	0.34	0.77	0.34
	(0.04)	(0.02)	(0.07)	(0.02)	(0.05)	(0.02)
Hourly Pay	15.45	13.14	14.49	12.45	13.96	12.26
	(0.05)	(0.02)	(0.08)	(0.04)	(0.08)	(0.05)
Weekly Earnings	562.65	424.26	539.54	419.22	504.96	413.12
	(1.34)	(0.83)	(2.66)	(1.88)	(3.17)	(2.09)
Usual Hours	34.33	30.94	36.11	32.65	34.70	32.47
	(0.04)	(0.03)	(0.07)	(0.07)	(0.09)	(0.08)
N	93,430	121,134	15,535	16,637	11,009	14,633

See Table 6 notes.

APPENDIX TABLE A5: EARNINGS MEANS FOR NON-RESTAURANT AND NON-RETAIL WORKERS

	White, Male	White, Female	Hispanic, Male	Hispanic, Female	Black, Male	Black, Female
Hourly Wage	20.42	17.71	16.39	14.42	16.96	15.46
	(0.01)	(0.01)	(0.02)	(0.02)	(0.03)	(0.03)
Hourly Tips	1.80	0.75	0.98	0.48	1.34	0.70
	(0.02)	(0.01)	(0.03)	(0.01)	(0.04)	(0.02)
Hourly Pay	22.20	18.42	17.34	14.86	18.27	16.12
	(0.02)	(0.02)	(0.04)	(0.03)	(0.05)	(0.03)
Weekly Earnings	888.88	633.02	691.22	535.20	721.40	600.59
	(0.75)	(0.57)	(1.21)	(1.09)	(1.65)	(1.23)
Usual Hours	39.06	33.69	39.43	35.47	38.76	36.57
	(0.01)	(0.01)	(0.02)	(0.03)	(0.03)	(0.03)
N	528,339	539,314	115,633	86,445	70,525	90,341

See Table 6 notes.

APPENDIX TABLE A6. ESTIMATES OF LIKELIHOOD OF TIP ELIGIBILITY, ALL RESTAURANT WORKERS

	Based on Reported Tip Eligibility (1)	Based on Positive Calculated Tips (2)	Based on Reported Tip Eligibility (3)	Based on Positive Calculated Tips (4)
TMW	0.008	0.001	0.019	0.009
	(0.018)	(0.016)	(0.025)	(0.021)
Hispanic·*TMW*	-0.015	0.003	-0.027	-0.006
	(0.016)	(0.014)	(0.028)	(0.024)
Black·*TMW*	-0.012	-0.024	-0.010	-0.023
	(0.013)	(0.015)	(0.013)	(0.014)
Female·*TMW*	-0.010	-0.014*	-0.015	-0.017
	(0.009)	(0.008)	(0.023)	(0.019)
MW	-0.067**	-0.074*	-0.094**	-0.092*
	(0.028)	(0.041)	(0.040)	(0.053)
Hispanic·*MW*	0.033*	0.015	0.067**	0.044*
	(0.017)	(0.014)	(0.029)	(0.022)
Black·*MW*	-0.010	-0.005	0.058**	0.060**
	(0.022)	(0.025)	(0.023)	(0.027)
Female·*MW*	0.027*	0.029*	-0.018	-0.022
	(0.014)	(0.016)	(0.022)	(0.021)
Hispanic	-0.110***	-0.085***	-0.232***	-0.192***
	(0.025)	(0.023)	(0.033)	(0.027)
Black	-0.059	-0.030	-0.299***	-0.249***
	(0.036)	(0.040)	(0.042)	(0.044)
Female	-0.026	-0.029	0.147***	0.143***
	(0.019)	(0.025)	(0.025)	(0.027)
Total Elasticities				
Hispanic·*TMW*	-0.007	0.005	-0.009	0.003
	(0.014)	(0.015)	(0.015)	(0.014)
Black·*TMW*	-0.004	-0.023††	0.008	-0.014
	(0.015)	(0.016)	(0.025)	(0.021)
Female·*TMW*	-0.002	-0.012	0.004	-0.008
	(0.015)	(0.014)	(0.013)	(0.011)
Hispanic·*MW*	-0.034	-0.059	-0.027	-0.048††
	(0.033)	(0.041)	(0.037)	(0.043)
Black·*MW*	-0.077***,†	-0.079*	-0.037†	-0.032
	(0.027)	(0.041)	(0.039)	(0.054)
Female·*MW*	-0.041	-0.045	-0.113***	-0.114***
	(0.026)	(0.034)	(0.030)	(0.038)
N	175,395	163,951	175,395	163,951

Each regression uses the same sample of hourly-paid workers in the restaurant industry with non-missing calculated nonwage earnings (see text for details). Control variables (for which coefficients are not reported) include age, marital status, metropolitan status, education level, and restaurant occupation in columns 1 and 2. Restaurant occupation controls are excluded in columns 3 and 4. Minimum wage variables are measured in logs. Regressions include state and month-year fixed effects. Standard errors are clustered by state. Weighted by Outgoing Rotation Group weights. Minimum wage variables are not demeaned.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The † symbols indicate the same levels of significance for the sums of the female and minority total elasticities.

APPENDIX TABLE A7: ALL RESTAURANT WORKERS

	Weekly Earnings Estimates from Table 11 (1)	Weekly Earnings Estimates Including Observations Excluded from Main Analysis because of Large Negative Values of Reported Weekly Earnings – Calculated Weekly Wage Earnings (2)
TMW	0.031*	0.030*
	(0.017)	(0.016)
Hispanic·*TMW*	-0.021	-0.017
	(0.027)	(0.030)
Black·*TMW*	0.003	0.002
	(0.024)	(0.027)
Female·*TMW*	-0.006	-0.017
	(0.009)	(0.011)
MW	0.197***	0.175***
	(0.048)	(0.047)
Hispanic·*MW*	-0.033	-0.042
	(0.043)	(0.043)
Black·*MW*	-0.048*	-0.063**
	(0.027)	(0.028)
Female·*MW*	0.043**	0.058***
	(0.018)	(0.021)
Hispanic	0.163***	0.157***
	(0.021)	(0.022)
Black	0.062***	0.050***
	(0.011)	(0.012)
Female	-0.154***	-0.151***
	(0.006)	(0.007)
Total Elasticities		
Hispanic·*TMW*	0.010	0.014
	(0.029)	(0.030)
Black·*TMW*	0.034	0.033
	(0.030)	(0.032)
Female·*TMW*	0.025	0.013
	(0.015)	(0.016)
Hispanic·*MW*	0.164**,†††	0.132*,†††
	(0.069)	(0.070)
Black·*MW*	0.149***,†††	0.112**,†††
	(0.050)	(0.050)
Female·*MW*	0.240***	0.233***
	(0.042)	(0.038)
N	145,014	156,399

Column 2 adds back in – relative to Table 11 – those whose estimated tips would be negative and beyond rounding error, as explained in the text.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The † symbols indicate the same levels of significance for the sums of the female and minority total elasticities.

APPENDIX TABLE A8: WAITERS AND BARTENDERS

	Hourly Wage (1)	Hourly Pay (2)	Weekly Earnings (3)	Usual Hours (4)
TMW	0.216***	0.077***	0.035	-0.042
	(0.044)	(0.020)	(0.030)	(0.025)
Hispanic·*TMW*	-0.086***	-0.045*	-0.019	0.026
	(0.032)	(0.027)	(0.032)	(0.019)
Black·*TMW*	-0.058**	-0.007	0.045	0.052
	(0.024)	(0.024)	(0.047)	(0.032)
Female·*TMW*	0.060***	0.025	0.015	-0.010
	(0.019)	(0.015)	(0.022)	(0.013)
MW	0.009	0.032	0.136*	0.104**
	(0.087)	(0.060)	(0.072)	(0.052)
Hispanic·*MW*	0.107*	0.108*	0.037	-0.071*
	(0.054)	(0.062)	(0.057)	(0.037)
Black·*MW*	-0.057	-0.119**	-0.166***	-0.047
	(0.070)	(0.053)	(0.061)	(0.051)
Female·*MW*	-0.100**	-0.022	-0.004	0.018
	(0.041)	(0.028)	(0.042)	(0.028)
Hispanic	0.029**	-0.027*	0.096***	0.123***
	(0.011)	(0.015)	(0.024)	(0.012)
Black	0.081***	0.007	0.070***	0.063***
	(0.013)	(0.009)	(0.018)	(0.014)
Female	-0.087***	-0.099***	-0.172***	-0.073***
	(0.007)	(0.005)	(0.009)	(0.006)
Total Elasticities				
Hispanic·*TMW*	0.130**,†††	0.033††	0.017	-0.016
	(0.053)	(0.034)	(0.053)	(0.036)
Black·*TMW*	0.158***,†††	0.071**,†††	0.080†	0.010
	(0.056)	(0.034)	(0.061)	(0.046)
Female·*TMW*	0.275***	0.103***	0.050**	-0.052***
	(0.042)	(0.019)	(0.019)	(0.018)
Hispanic·*MW*	0.116	0.140*,†	0.173*,††	0.033
	(0.092)	(0.081)	(0.087)	(0.059)
Black·*MW*	-0.048	-0.087	-0.030	0.057
	(0.110)	(0.086)	(0.101)	(0.079)
Female·*MW*	-0.091	0.010	0.132**	0.122**
	(0.076)	(0.051)	(0.055)	(0.050)
N	48,133	48,133	48,133	48,133

See Table 11 notes. Sample limited to waiters and bartenders.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The † symbols indicate the same levels of significance for the sums of the female and minority total elasticities.

APPENDIX TABLE A9: ALL RESTAURANT WORKERS WITH HOURLY WAGES AND HOURLY PAY GREATER THAN OR EQUAL TO THE MINIMUM WAGE

	Hourly Wage (1)	Hourly Pay (2)	Weekly Earnings (3)	Usual Hours (4)
TMW	0.116***	0.033***	0.016	-0.017
	(0.022)	(0.011)	(0.017)	(0.011)
Hispanic·*TMW*	-0.133***	-0.050**	-0.012	0.038**
	(0.027)	(0.021)	(0.028)	(0.018)
Black·*TMW*	-0.095***	-0.013	0.033	0.047**
	(0.015)	(0.008)	(0.022)	(0.018)
Female·*TMW*	0.066***	0.008**	-0.024***	-0.032***
	(0.006)	(0.004)	(0.009)	(0.008)
MW	0.231***	0.257***	0.372***	0.115***
	(0.031)	(0.027)	(0.043)	(0.024)
Hispanic·*MW*	0.104**	0.083**	-0.050	-0.134***
	(0.044)	(0.037)	(0.041)	(0.027)
Black·*MW*	0.015	-0.013	-0.062**	-0.049*
	(0.021)	(0.013)	(0.028)	(0.026)
Female·*MW*	-0.019	0.025***	0.079***	0.054***
	(0.013)	(0.009)	(0.019)	(0.018)
Hispanic	0.014	-0.003	0.165***	0.168***
	(0.010)	(0.009)	(0.020)	(0.013)
Black	0.009	-0.011**	0.065***	0.076***
	(0.012)	(0.004)	(0.009)	(0.007)
Female	-0.073***	-0.062***	-0.143***	-0.080***
	(0.007)	(0.002)	(0.005)	(0.005)
Total Elasticities				
Hispanic·*TMW*	-0.017†	-0.017	0.004	0.020
	(0.022)	(0.017)	(0.028)	(0.021)
Black·*TMW*	0.021†††	0.020†	0.049*	0.029
	(0.022)	(0.014)	(0.027)	(0.021)
Female·*TMW*	0.181***	0.041***	-0.008	-0.049***
	(0.021)	(0.012)	(0.016)	(0.010)
Hispanic·*MW*	0.335***,†††	0.341***,†††	0.322***,†††	-0.019
	(0.047)	(0.047)	(0.062)	(0.031)
Black·*MW*	0.247***,†††	0.244***,†††	0.310***,†††	0.066*,†††
	(0.034)	(0.027)	(0.050)	(0.034)
Female·*MW*	0.212***	0.282***	0.451***	0.169***
	(0.030)	(0.024)	(0.035)	(0.025)
N	133,378	133,378	133,378	133,378

See Table 11 notes. Sample limited to observations with hourly wage greater than or equal to the rounded-down tipped minimum wage (if tipped) or rounded-down minimum wage (if not tipped) and hourly pay greater than or equal to the rounded-down minimum wage.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The † symbols indicate the same levels of significance for the sums of the female and minority total elasticities.

APPENDIX TABLE A10: ALL RESTAURANT WORKERS WITH SELF-REPORTED, NON-IMPUTED EARNINGS VALUES

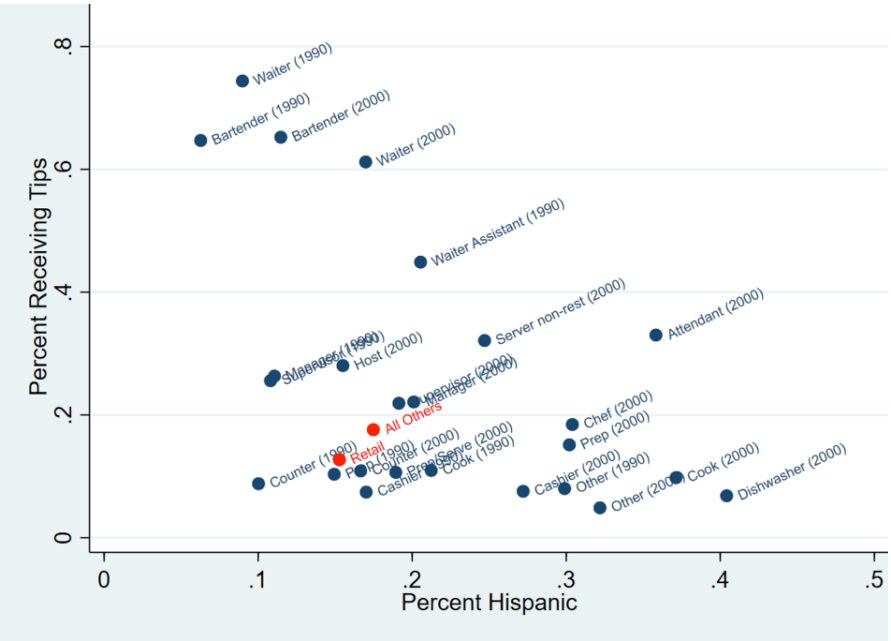
	Hourly Wage (1)	Hourly Pay (2)	Weekly Earnings (3)	Usual Hours (4)
TMW	0.209***	0.091***	0.057*	-0.034
	(0.032)	(0.024)	(0.032)	(0.023)
Hispanic·*TMW*	-0.239***	-0.108***	-0.045*	0.063***
	(0.035)	(0.028)	(0.025)	(0.015)
Black·*TMW*	-0.189***	-0.062***	-0.002	0.060**
	(0.015)	(0.017)	(0.030)	(0.026)
Female·*TMW*	0.071***	0.029***	-0.009	-0.038***
	(0.017)	(0.007)	(0.016)	(0.014)
MW	0.121**	0.101*	0.115	0.014
	(0.055)	(0.054)	(0.077)	(0.047)
Hispanic·*MW*	0.229***	0.184***	0.054	-0.130***
	(0.067)	(0.043)	(0.044)	(0.036)
Black·*MW*	0.142***	0.055*	-0.010	-0.065*
	(0.038)	(0.030)	(0.044)	(0.036)
Female·*MW*	-0.039	0.023	0.103***	0.081**
	(0.030)	(0.022)	(0.035)	(0.032)
Hispanic	0.020	-0.020*	0.104***	0.124***
	(0.013)	(0.011)	(0.018)	(0.010)
Black	0.028	-0.015	0.035**	0.050***
	(0.019)	(0.010)	(0.016)	(0.009)
Female	-0.073***	-0.078***	-0.171***	-0.094***
	(0.013)	(0.005)	(0.008)	(0.007)
Total Elasticities				
Hispanic·*TMW*	-0.029†	-0.016	0.012	0.028
	(0.025)	(0.026)	(0.038)	(0.023)
Black·*TMW*	0.021†††	0.029††	0.055	0.026
	(0.028)	(0.024)	(0.042)	(0.028)
Female·*TMW*	0.280***	0.120***	0.047	-0.073***
	(0.027)	(0.024)	(0.035)	(0.024)
Hispanic·*MW*	0.350***,†††	0.285***,†††	0.168**,†††	-0.117**
	(0.056)	(0.070)	(0.081)	(0.047)
Black·*MW*	0.263***,†††	0.156**,†††	0.105††	-0.052
	(0.060)	(0.060)	(0.084)	(0.052)
Female·*MW*	0.082	0.124***	0.218***	0.094**
	(0.056)	(0.042)	(0.064)	(0.043)
N	37,791	37,791	37,791	37,791

See Table 11 notes. Sample limited to observations with self-reported, non-imputed earnings data.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

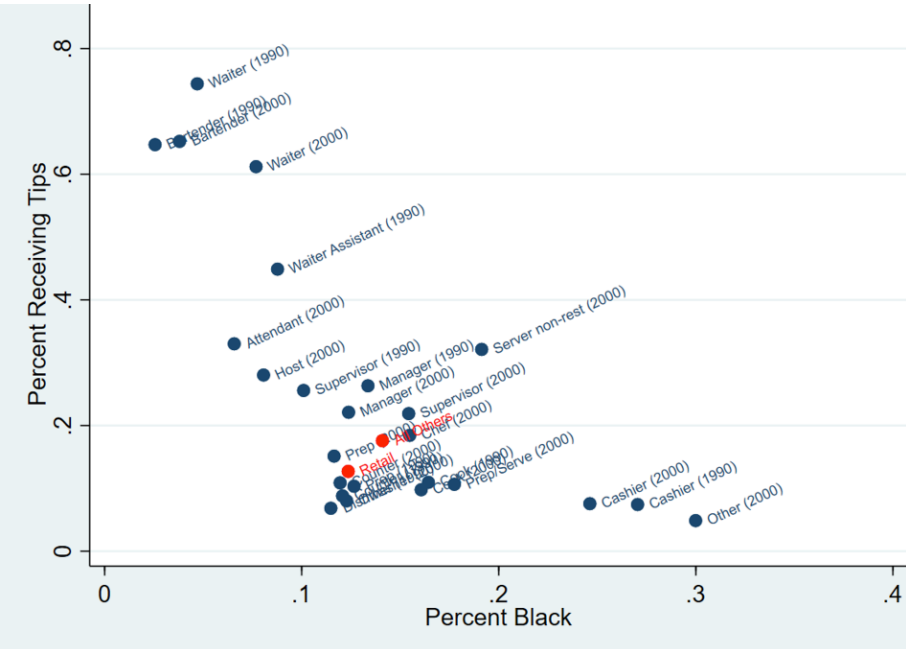
The † symbols indicate the same levels of significance for the sums of the female and minority total elasticities.

APPENDIX FIGURE A1: RESTAURANT OCCUPATIONS BY PERCENT REPORTING TIPS AND PERCENT HISPANIC



See Figure 2 notes.

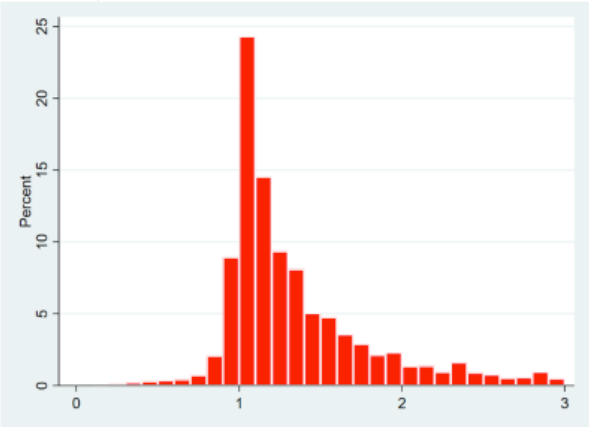
APPENDIX FIGURE A2: RESTAURANT OCCUPATIONS BY PERCENT REPORTING TIPS AND PERCENT BLACK



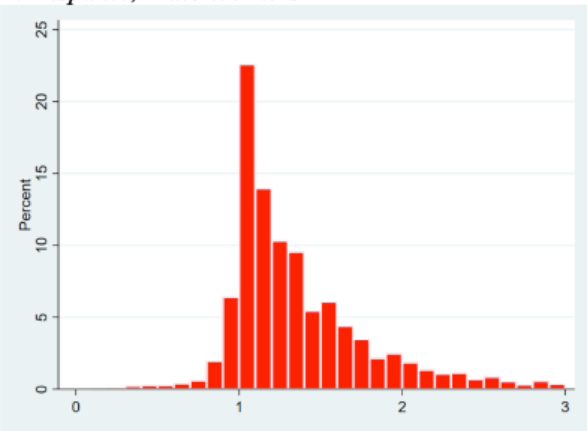
See Figure 2 notes.

APPENDIX FIGURE A3. COMPARISON OF RATIO OF HOURLY WAGES TO MINIMUM WAGE FOR RESTAURANT WORKERS BY RACE, ETHNICITY, AND SEX

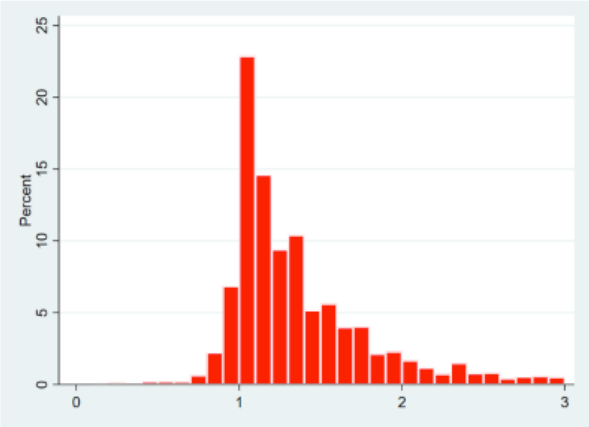
A: White, Male Workers



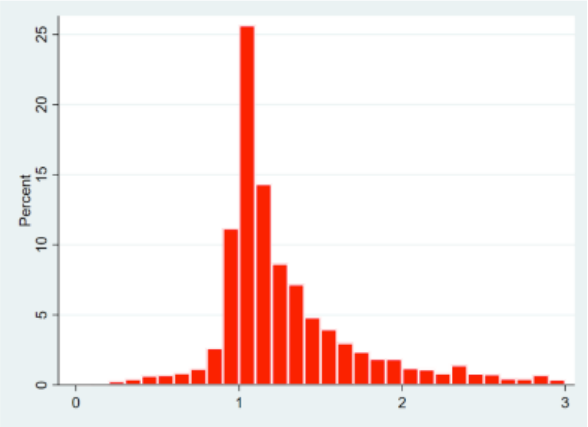
B. Hispanic, Male Workers



C: Black, Male Workers

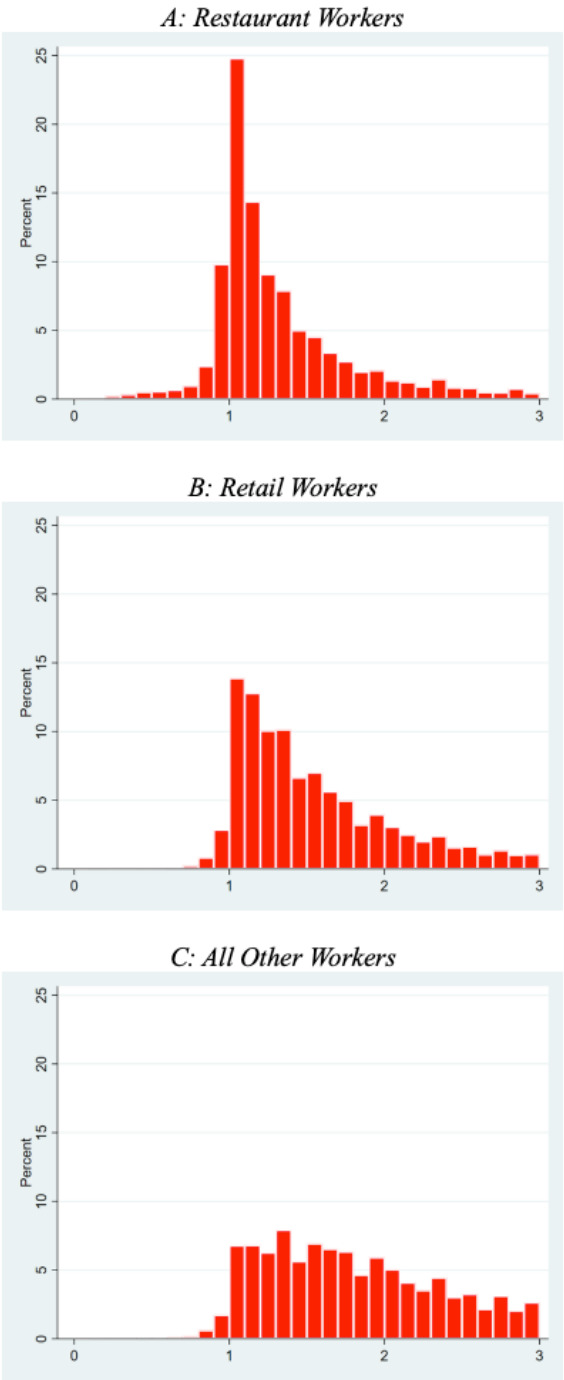


D. Female Workers



Hourly wages are divided by the minimum wage for non-tipped workers and by the tipped minimum wage for tipped workers. Samples are limited to hourly-paid workers with non-missing calculated nonwage earnings and consistent reported tip eligibility and tip values (see text for details), and who report hourly wages that are 0 to 3 times the minimum wage (91.9%, 94.5%, 93.0%, 94.0% of the full sample, respectively, in Panels A-D).

APPENDIX FIGURE A4. COMPARISON OF RATIO OF HOURLY WAGES TO MINIMUM WAGE FOR RESTAURANT, RETAIL, AND ALL OTHER WORKERS



Hourly wages are divided by the minimum wage for non-tipped workers and by the tipped minimum wage for tipped workers. Samples are limited to hourly-paid workers with non-missing calculated nonwage earnings and consistent reported tip eligibility and tip values (see text for details), and who report hourly wages which are 0 to 3 times the minimum wage (93.5%, 87.7%, 70.6% of the full sample, respectively, in Panels A-C).

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