IRLE
Institute for Research on Labor and Employment

IRLE WORKING PAPER
#104-24
September 2024

Sectoral Wage-Setting in California

Michael Reich and Denis Sosinskiy

Cite as: Michael Reich and Denis Sosinskiy. (2024). "Sectoral Wage-Setting in California". IRLE Working Paper No. 104-24. http://irle.berkeley.edu/publications/working-papers/sectoral-wage-setting-in-california/

Berkeley
UNIVERSITY OF CALIFORNIA

Sectoral Wage-Setting in California*

Michael Reich, University of California, Berkeley

Denis Sosinskiy, University of California, Davis

September 2024

Abstract

On April 1, 2024, California implemented its first sectoral wage policy, setting a $20 floor on hourly pay for workers in the larger fast food restaurant chains and snack and nonalcoholic beverages chains. A tripartite Fast Food Council will determine future wage increases as well as recommend industry-wide standards for working conditions and training practices. The $20 standard, the highest in the U.S., applies to an industry with about 750,000 workers. About 90 percent of the covered non-managerial workers were paid less than $20 before the policy, more than twice as much as in previous policies. By these metrics, the new wage standard lies well outside the range of previous policies that have been studied in the minimum wage research literature.

To fill the knowledge gap, we use novel data on wages and prices at individual restaurants as well as BLS industry employment data and deploy difference-in-differences event designs to identify the sectoral policy's *causal* effects on wages, employment, prices and price pass-throughs. Our restaurant wage data come from 35,680 job posts on Glassdoor, an internet job site. We obtained price data by scraping menus from 1,585 California restaurants and 1,694 restaurants in states without a minimum wage increase since 2009. We find that the policy increased average hourly pay by a remarkable 18 percent, and yet it did not reduce employment.

The policy increased prices about 3.7 percent, or about 15 cents on a $4 hamburger (on a one-time basis), contrary to industry claims of larger increases. About 62 percent of the increased costs were passed on to consumers in higher prices, suggesting that restaurant profit margins, which were above competitive levels before the policy, absorbed a substantial share of the cost increase. Since demand for fast food is highly price-inelastic, the price increases likely raised restaurant revenue. Franchise owners pay a fixed share of their revenue in royalty fees to their chains' parent companies. The sectoral wage standard thus benefits the parent companies.

*We are grateful to the Institute for Research on Labor and Employment at UC Berkeley for research support, to Alyssa Nguyen and Sakshi Kolli for research assistance, Ana Fox-Hodess for careful editing, and especially to Daniel Zhao, Lead Economist at Glassdoor, for assistance with Glassdoor's restaurant wage data.

1 Introduction

AB 1228, enacted on September 28, 2023, established a $20 minimum wage for workers in California's fast-food restaurants and snack and nonalcoholic beverage bars, effective April 1, 2024.[1] These two industries employed nearly 750,000 workers in early 2024; to mitigate the effects on smaller businesses, the policy exempts fast-food restaurants in chains that have fewer than 60 locations nationwide as well as restaurants located inside airports, stadiums and convention centers. The policy constitutes the highest minimum wage in the U.S.[2] Moreover, about 90 percent of the non-managerial workers in the two industries were paid less than $20 before the policy.[3] These metrics indicate an aggressive policy that lies well beyond the evidential range in previous minimum wage research.

AB 1228 came about through an agreement negotiated by the governor, the legislature, the International Franchise Association (IFA) and the Service Employees International Union (SEIU), to replace an earlier law. AB 257, passed in September 2022, had established a Fast Council with the power to set a fast food minimum wage as high as $22 and with the power to set industry-wide standards for working conditions (Egelko 2023).

After the passage of AB 257, IFA successfully placed an initiative on the state ballot that could have invalidated the law. The governor, legislative leaders and SEIU then agreed to lower the wage standard to $20, to limit the power of the Fast Food Council to regulate working conditions, and to other concessions, in exchange for the withdrawal of the ballot measure and to repeal of AB 257. AB 1228 nonetheless established a tripartite industry group– the Fast Food Council, composed of members from industry, labor and government– that is charged with developing and recommending industry-wide standards to state agencies; these standards would cover working conditions and training practices. The council is also empowered to set future minimum wage increases, up to 3.5 percent per year.

Since its passage, AB 1228's sectoral wage policy has attracted considerable media attention. Franchise owners complained that they had been largely left out of the negotiations; that the agreement placed all the burden of the new minimum wage on the franchises and that price increases would increase the royalty payments they must make to the parent companies (Liedke 2023). Numerous critical articles in the business press marshalled anecdotal evidence of substantial cuts in jobs and hours and reported that prices had increased "from single digits into the mid-teens."[4] In a Septem-

[1] https://www.dir.ca.gov/dlse/Fast-Food-Minimum-Wage-FAQ.htm. Snack and nonalcoholic bars include chains like Dunkin Donuts, Jamba Juice, Starbucks and TCBY.

[2] With the minor exceptions of the $20.29 minimum wage for large employers in two Seattle suburbs: Renton, WA, population 104,000 and Tukwila, WA, population 22,000.

[3] Estimated from percentile wages for fast food occupations reported by the BLS' Occupational and Employment Wage Survey, May 2023, California.

[4] These reports typically did not use control groups or measure price indices according to basic economics principles. See for example, https://anchor.placer.ai/the-anchor/measuring-the-impact-of-californias-minimum-wage-increase-on-restaurants.

ber 18, 2024 opinion column in Fox News, California Governor Gavin Newsom weighed in, citing BLS data that show consistent growth to date in year-over-year fast food employment.[5] As of this writing, the Fast Food Council has heard from stakeholders, but has not yet made any decisions about minimum wage increases for 2025.

Although economists have conducted numerous studies of minimum wage effects, only one study (Wiltshire et al. 2024) has estimated the causal effects of minimum wages as high as $15. To our knowledge, only one study by an economist (Bronars 2024) has examined the effects of AB 1228.[6] But Bronars simply asserts that minimum wage increases will always produce negative employment effects because the demand for labor slopes downward. He thus ignores two decades of research that have found minimal employment effects of minimum wage increases, even for substantial increases.[7]

Bronars also seems unaware of the substantial number of economic studies demonstrating that employers in low-wage labor markets possess power to set wages lower than they would be if labor markets were perfectly competitive.[8] In such circumstances, employment is determined by an upward-sloping labor supply schedule, not by the labor demand schedule, so long as the wage standard remains below the wage that a competitive labor market would generate. The results of the minimum wage literature suggest that we have not yet identified the wage at which such disemployment effects would be detected.

Given the interest in the effects of the $20 sectoral wage floor and the absence of prior careful studies, we provide here an interim report on the early *causal* effects of AB 1228 on wages, employment and prices in California fast food restaurants. To do so, we use the best systematic data available at this time and scientific causal identification methods that distinguish correlations from causation.[9] We do not study effects on hours because of the unavailability of state-level data on hours worked in fast food restaurants.[10]

What might be the effects of a $20 sectoral wage floor that raises the pay of most of its covered workers by nearly four dollars? As we have already mentioned, the bulk of recent research on minimum wages has found minimal employment effects; however, the highest minimum wage

[5]See for example, https://ktla.com/news/california/experts-have-mixed-views-of-california-fast-food-jobs-data/; https://ktla.com/news/california/instead-of-raising-prices-california-fast-food-restaurants-should-do-this-franchisee-says/?ipid=promo-link-block2; https://www.foxnews.com/opinion/gavin-newsom-critics-said-californias-minimum-wage-increase-would-job-killer-opposite-happened

[6]Bronars' study was issued by the Edgeworth Institute, a consulting firm that mainly serves the business community.

[7]For recent reviews of the minimum wage literature, see Dube and Lindner (2024) and Dube and Zipperer (2024)

[8]For a recent review, see Manning (2021b). Wiltshire et al. (2024) found evidence of employer wage-setting power in their study of fast food.

[9]We plan to issue a fuller study once the BLS makes available Quarterly Census of Wages and Employment data for the second quarter of 2024.

[10]However, Daniel Zhao, Lead Economist at the internet job site Glassdoor, has reported to us (personal communication) that discussions on the site about fast food working hours have not increased since the policy went into effect. Allegretto, Dube and Reich (2011) found that minimum wage increases did not reduce teen hours or employment.

in these studies was only $12. The study closest to ours (Wiltshire et al. 2024) found that $15 minimum wages in California and New York increased fast food wages and did not negatively affect fast food employment, while substantially reducing hiring and employee retention costs and modestly increasing prices at McDonald's. In that study, about 40 to 50 percent of all California restaurant workers were paid less than the upcoming minimum wage.

Interestingly, the sectoral wage policy might generate potential benefits for franchisers– the parent companies of franchised restaurants. If higher labor costs cause prices to rise, restaurant revenues would likely increase, as Rao and Risch (2024) found using tax data.[11] The revenue increase in turn would raise the fees the franchises are obligated to pay to their parent companies.

The magnitude of expected price increases depends upon on four factors: how much a higher minimum wage raises average wages; the share of labor costs in firms' operating costs; savings in recruitment and retention costs when minimum wage increases reduce labor turnover; and the extent to which restaurant profit margins were above the level that would obtain if restaurant labor markets were more competitive. However, only a few recent studies have examined the price effects of minimum wages. Most, but not all, find that the bulk of the labor cost increases are passed through to consumers as higher prices (Dube and Lindner 2024). However, Wiltshire et al. (2024), who use a careful stacked synthetic control causal identification method, find that about half the operating cost increases were passed through to prices.

Labor costs constitute about 30 percent of operating costs in fast food. If a $20 minimum wage causes average wages to increase about 18 percent, a 3.7 percent price increase implies a 62 percent pass-through of higher labor costs to prices. As Wiltshire et al. (2024) argue, a partial pass-through suggests that labor cost increases were absorbed partly by price increases and partly by reduced monopsony-level profits of restaurants.[12]

We use a novel dataset for restaurant wages, consisting of 35,680 job reports on the Glassdoor internet job platform (10,623 in California and 25,057 in controls states), posted before and after the policy. Our Glassdoor wage data includes 1,425 different individual restaurants in California. We estimate that fast food workers averaged $16.96 before the policy and increased about 18 percent to $20 soon after. In contrast, hourly wages did not increase for workers in the same chains who were located outside of California, nor among most California full service restaurant workers. These results, all of which satisfy parallel trends tests, suggest we have identified the causal wage effect of the policy.

Using the BLS' Current Employment Statistics (the establishment survey), we find that California fast-food employment continued to increase at its previous trend after April 1, 2024, as did employment in full-service California restaurants. These findings suggest that the policy has not had

[11] Revenues increase when product demand is price-inelastic, as is the case for fast food (Okrent and Alston 2012).

[12] The minimum wage literature has also found that lower employee separation rates absorb some of the wage cost increases through savings in hiring and recruitment costs. We will investigate this adjustment channel in the future, when the Quarterly Workforce Indicators' data on employee turnover become available for 2024q2.

adverse effects on employment.

To study the policy's causal effects on prices, we scraped menu prices two weeks before and two weeks after the April 1, 2024 effective date of the policy. We drew our scraped price data from a large representative sample of restaurants that use the popular Uber Eats platform to deliver meals to customers. To facilitate comparisons among menu items and chains, we restricted our sample to the burger-oriented segment of fast food. Our menu data include 1,491 restaurants in California and 1,694 restaurants in states that still have $7.25 minimum wages. We also use a triple-difference estimator, which compares price changes in fast food restaurants in California to those in states that have not experienced a minimum wage increase since 2009– and to price changes in fast food to price changes in full service restaurants.

We find that the policy led to modest price increases, contrary to multiple but dubious reports in the business press. For McDonald's four main menu items– a regular hamburger, a cheeseburger, a Big Mac and a Combo meal– prices in California increased between 1.3 and 1.7 percent after the new standard went into effect, relative to price changes in the control group of states. Our triple-difference estimator finds that prices in our sample of large fast food restaurant chains increased 3.7 percent, relative to the control groups.[13] To provide some context, fast food prices increased 4.8 percent between April 2023 and April 2024, when the $20 wage standard went into effect.

To summarize, the $20 minimum wage increase has raised pay, has not affected employment adversely and has modestly increased fast food prices.

We discuss our data and methods in Section 2 and present our findings on pay in Section 3, on employment in Section 4 and on price increases in Section 5. Section 6 concludes.

2 Data and methods

We begin by describing our wage and employment data, then turn to a detailed description of our novel price dataset, and end with our difference-in-differences event study methods.

2.1 Wage and employment data

(Note: The QCEW, which we will use in a futue analysis, provides a near-universe of establishment-level quarterly payroll reports, reports data for detailed six-digit NAICS industries. The QCEW will thus allow us to separately examine changes in pay and employment in the limited service and full service restaurant industries as well as the snack and nonalcoholic beverage bar industry. We will also be able to examine whether the sectoral wage policy has created wage spillovers in other low-wage industries. We will use the QCEW data after data for 2024q2 become available (scheduled

[13] A 3.7 percent price increase on a $4 hamburger amounts to 15 cents. The price increase is a one-time change that will not repeat in future years.

for December 2024).[14])

We use wage data on full-time and part-time fast food jobs provided to us by Glassdoor, a well-known internet jobs platform. Notably, our Glassdoor data identifies employer names, allowing us to analyze wages for individual chains as well as groups of fast-food chains. Glassdoor uses a "give and get" model: workers can search for jobs on Glassdoor if they share information about the pay and working conditions of their current– or most recent– job (Chamberlain 2016). Posts are thus voluntary and do not constitute a probability sample. However, pay rates across fast food chains are likely to be more similar than pay rates across the entire fast food industry. A randomized sample might therefore yield similar pay rates as the self-reported pay rates on Glassdoor.[15] For our purposes, the data contain one major drawback: posted pay information might refer to pay when a job began, imparting a possible lag for measuring current pay.

Since post-policy QCEW data are not yet available, we use the BLS' Current Employment Statistics (CES) to assess the effect of the policy on employment. The CES reports monthly employment data separately for NAICS codes 722511 (full service restaurants) and for the sum of 722513 (limited service restaurants), 722514 (cafeterias) and 722515 (snack and nonalcoholic beverage bars), for both California and the U.S. We can therefore make difference-in-differences comparisons to estimate the early employment effects of the policy.[16]

2.2 Price data

To collect price data, we used a web scraping algorithm to collect menu data on the platform of Uber Eats, a popular food delivery service used by almost all fast food chains.[17] To our knowledge, our price data for multiple named restaurants and chains across the U.S. constitutes the most comprehensive price dataset ever used in minimum wage research.The fast food industry comprises numerous ethnic cuisines as well as chains that specialize in different dishes– burgers, chicken dishes, pizza and others. To make the price measurement process more manageable, we focus on the largest segment of the industry– burger-oriented restaurants– and on their five most popular menu items: cheeseburgers, hamburgers, specialty items, fries and combo meals. Specialty dishes represent a chain's signature dish, such as a McDonald's Big Mac or a Burger King Whopper.

We collected menu prices from three categories of burger-oriented restaurants: the largest fast-food chains in California and the U.S.; the largest full-service restaurant chains serving "American cuisine;" and independent (non-chain) burger-oriented fast-food restaurants in California. Obtaining data for restaurants with comparable menus (or some overlapping items) allows us to examine

[14]The QCEW has been used to study the effects of minimum wages by Dube, Lester, and Reich (2010), Godoey and Reich (2021), and Wiltshire et al. (2024).

[15]See also Karabarbounis and Pinto (2018), who show that most occupational pay rates on Glassdoor are similar to those in the QCEW.

[16]The CES surveys 119,000 businesses and government agencies, representing approximately 629,000 worksites throughout the U.S.

[17]We were unable to obtain price data on snack and nonalcoholic bars, as most do not use delivery platform services.

prices by item, making comparisons more precise and excluding potential counterfactuals that affect the prices of certain meals. Our sample of burger restaurants (American cuisine) includes some of the largest U.S. fast-food and full-service chains, as measured by estimated market share and number of employees (companiesmarketcap.com).

For the cheeseburger, hamburger, fries and combo menu items, we search for a perfect text match to identify the item. If we do not identify a perfect match, we make choices manually: a hamburger represents a smaller, simpler burger without cheese; a cheeseburger is a smaller burger with cheese; fries are french fries of a default size; and a combo meal combines a default size specialty item, a side and a drink. We identify each chain's specialty item using its marketing materials and media. We also verify that they are comparable in size between the chains.

The $20 sectoral wage standard applies to chains in California that have at least 60 locations nationwide. Hence, the California locations of the largest burger-oriented fast food chains provide our sample of the treated group, while locations outside of California for the same chains serve as a natural control group. To obtain the cleanest estimates of the effect of new minimum wage policy, we limit our control group to restaurants in states without a binding state minimum wage. We identified the largest chains using published industry sources (www.qsrmagazine.com/slideshow/americas-50-biggest-fast-food-chains/; www.businessinsider.com/biggest-fast-food-chains-in-the-us-ranked-2024-7). Table 1 lists our sample of chains and the corresponding number of restaurant locations.

We also collected prices for large national full service restaurant chains, both in California and in our control states. These restaurant chains constitute a natural control group for our study. We include these chains also to examine wage spillovers from the fast food industry. While employers in the full service industry are not covered by the new policy, their employees are similar to the the fast food industry workforce. Full service restaurants thus might need to respond to wage pressures generated by the policy.

Finally, we also collected price data from small burger-oriented fast-food chains that are not covered by the policy because they have fewer than 60 locations. These restaurants constitute another natural control group. However, since they compete directly with large fast-food chains, smaller chains can be affected indirectly by the new policy. Since there is no systematic database of all local fast-food restaurants in California, we selected around 100 local restaurants and chains with the word "burger" in their names, using web sources, such as the list of fast food independent California restaurants compiled by Manta (www.manta.com).[18]

In addition to choosing the sample of restaurants, our first round of scraping used "search addresses" in the geographical areas of interest. To enable future county-level analyses, we defined the 25 largest counties in California as our treated locations; these counties cover 95 percent of fast food employment in the state. For controls, we chose the 95 most populous counties in states that do not have state-wide minimum wage policies. This selection of counties, which follows Wiltshire

[18] Since our sample of independent restaurants was too small to obtain precise results, we do not report those here. We expect to obtain larger samples as we continue to collect menu data.

et al. (2024), is suitable for our difference-in-differences estimation.

For each county in our sample, we scraped menus in up to three of the most populated cities, depending on the county's population. For each city, we use the address of its City Hall as an input to the Uber Eats algorithm. The algorithm identifies up to six of the closest restaurants in each chain. For each restaurant, we scraped the full menu on the restaurant's page.

For the second wave of price data collection (the first post-policy collection), we used the same search algorithm. In addition, we collect prices from any restaurants we missed in the first wave, thereby maximizing the number of restaurants in each time period in our data.[19]

As Table 1 indicates, we obtained prices before and after the policy for 1,120 fast food California restaurants: including 226 McDonald's stores, and 1,002 fast food restaurants in other states. Our sample of full service included 371 California restaurants and 692 restaurants in other states. As Table 1 shows, the number of restaurants for each chain in our sample is highly correlated with the total number of restaurants of the chain in California and elsewhere.

Menu prices on delivery platforms may differ from in-store prices. Some restaurants may choose to post higher delivery-based prices either because they perceive delivery to be more price-inelastic or to compensate for commissions charged by delivery platforms.[20] To assess potential differences between Uber Eats menu prices and in-store prices, we collected prices directly from the websites of three fast food chains in our sample (Burger King, Wendy's and Carl's Jr). We can therefore examine whether prices on the restaurant's website differ from those on Uber Eats and whether the price effects differ using Uber Eats' prices. Since we did not detect any systematic differences in price increases, we do not include these results in this report.

2.3 Difference-in-differences model

To assess the causal effect of the minimum wage policy on restaurant prices, we conduct a difference-in-differences event study. The estimated model is:

$$P_{ic,t} = \alpha_{ic} + \tau_t + \sum_{t=1,2} \beta_t \times CA_i \times Post_t + \varepsilon_{ic,t} \tag{1}$$

where $P_{ic,t}$ is the price of an item in location i of chain c at event time t. α_{ic} and τ_t are location-chain and time fixed effects, respectively. CA_i is an identifier equal to one if the location is in California (subject to the policy), and $Post_t$ equals one for prices after the minimum wage increase. $\varepsilon_{ic,t}$ is a random error. Finally, β_t is a coefficient of interest representing a causal effect of the \$20

[19] We collected a third wave of price data in mid-September 2024, which we will analyze in a future version of this study.

[20] Massimo (2021) reports that prices are higher on Uber Eats than in restaurants.

minimum wage t quarters after the implementation. We use the month before the policy as our reference period $t = 0$. Each consecutive t represents a quarter shift in time.[21]

We estimate price effects for each individual chain and pooling all the chains together. The individual chain estimates provide a price change by item for a particular chain (e.g., McDonald's or Burger King). The pooled estimate averages the price changes among all chains for each menu item. We weight the pooled results by the number of each chain's California locations. Such weighting provides the most representative price effect for the fast-food in California.

Our model assumes parallel trends before the policy: that within-chain price changes before the policy trend similarly in California locations as in other states. To select control groups without the policy that are most likely to trend similarly, we restrict our control group to locations in the same chains in the largest counties in states that never adopted a state-wide minimum wage policy. This control group closely follows the donor pool in Wiltshire et al. (2024), who find parallel pre-trends for fast food earnings and employment.

The main threat to our identification strategy involves firms' anticipating the policy and beginning to adjust their prices before the policy became effective. Since we collected pre-policy data in mid-March 2024, our research design accounts for anticipation effects that occurred within two weeks of the policy's effective date. Although we cannot detect earlier anticipatory price changes, we do not expect those to be as common. An individual firm that raised its prices well before the effective date might find that other firms do not follow its lead. As a result, a strategy of increasing prices too early risks losing market share to firms that did not increase their prices. However, as the effective date of the policy approaches, the common shock to all firms makes it more likely that one firm's price increases will coincide with price increases by their competitors.

2.4 Triple differences model

To relax some assumptions of the difference-in-differences model we described above, we also present estimates based on the triple difference-in-differences specification. In addition to comparisons between states, this model compares the fast food industry to the full service industry, which is not subject to the new policy. The model is described using the equation below.

$$P_{ic,t} = \alpha_{ic} + \tau_t + \lambda_c + \sum_{t=1,2} \beta_t \times CA_i \times Post_t \times FastFood_c + \varepsilon_{ic,t} \tag{2}$$

The model builds on 1, adding a fast-food fixed effect, λ_c, and adding an interaction term, $FastFood_c$, which equals one for fast food chains. The specification is equivalent to the difference between two difference-in-differences estimates. The specification leverages that fast food restaurants outside

[21] This version of our paper includes only $t = 0$ and $t = 1$, transforming our event study into a simple difference-in-differences model with one pre and one post-treatment period.

of California are not subject to the new policy, and that full service restaurants in California are also not subject to the new policy.

Moreover, this approach provides the cleanest control group, relaxing the identifying assumption of parallel trends. This specification requires the difference between fast-food prices and full-service prices in California to trend similarly pre-policy to the difference between fast-food prices and full-service prices in control states. In other words, the parallel trend assumption is now concerned with trends in differentials rather than trends in levels, as in the difference-in-differences specification.[22] We consider the estimates that use this specification to constitute the cleanest approach to estimating the policy's price effects.

3 Glassdoor pay data through September 2024

Glassdoor job searchers post self-reported hourly base pay for current or past part-time and full-time jobs.[23] Job searchers enter their pay rate when they post information on the platform about their current or most recent job. Importantly, the posting date often occurs several months after the last job began, creating some ambiguity about the relevant time period. As a result, some posted pay rates refer to much earlier time periods. We return to this issue below.

We display the distribution of pre-policy and post-policy wages in the four panels of Figure 1. The two upper panels (A and B) display hourly wage distributions for fast food restaurants; the lower panels (C and D) do the same for full service restaurants. The two left panels (A and C) report wage distributions in California, while the two right panels (B and D) do the same for wage distributions in our control states. In each panel, the blue lines show the pre-policy (pre-April 1) wage distributions and the red lines show the post-policy distributions. The pre-policy data consists of pay rates posted in 2024q1; the post-policy data consists of pay rates posted in 2024q2.[24]

In Panel A of Figure 1, we estimate that the distribution of pre-policy wages (blue line) in California fast food restaurants implies an average pre-policy wage of $16.96, with most jobs paying between $14 and $18. A considerable mass of jobs in the pre-policy period paid less than $16, which was the state minimum wage in 2024q1. Do these jobs reflect noncompliance with the minimum wage or do they reflect the Glassdoor reporting lags that we mentioned earlier? Fast food chain restaurants generally hire third-party payroll services (such as Paychex and others); it seems safe to assume that the payroll services ensured compliance with the applicable minimum wage laws in 2024q1. The pre-policy job posts that reported paying less than $16 probably reflect jobs that began earlier than when they were posted on Glassdoor.

The mass of pre-policy wages above $16 likely reflects higher local minimum wages, some of

[22] Olden and Moen (2022) provide an in-depth discussion of the triple difference estimator.

[23] We are grateful to Glassdoor for sharing their data with us. Our data excludes temporary employment and managerial positions.

[24] We also inspected, but do not report here, pay trends in 2023; the pre-trends are parallel .

which reached $18.67 in 2024, as well as higher pay rates for more experienced workers, and higher pay scales at some chains than others. The small blue spike at $20 may also reflect the tendency of workers to report pay in round numbers.

Consider now the post-policy (red) line in Panel A of Figure 1. The red line shows that pay rates bunched quickly at $20 after the sectoral policy went into effect. The red line in Panel A of Figure 1 also shows some continued but bunching at $16. We hypothesize that this hump again reflects reporting lags, rather than noncompliance with the wage standard. But even with imperfect reporting, the probability of being paid $20 or higher jumped threefold. We therefore regard the legal minimum of $20 as our best estimate of the post-policy average wage among treated restaurants. The policy increase from $16.96 to $20 represents an 18 percent increase.

Panel B of Figure 1 presents pre and post wage distributions for the same restaurant chains that make up Panel A, but that are located in our control group of states– those with $7.25 minimum wages. The mass of pre-policy wages in this panel bunches at round numbers– $10, $12 and $15, indicating that the $7.25 standard is not binding. The post-policy wage distribution is identical to the pre-policy distribution, which is what we would expect, and reinforces our confidence in the results in Panel A.

Our results in Panel A are also supported by the results for full service restaurants, displayed in Panels C and D. The pre and post policy wage distributions are nearly identical. The wage distribution for full service restaurants in Panel C makes clear that the sectoral wage standard had little effect on pay in most full service restaurant jobs; however, the small red spike at $20 indicates wage spillovers for about 10 percent of full service restaurant jobs.

In summary, the sectoral pay policy increased average pay in fast food restaurants by 18 percent, or nearly 75 percent of the nominal 25 percent increase. By comparison, previous minimum wage increases increased average fast food pay by about 20 percent of the mandated increases (Wiltshire et al. 2024).

4 Employment before and after the policy

We present employment trends from 2023m1 through 2024m7 for fast food and full service restaurants in Figure 3. The data come from the BLS' monthly Current Establishment Survey (CES).[25] The two red lines refer to California restaurants; the two blue lines refer to restaurants in the U.S. The solid lines refer to fast food and other; the dashed lines refer to full service. To view these lines on the same graph, we use the left vertical axis to measure California employment and the right vertical axis to measure U.S. employment.

The solid red and blue lines (fast food, California and fast food, U.S.) are parallel until the beginning of 2024, when California fast food employment begins to grow faster than U.S. fast food

[25]CES data on fast food and related employment is available for California, but not for any other state. No other state or locality raised its minimum wage on or near April 1, 2024.

employment. Comparing the two solid lines thus suggests that the minimum wage change did not affect trends in fast food employment.[26]

This conclusion is reinforced by comparing the dashed red and blue lines (full service, California and full service, U.S.) in Figure 3. In the first three months of 2024, California full service employment grew more slowly than did U.S. full service employment. The divergence between the two dashed lines then grows in April and May of 2024.

The pattern of smaller growth of California full service employment (relative to U.S. full service employment) contrasts with the greater growth of California fast food employment (relative to U.S. fast food employment). The contrast is not consistent with a confounding shock that would similarly affect California fast food and full service restaurants. Moreover, as Panel A of Figure 4 indicates, California GDP and U.S. GDP have grown at the same rates since the end of 2023.

Taken together, the CES employment patterns in Figure 3 suggest a small positive effect of the higher minimum wage on fast food employment. However, survey data such as the CES are subject to sampling errors, particularly when looking at detailed industries at the state level. Since we cannot yet access the QCEW's near-census of establishments for 2024q2, we adopt a more cautious conclusion: we do not detect evidence of an adverse employment effect.

5 Prices before and after the policy

5.1 Price levels before the policy

Table 2 displays pre-policy prices for five main menu items in each of nine burger-oriented fast food chains. These prices are for California stores only. The chain are arrayed according to the number of stores in California. The bottom two rows display menu item price averages across the nine chains. The row marked unweighted displays the simple average of the cells above. The row marked weighted takes into account heterogeneity in the number of California stores in each chain.

The larger chains tend to have lower prices across all five menu items than do the smaller ones. Prices for each item are relatively low and similar among the largest four chains: McDonald's, Burger King, Jack in the Box and Wendy's. Prices may be lower because of scale economies in operations, and/or because they target a different segment of fast-food consumers. On the other hand, price variation within a chain, measured by the standard deviation of prices and reported in parentheses in Table 2, is greater in these four chains, indicating that franchisees are given some leeway to choose prices, or that Uber Eats' menus vary by geography from in-store menu prices.

5.2 Price changes

Panel B of Figure 4 compares recent restaurant price changes in two major California metros with recent restaurant price changes in the U.S. as as whole. The price indices come from the large

[26] The lines also exhibit parallel trends in the pre-trend period.

surveys undertaken by the BLS to construct the monthly Consumer Price Index. [27]

Table 3 reports our difference-in-differences estimates of price changes for fast food and full service. These results can be interpreted as percent changes. On average, fast food prices increased 2.6 to 3.8 percent, depending on the menu item. Interestingly, the price of a specialty burger decreased in price by 1.3 percent (although the estimate is less statistically significant). This pattern might indicate the importance of pricing of "signature" items (such as a Big Mac or Whopper) for marketing purposes and to keep customers from switching to competitors.

The bottom row of Table 3 displays price changes for full service restaurants. We do not expect to see direct effects of the policy on full service restaurants, since they are not covered by the policy. However, some spillover effects are possible. The estimated price effects for all three menu items in our full service restaurants are statistically insignificant and small in magnitude, ranging between -0.01 and 0.05 percent. This result suggests the absence of spillover effects among full service restaurants.

As additional evidence, we present results in Table 4 for our strongest identifying specification, triple-differences. Since the model uses data for both fast food and full service restaurants, we can study only the three menu items– cheeseburgers, hamburgers and fries– that are present in both types of restaurants. Our overall estimated price increase for these three items is 3.7 percent. We estimate price effects for all fast food chains for cheeseburger and fries to be 3.7 and 4.0 percent, respectively. Both are statistically significant and very close to their difference-in-differences counterparts. In contrast, our triple difference estimate of price changes for hamburgers is lower than our difference-in-differences estimate (3.3 vs. 3.8 percent); and it is statistically insignificant. This result may reflect the large price increase for hamburgers in the full service industry (Table 3), which reduces the triple difference estimate. Also standard errors are higher by construction in triple difference estimates, which reduces statistical significance.

Finally, Table A1 presents difference-in-difference price effect estimates by fast food chain. Remarkably, every reported estimate in the table is statistically significant at the 99 percent level (with the exception of Shake Shack, which did not change any prices).[28] The smallest increases are observed at McDonald's, ranging from 1.3 to 1.7 percent. We observe the largest changes at Burger King, ranging from -7.3 percent, for its signature Whopper, to 24.9 percent for a regular hamburger.[29] Price increases were lower for each chain's specialty item (becoming negative for

[27] Unfortunately, the BLS does not report separate price indices for fast food and full service restaurants. According to BLS, restaurant prices increased 5.2 percent during 2023 and at an annual rate of 2.8 percent in 2024q1.

In the twelve months before the sectoral wage policy began, the California and U.S. lines are parallel, indicating similar changes in restaurant prices. After April 1, California restaurant prices increase faster than do restaurant prices in the U.S. as a whole.

[28] To respond to publicity about fast food price increases since the pandemic, many of the chains introduced lower price point items– $5 value meals. Although these new items were introduced April 1, they were added to menus throughout the U.S., not just in California. They therefore do not appear to represent a response to price increases specific to California.

[29] This negative estimate does not imply that Whopper prices fell in California. A negative estimate can occur when

some), validating our decision to collect data on these items.

To summarize, price increases varied somewhat by menu item and chain, as one would expect because menu items vary in their labor-intensity and because wage increases also varied by chain. Nonetheless, the results in Tables 3, 4 and A1 suggest that almost all of the individual price increases were modest, relative to price changes in full service restaurants and price changes in other states. Our preferred triple differences estimates in Table 4 indicate that the sectoral wage policy caused prices to increase only 3.7 percent.

5.3 Cost pass-throughs to prices

We consider here the extent to which increases in labor costs were passed on to consumers in higher prices or were absorbed by restaurants in reduced profits. Since labor costs represent about 30 percent of a fast food restaurant's operating costs, an increase of wages of 18 percent could be fully absorbed by a price increase of .3x.18 or 6 percent, without any reduction in profits. Our estimated price increase of 3.7 percent thus indicates that 62 percent (3.7 divided by 6) of the cost increases were borne by consumers. The rest is absorbed by savings in hiring and retention costs and by reductions in what were restaurant's monopsonistic (higher than competitive) profit margins.

The price increases most likely translated into higher restaurant revenues, since the price increases were much greater than any reduction in consumer demand. Franchise licenses granted by a chain's parent company to individual restaurant owners call for a royalty fee to be paid to the parent company. The fee is usually a fixed percentage of the restaurant's revenue. Restaurant owners may thus have to pay a greater amount to the parent companies at the same time that the restaurant owners face declining profit margins.

6 Conclusions

On April 1, 2024, California established a $20 sectoral wage standard for fast food and related workers in large chains. The statewide minimum wage for all other workers remained $16. The $20 sectoral standard, which covers about 750,000 workers, is higher than any minimum wage in the nation. It is also higher than the pay received by about 90 percent of the non-managerial workforce in the covered industries. Although the bulk of recent minimum wage studies find minimal employment effects, many of these studies examine minimum wages up to only $12; only one examines the effects of $15 minimum wages.

In this report, we use novel Glassdoor wage data for fast food and full service restaurants in California and in a control group of states without a minimum wage increase since 2009, BLS data on employment in fast food and full service restaurants in California and the U.S., and novel scraped data on menu prices in burger-oriented fast food and full service restaurants in California and in

prices rise more in the control states than in California.

states without a minimum wage increase since 2009. To identify the causal effects of the sectoral wage policy, we deploy difference-in-differences event study methods that control for changes in other states and in full service restaurants.

We find that the sectoral wage standard raised average pay of non-managerial fast food workers by nearly 18 percent, a remarkably large increase when compared to previous minimum wage policies. Nonetheless, the policy did not affect employment adversely. It did increase fast food prices, on a one-time basis only, by about 3.7 percent, or about 15 cents for a $4 item. Consumers therefore absorbed about 62 percent of the cost increases. These effects are benign. However, restaurant profit margins likely fell and the royalty fees restaurant operators pay to franchisors likely increased.

References

Allegretto, Sylvia, Aridnrajit Dube and Michael Reich 2011. "Do Minimum Wages Really reduce Teen Employment." *Industrial Relations* https://irle.berkeley.edu/wp-content/uploads/2011/04/Do-Minimum-Wages-Really-Reduce-Teen-Employment.pdf

Bronars, Stephen 2024. "Nearly Half of Limited-Service Restaurants in California Are Subject to the New $20 Minimum Wage." Edgeworth Economics.

Chamberlain, Andrew 2016a. "Glassdoor Local Pay Reports–Methodology." https://research.glassdoor.com/site-us/wp-content/uploads/sites/2/2016/12/LocalPayReports$_{M}ethodology.pdf$

Chamberlain, Andrew 2016b. "Demystifying the Gender Pay Gap," Glassdoor Economic Research. https://www.glassdoor.com/research/studies/gender-pay-gap/

Dube, Arindrajit, William Lester and Michael Reich 2010. "Minimum Wage Effects Across State Borders: Estimates from Contiguous Counties." *Review of Economics and Statistics*

Dube, Arindrajit, William Lester and Michael Reich 2016. "Minimum Wage Shocks, Employment Flows, and Labor Market Frictions" *Journal of Labor Economics*

Dube, Arindrajit and Attila Lindner 2024. "Minimum Wages in the Twenty-First Century." NBER Working Paper.

Dube, Arindrajit and Ben Zipperer 2024. Own-Wage Elasticity: Quantifying the Impact of Minimum Wages on Employment." NBER Working Paper.

Egelko, Bob 2023. "California fast-food workers will get $20 minimum wage under new deal." *San Francisco Chronicle*. https://www.sfchronicle.com/politics/article/california-fast-food-deal-18360233.php

Franchise Marketing Systems 2024. "Franchisor Control Over Prices and Policies." www.fmsfranchise.com

Godoey, Anna and Michael Reich 2021. "Are Minimum Wage Effects Greater in Low Wage Areas? *Industrial Relations*

Karabarbounis, Marios and Santiago Pinto 2018. "What Can We Learn from Online Wage Postings? Evidence from Glassdoor." E*Economic Quarterly*, Federal Reserve Bank of Richmond.

Liang, Xiofan and Clio Andris 2022. "Measuring McCities: Landscapes of Chain and Independent Restaurants in the United States." *Environment and Planning B: Urban Analytics and City Science* 49, 2: 585-602.

Liedke, Matthew 2023. "Franchisees Felt Left Out in California Legislative Deal." *Franchise Times* ttps://www.franchisetimes.com/franchise$_{n}ews/franchisees-felt-left-out-in-california-legislative-deal/article_{9}$0209638 − 6*c*6*a* − 11*ee* − *b*604 − 6*bc*046*b*391*ce.html*

Manning, Alan 2021a. "Monopsony in Labor Markets: a Review." *ILR Review*

Manning, Alan 2021b. "The Elusive Employment Effects of Minimum Wages." *Journal of Economic Perspectives.*

Massimo, Rick 2021. "Uber Eats will now highlight price differences from restaurants, DC's AG says." WTOP News. https://wtop.com/food-restaurant/2021/06/uber-eats-will-now-highlight-price-differences-from-restaurants-dcs-ag-says/

Okrent, Abigail and Julian Alston 2012. "The Demand for Disaggregated Food-Away-From-Home and Food-at-Home Products in the United States." U.S. Department of Agriculture, Economic Research Report No. ERR-139. https://www.ers.usda.gov/publications/pub-details/?pubid=45006

Olden, Andreas, and Jarle Møen. "The triple difference estimator." *The Econometrics Journal* 25.3 (2022): 531-553.

Rao, Nirupama and Max Risch 2024. "Who's Afraid of the Minimum Wage? Measuring the Impacts on Independent Businesses Using Matched U.S. Tax Returns." SSRN Working Paper

Reich, Michael 2022. "An $18 Minimum Wage for California." CWED Policy Brief. https://irle.berkeley.edu/wp-content/uploads/2022/11/An-18-Minimum-Wage-for-California-06-28-2022.pdf

Wiltshire, Justin, Carl McPherson, Michael Reich and Denis Sosinskiy 2024. "Minimum Wage Effects and Monopsony Explanations." IRLE Working Paper https://irle.berkeley.edu/publications/working-papers/minimum-wage-effects-and-monopsony-explanations/

Tables and Figures

Table 1: Number of restaurants overall and in our sample, by chain and location

	Overall		Sample	
	California	Non-California	California	Non-California
Fast-Food				
McDonald's*	1221	12308	226	173
Jack in the Box*	942	1251	203	109
Carl's Jr and Hardee's	647	1990	93	97
Burger King*	534	6193	164	170
Wendy's	297	5711	133	139
The Habit*	258	109	131	14
Five Guys	123	1377	100	128
Sonic	82	3430	34	117
Shake Shack	60	290	36	55
Total			1120	1002
Full-Service				
Denny's	358	996	141	142
Applebee's*	106	1430	75	144
Buffalo Wild Wings	99	1199	70	149
Red Robin*	57	438	48	83
Outback Steakhouse	44	632	36	145
TGI Fridays	16	209	1	29
Total			371	692
Local Fast-Food				
Total			94	

Note: This table depicts the number of restaurants by chain in California and other states. Columns 1-2 show the overall number of restaurants in each chain. Columns 3-4 show the number of restaurants in our collected data. All lrestaurants in the sample are present in each wave of data collection. Overall numbers are from each company's public documents. *The company does not report a number of locations publicly; we use an estimate provided by a web scraping service ScarapeHero.

Table 2: Average pre-policy fast food prices in California

	(1) Cheeseburger	(2) Hamburger	(3) Specialty burger	(4) Fries	(5) Combo
A. By group					
All chains	4.25	4.14	7.76	4.92	13.44
	(1.60)	(1.56)	(1.56)	(0.78)	(1.78)
Lower-price chains	3.90	3.85	7.53	4.89	13.22
	(0.83)	(1.12)	(1.22)	(0.64)	(1.60)
Higher-price chains	9.06	7.98	10.52	5.27	16.93
	(1.57)	(1.56)	(2.43)	(1.70)	(0.58)
B. By chain					
McDonald's	3.85	3.41	7.51	5.07	12.75
	(0.60)	(0.52)	(0.83)	(0.59)	(1.57)
Jack in the Box	3.83	3.48	6.58	4.93	13.02
	(0.42)	(0.34)	(0.73)	(0.40)	(1.17)
Carl's Jr and Hardee's	5.57	5.42	8.42	4.02	13.95
	(0.88)	(1.07)	(0.47)	(0.55)	(0.60)
Burger King	3.18	5.46	9.47	4.89	15.21
	(0.73)	(1.41)	(0.85)	(0.80)	(0.96)
Wendy's	3.45	2.91	7.98	2.43	–
	(0.45)	(0.53)	(0.96)	(.)	
The Habit	8.14	7.02	9.12	4.24	16.93
	(0.21)	(0.20)	(0.29)	(0.22)	(0.58)
Five Guys	11.57	10.45	14.55	8.05	–
	(0.97)	(0.78)	(1.00)	(0.76)	
Sonic	4.72	–	9.33	–	–
	(0.25)		(0.64)		
Shake Shack	9.31	8.94	9.54	5.59	–
	(0.17)	(0.12)	(0.12)	(0.14)	

Note: This table reports average prices of selected items in the collected data by group and by fast food chain. Panel A is weighted by number of locations in California of each chain. All averages are reported in U.S. dollars. Standard deviations are reported in parentheses. Missing cells represent items either not included in the chain's menu or not captured by the data-collection algorithm. Items for each franchise are selected manually if no perfect match by name is found. "Higher-price chains" include The Habit, Five Guys, and Shake Shack. "Lower-price chains" include all other chains in the sample.

Table 3: Difference-in-differences log price effect by item and group

	(1) Cheeseburger	(2) Hamburger	(3) Specialty Burger	(4) Fries	(5) Combo
Fast-Food					
All Chains	0.036***	0.038***	-0.013**	0.041***	0.026***
	(0.004)	(0.008)	(0.006)	(0.004)	(0.004)
Lower-price Chains	0.036***	0.038***	-0.015**	0.039***	0.025***
	(0.005)	(0.010)	(0.007)	(0.005)	(0.004)
Higher-price Chains	0.036***	0.038***	0.037***	0.051***	0.052***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)
Full-Service					
All Chains	-0.001	0.005	–	0.001	–
	(0.006)	(0.004)		(0.009)	

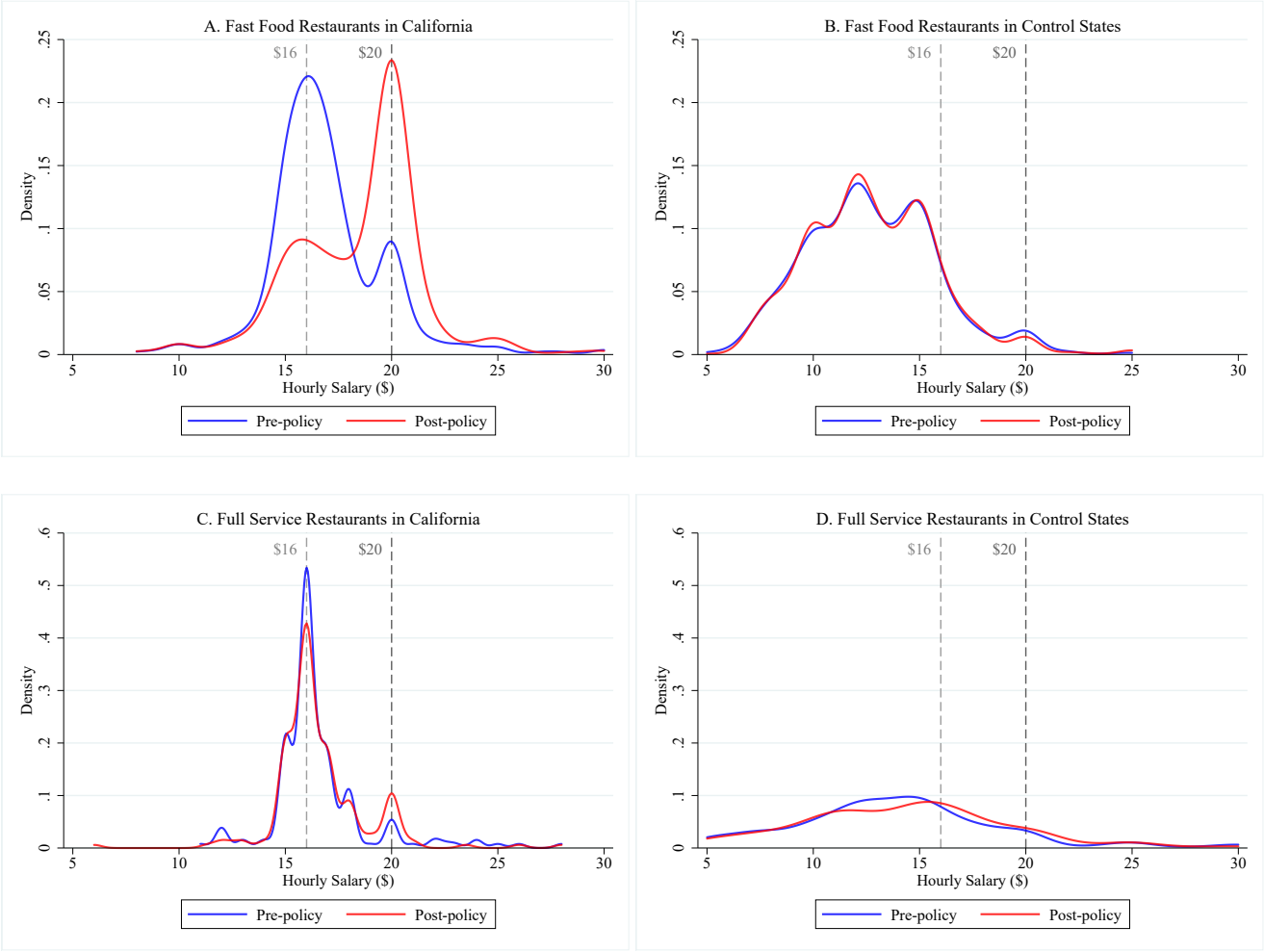
Note: Estimated using Equation 1. Each outcome is a log of the stated variable. All estimates are weighted by a number of chain locations in California. Missing cells represent items not included in the menu. "Higher-price chains" include The Habit, Five Guys, and Shake Shack. "Lower-price chains" include all other chains in the sample. Statistical significance is marked as follows: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Triple differences log price effects

	(1) Cheeseburger	(2) Hamburger	(3) Fries
A. All fast food			
Treatment effect	0.037***	0.033	0.040***
	(0.010)	(0.049)	(0.012)
Post	0.032***	0.003	0.014*
	(0.006)	(0.027)	(0.007)
CAxPost	-0.001	0.005	0.001
	(0.010)	(0.049)	(0.011)
FastFood x Post	-0.017**	-0.002	-0.031***
	(0.007)	(0.028)	(0.008)
B. Lower-price chains			
Treatment effect	0.038***	0.033	0.038***
	(0.011)	(0.056)	(0.013)
Post	0.032***	0.003	0.014*
	(0.007)	(0.030)	(0.008)
CAxPost	-0.001	0.005	0.001
	(0.010)	(0.055)	(0.012)
FastFood x Post	-0.017**	-0.002	-0.032***
	(0.007)	(0.031)	(0.009)
C. Higher-price chains			
Treatment effect	0.037***	0.033***	0.050***
	(0.009)	(0.004)	(0.013)
Post	0.032***	0.003	0.014***
	(0.003)	(0.002)	(0.005)
CAxPost	-0.001	0.005	0.001
	(0.005)	(0.004)	(0.007)
FastFood x Post	-0.030***	-0.000	-0.012
	(0.007)	(0.003)	(0.010)

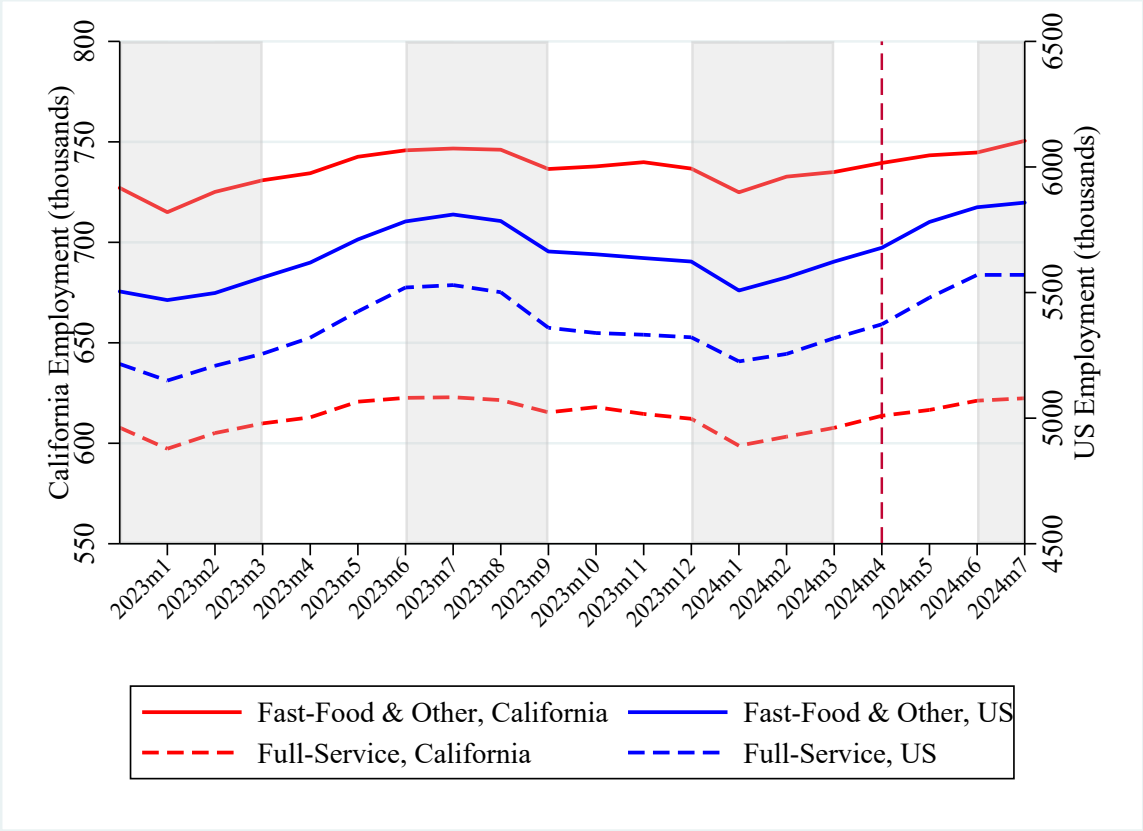
Note: Estimated using Equation 1. Each outcome is a log of the stated variable. All estimates are weighted by the number of chain locations in California. "Higher-price chains" include The Habit, Five Guys, and Shake Shack. "Lower-price chains" include all other chains in the sample. Missing cells represent variables not captured by the data-collection algorithm or missing from the menus. Statistical significance is marked as follows: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 1: Glassdoor Hourly Wage Distribution Pre- and Post-policy for Fast Food and Full Service Restaurants



Notes: Constructed using data provided by Glassdoor. The pre-policy period includes wages for 2024Q1; the post-policy includes wages for 2024Q2. Panels A and B include reported wages in the "Restaurants & Cafes" industry for fast food restaurants in our price data and the top 20 fast-food chains in terms of the number of salaries reported in the period of interest in California. Panels C and D include wages for full service restaurants in our price data and the top 25 full service chains in terms of the number of salaries reported in the period of interest in California. Distributions are constructed using kernel density approximation. Excludes managerial and sales occupations. The vertical dashed lines represent the pre-policy California minimum wage, $16, and the new minimum wage for fast food in California, $20.

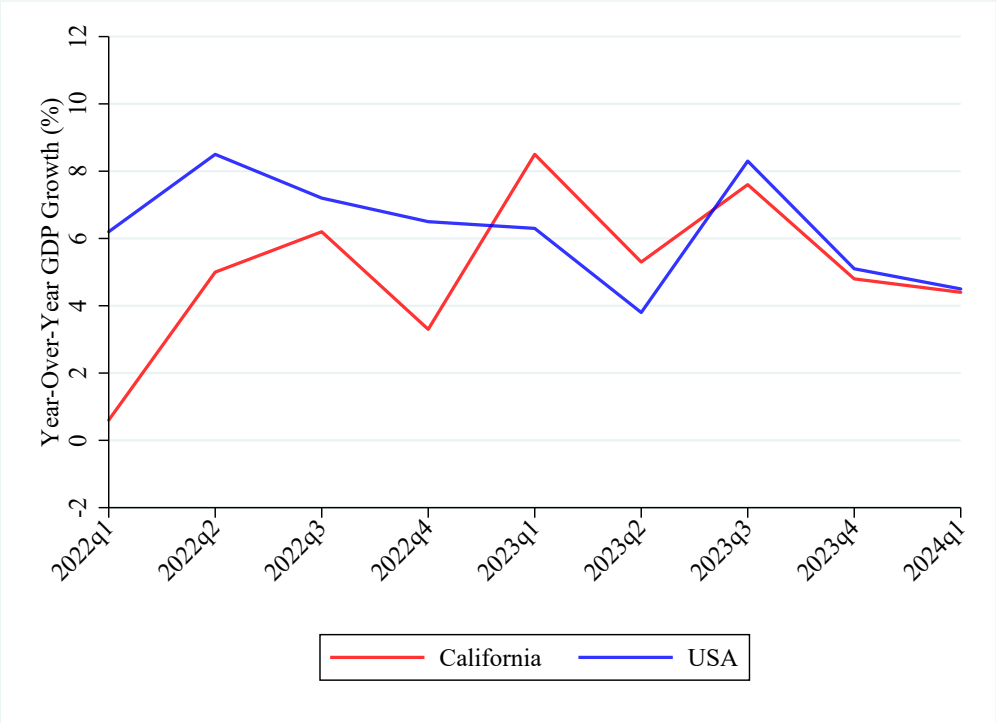
Figure 2: Fast-Food and Full Sevice Employment in California and USA



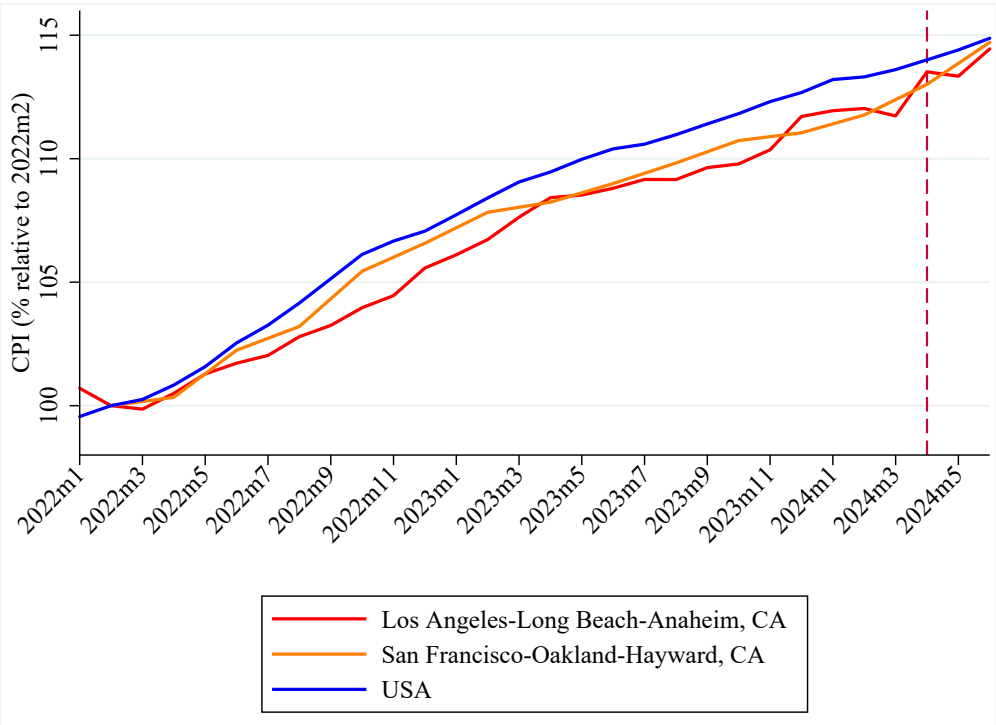
Notes: Constructed using BLS Current Employment Statistics data (CES). "Fast-food & Other" include NAICS codes 722513, 722514, 722515. CES does not provide state-level data for the fast-food industry individually. Full-service is NAICS 722511. The vertical dashed line is the month the new policy was introduced. Shading represents quarters.

Figure 3: GDP and Price Growth in California and USA

A. Year-over-Year GDP Growth in California and USA



B. Price Index Growth for "Food Away From Home" by Geography



Notes: Panel A is constructed using GDP data, U.S. Bureau of Economic Analysis. Panel B is constructed using BLS Consumer Price Index data. The price index is normalized to 100 in 2022m2. The vertical dashed line represents the introduction of the new policy. The vertical dashed line is the month the new policy was introduced.

Appendix Tables and Figures

Table A1: Difference-in-differences log price effect by item and chain

	(1) Cheeseburger	(2) Hamburger	(3) Specialty Burger	(4) Fries	(5) Combo
Effects by chain					
McDonald's	0.017***	0.017***	0.013***	0.015***	0.013*
	(0.005)	(0.004)	(0.004)	(0.003)	(0.008)
Jack in the Box	-0.010	-0.090***	-0.090***	0.006***	0.034***
	(0.012)	(0.021)	(0.024)	(0.002)	(0.005)
Carl's Jr	0.062***	–	0.054***	0.025***	0.029***
	(0.012)		(0.015)	(0.007)	(0.007)
Burger King	0.181***	0.249***	-0.073***	0.157***	0.048***
	(0.012)	(0.035)	(0.020)	(0.022)	(0.005)
Wendy's	0.031***	0.035***	0.029***	–	–
	(0.008)	(0.009)	(0.007)		
The Habit	0.046***	0.053***	0.051***	0.069***	0.052***
	(0.004)	(0.005)	(0.005)	(0.010)	(0.004)
Five Guys	0.019***	0.010***	0.013***	0.012***	–
	(0.003)	(0.002)	(0.002)	(0.002)	
Sonic	-0.182***	–	0.018***	–	–
	(0.053)		(0.003)		
Shake Shack	0.000	0.000	0.000	0.000	–
	(.)	(.)	(.)	(.)	

Note: Estimated using Equation 1. Each outcome is a log of the stated variable. The last row represents the average effect weighted by the number of locations in California. Missing cells represent variables not captured by the data-collection algorithm. Statistical significance is marked as follows: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$