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**Pasadena's Minimum Wage Policy
Effects on Workers, Businesses and the Local Economy**

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Note: This report presents the main results of our analysis, but omits details for smaller industries and cities. Further results are available from the authors upon request.

Abstract

We examine how Pasadena's workers, businesses and economy have fared since the city's minimum wage ordinance was first implemented on July 1, 2016. More precisely, we assess pay and employment in Pasadena's low-wage industries since 2014, well before the city's minimum wage ordinance was first implemented, through the second quarter of 2018. Our data consist of payroll and employment head count data by detailed industry and area, as provided by the California Employment Development Department.

We first examine differences in pay and employment outcomes in the low-wage sectors in Pasadena before and after the policy, controlling for trends in overall private sector outcomes, which should not be affected by the policy, while others do not. We then compare these before-after differences to comparable before-after differences in Los Angeles City and other counties in California. Some of our comparator areas, most notably Los Angeles City, also have their own minimum wage policies. Our analysis thus proceeds through a series of standard difference-in-difference comparisons.

As mentioned in our proposal to the city, we do not provide a causal identification of the effects of the minimum wage policy alone. Such an analysis is not possible, given data constraints and the spillover effects into Pasadena of related minimum wage policies that are also in effect in Los Angeles City, in other nearby cities and in unincorporated areas of Los Angeles County. Nonetheless, the report provides the City Council of Pasadena and stakeholders with due diligence information on whether the city should continue implementing the minimum wage ordinance in 2019 and thereafter.

We find that overall economic trends in Pasadena have mainly mirrored the economic activity patterns of the region—defined, for example, as Los Angeles County as a whole. We find that pay and employment trends in Pasadena's low-wage industries also mirror the trends in the region as a whole. We cannot detect any significant differences between pay and employment trajectories in Pasadena's low wage industries and those in the comparator counties. These results are not surprising, given the small size of Pasadena's low-wage labor market, relative to the larger labor market of Los Angeles County.

Contrary to our initial research design, we do not use cities of similar size as Pasadena as our comparators. An appendix compares Pasadena's main low-wage industries with the experience of the same industries in a group of similar-sized comparator cities: Burbank, Glendale, Orange and Santa Monica. The centers of Burbank and Glendale are located a few miles from Pasadena, while Santa Monica, which has a similar minimum wage policy, is located on the other side of Los Angeles City. Orange is located within Orange County. The results are similar to those in our main analysis. However, the data for detailed industries in such small cities are very noisy. We therefore do not place much confidence upon these comparisons of small cities.

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1. Pasadena's minimum wage: the economic and policy context

This section examines the level and distribution of income in Pasadena, the linkages between its low-wage workforce and those of surrounding areas, recent unemployment trends, and the timetable of minimum wage policies in Pasadena and elsewhere in California.

Pasadena is a relatively small (population about 140,000) but prosperous and famous city within Los Angeles County. For comparison, Los Angeles City has a population of about four million people, Los Angeles County is home to about ten million people, and the greater Los Angeles metropolitan area has close to thirteen million residents. These figures suggest that developments within Pasadena are likely to be substantially affected by developments in the heavily-populated surrounding areas.

Pasadena is best-known for the Rose Bowl and the associated Tournament of Roses Parade, for its world-class museums, as the home of CalTech, and even as the location of a major flea market. The city is both more affluent than most parts of Southern California and also exhibits more income inequality. This greater inequality is not surprising, as well-paid professionals in affluent cities spend their incomes on services produced by low-paid workers—restaurant employees, housekeepers, retail cashiers, car wash attendants and others.

Pasadena's income and demographic profile Pasadena's median household income in 2016 stood at about \$73,000, higher than the \$58,000 median income in Los Angeles County as a whole, and \$55,000 in the U.S. as a whole. (Figures in this and the following paragraphs are from DataUSA Pasadena and from Census QuickFacts Pasadena). The median property value in 2016 was about \$650,000, compared to \$466,000 in Los Angeles County as a whole and \$409,000 in California as a whole. Only 43 percent of Pasadena's residents are homeowners, compared to 46 percent in Los Angeles County as a whole, 54 percent in California, and a national average of 63.6 percent.

Pasadena's population is made up of about 37 percent non-Hispanic whites, 34 percent Hispanics, 15 percent Asians and 10 percent black. In 2016, Pasadena's approximately 20,000 employers had about 72,000 workers. Of these, nearly 40 percent work in three industries—professional, scientific and technical services; educational services; and healthcare and social assistance (DataUSA Pasadena, based on five-year American Community Survey estimates).

A large proportion of Pasadena's population is made up of college graduates. According to 2018 American Community Survey data compiled by TownCharts.com, about half of Pasadena's population are graduates of four-year colleges, compared to 33 percent of California's population; twelve percent have completed less than high school, compared to sixteen percent in all of California.

Income inequality in Pasadena As is the case for many affluent cities, a local low-wage labor force provides services that mainly cater to the more affluent residents. Indeed, Pasadena contains a sizable poor population (15.8 percent of its overall population, compared to 14 percent nationally), of which about half are Hispanic and half are non-Hispanic whites. Median household income varies substantially among Pasadena's census tracts, from \$187,000 in the

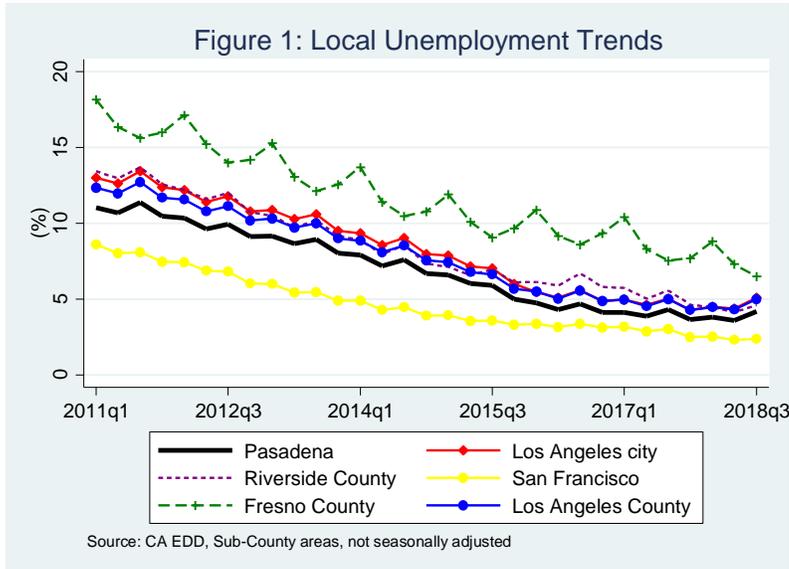
western area of the city, to about \$33,000 in the center of the city. Pasadena ranks second among California cities on a variety of inequality measures that take top income households into account (Dreier and Maier 2014).

Pasadena's economic integration with surrounding and nearby communities Any analysis of Pasadena's labor market developments and its minimum wage policy must take the city's spatial location into account. Pasadena, which is one of 88 cities within Los Angeles County, is located only ten miles from downtown Los Angeles. As everyone knows, an extensive network of roads, interstate and state highways and, to a lesser extent, public transit systems link these cities together. Most important, any significant labor market events in Los Angeles City are likely to spill over into Pasadena.

This interdependence is illustrated by in-commuting patterns and out-commuting patterns. In 2015 (the latest year available, Census Longitudinal Employer-Household Dynamics (LEHD) data indicate that 16,900 individuals were employed in Pasadena with earnings from their primary jobs of \$1,250 per month or less. (This is the cutoff used by the LEHD.) Of these, 14,400 (or 85 percent) lived outside of Pasadena and commuted in to the city. Only 2,500 of these low-earning workers (or 15 percent of the total) both lived and worked in the city. At the same time, somewhat over 7,000 low-earning workers lived in Pasadena but worked outside the city's borders (see the Census Bureau's *On the Map*).

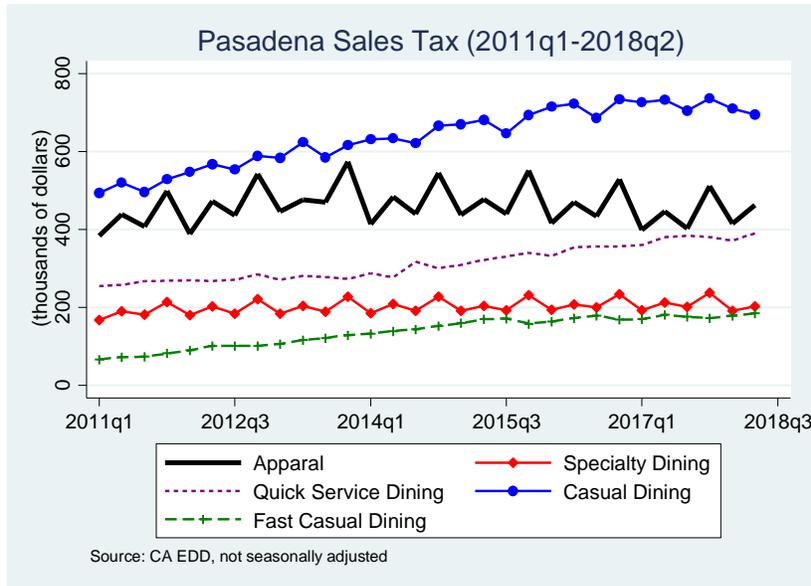
These commuting patterns suggest that unskilled workers can easily switch jobs if pay were to rise or fall in Pasadena relative to nearby areas. In other words, pay levels for unskilled jobs are not likely to vary much within the commuting area, except for commuting costs themselves.

Unemployment and other economic trends in Pasadena Figure 1 displays unemployment trends since 2011 in Pasadena (black), Los Angeles city (red) and four comparison counties: Fresno (green), Los Angeles (blue), Riverside (purple) and San Francisco (yellow). As the unemployment trends indicate, each of these areas has experienced a steady recovery and ongoing recovery from the Great Recession. Unemployment remains somewhat higher in Fresno County—the poorest county in the state than in the southern California areas—and is somewhat lower in San Francisco—one of the most prosperous areas in the state. Unemployment is lower in Pasadena than in Los Angeles City, Los Angeles County and Riverside County. However, the lines for these four areas are remarkably close to each other and move in parallel.

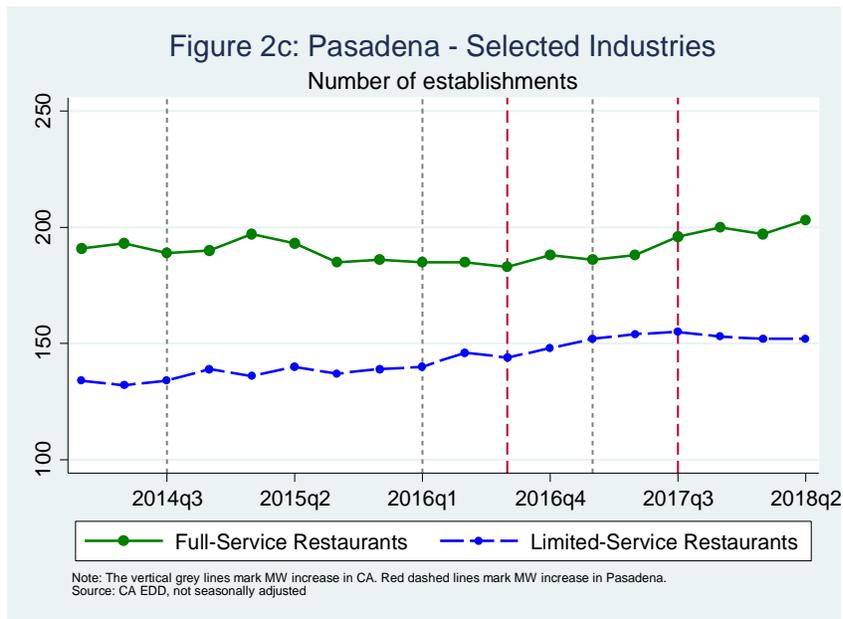


The downward unemployment rate trends in Figure 1 begin to flatten in early 2016, just before minimum wage increases began to be implemented in Pasadena and elsewhere. However, this flattening likely reflects a slowdown in the state’s growth; California unemployment trends (not displayed in Figure 1) show a similar pattern. The main takeaway from Figure 1 therefore is that unemployment trends in Pasadena reflect unemployment trends in the region and the nation, not the effects of minimum wage policies. This finding is not surprising, since most of the unemployed worked at jobs that paid well above minimum wages.

As we document in later sections, overall private sector employment in Pasadena and these comparison areas also has grown steadily. Other measures provide similar evidence. According to PasadenaNow (<http://www.pasadenanow.com/main/commercial-real-estate-inventory-nearly-depleted-in-pasadena/#.XEisi817mUk>), retail vacancy rates in the city continued to decline in 2017, while commercial real estate values continued to increase. As the figure below shows, sales tax data for a number of low-wage industries also show steady growth in recent years, with no evident trend breaks when the minimum wage policy began to be implemented.



As Figure 2c shows, the number of limited-service restaurants and full-service restaurants also show no breaks in trend at the times of the minimum wage increases.



The policy context Table 1 presents phase-in schedules to \$15 for Pasadena, three other cities (Santa Monica, Los Angeles and San Francisco) and for the state. The first phase of Pasadena’s own policy began on July 1, 2016, with an increase in the city’s minimum wage from \$9 to \$10.50, when the state’s minimum wage increased from \$9 to \$10.

It seems unlikely that a \$.50 minimum wage differential with nearby areas would generate measurable effects on Pasadena businesses. Greater differentials with the state minimum wage

ensued: a \$1.50 differential on July 1, 2017 and a \$2.25 differential on July 1, 2018. The differential is then scheduled to continue at \$2.25 on July 1, 2019, then fall to \$2 on July 1, 2020 and to fall further in 2021 and 2022.

Moreover, as is clear from Table 1, other nearby cities in Los Angeles County are also on track to phase in \$15 minimum wages, and at the same timetable as Pasadena. Numerous other California cities, particularly in the Bay Area, have also enacted minimum wage policies that are phasing in to \$15.

Table 1 Minimum Wage Policies in California and selected California cities
(July 2014 to July 2022)

Date	Pasadena	Santa Monica	Los Angeles	San Francisco	California
July 1, 2014	9.00	9.00	9.00	10.74	9.00
July 1, 2015	9.00	9.00	9.00	12.25	9.00
July 1, 2016	10.50	10.50	10.50	13.00	10.00
July 1, 2017	12.00	12.00	12.00	14.00	10.50
July 1, 2018	13.25	13.25	13.25	15.00	11.00
July 1, 2019	14.25*	14.25	14.25	CPI indexing	12.00
July 1, 2020	15.00*	15.00	15.00	CPI indexing	13.00
July 1, 2021	CPI indexing	CPI indexing	CPI indexing	CPI indexing	14.00
July 1, 2022	CPI indexing	CPI indexing	CPI indexing	CPI indexing	15.00

Note: *Pasadena’s 2019 and 2020 scheduled increases are contingent upon a City Council review of the economic impact of the 2016–2018 increases. Other cities, such as Burbank, Glendale, and Orange – are covered by California’s minimum wage schedule.

The unincorporated areas of Los Angeles County, along with the cities of Los Angeles, Pasadena and Santa Monica, have current pay floors of \$13.25 an hour for employers of 26 or more workers. These cities’ minimum wage standards are scheduled to rise to \$14.25 on July 1, 2019 and to \$15 on July 1, 2020. San Francisco’s minimum wage is already at \$15. California will phase in to \$15 on January 1, 2022. All areas will begin inflation adjustments after reaching \$15.

If the Pasadena City Council votes to pause the scheduled phase-ins, higher minimum wage standards in nearby cities, especially those in Los Angeles City, will still have substantial spillover effects on wages and labor supply in Pasadena itself. If higher-paying jobs are available in nearby areas, Pasadena businesses may experience difficulty recruiting and retaining their better workers. Moreover, the state minimum wage is scheduled to reach \$15 just a few years later. Also of importance, in 2016 the state initiated an Earned Income Tax Credit (EITC) for low-income working households with children. The city council’s decision whether to continue the implementation of the city’s minimum wage experience should consider this context of continuing policy changes.

2. Minimum wage-employment effects: an up-to-date literature review

With over 150 federal, state and local minimum wage increases in the U.S. in the past thirty-five years, economists have considerable opportunity to study the impact of this policy. This section first provides a brief review of how economists conceptualize the mechanisms through which minimum wages may affect employment. We then review the recent empirical literature on the subject—first on teens, then on restaurant workers and finally on all minimum wage workers. We close with a brief review of the evidence from previous studies of citywide minimum wages.

Economic theory Modern economic theory recognizes that employers and worker adjust to economy-wide minimum wage increases in ways that can both reduce and increase the demand for less-skilled workers. The potential negative employment effects come from automation, reductions in operating hours, reductions in sales if companies raise prices, reductions in benefits (such as health insurance) and substitution of skilled workers for unskilled workers. The potential positive effects include increases in labor supply, savings on labor recruitment and retention costs with reduced employee turnover, productivity gains that make hiring more workers desirable, and increased demand for goods and services from low-wage workers, who have higher income increases and higher propensities to consume than do more affluent individuals, who may have to pay higher prices for products. (See Reich et al. 2017 and Godoey, Allegretto and Reich 2019 for more detailed discussions.)

Some, but not all, of these individual mechanisms have been examined in empirical studies. For example, Aaronson and Phelan (2015) find that minimum wages accelerated a decline in some low-paid jobs (cashiers), but find similar increases in others (food prep workers). Allegretto and Reich (2016) find a small increase in restaurant prices after a 25 percent minimum wage increase in San Jose. Cooper et al. (2017) find that state-level minimum wage increases have modest positive effects on local consumer spending growth. Cengiz (2018) finds that minimum wage increases do not lead to reductions in health insurance benefits.

Citywide minimum wages, such as Pasadena's, may have different effects from state and federal increases. Most important, such policies can cause businesses to relocate to lower-wage areas; they can also cause workers to switch jobs from employers in lower-wage areas to employers in higher wage areas. Moreover, local spending out of increased incomes will increase only to the extent to which low-wage workers spend their increased incomes locally. However, such multiplier effects may be attenuated, insofar as some of what people buy is produced elsewhere. Disconnects between where workers are employed and where they live and spend their additional income can also become important factors for local minimum wage policies.

As this brief discussion highlights, local minimum wages can have positive or negative net effects on employment. Clearly, economic theorizing is insufficient by itself to identify the likely net employment effects. For this very reason, economists have spent considerable effort on empirical studies on this question. We turn next to these studies.

Empirical research The effect of minimum wages on employment constitutes one of the most studied questions in all of economics. Great strides have been made, partly through increased

statistical methods and partly from improved data. Nonetheless, the literature is not unanimous. (Compare Neumark, Salas and Wascher 2014 with Allegretto, Dube, Reich and Zipperer 2017).

Empirical studies at first focused on the group of workers most exposed to minimum wages—teens. This strategy makes sense because employment effects are likely to be smaller to nonexistent for groups that experience smaller or no increases in their pay because of minimum wage increases. Early studies of teens used variation in minimum wages over time and among states to identify minimum wage effects. Such studies often found that a 10 percent increase in the minimum wage reduced teen employment by one to three percent (Neumark and Wascher 2008).

However, teen employment has been falling for at least three decades, and unevenly so in different states. The challenge for minimum wage studies involves isolating the effects of the policy from the confounding effects of declines in teen employment that are attributable to other causes. For example, states that raised their minimum wages were more likely to emphasize educational policies that also reduced the number of available teen workers. Careful studies that took such confounding forces into account find that a ten percent minimum wage increase reduces teen employment by a much smaller amount, between 0.5 percent and zero (Allegretto, Dube and Reich 2011; Allegretto, Dube, Reich and Zipperer 2017).

Economists have also attempted to estimate the effects of minimum wages on low-paid workers who are *not* teens. One such group of studies looks at restaurant workers, many of whom are also exposed to minimum wage increases. Remarkably—given the controversies among scholars--studies of restaurant workers have arrived a consensus—employment effects somewhere between 0.5 percent and zero (Dube, Lester and Reich 2010).

Policy makers often want to know how high the minimum wage can go without causing job loss. Economists, however, pose a different question: What is the tradeoff between increasing pay for employed low-wage workers and employment losses for some? The results in the new teen and restaurant workers studies indicated that the tradeoff has been very favorable for minimum wage policy.

The new teen and restaurant worker studies have visibly shifted the views of the economics profession. In 2013, a panel of 41 elite economists was asked about the desirability of raising the minimum wage to \$9 an hour, as proposed by President Obama (<http://www.igmchicago.org/surveys/minimum-wage>). Only one-third of the panel agreed that the minimum wage hike “would make it noticeably harder for low-skilled workers to find employment.” The panel supported the Obama initiative by a 3 to 1 margin. In 2015, the panel was asked the same question, but for a \$15 an hour federal minimum wage. Only 26 percent of the panel agreed with the proposition about job loss.

The teen and restaurant worker studies together account for about 90 percent of all minimum wage studies. However, these studies leave an incomplete picture, as these two groups of workers together account for only about half of all the workers exposed to minimum wages. In the past few years, two advances have allowed economists to overcome this limitation.

The first advance is methodological—the development of a “bunching” estimator that allows examination of the net change in the number of all jobs that are just below and just above the minimum wage (Cengiz, Dube, Lindner and Zipperer 2019). Using this method, Cengiz et al. find that minimum wages do not reduce employment, either overall or among specific groups of less-educated workers. Cengiz et al. are also able to examine other methodological issues that arise from two oft-cited studies of all workers that do obtain negative employment effects: Clemens and Wither 2014, and Meer and West 2016. These issues include whether the highest minimum wage policies have more negative employment effects than more modest increases, whether previous studies adequately control for changes in business cycle conditions, and whether previous studies spuriously find negative employment effects where they should not, such as among professional and other highly-paid workers. Cengiz et al. find that both the Clemens and Wither and the Meer and West studies do not pass these basic methodological checks. Similar issues plague Leamer (2018).

The second and also very recent important advance in the minimum wage literature involves a new availability, at least to Census Bureau researchers, of data obtained from income tax filings that are linked to Current Population Surveys. Studies by Census Bureau economists using this newly-available data do not find negative employment effects, even five and ten years after a minimum wage increase Rinz and Voorheis 2018; Toddy and Zipperer 2018).

Studies of citywide minimum wage studies The first cities to implement citywide minimum wages were San Francisco, Santa Fe and Washington, DC. Dube, Naidu and Reich (2007) studied the San Francisco policy effects through a survey of affected and non-affected restaurants in San Francisco and the East Bay. They found no employment decreases. A later study of all three cities (Rosner and Schmitt 2011) came to similar conclusions. Dube, Naidu and Reich (2014) updated the San Francisco study, also with similar results.

A new wave of citywide minimum wage policies began to be enacted in 2014, with Los Angeles, San Francisco and Seattle leading the way among large cities, with Oakland, San Jose and other Peninsula cities following shortly thereafter. By the end of 2016, minimum wage levels in Oakland, San Francisco, Seattle and San Jose had reached \$13, higher than the previous real minimum wage peak reached in the late 1960s.

Two studies of the Seattle minimum wage appeared in June of 2017. In a food services industry study, Reich, Allegretto and Godoey (2017) found that minimum wages raised pay and did not adversely affect employment. In contrast, Jardim et al. (2017) found that reduced hours and reduced employment left Seattle workers worse off after the minimum wage increased to \$13. To isolate the causal effect of the policy, Reich et al. compared Seattle’s experience to a “synthetic” control group drawn from urban metro areas across the U.S. Jardim et al. also drew upon a synthetic control, but drawn exclusively from other urban areas in Washington.

Jardim et al. were criticized for not having an adequate control for business cycle conditions (Schmitt and Zipperer 2017). In particular, Seattle experienced a boom after the policy, but the rest of the state did not. The boom raised wage growth in Seattle that was well above wage growth in the rest of Washington. Thus Jardim et al.’s data contained fewer low-wage jobs, but

because of the boom, not because of the minimum wage policy. Jardim et al. revised their study in 2018, with estimates that were about half the size of their previous numbers, but they did not expand their control group, leaving open the credibility of their finding. A second study by Jardim et al. (2018), using longitudinal data and the same control groups, found even smaller negative effects, but did not resolve the issue of how to control for the economic boom in Seattle.

Finally, Allegretto et al. 2018 and Nadler et al. (2019) expanded their previous work to examine high minimum wages in six large cities: Chicago, District of Columbia, Oakland, San Francisco, San Jose and Seattle. Using a variety of statistical methods and checks, they found that pay increased in food services, that employment did not change, and that there was no evidence to support the claim that employers switched their hiring to more-educated workers. Nadler et al. (2019) further found that using industry-based QCEW data rather than individual-level data did not attenuate measured employment effects. This finding supports our use of industry-level QCEW data in our study.

To summarize, the weight of the evidence in careful empirical minimum wage studies increasingly has tilted toward finding small to zero disemployment effects of state and federal minimum wages. This conclusion has been reinforced by the results in the newer studies that used improved methods and data. Citywide minimum wage policies potentially could nonetheless cause greater leakages of capital and consumer spending than the more-studied state or federal increases. However, the weight of the evidence of recent local studies thus far also does not support the presence of such effects.

3. Data

Quarterly Census of Employment and Wages (QCEW) Our data primarily comes from the Quarterly Census of Employment and Wages. This dataset, which covers about 97 percent of all nonfarm employment, is collected from employers by California’s Employment Development Department (EDD). The data include monthly headcounts and quarterly payrolls, as well as number of establishments. The individual reports include the exact address of the reporting unit. The QCEW is publicly available for all detailed industries and for all counties in the U.S. The City of Pasadena contracted with CA EDD to provide us with detailed QCEW data for individual cities, including Pasadena, Glendale, Los Angeles City, Orange and Santa Monica.

We obtained data by city and detailed industry with the assistance of Pat Hom, Research Analyst at the California Employment Development Department and Ruth Baenz-Martinez, of the Economic Development Agency, City of Pasadena. We obtained data for Fresno, Los Angeles and San Francisco Counties and for the State of California from the EDD’s Labor Market Information Division (LMID) website.

Quality of the QCEW data The main advantage of the QCEW data is that it comes from administrative records with widespread coverage, whereas most survey data have sizable non-reporting issues, especially for individuals at low wages. A second advantage is its quarterly frequency and the relatively short lag (about six to nine months) between the collection of the data and its availability for researchers.

Every state’s EDD sends the reports provided by employers to the Bureau of Labor Statistics (BLS) in Washington, DC, which then uses its expertise to “clean” the data of noise and to otherwise render the data more usable for analysis. Recently, for example, BLS has added geocode identifiers to replace establishment street addresses. The “corrected” QCEW data are then sent to the state agencies. Our understanding is that the data we received has been so treated by BLS.

Although it is widely used in minimum wage studies, the QCEW has some disadvantages. First, many businesses— fast-food chains, for example-- operate at more than one address, each of which constitutes a separate business establishment. Such businesses may send reports to EDD that are based on just a single address or send a single report that consolidates data for all its establishments. In the latter case, the reporting unit usually provides the headquarters address but does not provide separate data for each of its other locations. In the current context, some of the payroll and headcount numbers allocated to Pasadena may not be actually based in Pasadena. Similarly, some of the payroll and headcount numbers for, say Los Angeles City, might include data for employees who are based in Pasadena, not Los Angeles City. Moreover, businesses may change their headquarters location without changing the locations of their individual establishments. And they may change how they report their data—whether companywide or by individual establishment,

In other words, the QCEW contain some spatial measurement error. While it is not possible to determine the magnitude of such measurement error, one can expect it to be larger for a

smaller area than for a larger one. This noise in the data is also likely to be greater for small industries than for larger ones. It also seems likely that such errors change over time, such as when companies change their headquarters location or just change how they decide to send reports to EDD.

To protect confidentiality, EDD suppresses data when the number of reporting establishments is very small. This suppression is more likely for industries with a small number of establishments and for very small geographical areas. In this report, we use information only on industries and areas that do not have data-suppression issues.

Despite its disadvantages, the QCEW data are far preferable to any other data sources, as we discuss further below.

Outcome measures in the QCEW The payroll and headcount data in the QCEW permit calculation of an area or industry's average weekly wage. This measure is defined as total payroll divided by average headcount, divided by 13 (the number of weeks in each quarter). Actual hourly wages will diverge from the average weekly wage for particular individuals. Moreover, hours worked per quarter will also vary among individuals, among industries and over time. Nadler et al. (2019) compares correlations between industry-level variation in the average weekly wage in the QCEW with variation in individual-level hourly wages in individual-based data from the Current Population Survey. For an industry as large as food services, the QCEW average weekly wage measure turns out to do a very good job capturing variation in average hourly wages. This correlation is smaller, however, in smaller industries, such as car washes.

Detailed industry data can be highly seasonal. To correct for seasonality, our outcome measures use quarterly year-over-year comparisons.

Alternative data sets Other government-collected datasets are commonly used in minimum wage studies. These include the American Community Survey (ACS), the Current Population Survey (CPS), the Longitudinal Employer-Home Data (LEHD) and the Occupational Employment Survey (OES). Each of these has limitations that make their data not suitable for studying Pasadena's minimum wage. The ACS reports only annual data, collected on a rolling basis throughout the year. The sample size of the CPS is too small for local analyses. LEHD data are only available to selected researchers and with a multi-year lag. The OES is based on a three-year rolling survey.

These surveys do include hourly wage data. However, the sampling frame is based on the respondent's residence. Except for the ACS, the survey instrument does not ask in what city the residents work. The disconnect between the location of workplace and the location of residence is especially great for small cities such as Pasadena. Survey data are also subject to sampling errors and nonresponse limitations.

4. Methods

Selecting the industries to study We first identify the industries in Pasadena that are least exposed (i.e., have high average weekly wages) to minimum wage increases as well as those that are the most exposed (have low average weekly wages). Our primary goal is to identify the detailed low-wage industries with enough employees to permit reliable inference about trends over time. We will then focus on these industries in our difference-in-difference analyses.

Table 2 provides this information, using 2016q1, just before the city’s policy was implemented as the baseline. Measured by employment levels, the Professional, Scientific and Technical Services industry constitutes one of the largest industries in Pasadena (14,000 employees). It also ranks as one of its highest-paid industries, with an average weekly wage of nearly \$2,000. We experimented with using this industry as a comparator that was not much affected by the minimum wage. However, we found that its employment and pay levels exhibit considerable noise. Pay in Residential Building Construction also ranks high (\$1,550 average weekly pay), but is too small (about 330 employees) for examining changes over time. We therefore use overall private sector employment for our baseline.

Table 2 Pasadena employment and wages, selected industries, 2016q1

Industry	Employment	Average weekly wages (\$)
Professional, Scientific and Technical Services	14,120	1,959
Retail Trade	8,868	660
Full-Service Restaurants	4,889	472
Limited-Service Restaurants	2,907	350
Home Health Care Services	1,101	603
Snack and Nonalcoholic Beverage Bars	642	327
Child Day Care Services	563	548
Residential Building Construction	332	1,550
Janitorial Services	320	364
Car Washes	136	321
Cafeterias, Grill Buffets and Buffets	124	477

Source: QCEW, Employment and payroll data from CA EDD.

We turn next to Pasadena’s low-wage industries. As shown in Table 2, and measured again by employment, food services constitute Pasadena’s largest low-wage industries. Food services includes full-service restaurants (average pay \$472), limited service restaurants average pay \$350), snacks and bars (average pay \$327) and cafeterias (average pay \$477). The food services industries shown in Table 2 overall employed nearly 8,600 workers in 2016q1. Our analysis will focus on the full-service and limited-service restaurant sectors.

Pay in janitorial services (\$364) was comparable to pay in some of the food service sectors, but employed only 320 workers. Pay in car washes was even lower (\$321), but employed even fewer workers (136). We examined results for these industries, but consider them too small for confident inference.

The remaining industries in Table 2 are retail (average pay \$660), home health care services (average pay \$603) and child care (average pay (\$548). They thus all fall in an “intermediate” pay category, somewhat higher than restaurants, but still low enough to be affected by minimum wages. Retail’s pay is highest, so we omit it from the present version of our report. The workforce size in the other two industries is quite small, with considerable noise in the reported data. We therefore omit these from the report as well.

Difference in differences Our principal study method involves a series of comparisons that permit generating a series of “difference-in differences” computations. The difference-in differences method is well-established in empirical labor economics generally. It has frequently been used to evaluate the effects of city, state and federal minimum wage changes.

We will first compare trends before and after the implementation of the policy, and then progressively add controls such as overall private sector employment in the pre and post periods. Such controls minimize the effects of changes in the city’s economy that are unrelated to the policy. The resultant comparisons will illuminate whether differences between pre and post policy trends in Pasadena itself appear to be related to the policy.

We will then conduct the same exercise for four comparison areas: Los Angeles City, nearby Riverside County, Fresno County and San Francisco (City and) County. Los Angeles and San Francisco have also been phasing in their own \$15 minimum wage, while Fresno and Riverside have not.

The difference-in-differences will involve comparing pre-post differences in average weekly wages and employment between Pasadena and each of the four comparison areas. We will then conduct a summary analysis of these multiple difference-in differences.

Inability to conduct a causal analysis An ideal causal study of the minimum wage policy would compare outcomes in Pasadena to the counterfactual case—what those outcomes would be if Pasadena had not adopted the policy. When such a counterfactual exercise cannot be conducted, economists adopt a second-best approach. They look instead for comparison areas that best approximate Pasadena but that have not adopted a minimum wage policy. The method we adopt is in this spirit.

We do not claim here to conduct a state of the art causal analysis. The reason: It is impossible to isolate the effects of Pasadena’s adoption of a minimum wage from the effects of Los Angeles’ adoption of a minimum wage. As I suggest above, if Pasadena had not adopted a minimum wage ordinance, we would expect wage effects from Los Angeles to spill over into adjacent areas, such as Pasadena. Wage increases would occur even without a minimum wage ordinance in Pasadena because employers in Pasadena would find that they must match Los Angeles wages in order to retain their workforce. It is thus not possible to conduct a credible causal analysis, even

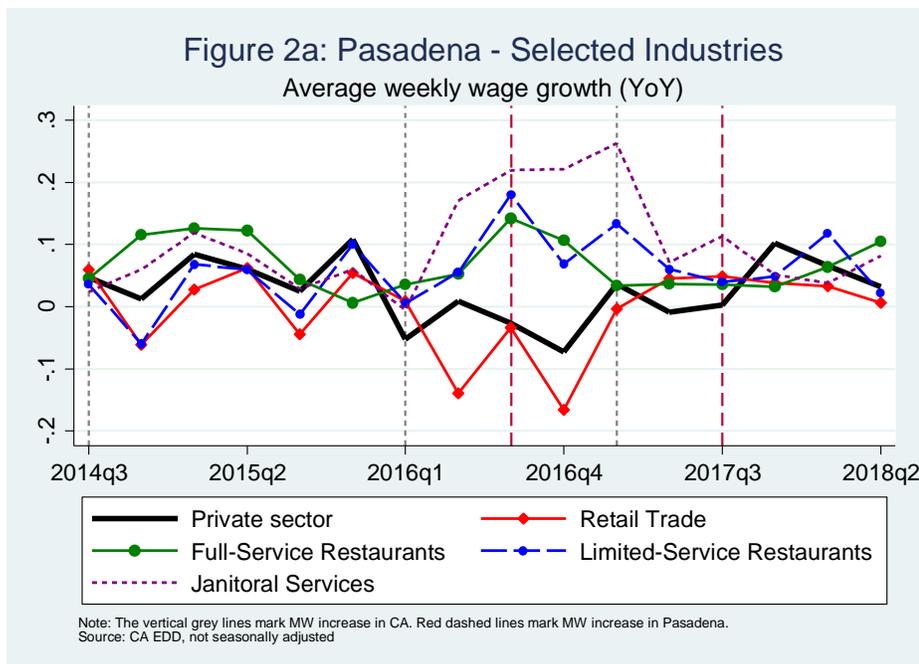
when using state of the art methods such as synthetic controls, event studies, interactive factor analysis, time series methods or others.

5. Findings: descriptive and first differences

In this section we first provide descriptive comparisons for our selected Pasadena industries. We then extend this analysis to our comparison areas.

Descriptive comparisons among selected Pasadena industries Figure 2a examines year-over-year pay trends since 2014q3 in Pasadena for the entire private sector (black), and for its three largest (measured by employment) low-wage industries: retail trade (red), full-service restaurants (green), limited-service restaurants (blue) and janitorial services (purple). We show year-over-year changes to reduce the effects of seasonal variation and allow a clearer picture of trends.

Figure 2a and the subsequent figures in this report show year-over-year growth in pay or employment. They do not show pay or employment levels. The pay data are not corrected for inflation. Such a correction is not strictly necessary, as it would apply equally to all the comparisons in the figures. This mode of presenting the data better illustrates changes over time, which is what interests us.



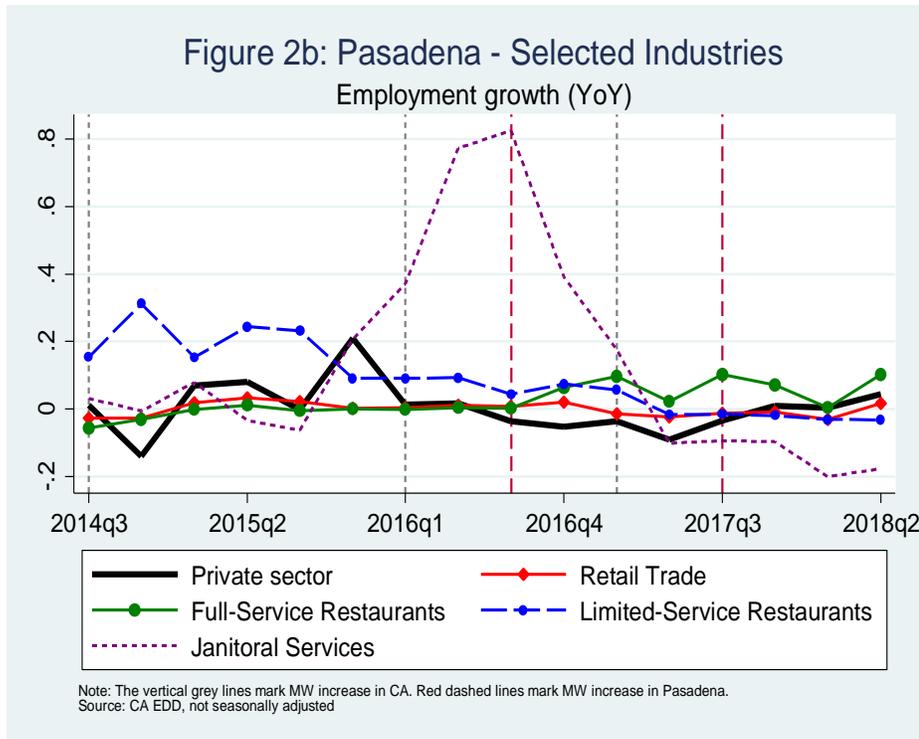
The lines for janitorial services and for retail trade exhibit considerable wage growth variation— as much as 15 to 20 percent around the times that the state and then the first Pasadena minimum wage increases were implemented. These variations, which occur in

opposite directions in the two industries, may reflect changes in hours more than changes in weekly pay. Or they may reflect noise in the data that should not be given much weight. Subsequent figures show similar noise-like variation for these industries.

In contrast, the lines in Figure 2a for the pay growth trends in full-service restaurants and in limited-service restaurants indicate variations that are more limited—and that more credibly reflect changes in hourly wages. Recall that Nadler et al. (2019) found that variations in average weekly wages in these two industries appear to credibly reflect changes in hourly pay. Moreover, workers in these two industries are heavily exposed to minimum wage changes. We therefore limit the focus of our discussion to results for these two industries, with comparisons only to overall private sector pay and employment (the thick black line), which are much less exposed to minimum wages.

Figure 2a shows that wage growth in limited-service and full-service restaurants increased during the quarters that the state and Pasadena’s minimum wages were also increasing. These increases contrast with slowdowns in wage growth for the private sector as a whole. Figure 2b shows that employment growth in limited-service restaurants declined slightly in the same quarters, while employment growth in full-service restaurants increased slightly. Overall private sector employment growth fell slightly during the same period.

The takeaway from Figures 2a and 2b is thus that the minimum wage increases were associated with small wage increases and with small to zero disemployment effects in restaurants.



Comparisons with comparison areas In this section, we compare overall private sector pay and employment comparisons in Pasadena with the same data for Los Angeles city and our four comparison counties. We show results again on four low-wage industries in Figures 2a and 2b (retail trade, limited-service restaurants, full-service restaurants, and janitorial services). However, our main focus is on the limited-service and full-service restaurant sectors.

We have also examined results for home health care services and for child day care services. Home health care service pay and employment levels are largely heavily regulated by administrative policies at the county level. Child day care pay is less regulated, but child care employment is affected by variations in child care subsidies. Results for these industries are available from the authors upon request.

Figure 3a shows that private sector wage growth was lower in Pasadena during the minimum wage increase quarters than it was before or after. It also shows the absence of a slowdown in private sector wage growth in the four comparison areas during the same quarters.

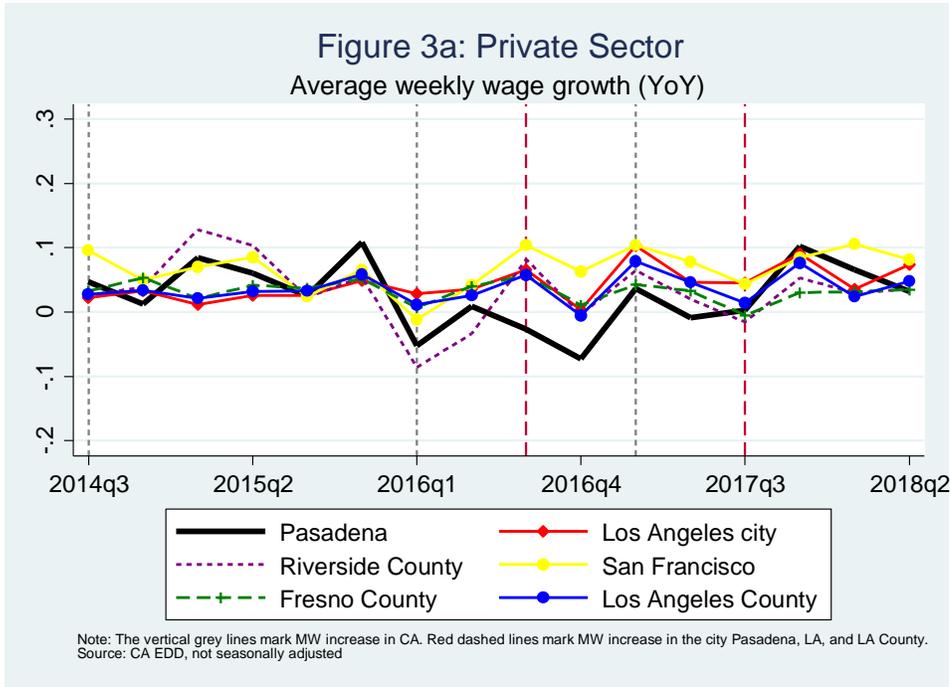
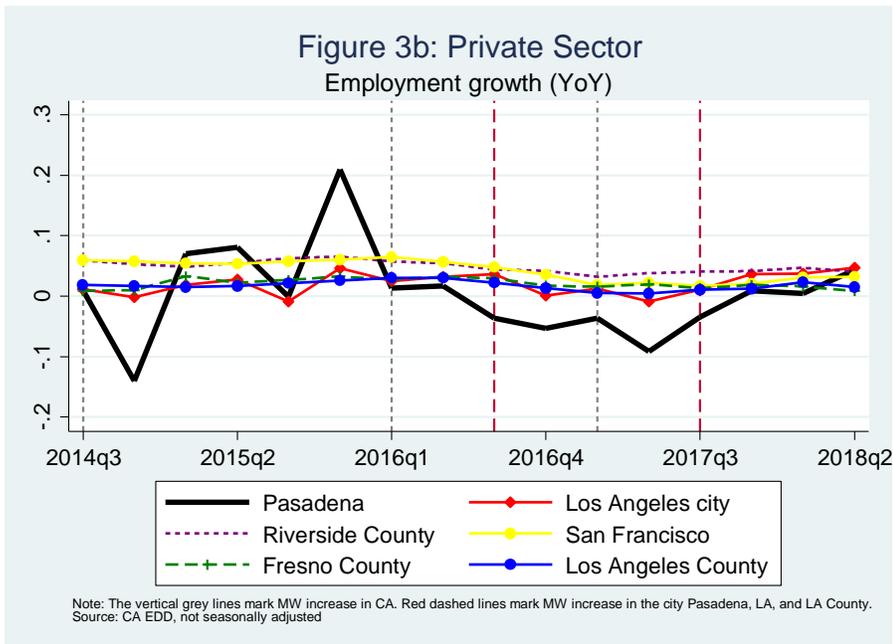


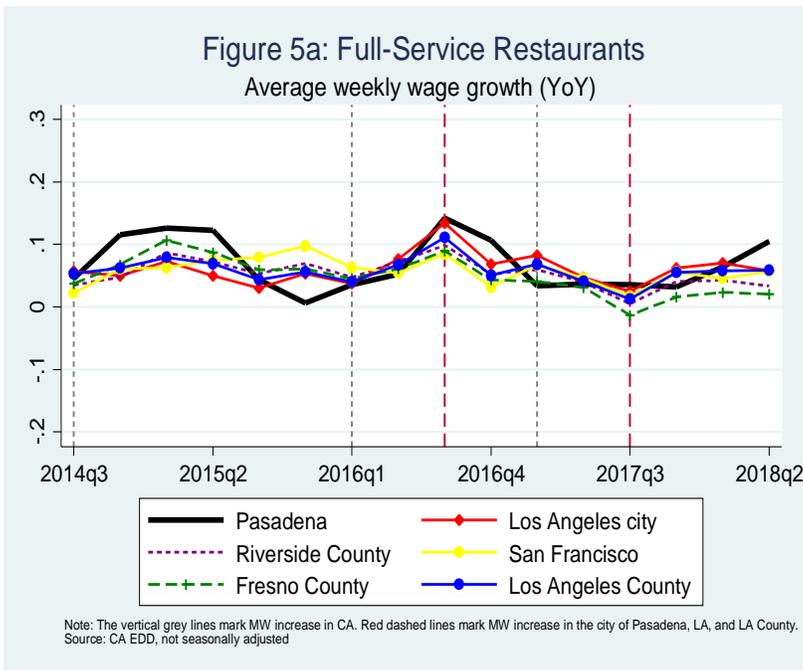
Figure 3b shows a similar pattern for employment. Private sector employment growth slowed down during the minimum wage quarters in Pasadena, but not in the comparison

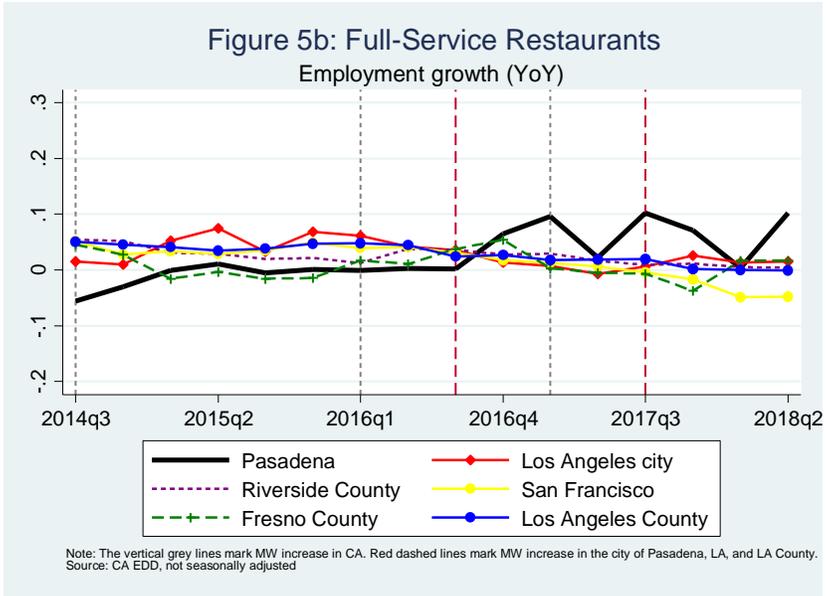


areas. These results provide a baseline for our further analysis of pay and employment effects below.

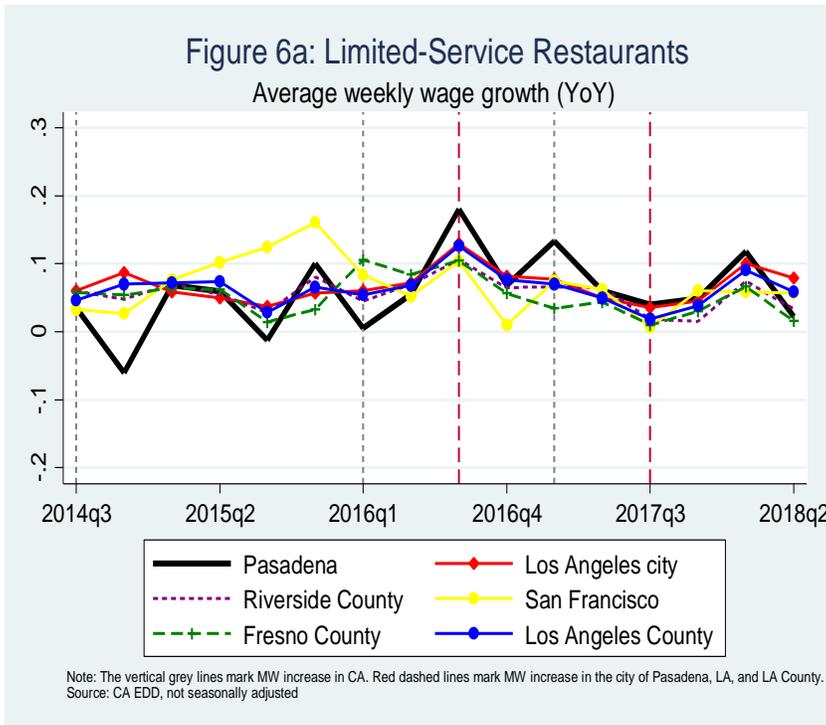
[nb We omit presentation and discussion of Figures 4a and 4b on pay and employment trends in retail trade in the five areas. We also omit discussion of other small industries. These results are available upon request to the authors.]

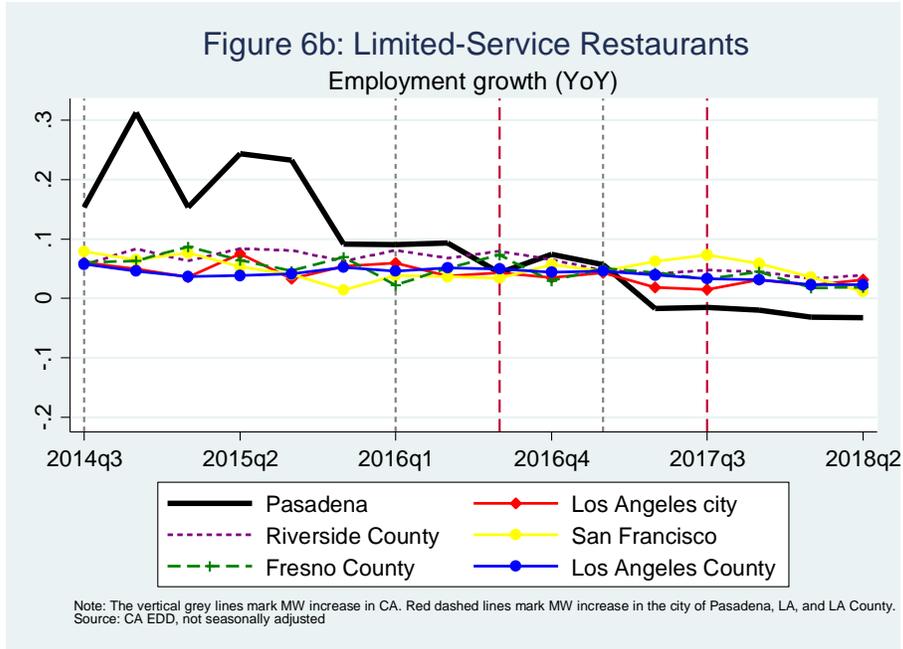
Full-service restaurants Figure 5a shows that pay growth in Pasadena’s full-service restaurants changed at about the same rates as in all the comparison cities. In contrast, Figure 5b shows that employment in full-service restaurants grew faster in Pasadena after Pasadena’s minimum wage increases than did employment in the comparison areas. The takeaway: Pasadena’s policies do not seem to have deterred restaurant employment growth.





Limited-service restaurants Figure 6a shows that wage growth in Pasadena’s limited-service restaurants after its minimum wage was implemented slightly exceeded wage growth in the comparison areas. Figure 6b shows that employment in Pasadena’s limited service restaurants grew slightly more slowly—after the state’s second minimum wage increase.





6. Difference-in-differences

In this section our comparisons look at differences in differences. We take into account differences in each individual industry before and after the policies relative to our comparison areas and differences with overall private sector trends in those areas.

[We again omit figures for retail trade and other sectors and focus only on the full-service and limited service restaurant industries. Figures for the omitted industries are available from the authors upon request.]

Figure 12a shows that wage growth in Pasadena’s full-service restaurants exceeded overall private sector wage growth during the minimum wage phase-in quarters of 2016, and by more than was the case in the comparison areas. This higher wage growth is less evident after the 2017 Pasadena increase.

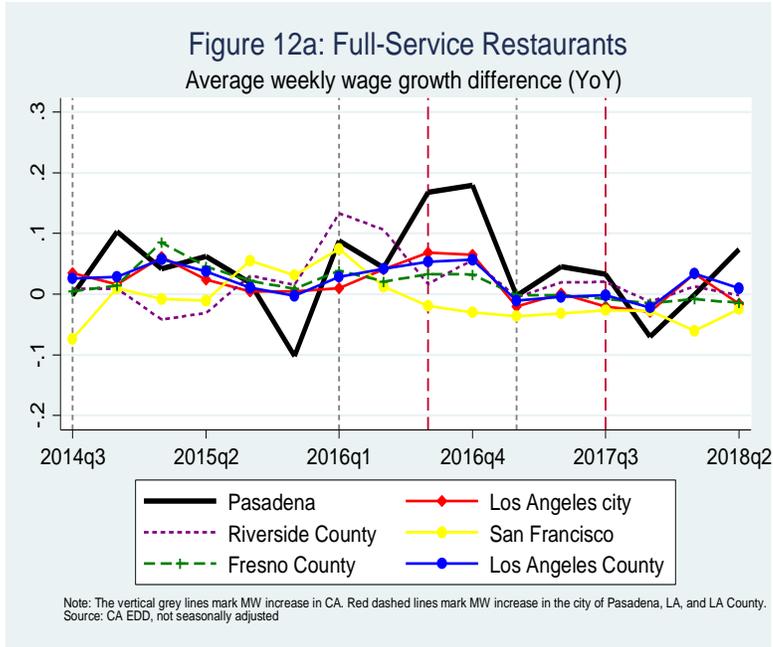
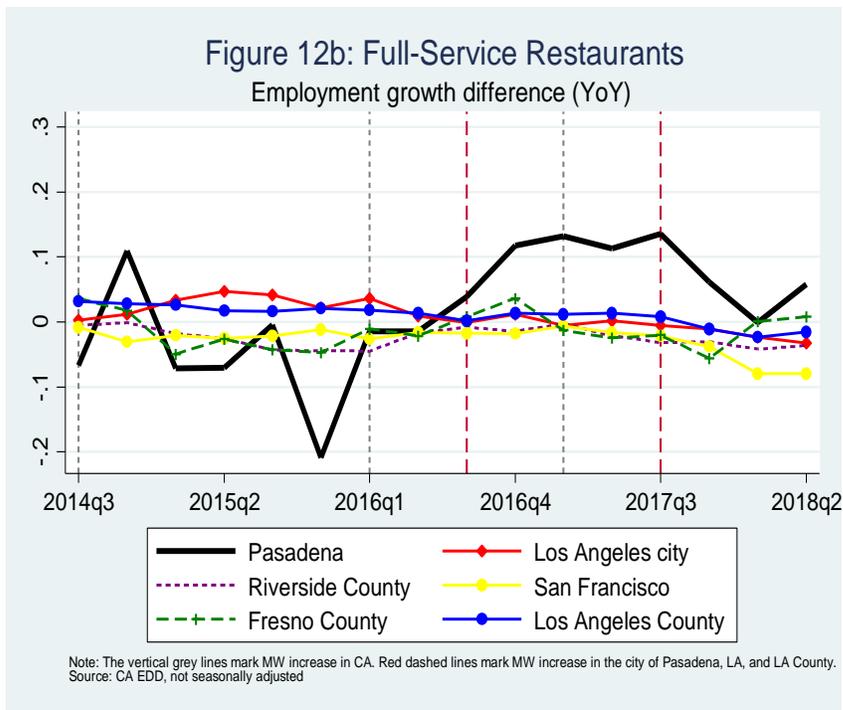


Figure 12b shows a substantial amount of employment growth in Pasadena’s full-service restaurants, relative to overall private sector employment growth in the city, coincident with the state and local minimum wage increases. This higher rate of employment growth is not visible for the other comparison areas.



Limited-service restaurants Figure 13a indicates that wage growth in Pasadena’s limited service restaurants exceeded that in the city’s overall private sector. This increase is evident

after the city's first minimum wage increase, but not after the second. Such wage growth is not evident in the four comparison areas.

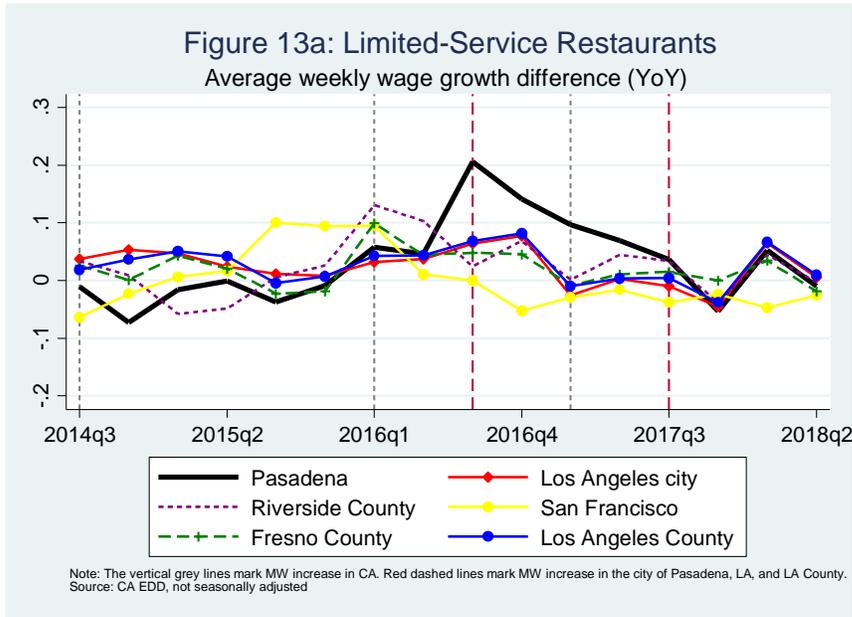
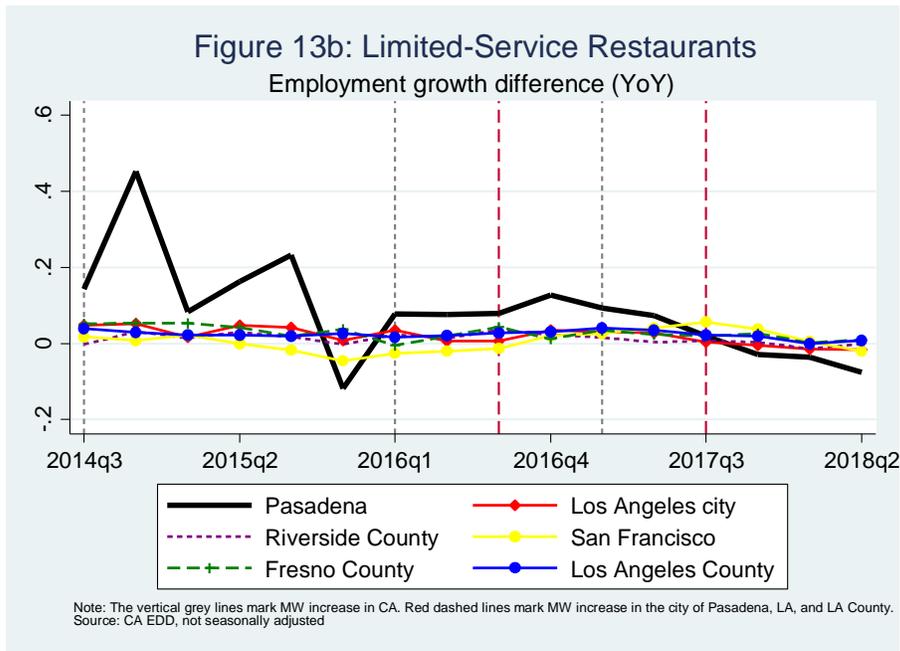


Figure 13b indicates that employment grew faster in Pasadena's limited-service restaurants than for the overall private sector—but not after the city's second minimum wage increase. Employment in limited-service restaurants in the comparison areas grew at the same rate as growth in private sector employment.



The takeaway from Figures 13a and 13b: The minimum wage increases are associated with pay increases, but not employment declines, among Pasadena's limited-service restaurants.

7. Conclusions

How has Pasadena fared after its citywide minimum wage increases?

The evidence in the first section of this report suggests that the local economy has continued to grow, and at about the same rate as Los Angeles County and the greater Los Angeles metropolitan area. No breaks in trend occur at the time of the minimum wage increases.

This result is not surprising, since the principal effects of minimum wage policies are concentrated in only a small number of industries. This result is also not surprising because Pasadena is embedded in a much larger economic region.

The studies reviewed in the second section of this report attempt to isolate the causal effects of minimum wages from other changes taking place at the same time. Such studies increasingly show that minimum wage increases have increased the earnings of low-wage workers and have not significantly reduced their employment. These results pertain even for recent citywide minimum wage increases in the \$10 to \$13 range.

Our detailed analysis of wage and employment trends in full-service and limited-service restaurants examined simple descriptive trends, comparisons with private sector trends in Pasadena, and comparisons with trends in these industries in other areas. A similar picture appears in each of these. Minimum wages have increased the pay of Pasadena workers in these industries and has not thus far visibly reduced their employment levels.

Some caution is necessary. First, the data available for detailed industries in a city the size of Pasadena is inherently noisier than for larger areas. We cannot be certain how such noise has affected our findings. Second, the data and the economic environment do not permit a rigorous causal analysis that can eliminate confounding factors. The analysis presented here is therefore suggestive rather than definitive.

Nonetheless, the results from our detailed analysis of restaurants are also not surprising, for two reasons. First, the adjustment mechanisms to minimum wages-- briefly described here in the literature review section— indicate that the net effects of minimum wages on employment are much smaller than some observers suggest. Second, spillovers from the minimum wage increases in the much larger Los Angeles labor market have substantial effects on Pasadena's low-wage labor markets and businesses. This consideration suggests that the data on pay and employment growth in Pasadena's low-wage industries that we have analyzed here may reflect more than just the effects of Pasadena's minimum wage policy.

In any case, the results here should mitigate concerns about possible negative effects of Pasadena's minimum wage policy thus far. Policy makers should also take into account the effects of not continuing Pasadena's minimum wage phase-ins. If minimum wages are higher in nearby Los Angeles, some Pasadena businesses may find it more difficult to recruit and retain workers.

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9. Appendix A: Comparisons with other small industries

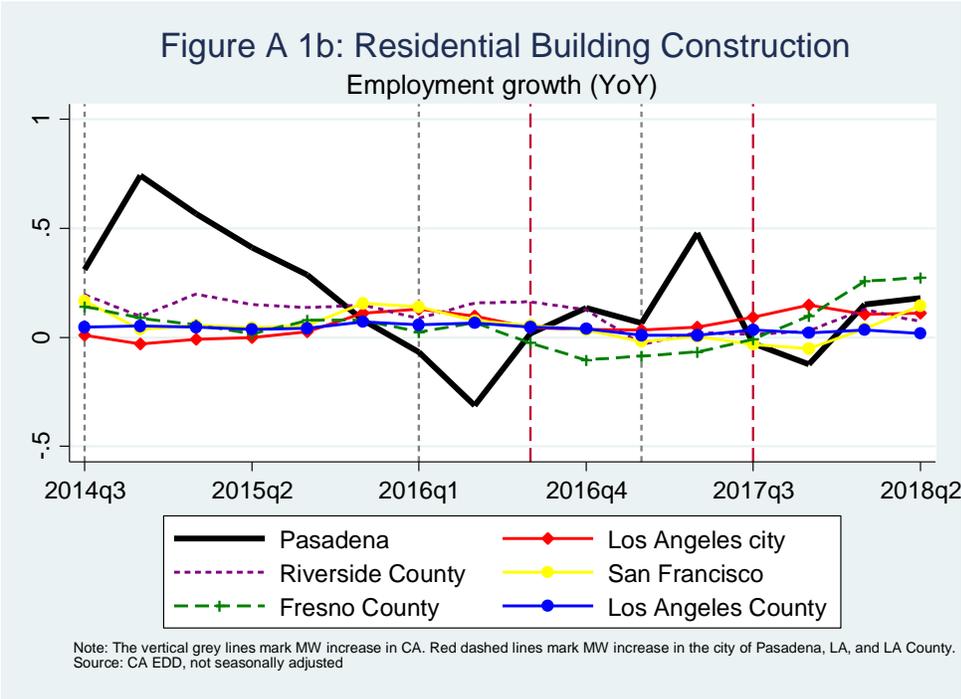
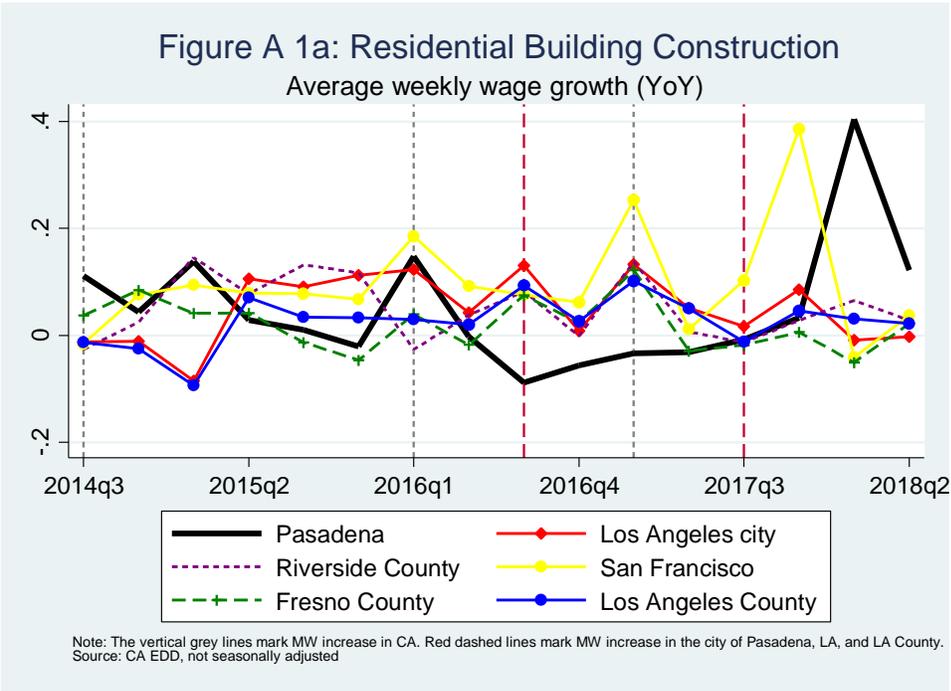
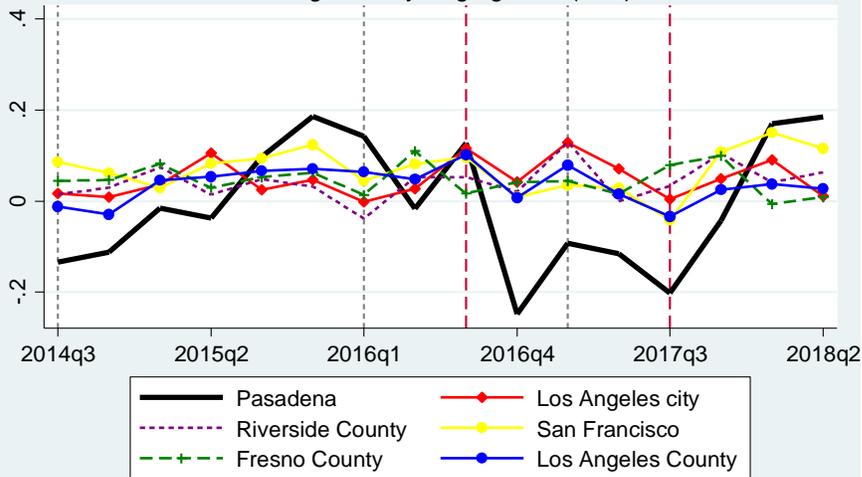
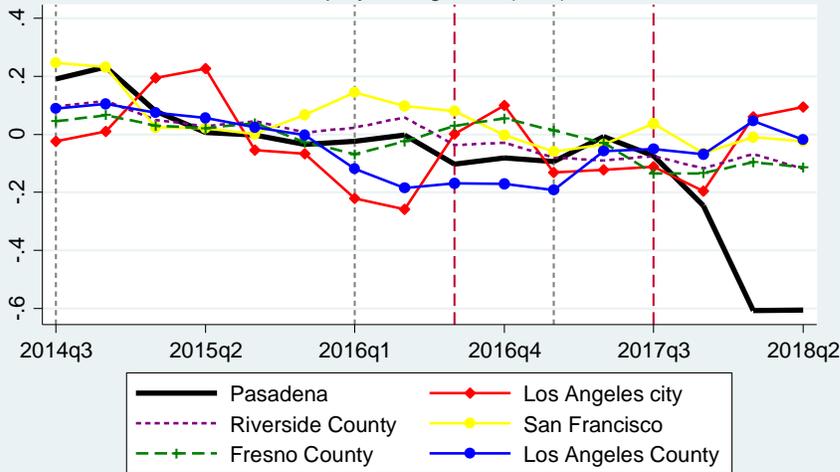


Figure A 2a: Cafeterias, Grill Buffets, and Buffets
Average weekly wage growth (YoY)



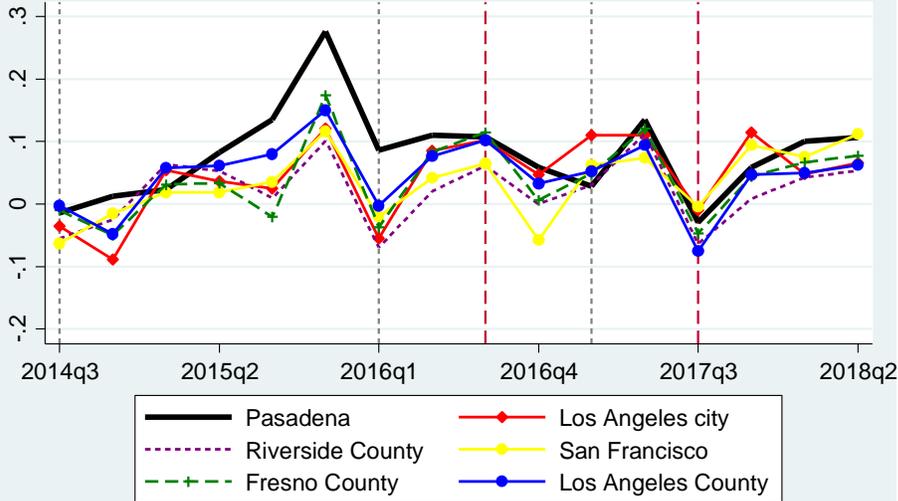
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure A 2b: Cafeterias, Grill Buffets, and Buffets
Employment growth (YoY)



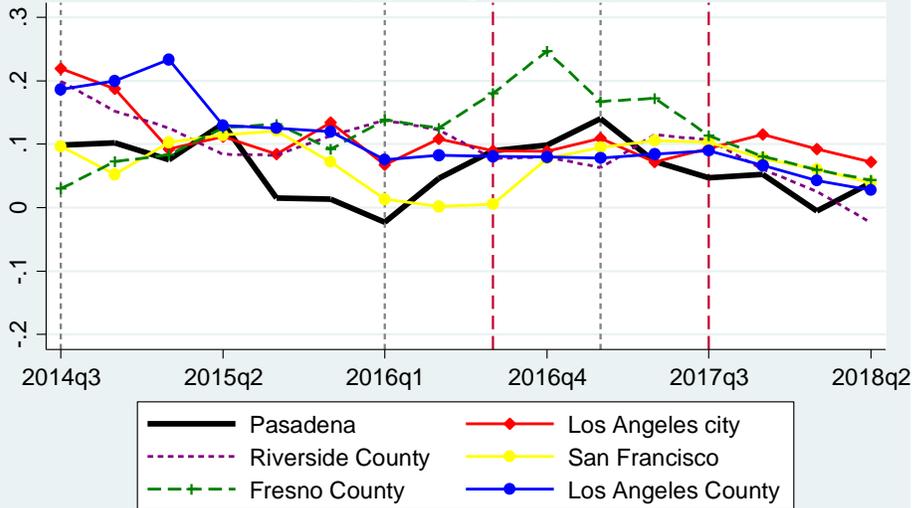
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure A 3a: Snack and Nonalcoholic Beverage Bars
Average weekly wage growth (YoY)



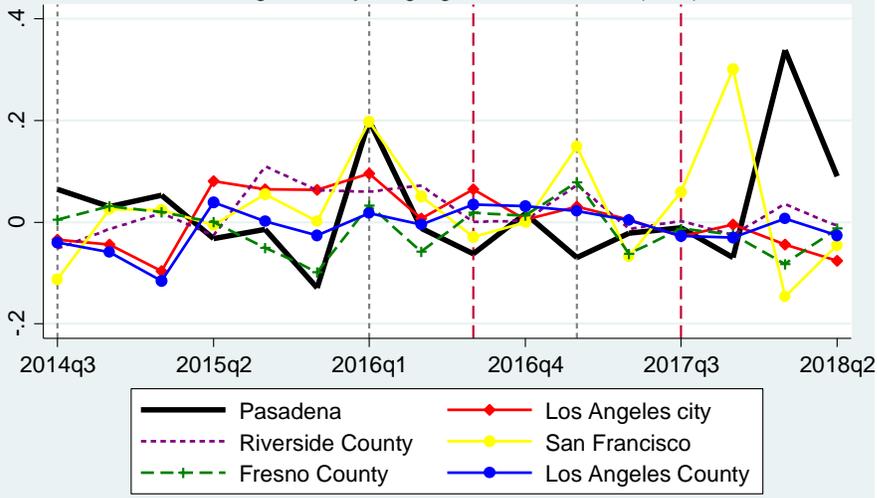
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Source: CA EDD, not seasonally adjusted

Figure A 3b: Snack and Nonalcoholic Beverage Bars
Employment growth (YoY)



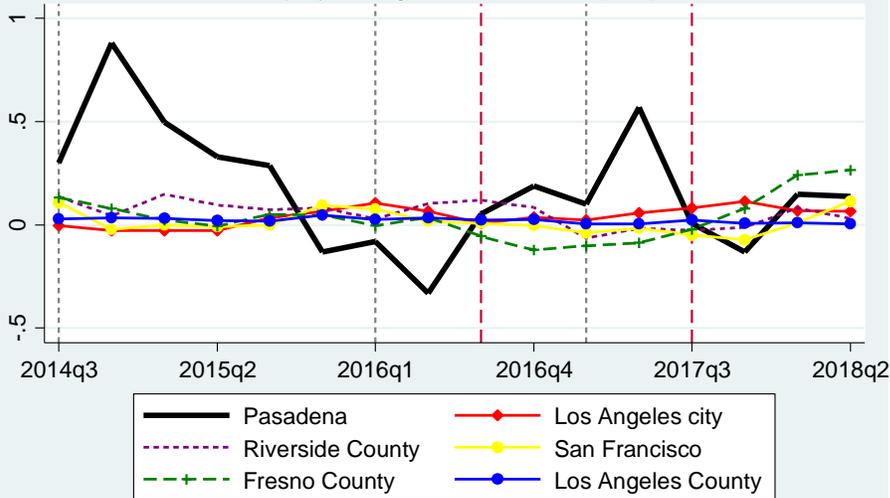
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County.
Source: CA EDD, not seasonally adjusted

Figure A 4a: Residential Building Construction
Average weekly wage growth difference (YoY)



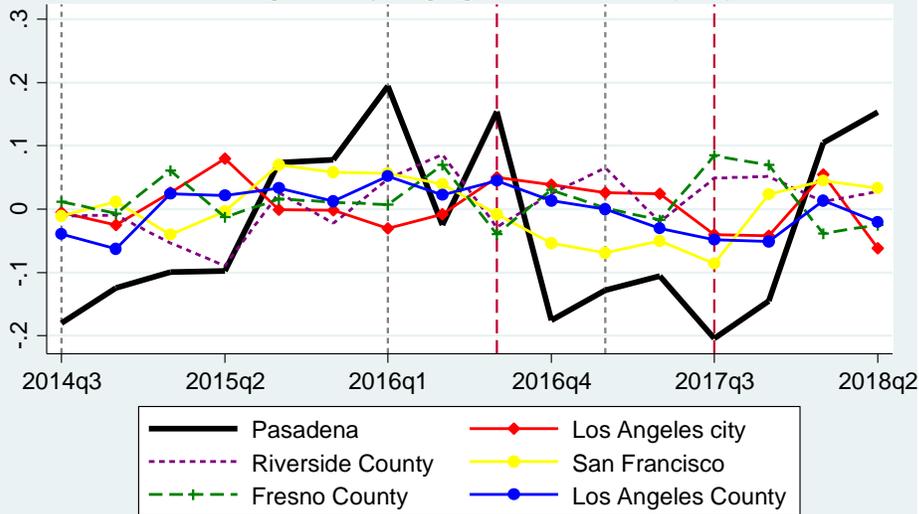
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County.
Source: CA EDD, not seasonally adjusted

Figure A 4b: Residential Building Construction
Employment growth difference (YoY)



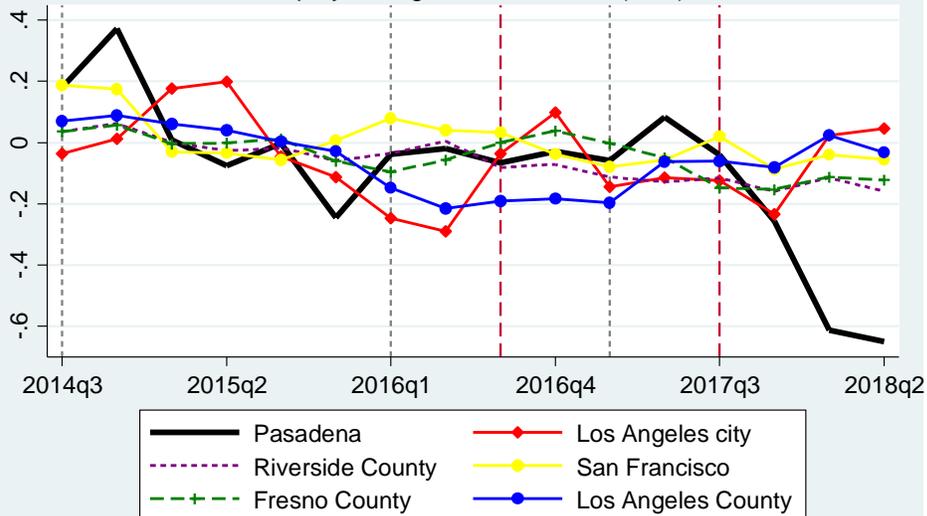
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Source: CA EDD, not seasonally adjusted

Figure A 5a: Cafeterias, Grill Buffets, and Buffets
Average weekly wage growth difference (YoY)



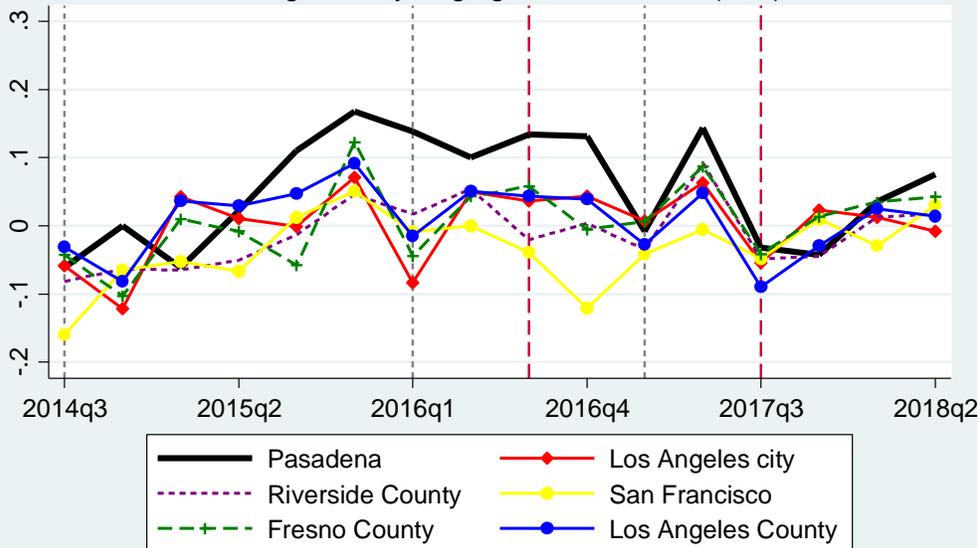
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Source: CA EDD, not seasonally adjusted

Figure A 5b: Cafeterias, Grill Buffets, and Buffets
Employment growth difference (YoY)



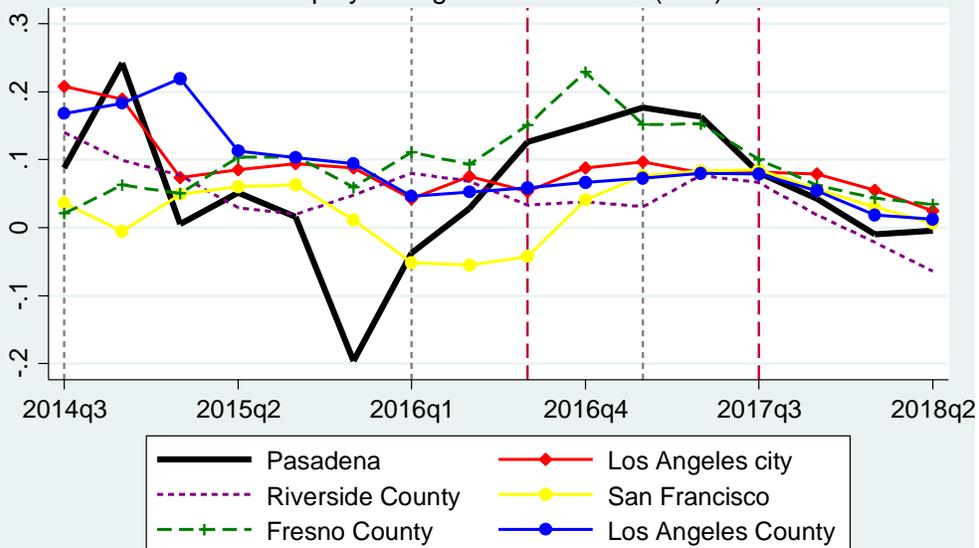
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Source: CA EDD, not seasonally adjusted

Figure A 6a: Snack and Nonalcoholic Beverage Bars
Average weekly wage growth difference (YoY)



Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure A 6b: Snack and Nonalcoholic Beverage Bars
Employment growth difference (YoY)



Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

10. Appendix B: Comparisons to Burbank, Glendale, Orange and Santa Monica

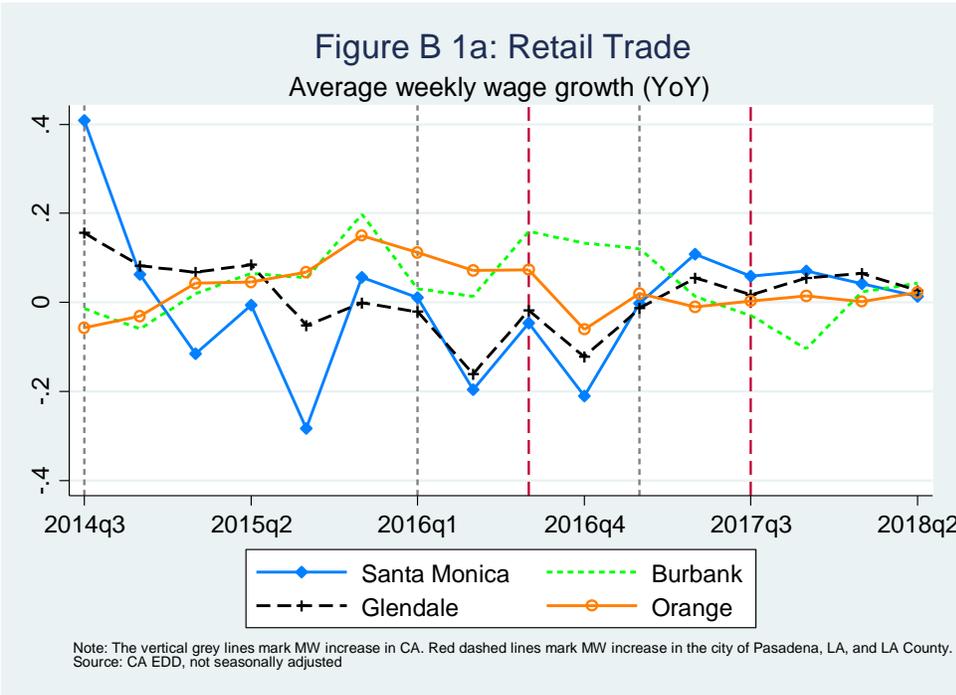
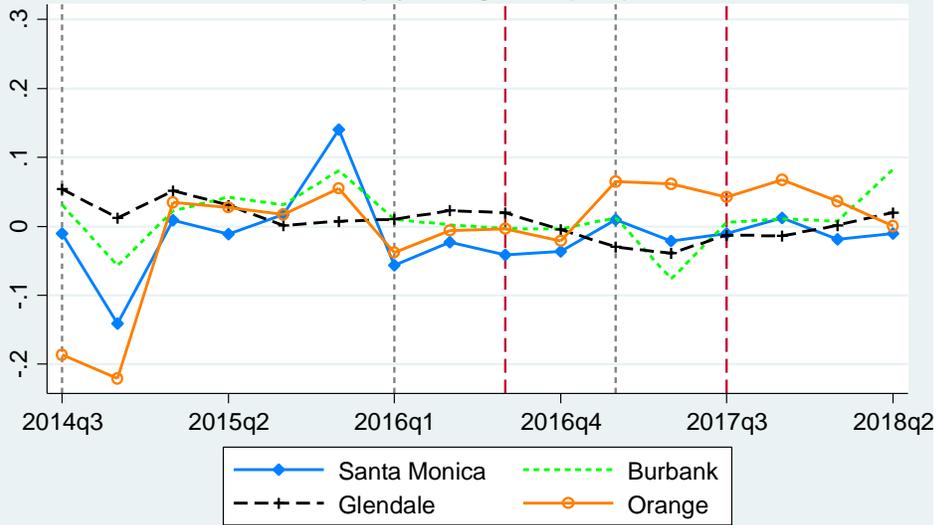
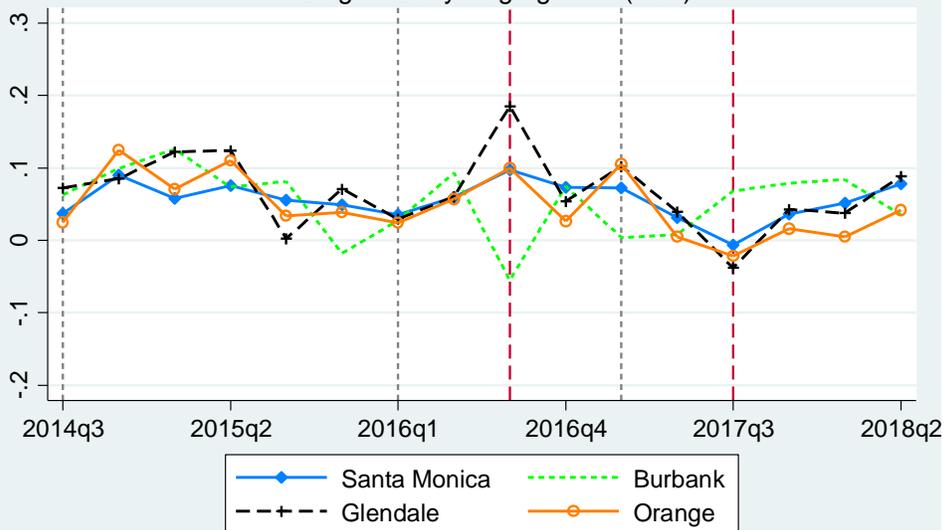


Figure B 1b: Retail Trade
Employment growth (YoY)



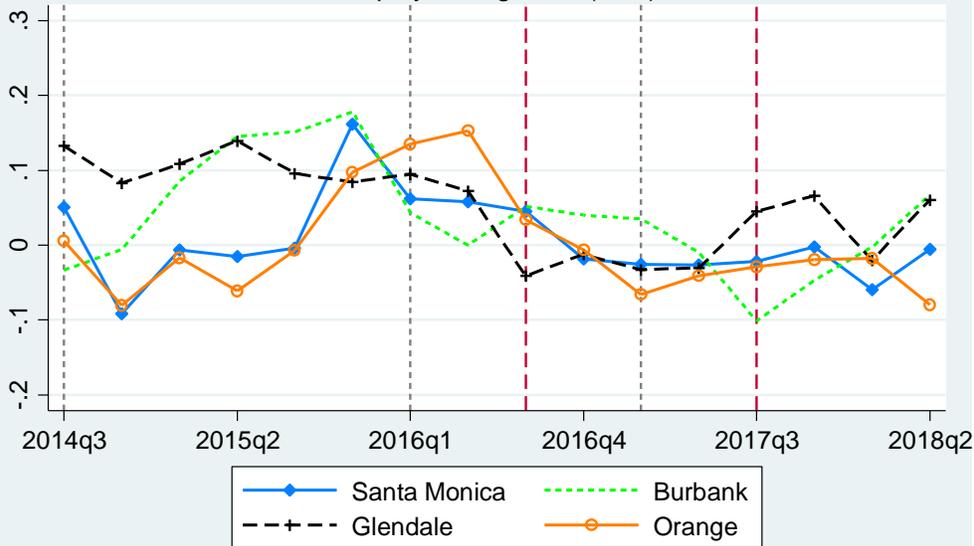
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 2a: Full-Service Restaurants
Average weekly wage growth (YoY)



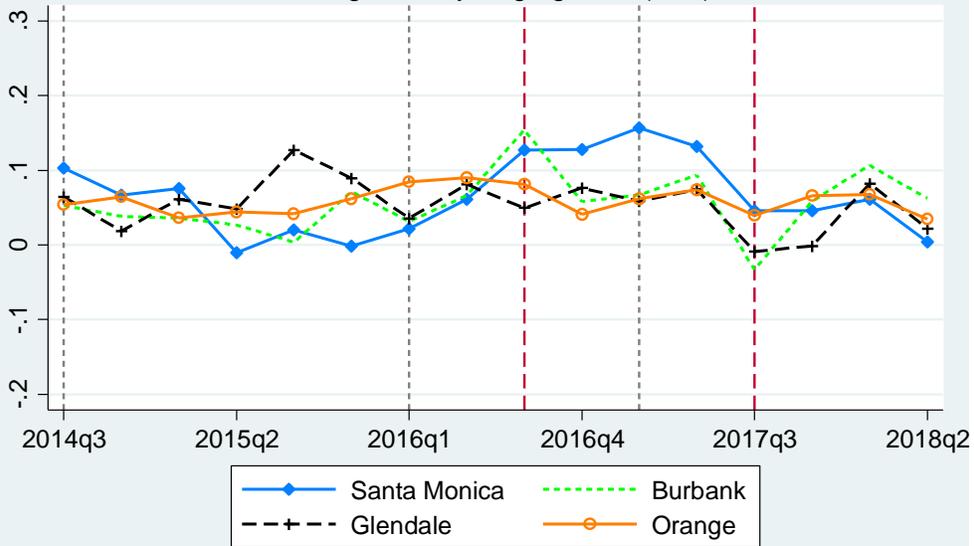
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 2b: Full-Service Restaurants
Employment growth (YoY)



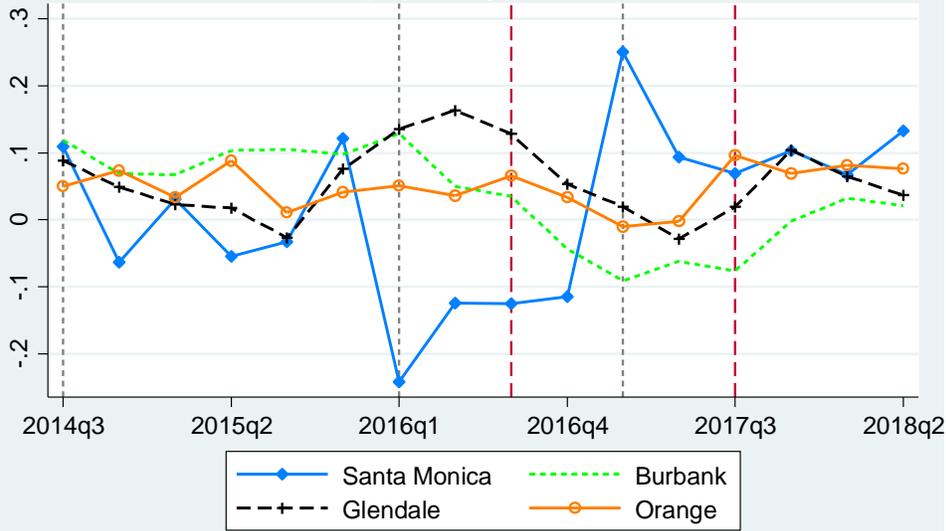
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 3a: Limited-Service Restaurants
Average weekly wage growth (YoY)



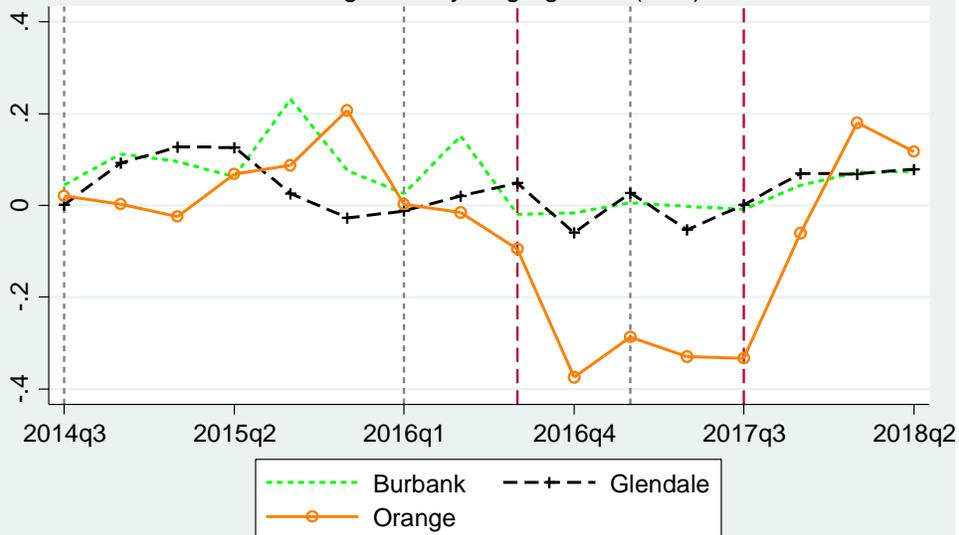
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 3b: Limited-Service Restaurants
Employment growth (YoY)



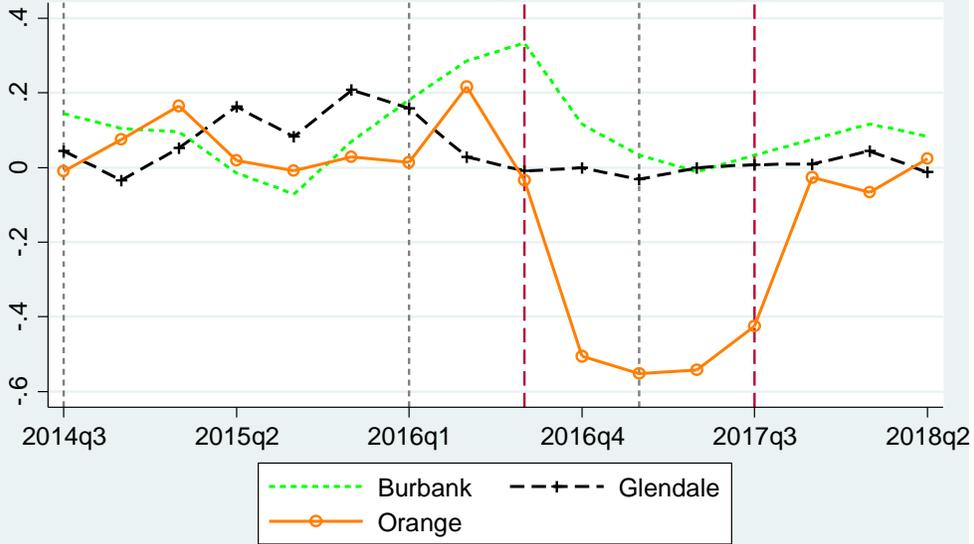
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 4a: Home Health Care Services
Average weekly wage growth (YoY)



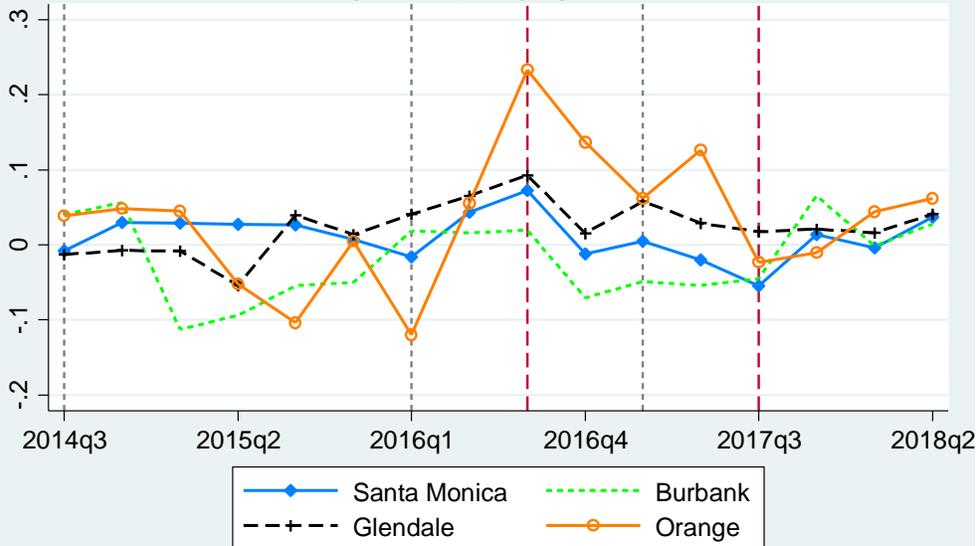
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 4b: Home Health Care Services
Employment growth (YoY)



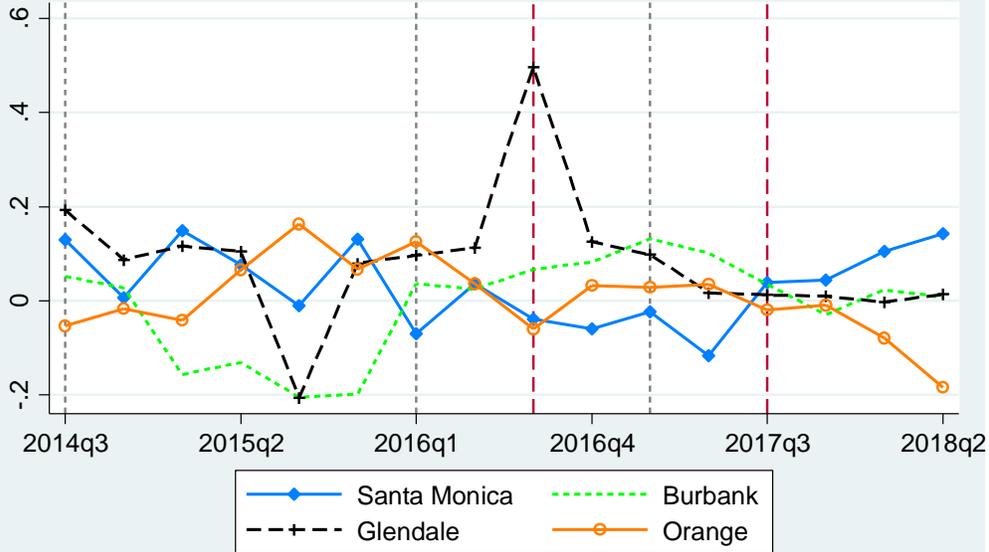
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 5a: Child Day Care Services
Average weekly wage growth (YoY)



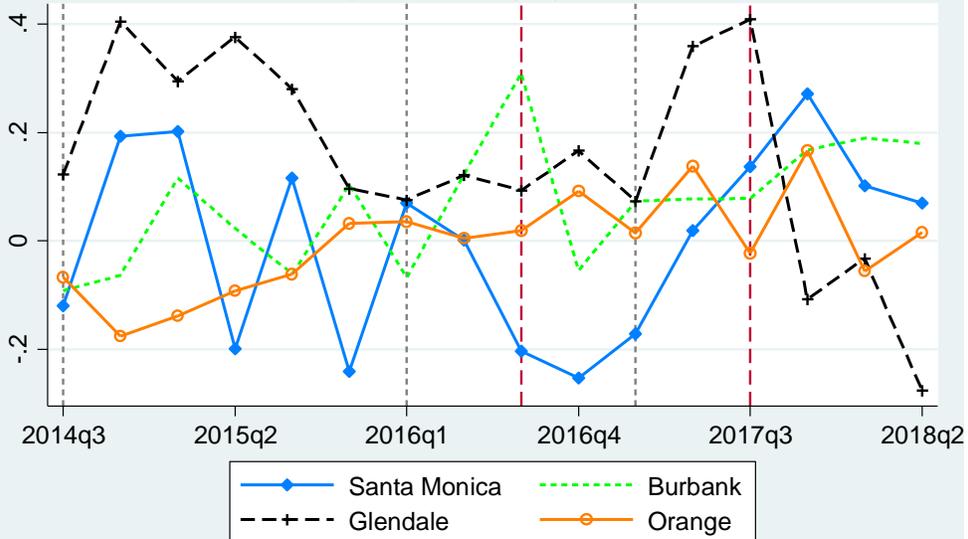
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 5b: Child Day Care Services
Employment growth (YoY)



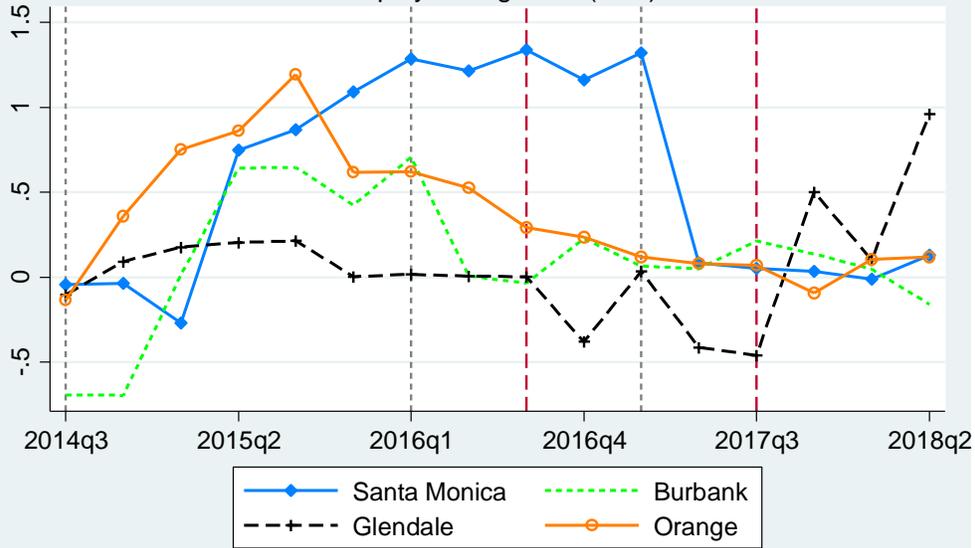
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 6a: Janitorial Services
Average weekly wage growth (YoY)



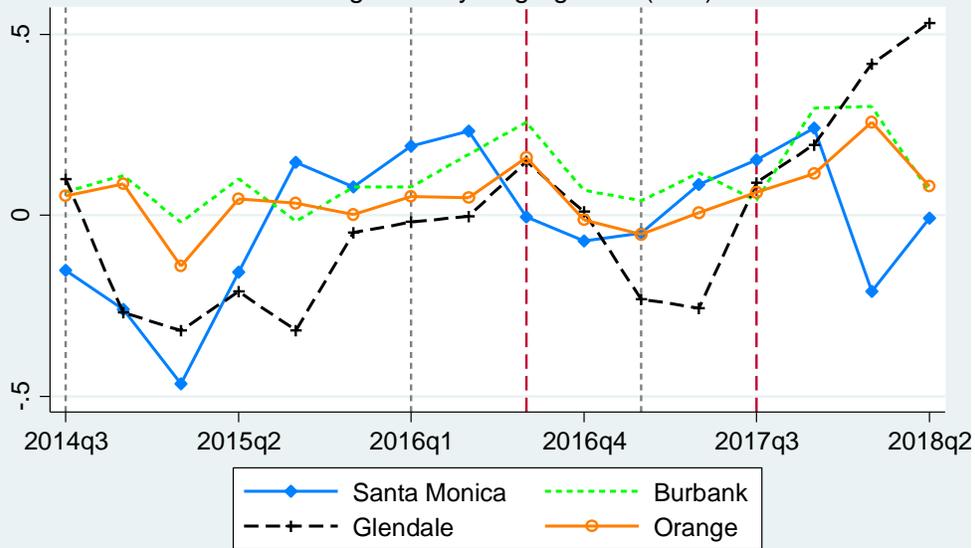
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 6b: Janitorial Services
Employment growth (YoY)



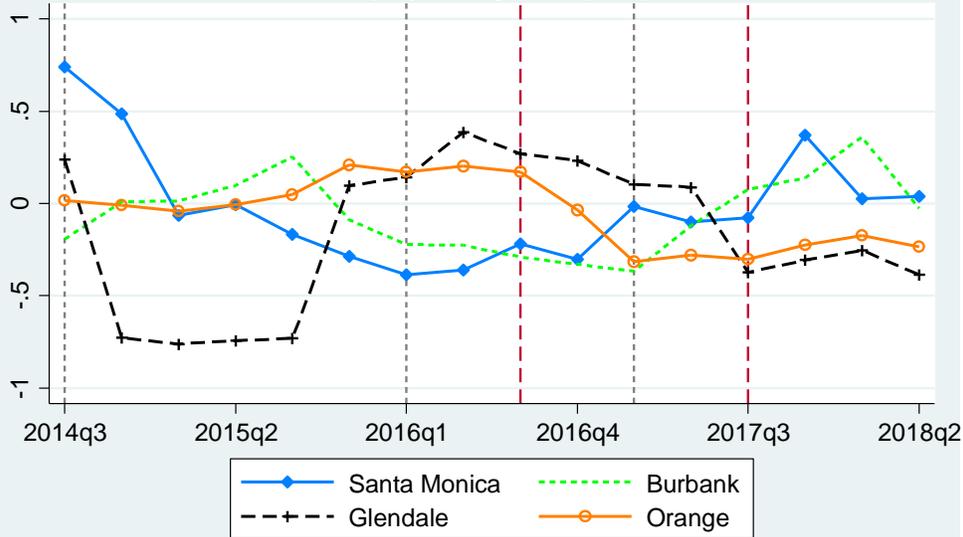
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County.
Source: CA EDD, not seasonally adjusted

Figure B 7a: Car Washes
Average weekly wage growth (YoY)



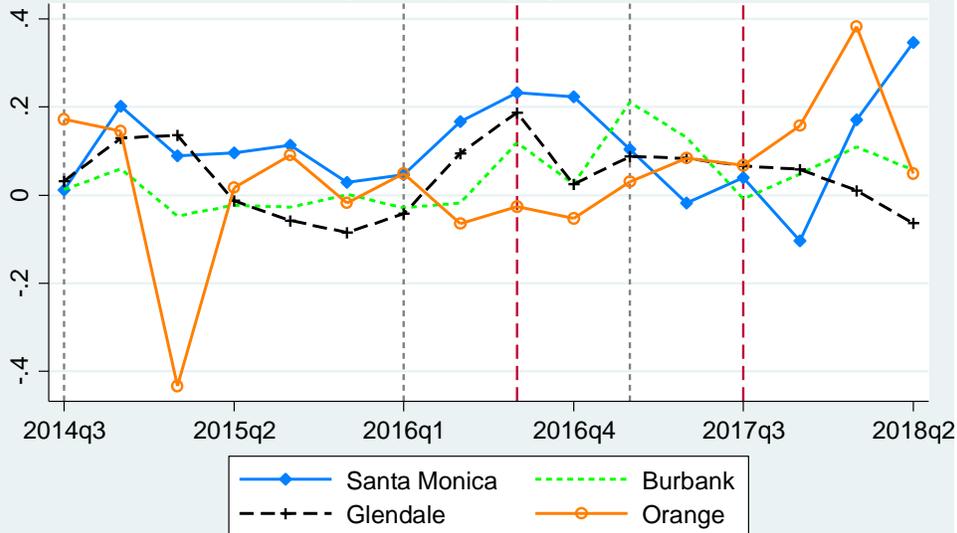
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County.
Source: CA EDD, not seasonally adjusted

Figure B 7b: Car Washes
Employment growth (YoY)



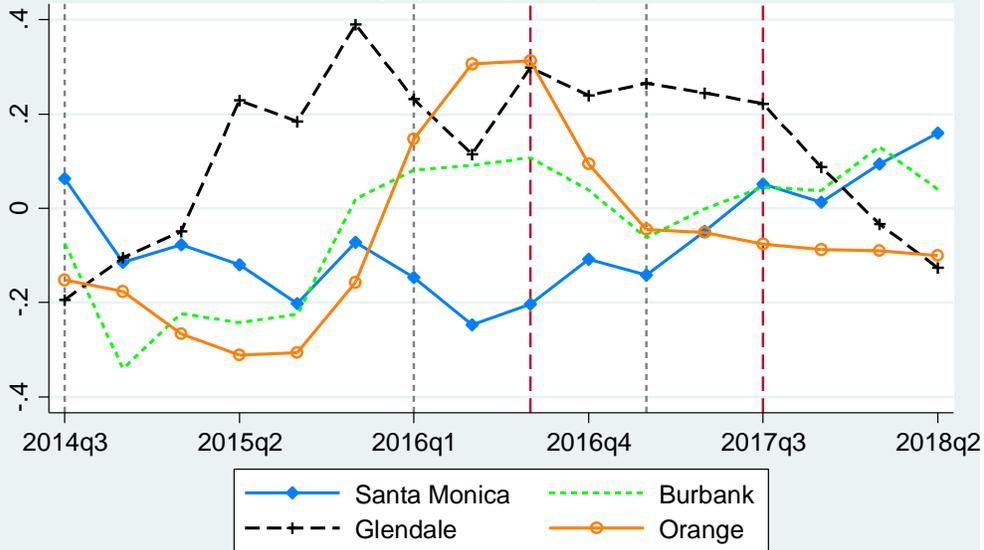
Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 8a: Residential Building Construction
Average weekly wage growth (YoY)



Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted

Figure B 8b: Residential Building Construction
Employment growth (YoY)



Note: The vertical grey lines mark MW increase in CA. Red dashed lines mark MW increase in the city of Pasadena, LA, and LA County. Source: CA EDD, not seasonally adjusted