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# The impact of paid sick leave laws on consumer and business bankruptcies

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## Abstract

This paper examines how missed income due to illness impacts household fragility. Specifically, it shows that paid sick leave laws, which provide households insurance against illness-related income shocks, reduce consumer bankruptcy. Using a panel dataset at the county-quarter level, this paper exploits the geographic and temporal variation in the adoption of paid sick leave laws to implement a difference-in-differences and event study analysis. It finds that paid sick leave laws reduce consumer bankruptcy filings by approximately 11%; this effect is seen within three quarters of the law's implementation and remains constant in magnitude and significance thereafter. As paid sick leave laws may come at a cost to businesses, this paper also examines the impact of such laws on business bankruptcy filings—it shows that paid sick leave laws have little to no impact on business bankruptcy filings.

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## INTRODUCTION

On average, employees miss 14 days of work each year due to illness (Agency for Healthcare Research and Quality, 2010). Furthermore, nearly one in four workers report that they have lost a job or were threatened with job termination for taking time off due to illness (Smith & Kim, 2010). If households are not fully insured against these illness-related income shocks, they can lead to financial distress. This paper explores whether paid sick leave laws can reduce household fragility, as measured by consumer bankruptcy. However, such laws may come at a cost to businesses. Therefore, this paper also examines the impact of paid sick leave laws on business bankruptcies. Understanding the impact of paid

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sick leave laws is not just important for academics, but also for policy debates about designing and administering public insurance programs.

To be sure, a large literature has examined the relationship between health and bankruptcy. However, most of the previous literature has concentrated on whether out-of-pocket health care costs cause consumer bankruptcy. Indeed, much of the previous policy work has focused on whether health insurance, which mitigates out-of-pocket costs, reduces bankruptcies. This paper investigates a different avenue through which health may impact bankruptcy—how missed income due to illness impacts bankruptcy.

Paid sick leave laws allow workers to accrue paid sick time, which can be used for a variety of reasons including recovering from one's own illnesses, accessing preventive care, or providing care to a sick family member. In addition to providing income stability, these laws provide employment security as they prohibit firms from firing workers for taking time off due to illness. Staying home when ill is beneficial to the worker as it reduces the extension or worsening of an illness. Moreover, these laws can be beneficial to firms as sick workers have reduced on-the-job performance. Furthermore, by encouraging workers to stay home when they are ill, paid sick leave laws improve public health by slowing the spread of contagious illnesses to customers, coworkers, and others. Yet despite their benefits, the United States does not have a national paid sick leave law—indeed, the United States is only one of two OECD countries without a federal paid sick leave law (Callison & Pesko, 2017). Instead, the passage of paid sick leave laws has been left to state and local governments. As a result, 25% of workers do not have access to paid sick leave (Bureau of Labor Statistics, 2019). Indeed, many of the workers without access to paid sick leave are economically insecure workers (Bureau of Labor Statistics, 2019). Without paid sick leave laws, these workers face further economic risk—facing possible job termination in addition to lost pay—when they take time off to care for their own health or to provide care for family members. However, many argue that providing paid sick leave is costly to firms. Not only do these laws require firms to pay workers when they are out ill, they also may require firms to make costly adjustments to their work schedules. These costs could be magnified by workers shirking, that is, workers taking advantage of the compensated time off to stay home from work when they are not actually ill.

This paper exploits the geographic and temporal variation in the adoption of paid sick leave laws to examine their impact on both consumer and business bankruptcy filing rates. Using a panel dataset of quarterly observations at the county level, it employs a difference-in-differences and event study analysis. The difference-in-differences methodology shows that paid sick leave laws decrease consumer bankruptcy filings by 0.139 bankruptcies per 1000 persons per quarter, which represents an 11% decrease in the consumer bankruptcy filing rate. Event study analysis confirms that control and treatment counties follow similar pretreatment trends, thus validating the parallel trends assumption. It also

shows that the decrease in the consumer bankruptcy filing rate can be seen within three quarters of the law's implementation and that the effect remains constant in magnitude and significance thereafter. Results are larger where paid sick leave mandates are more generous (as measured by the rate at which paid sick leave can be accrued, the number of hours that can be accrued each year, as well as the vesting period). To explore these results in more detail, the paper investigates the mechanisms through which paid sick leave laws aid households. I show that the employment security (preventing workers from being fired when they take time off for being ill) and income stability (on average, providing workers with 40 h of paid sick leave each year) they provide is particularly beneficial to financially fragile workers, underscoring the precarious financial position that many consumers are in.

These results are robust to numerous specification checks. To alleviate concerns about spatial heterogeneity, I show that the estimated effect remains similar in magnitude and significance when I include various location-specific time effects. In addition, the results are robust to alternative approaches that address two-way fixed effect (TWFE) event study concerns (Goodman-Bacon, 2021). This robustness check indicates that the staggered adoption of paid sick leave laws is likely not problematic in this setting. Moreover, results are not biased by the unbalanced nature of the panel dataset with respect to event time, by the lengthy pretreatment sample period, or by the nationwide downward trend in bankruptcy rates. Results persist when the treatment group is augmented to include not only the 327 counties that adopt a paid sick leave law, but also the 185 counties that neighbor them, thus accounting for the sub-population of workers that commute across county lines. Similarly, results persist when identification is based only on state-level laws.

In addition to highlighting the benefit paid sick leave laws provide consumers, this paper does not find evidence of these laws having a negative impact on businesses. Their estimated impact on business bankruptcies is statistically insignificant, regardless of the generosity of the mandate. Business bankruptcy is, admittedly, an extreme outcome. Therefore, this paper also explores other ways in which paid sick leave laws may impact business dynamics including exit and entry. Again, this paper finds that paid sick leave laws do not have a statistically significant impact these other measures of business dynamics.

## INSTITUTIONAL BACKGROUND

### Consumer Bankruptcy in the United States

A well-established literature has shown the pervasiveness of financial fragility among American households (Lusardi et al., 2011). Estimates showed that in 2019 (the last year included in my panel dataset), at least 50% of households

were living paycheck to paycheck (Glink & Tamkin, 2020) with 12% of American adults being incapable of paying a \$400 emergency expense (Board of Governors of the Federal Reserve System, 2019). In addition, 10% of households reported that they struggled to pay their bills due to varying income (Board of Governors of the Federal Reserve System, 2019). The bankruptcy system is one of the policy tools intended to assist consumers in financial distress.

Between 2010 and 2019, the time period studied here, approximately 10 million consumers filed for bankruptcy. When filing for bankruptcy, consumers can choose to file under Chapter 7 or Chapter 13 of the Bankruptcy Code.<sup>1</sup> In a Chapter 7 bankruptcy, consumers must give up any assets above their state's exemption limits. These exemption levels, which vary dramatically across states, detail how much property is protected when filing for bankruptcy. (For more details about state exemption laws and their impact on bankruptcy, see Miller, 2019.) Once any nonexempt assets are collected and liquidated, the proceeds are distributed among the consumers' creditors. After this disbursement, any unpaid unsecured debts are discharged (legally forgiven). Because most consumers filing a Chapter 7 do not have any nonexempt assets—that is, because most consumers in a Chapter 7 bankruptcy do not have assets above the state's exemption level—Chapter 7 bankruptcies are usually fairly quick, lasting 6 months on average. In a Chapter 7 bankruptcy, the consumer may keep all their future income.

Alternatively, consumers can file for bankruptcy under Chapter 13 of the Bankruptcy Code. In a Chapter 13 bankruptcy, consumers keep all their assets, regardless of their state's exemption level. Instead, consumers make payments out of their disposable income over a 3- to 5-year period. Proceeds from the Chapter 13 payment plan are distributed among the consumers' creditors. These payments must be at least the value that creditors would receive in Chapter 7. Upon completion of the plan, any remaining unsecured debt is discharged. However, if the consumer is unable to complete their repayment plan, which occurs in over two-thirds of cases, the case will either be converted to a Chapter 7 bankruptcy or dismissed. If the case is ultimately dismissed, the consumer is once again liable for any remaining debts.

Regardless of chapter choice, for consumers in financial distress, bankruptcy has many advantages. First, as mentioned above, through the bankruptcy process, consumers can discharge much of their unsecured debt, including credit card debt and medical debt. Another aspect of the bankruptcy process that can be beneficial to consumers is the automatic stay. Upon filing for bankruptcy, an automatic stay is immediately implemented, temporarily halting all collection activities such as wage garnishments and foreclosures. The magnitude of this benefit depends on the consumers' state—for example, state garnishment laws

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<sup>1</sup>Consumers can also file under Chapter 11 of the Bankruptcy Code. However, during the time period studied here, less than 1% of consumers filed under Chapter 11. Therefore, it is not discussed in the text of this paper.

detail what portion of a consumer's income can be garnished if they do not repay their debts. Debt discharge and the automatic stay are just two of the advantages of bankruptcy. Bankruptcy also allows consumers to begin rebuilding their credit.

Although filing for bankruptcy has many advantages, it is a costly endeavor. The magnitude of these costs depends on the bankruptcy chapter. For example, on average attorneys charge approximately \$1200 to file a Chapter 7; this fee is paid up front. On the other hand, for a Chapter 13 bankruptcy, attorneys typically charge approximately \$3200, which can be paid over time through the Chapter 13 repayment plan. In addition, a consumer must pay court fees, which total \$338 for Chapter 7 and \$310 for Chapter 13. Furthermore, there are the nonpecuniary costs of bankruptcy, including the stigma of bankruptcy and future restrictions from the credit market. Moreover, after receiving a discharge, debtors are not eligible to receive another discharge for several years.

The optimal bankruptcy chapter for any consumer depends on very detailed aspects of their financial situation. In general, Chapter 7 is intended for use by low-income consumers with few assets, while Chapter 13 is best suited for consumers with consistent income and assets above their state's exemption level.<sup>2</sup> However, the prevalence of Chapter 7 versus Chapter 13 differs by locality and is not always determined by the debtor's financial situation. For example, Lefgren et al. (2010) find that the difference is largely explained by the consumer's attorney, with lawyers' steering consumers toward the more profitable chapter. In addition, Braucher et al. (2012) and Morrison et al. (2020) find that African Americans are overrepresented in Chapter 13. Moreover, Foohey et al. (2017) show that Chapter 13 is often used by consumers who need to finance their attorney fees through the repayment plan.

## The many causes of consumer bankruptcy

A large literature has examined the many causes of bankruptcy. Surveys conducted by the Consumer Bankruptcy Project revealed that a job problem is one of the most common causes of bankruptcy—when asked to self-identify the reason for filing for bankruptcy, two-thirds of filers listed a job problem as one of the reasons (Sullivan et al., 2000). Sullivan et al. (2000) detailed how, in particular, layoffs and firings create huge financial vulnerability. Even if a worker finds another job, a period without income may create insurmountable debts, especially if the worker is financially unstable to begin with. Similarly, Keys (2018) found that consumers are three times more likely to file for bankruptcy in the

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<sup>2</sup>The Bankruptcy Abuse Prevention and Consumer Protection Act of 2005 amended the Bankruptcy Code to include a means test that states that only filers whose income over the previous 6 months is below the median for their state automatically qualify for a Chapter 7 discharge. However, Dickerson (2006) argued that the means test did not restrict consumers' choice of chapters.

year immediately following a job loss. This income volatility creates a financial “sweatbox,” during which consumers often reduce their savings and sell their assets as they try to manage their debts (Foohey et al., 2018). Indeed, by the time they file for bankruptcy, many consumers are so cash-strapped that they are unable to pay their attorney fees (Lupica, 2012).

Particularly relevant for this paper are the prior works that highlighted the intersection of health and bankruptcy. In one of the most well cited papers on this topic, Himmelstein et al. (2005) contended that more than half of all consumer bankruptcies are “medical bankruptcies.” Using anecdotal data from a survey of consumers who filed for bankruptcy in 2001, the authors broadly defined a “medical bankruptcy” as debtors who either (1) cited illness or injury, birth/addition of a new family member, death in the family, alcohol or drug addiction, or uncontrolled gambling as the reason for filing for bankruptcy; (2) lost at least 2 weeks of work-related income because of illness/injury; (3) reported uncovered medical bills exceeding \$1000 in the past years; or (4) mortgaged a home to pay medical bills.<sup>3</sup> And while the conclusions reached by this paper have been hotly debated (Dranove & Millenson, 2006), in part because of the author’s broad definition of medical bankruptcy, and in part for its ability to prove causality, it provides insight into the many channels through which health may impact bankruptcy, most notably through out-of-pocket medical costs, adverse health events, and loss of income.

Most of the literature on medical bankruptcies has examined the cost channel, examining how out-of-pocket health care costs impact bankruptcy (Dobkin et al., 2018). Indeed, much of the policy work has examined whether health insurance, which mitigates out-of-pocket health care costs, can reduce bankruptcy (Caswell & Waidmann, 2017; Gross & Notowidigbo, 2011; Mazumder & Miller, 2016). However, less work has been done to explore how missed income due to illness impacts bankruptcy. To date, this topic has primarily been explored by Himmelstein et al. (2019). Using survey data, Himmelstein et al. (2019) found that 44% of bankrupt consumers self-identified missed income due to illness as one of the causes of their bankruptcy. However, survey data are not enough—this paper exploits the geographic and temporal variation in the adoption of paid sick leave laws to explore this relationship further.

## **Paid sick leave laws**

In 2006, San Francisco passed the nation’s first paid sick leave law.<sup>4</sup> Since that time, many cities, counties, and states have followed suit. Again, these laws

<sup>3</sup>Consistent statistics were calculated by Himmelstein et al. (2019) using survey data from consumers who filed for bankruptcy between 2013 and 2016.

<sup>4</sup>The law became effective on February 5, 2007.

allow workers to accrue paid sick time, which can be used for a variety of reasons including recovering from one's own illness, accessing preventive care, or providing care to a sick family member. Furthermore, these laws protect workers from being fired for taking this paid time off due to illness.

As seen in Table 1, these laws have varied provisions. For example, each locality has specified an accrual rate, that is, the minimum rate at which sick leave is accrued per hour worked. Accrual rates vary from 1 h for every 30 worked (the median rate) to 1 h for every 52 h worked. It should be noted that the laws specify the minimum accrual rate—employers are allowed to offer more generous accrual rates, in which workers can accrue leave faster. Paid sick laws also specify the minimum amount of leave that workers must be allowed to accrue each year. The typical locality specifies that employees must be allowed to accrue at least 40 h per year. However, this provision varies from 24 h per year to 80 h per year. Finally, Table 1 shows the vesting period specified by paid sick leave laws—each locality specifies the maximum amount of time an employee must wait before they can use their paid sick leave, with the median vesting period being 90 calendar days. At one extreme, New York City allows employees to begin using their leave immediately and at the other extreme, employees in Vermont can be required to wait up to 1 year before using their accrued paid sick leave.

### **The impact of paid sick leave laws on consumers**

Without a national law, approximately one-quarter of workers do not have paid sick leave (Bureau of Labor Statistics, 2019). Without paid sick leave, sick workers face a trade-off between earning a wage at work, or staying home without pay and facing possible job loss. With paid sick leave, sick workers can stay home, earning income and maintaining their employment. Staying home, is obviously, beneficial to the worker—they are able to rest and recuperate (Gilleski, 1998), to obtain proper medical treatment when necessary (DeRigne et al., 2017; Gilleski, 1998; Peipins et al., 2012), and to avoid taking longer periods of time off in the future because their health worsens and minor conditions are exacerbated (Grinyer & Singleton, 2000). By providing employment security and income stability, paid sick leave laws provide an obvious benefit to consumers and thus, are expected to decrease consumer bankruptcy filing rates.

This paper focuses on the impact of paid sick leave laws on the overall bankruptcy rate and not bankruptcy chapter. That said, given the institutional background, absent any changes to attorney steering, or local legal culture, paid sick leave laws are expected to have a larger impact on the number of Chapter 7 cases. Again, in a Chapter 7 bankruptcy, consumers liquidate their non-exempt assets (i.e., their assets above their state's exemption level). By comparison, in a Chapter 13 bankruptcy, consumers keep all their assets and instead make



TABLE 1 Paid sick leave laws in the United States, 2007–2019

Location	Effective date	Accrual rate	Annual cap	Vesting period
San Francisco, CA	February 5, 2007	1 h for every 30 h (firms <10)	40 h per year (firms <10)	90 calendar days after commencing employment
		1 h for every 72 h (firms ≥10)	72 h per year (firms >10)	
Connecticut	January 1, 2012	1 h for every 40 h	40 h per year	680th hour of employment
Seattle, WA	September 1, 2012	1 h for every 40 h (firms <250)	40 h per year	90 calendar days after commencing employment
		1 h for every 30 h (firms ≥250)		
Portland, OR	January 1, 2014	1 h for every 30 h (firms >5)	40 h per year	90 calendar days after commencing employment
		1 h for every 40 h (firms ≤5)		
Jersey City, NJ	January 24, 2014	1 h for every 30 h (firms <10)	24 h per year (firms <10)	90 calendar days after commencing employment
		1 h for every 30 h (firms ≥10)	40 h per year (firms ≥10)	
New York City, NY	April 1, 2014	1 h for every 30 h	40 h per year (firms ≥5)	No restriction
Newark, NJ	May 29, 2014	1 h for every 30 h	24 h per year (firms <10)	90 calendar days after commencing employment
			40 h per year (firms ≥10)	
Passaic, NJ	January 2, 2015	1 h for every 30 h	24 h per year (firm <10)	90 calendar days after commencing employment
			40 h per year (firm ≥10)	
East Orange, NJ	January 7, 2015	1 h for every 30 h	24 h per year (firms <10)	90 calendar days after commencing employment
			40 h per year (firms ≥10)	
Irvington, NJ	January 7, 2015	1 h for every 30 h	24 h per year (firms <10)	

(Continues)

**TABLE 1** (Continued)

<b>Location</b>	<b>Effective date</b>	<b>Accrual rate</b>	<b>Annual cap</b>	<b>Vesting period</b>
			40 h per year (firms $\geq 10$ )	90 calendar days after commencing employment
Paterson, NJ	January 9, 2015	1 h for every 30 h	24 h per year (firms $< 10$ )  40 h per year (firms $\geq 10$ )	90 calendar days after commencing employment
Oakland, CA	March 2, 2015	1 h for every 30 h	40 h per year (firm $< 10$ )  72 h per year (firm $\geq 10$ )	90 calendar days after commencing employment
Montclair, NJ	March 4, 2015	1 h for every 30 h	40 h per year	90 calendar days after commencing employment
Trenton, NJ	March 5, 2015	1 h for every 30 h	40 h per year	90 calendar days after commencing employment
Philadelphia, PA	May 13, 2015	1 h for every 40 h	40 h per year	90 calendar days after commencing employment
Bloomfield, NJ	June 30, 2015	1 h for every 30 h	40 h per year	90 calendar days after commencing employment
California	July 1, 2015	1 h for every 30 h	24 h per year	90 calendar days after commencing employment
Massachusetts	July 1, 2015	1 h for every 40 h	40 h per year	90 calendar days after commencing employment
Emeryville, CA	July 2, 2015	1 h for every 30 h	48 h per year (firms $\leq 55$ )  72 h per year (firms $> 55$ )	90 calendar days after commencing employment
Oregon	January 1, 2016	1 h for every 30 h	40 h per year	90 calendar days after commencing employment
Tacoma, WA	February 1, 2016	1 h for every 40 h	40 h per year	90 calendar days after commencing employment
Elizabeth, NJ			40 h per year	

(Continues)

TABLE 1 (Continued)

Location	Effective date	Accrual rate	Annual cap	Vesting period
	March 2, 2016	1 h for every 30 h		90 calendar days after commencing employment
New Brunswick, NJ	May 5, 2016	1 h for every 35 h	72 h per year	90 calendar days after commencing employment
Los Angeles, CA	July 1, 2016	1 h for every 30 h	48 h per year	90 calendar days after commencing employment
San Diego, CA	July 11, 2016	1 h for every 30 h	80 h per year	90 calendar days after commencing employment
Plainfield, NJ	July 15, 2016	1 h for every 30 h	40 h per year (firms ≥10) 24 h per year (firms <10)	90 calendar days after commencing employment
Montgomery County, MD	October 1, 2016	1 h for every 30 h	32 h per year (firms <5) 56 h per year (firms ≥5)	90 calendar days after commencing employment
Santa Monica, CA	January 1, 2017	1 h for every 30 h	40 h per year (firms <26) 72 h per year (firms ≥26)	90 calendar days after commencing employment
Vermont	January 1, 2017	1 h for every 52 h	24 h per year (2017–2018) 40 h per year (2019 to current)	12 months after commencing employment
Washington	January 1, 2017	1 h for every 40 h	40 h per year	90 calendar days after commencing employment
Morristown, NJ	January 11, 2017	1 h for every 30 h	24 h per year (firms <10) 40 h per year (firm ≥10)	90 calendar days after commencing employment
Chicago, IL	July 1, 2017	1 h for every 40 h	40 h per year  40 h per year	180th day of employment

(Continues)

TABLE 1 (Continued)

Location	Effective date	Accrual rate	Annual cap	Vesting period
Cook County, IL	July 1, 2017	1 h for every 40 h		180th day of employment
Minneapolis, MN	July 1, 2017	1 h for every 30 h	48 h per year	90 calendar days after commencing employment
St. Paul, MN	July 1, 2017	1 h for every 30 h	48 h per year	90 calendar days after commencing employment
Arizona	July 1, 2017	1 h for every 30 h	24 h per year (firms <15) 40 h per year (firms ≥15)	90 calendar days after commencing employment
Berkeley, CA	October 1, 2017	1 h for every 30 h	48 h per year (firms <25) 72 h per year (firms ≥25)	90 calendar days after commencing employment
Maryland	February 11, 2018	1 h for every 30 h	40 h per year	106th day of employment
Rhode Island	July 1, 2018	1 h for every 35 h	24 h per year (firms >17) (2018) 24 h per year (firms >17) (2019)	90 calendar days after commencing employment
New Jersey	October 29, 2018	1 h for every 30 h	40 h per year	120th day of employment
Michigan	March 19, 2019	1 h for every 35 h	40 h per year	90 calendar days after commencing employment
Westchester County, NY	July 10, 2019	1 h for every 30 h	40 h per year	90 calendar days after commencing employment

Source: A Better Balance (2020).

monthly payments from their future disposable income. Because financially fragile workers often have few assets and low/volatile income, it is unadvisable for them to file under Chapter 13. Thus, paid sick leave laws are expected to have a larger impact on the number of Chapter 7 bankruptcies.

Paid sick leave laws are just one of the many public programs that insure consumers against income shocks. For example, disability insurance provides partial income replacement in case of permanent work disability. To be eligible for disability pay, a worker must have worked in a job covered by Social Security and have a medical condition that meets Social Security's strict definition of a disability, set at the federal level. If a worker qualifies for disability insurance, payment amount is also set at the federal level. As another example, unemployment insurance provides temporary partial income replacement to workers who lose their jobs. While the unemployment insurance system has a common structure nationwide, each state sets its program's parameters including the benefit amounts. In addition, paid family leave assists consumers with medical-related income shocks by providing partial wage replacement for longer-term leave to care for seriously ill family members, undergo medical treatment, recover from a serious illness, or bond with a new child entering the family. Finally, a discussion of public safety nets and bankruptcy would be remiss without mentioning the Affordable Care Act (ACA). The ACA expanded medical coverage, especially to low-income households.

How do paid sick leave laws compare to these other programs? To begin, paid sick leave laws have less stringent access qualifications. For example, paid family leave and disability insurance only cover specific medical conditions. By comparison, workers can utilize paid sick leave for any medical reason, including a common cold or back pain. In addition, paid sick leave laws are distinct for their full wage replacement. By comparison, disability insurance, unemployment insurance, and paid family leave only provide partial wage replacement. However, paid sick leave provides a shorter coverage period. As discussed above, paid sick leave typically provides 40 h of wage replacement. Meanwhile, paid family leave typically provides 12 weeks of wage replacement, unemployment insurance typically provides 26 weeks of wage replacement and disability insurance provides permanent wage replacement. A final important difference between paid sick leave laws and other public safety nets is the source of funding. Disability insurance, unemployment insurance, the ACA, and paid family leave are typically funded through tax revenue while paid sick leave is paid for by the firm.

Prior works have investigated how these other public insurance programs impact consumer bankruptcy. For example, Deshpande et al. (2021) showed that access to disability insurance decreases consumer bankruptcy by 20%. Furthermore, Fisher (2005) showed that a 10% increase in unemployment insurance decreases consumer bankruptcy by 2%. However, Himmelstein et al. (2019) showed that the ACA did not impact consumer bankruptcy. For policy purposes, it is important to understand how paid sick leave laws compare—do they, like disability and unemployment insurance decrease consumer bankruptcies? And if so, by how much? Furthermore, given the divergent funding mechanism, it is important to understand how paid sick leave laws impact a firm's costs.

## The impact of paid sick leave laws on businesses

How do paid sick leave laws impact the labor market? According to standard economic theory, this mandated benefit increases the supply of labor. However, a priori, it is unclear how a paid sick leave law will impact the demand for labor. On one hand, absenteeism can increase firm's costs. These costs could be magnified by workers shirking, that is, workers taking advantage of the compensated time off to stay home from work when they are not actually ill (Ahn & Yelowitz, 2016). To prevent shirking, firm's monitoring costs might increase. Relatedly, paid sick leave laws could increase employer's costs by requiring firms to make adjustments to their work schedules. Therefore, opponents of paid sick leave laws argue that such ordinances raise firm's costs, placing businesses at a competitive disadvantage (as discussed in Marotta & Greene, 2019). On the other hand, these costs could be offset, or even reversed, by a reduction in presenteeism, that is, a reduction in workers coming to work while sick. If sick workers stay home, they will have reduced interactions with their coworkers thereby preventing the spread of contagious diseases to other workers (Callison & Pesko, 2017; Pichler et al., 2021; Pichler & Ziebarth, 2017; Pichler & Ziebarth, 2020; Skåtun, 2003; Stearns & White, 2018). This could be beneficial to the firm as sick workers are less productive (Goetzel et al., 2004), more likely to make production errors (Goetzel et al., 2004), and more likely to have accidents and injuries (Asfaw et al., 2012). Put another way, prior works on presenteeism argue that paid sick leave laws can benefit employers through the reduction of productivity losses associated with sick workers who continue to work but are not fully productive. On a related note, prior works have shown that workers with access to paid sick leave are more likely to access preventative care, which may improve overall health. For example, workers with paid sick leave are more likely to undergo cancer screenings (Peipins et al., 2012). As a final point, studies have shown that paid sick leave decreased turnover rates which could also reduce a firm's costs (Hill, 2013).

Thus, the overall effect of paid sick leave laws on the labor market is, a priori, uncertain—it depends on the direction and relative size of each shift. For example, if the shift in the supply of labor is large relative to the shift in demand, workers could experience an increase in both employment and total benefits. On the other hand, if there is a relatively large decrease in the demand for labor (relative to the increased supply of labor), employment and wages would fall while firms would experience an increase in total costs. In line with this theoretical uncertainty, prior empirical works on the impact of paid sick leave laws on the labor market have been mixed.<sup>5</sup> For example, while Pichler and Ziebarth

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<sup>5</sup>As discussed in Ahn and Yelowitz (2016), much of the empirical work on paid sick leave utilizes data from Europe. While these studies provide useful insights, it is difficult to translate their results to the United States as many aspects of the program are different. Therefore, the text of this paper focuses on studies conducted in the United States.

(2020) find that paid sick leave laws have an insignificant effect on employment, Ahn and Yelowitz (2016) show that paid sick leave laws decrease employment. Similarly, while some works find an insignificant effect of paid sick leave laws on wages (including Pichler & Ziebarth, 2020) and other fringe benefits (MaClean et al., 2020), others find that paid sick leave laws decrease fringe benefits (Colla et al., 2014). This paper contributes to the growing debate on the impact of paid sick leave laws, looking beyond their impact on labor markets to examine how these laws impact the financial fragility of both consumers and firms, as measured by bankruptcy rates.

### **Business bankruptcy in the United States**

Like consumers, financially fragile businesses have two chapters under which they can file for bankruptcy: Chapter 7 or Chapter 11. As with consumers, when a business files under Chapter 7 of the Bankruptcy Code, it must liquidate all its nonexempt assets. The proceeds of this sale are used to repay the business's creditors with debt being paid according to the Absolute Priority Rule. Once all the firm's assets are liquidated, its remaining debts are discharged and the firm is dissolved. Like Chapter 7 consumer cases, Chapter 7 business cases are relatively quick, lasting on average just 6 months.

In a Chapter 11 bankruptcy, businesses typically reorganize in order to repay debts.<sup>6</sup> Under this chapter, firms continue to operate and repay part of their debt from future earnings rather than from selling their assets. Specifically, firms propose a repayment plan and creditors whose rights are affected may vote on the plan. Once the plan gets the required votes, if it satisfies certain legal requirements, it will be confirmed (approved) by the court. Upon completion of its repayment plan, any remaining debts are discharged. As this chapter is a more complex form of bankruptcy, cases typically last several years. Although Chapter 11 is designed to allow for reorganization, about two-thirds of business Chapter 11 cases are either converted to Chapter 7 or dismissed from court entirely (Iverson, 2018).

For firms in financial distress, bankruptcy has many advantages. As in consumer bankruptcy cases, through the bankruptcy process firms are able to discharge much of their unsecured debt. Businesses commonly use the bankruptcy process to eliminate credit card debt, debts owed under lease agreements, and debts owed to professionals. An additional benefit is the automatic stay, which temporarily stops the termination of essential contracts or secured lender actions. In addition, a Chapter 11 bankruptcy allows firms to continue to operate and to begin to rebuild their credit.

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<sup>6</sup>In a Chapter 11 bankruptcy, while businesses have the option to either reorganize or liquidate their assets, reorganization is more common.

However, as with consumers, filing for bankruptcy can be costly to firms. First, there are attorney fees, which vary by chapter. For a Chapter 7 bankruptcy, attorney fees average \$1700 while Chapter 11 bankruptcy attorney fees often exceed \$20,000. In addition, firms must pay court fees—court fees average \$338 for a Chapter 7 bankruptcy and \$1700 for a Chapter 11 bankruptcy. Furthermore, a firm may face stigma of bankruptcy, future restrictions from the credit market, future restrictions from rentals, and higher insurance costs.

Chapter 7 is typically considered the “chapter of last resort” by businesses. It is predominantly used when a business lacks the financing to pursue reorganization or liquidation through Chapter 11. This is most common with sole proprietorships or other small businesses that have difficulty attracting distressed financing or investment. If a business can afford it, Chapter 11 is typically preferred over Chapter 7, for reorganizations and for liquidations. Among other things, Chapter 11 permits management to stay “in possession” or control the bankruptcy estate, meaning that management has a direct say in how assets are marketed, debts are addressed, and litigation claims are pursued. Chapter 11, however, is materially more expensive than Chapter 7 and therefore typically involves mid-to-large companies with meaningful revenue or assets.

## DATA

### Description of variables

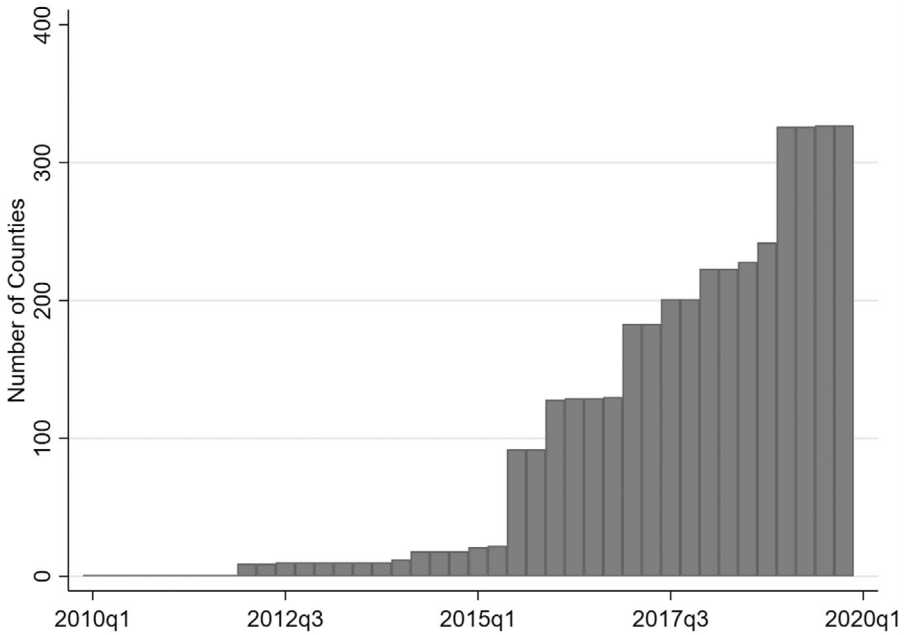
The empirical analysis uses a panel dataset of quarterly observations at the county level. The sample contains data for 40 quarters—it begins in the first quarter of 2010 and ends in the fourth quarter of 2019. As shown in Table 1, during the sample period, 31 counties/cities and 11 states implemented a paid sick leave law.<sup>7</sup> Figure 1 shows the temporal variation in the implementation of paid sick leave laws over time. Of the 3132 counties in the sample, 327 had paid sick leave laws by the end of the sample period. In addition, Figure 2 shows the geographic variation.

To examine the impact of paid sick leave laws on consumer and business bankruptcies, the two outcome variables are: the consumer bankruptcy filing rate (defined as the number of consumer bankruptcy filings per 1000 persons) and the business bankruptcy filing rate (defined as the number of business bankruptcy filings per 1000 persons). Quarterly bankruptcy statistics by county are constructed from the Integrated Petition Database (IDB) available from the Federal Judicial Center.<sup>8</sup> The IDB contains the universe of bankruptcy petitions

<sup>7</sup>Although a paid sick leave law went into effect in Dallas, Texas on August 1, 2019, it was never enjoined due to *ESI/Employee. Solutions v. City of Dallas*. Thus, Dallas is not included in the treatment group.

<sup>8</sup>The dataset for this paper was constructed after the data anomalies were identified and corrected in the Federal Judicial Center IDB database in November 2021.



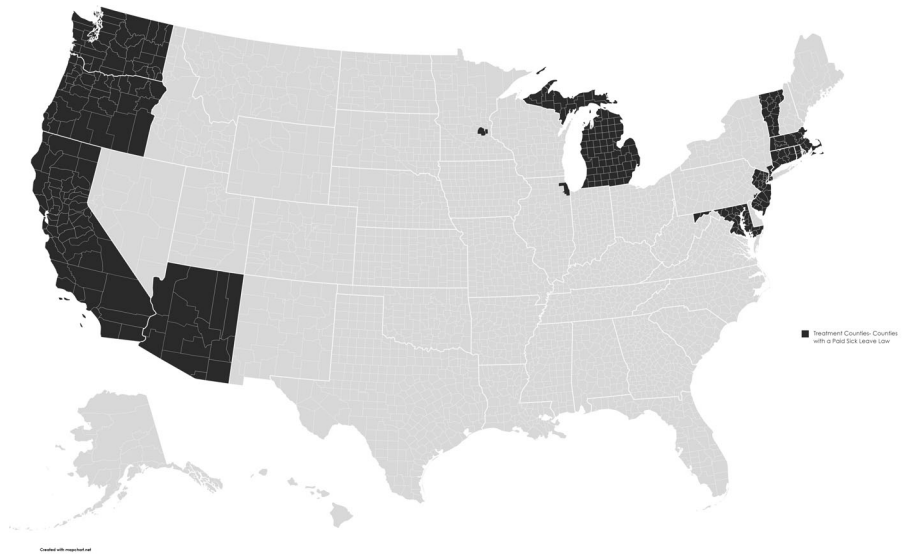


**FIGURE 1** Number of counties with paid sick leave laws, 2010–2019. *Source:* A Better Balance (2020).

filed during the sample period. To calculate the consumer bankruptcy filing rate, I count the number of consumer bankruptcy cases (i.e., the number of cases in which the debtor claims the majority of debt is for household purposes) in a county in a quarter and divide by the county population (available from the US Census). Similarly, to calculate the business bankruptcy filing rate, I count the number of business bankruptcy cases (i.e., the number of cases in which the debtor claims the majority of debt is for business purposes) in a county in a quarter and divide by the county population.<sup>9</sup>

The dataset includes numerous time-varying factors that prior research has shown to influence bankruptcy rates. For example, the dataset includes information on the generosity of other public safety nets that could be associated with bankruptcy filing rates. I include a dummy variable that equals one if a county is in a state that has a paid family leave law in place. (Note, during the time

<sup>9</sup>0.05% of cases did not indicate one of these case types. For these cases, I used the bankruptcy chapter to infer the case type. Chapter 7 cases were assumed to be consumer cases, Chapter 11 cases were assumed to be business cases, and Chapter 13 cases were assumed to be consumer cases. The results are robust to excluding these unclassified cases, counting all unclassified cases as consumer cases, or counting all unclassified cases as business cases.



**FIGURE 2** Map of counties with paid sick leave laws, 2010–2019. *Source:* A Better Balance (2020).

period studied here, all paid family leave laws were enacted at the state level.) As detailed above, paid family leave laws provide longer-term leave to care for seriously ill family members, undergo medical treatment, recover from a serious illness, or bond with a new child entering the family. I also include a variable that denotes the generosity of a state’s unemployment insurance. As discussed above, while unemployment insurance has a common structure nationwide, each state can set its program’s parameters, including the generosity of payments. To measure the generosity of each state’s unemployment insurance benefits, like Hsu et al. (2018), I calculate the product of the maximum weekly benefit amount and the maximum duration. This variable provides a proxy for the total benefits that a person can receive in a given year. Finally, I create a dummy variable that denotes whether the ACA is in effect, offering expanded Medicaid eligibility to nearly all individuals with incomes at or below 138% of poverty. While the ACA was intended to expand Medicaid eligibility at a national level, a Supreme Court ruling in 2012 made it optional for states. Thus, I create a dummy variable that equals one if the county is in a state that offers expanded medical insurance coverage through the ACA. It should be noted that the dataset does not include a variable to denote the generosity of disability leave. As detailed above, disability eligibility and payment amounts do not differ by locality. They are set at the federal level and are based on the number of

years of work and the average income earned during those years. As discussed below, any changes in the national amounts over time is subsumed by time fixed effects.

The dataset also includes information on bankruptcy laws. Because state exemption and garnishment laws rarely change, their effect is subsumed by various location fixed effects. Instead, to proxy for local legal culture and the relative costs and benefits of each bankruptcy chapter, the dataset includes the portion of consumer bankruptcy cases in the county filed under Chapter 13.<sup>10</sup>

Finally, the dataset includes various socioeconomic and demographic factors that are associated with bankruptcy. They include median home value and the percent of the population that is a homeowner. Additional factors include: the percent of the population that is male, the percent of the population that is Black, the percent of the population that is Hispanic, education (measured by two variables: the percent of the population with high school degree or more and the percent of the population with bachelor's degree or more), household size (measured by three variables: the percent of households of size 1, 2, and 3), marital status (measured by four variables: the percent of the population that is married, divorced, separated, and widowed), and age (measured by seven variables: the percent of the population that is ages 20–29, ages 30–39, ages 40–49, ages 50–59, ages 60–69, ages 70–79, and above 80).

## Summary statistics

Table 2 provides summary statistics. The first column provides summary statistics for the full sample. The second column shows summary statistics for treated counties, that is, counties in which a paid sick leave law goes into effect before 2020. To clarify, counties are treated if they enact their own paid sick leave law prior to 2020 or if they are in a state that enacts a paid sick leave law prior to 2020. Finally, the third column shows summary statistics for control counties, that is, counties that do not have a paid sick leave law in effect prior to 2020. Again, control counties are defined as those counties that do not have a paid sick leave law in effect at either the county or state level prior to 2020.

As seen in Table 2, mean consumer bankruptcy rates are higher in counties without a paid sick leave law than counties with a paid sick leave law. In addition to having different filing rates, the composition of cases varies between treatment and control counties. Counties with paid sick leave laws have a higher Chapter 7 filing rate but a lower Chapter 13 filing rate. Treated and control

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<sup>10</sup>The portion of consumer cases filed under Chapter 13 varies dramatically by locality. Thus, this variable is constructed at the county level. However, constructing this variable at the county level could be problematic for small counties with few consumer bankruptcy cases. In results not shown, my results are similar in magnitude and significance if the variable is constructed at the larger federal judicial district level. Additional robustness checks regarding county size are conducted in “Unweighted Analysis” section.

TABLE 2 Summary statistics

	(1) Full sample	(2) Treated counties	(3) Control counties
Consumer bankruptcy filing rate	1.468 [1.442]	1.211 [0.871]	1.498 [1.492]
Consumer Chapter 7 filing rate	0.596 [0.522]	0.747 [0.544]	0.578 [0.517]
Consumer Chapter 13 filing rate	0.872 [1.283]	0.464 [0.472]	0.920 [1.339]
Business bankruptcy filing rate	0.034 [0.122]	0.037 [0.069]	0.034 [0.127]
Business Chapter 7 filing rate	0.024 [0.075]	0.027 [0.053]	0.024 [0.078]
Business Chapter 11 filing rate	0.010 [0.095]	0.010 [0.041]	0.010 [0.099]
<i>Other public safety nets</i>			
Paid family leave law in effect	0.04 [0.19]	0.30 [0.46]	0.01 [0.09]
ACA in effect	0.41 [0.49]	0.89 [0.31]	0.36 [0.48]
Maximum unemployment insurance	\$4415.80 [5928.80]	\$5253.50 [7481.20]	\$4317.50 [5711.00]
<i>Bankruptcy laws</i>			
Portion of cases filed under Chapter 13	0.43 [0.32]	0.35 [0.20]	0.44 [0.33]
<i>Socioeconomic and demographic variables</i>			
Median home value	\$137,279.50 [84,174.80]	\$238,067.30 [144,265.40]	\$125,453.50 [64,366.80]
Homeownership rate	80.54 [14.32]	78.52 [16.56]	80.78 [14.02]
Percent male	50.06 [2.251]	49.89 [1.649]	50.07 [2.311]
Percent black	9.26 [14.54]	5.74 [9.14]	9.67 [14.99]
Percent Hispanic	9.03 [13.49]	13.56 [15.10]	8.50 [13.19]
Percent with high school degree or more	64.41	60.95	64.82

(Continues)

TABLE 2 (Continued)

	(1) Full sample	(2) Treated counties	(3) Control counties
	[7.66]	[9.58]	[7.29]
Percent with bachelor's degree or more	20.11	26.12	19.41
	[9.44]	[11.18]	[8.95]
Percent of households with one person	27.77	27.44	27.80
	[4.52]	[4.36]	[4.54]
Percent of households with two people	36.98	36.68	37.01
	[4.30]	[5.13]	[4.19]
Percent of households with three people	14.66	14.56	14.67
	[2.75]	[2.44]	[2.78]
Percent married	52.34	50.84	52.51
	[7.10]	[5.87]	[7.20]
Percent divorced	11.49	11.61	11.48
	[2.36]	[2.27]	[2.37]
Percent separated	1.97	1.72	2.00
	[1.05]	[0.68]	[1.08]
Percent widowed	7.17	6.31	7.27
	[1.82]	[1.40]	[1.84]
Percent ages 20–29	12.23	12.49	12.20
	[3.30]	[3.39]	[3.29]
Percent ages 30–39	11.61	11.60	11.61
	[1.67]	[1.99]	[1.63]
Percent ages 40–49	12.31	12.34	12.30
	[1.60]	[1.63]	[1.60]
Percent ages 50–59	14.26	14.50	14.23
	[1.72]	[1.87]	[1.70]
Percent ages 60–69	12.35	12.95	12.28
	[2.55]	[3.24]	[2.45]
Percent ages 70–79	7.54	7.64	7.53
	[2.12]	[2.60]	[2.06]
Percent age 80 and above	4.55	4.45	4.56
	[1.52]	[1.27]	[1.54]
Number of counties	3132	327	2805
Number of county-quarter observations	124,440	13,068	111,372

Note: The table reports the mean for each variable used in the analysis. Standard deviations are reported in brackets. Bankruptcy filing rates are measured as the number of filings per 1000 population. Paid family leave is a dummy variable that equals 1 if the locality allows paid family leave. ACA is a dummy variable that equals 1 if the Affordable Care Act is in effect.

counties, however, have similar business bankruptcy filing rates. The overall business filing rate as well as the business filing rate for each chapter are similar in counties with and without paid sick leave laws.

Counties with paid sick leave laws have more generous public safety nets: they are more likely to have a paid family leave law, to adopt the ACA, and to provide higher unemployment insurance benefits. In addition, as mentioned above, counties with paid sick leave laws have a lower portion of cases filed under Chapter 13 of the Bankruptcy Code.

Summary statistics also show that the treated and control counties are different in terms of socioeconomic and demographic factors that are correlated with bankruptcy. For example, compared to counties that did not enact a paid sick leave law, treated counties have a lower homeownership rates and higher median home values. Treated counties also have different demographic characteristics: in treated counties, the percent of the population that is Black is smaller, the percent of the population that is Hispanic is larger, and the percent of the population with a college education is larger. In treated counties, households are larger, less likely to be married, separated and widowed, and more likely to be divorced or single.

## EMPIRICAL FRAMEWORK

This section details the two empirical approaches employed in this paper: a difference-in-differences methodology and an event study analysis. Using a panel of quarterly observations at the county level, in both specifications, identification is based on the geographic and temporal variation of paid sick leave laws.

### Difference-in-differences

To estimate the impact of paid sick leave laws on bankruptcy rates, the difference-in-differences methodology estimates the following specification:

$$Bankruptcy_{ct} = \alpha + \beta PSL_{ct} + \gamma X_{ct} + \phi_c + \tau_t + \varepsilon_{ct}, \quad (1)$$

where  $Bankruptcy_{ct}$  is the bankruptcy rate (the number of consumer bankruptcy or business bankruptcy filings per 1000 persons) in county  $c$  in time  $t$ .  $PSL_{ct}$  is a dummy variable that equals 1 if county  $c$  in time  $t$  has a paid sick leave law in effect—again, this dummy variable equals 1 if county  $c$  has its own paid sick leave law in effect or if county  $c$  is in a state with a paid sick leave law in effect. Finally,  $X_{ct}$  is a vector of control variables,  $\phi_c$  are county fixed effects, and  $\tau_t$  are time fixed effects. The inclusion of county fixed effects

removes time-invariant unobserved county-level factors (such as spatially correlated heterogeneity in preferences for bankruptcy across counties like a strong ethic of debt repayment) while the inclusion of time fixed effects removes contemporaneous shocks common to all counties (such as changes in disability insurance payments or the passage of the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005). Thus, the coefficient of interest,  $\beta$ , is a within-county estimator.

Estimates from this analysis are unbiased: (1) if paid sick leave laws are not endogenous (meaning, paid sick leave laws are not enacted because of differential bankruptcy rates); and (2) in the absence of unmeasured county-specific unobservables that are correlated with paid sick leave laws and bankruptcy filing rates. Policy endogeneity is tested with the event study analysis, detailed below, comparing the bankruptcy rates in treated and control counties over the 12 quarters before a paid sick leave law go into effect. Policy endogeneity is also tested in the robustness checks section, with the inclusion of location-specific time effects including state-specific time fixed effects, state specific linear time trends, Metropolitan Statistical Area (MSA)-specific fixed effects, and MSA-specific linear time trends.

As counties enact paid sick leave laws at different times, the standard TWFEs difference-in-differences estimate in Equation (1) is a weighted average of all possible two-group/two-period difference-in-differences estimates. This means that counties that implement a paid sick leave law at time  $t$  are compared to both counties that never implement a paid sick leave law and counties that have not yet implemented a paid sick leave law by time  $t$ . In the presence of time-varying treatment effects, comparing early adopting and late adopting counties may introduce bias into the TWFE difference-in-differences estimate (Callaway & Sant'Anna, 2021; de Chaisemartin & D'Haultfoeuille, 2020; Goodman-Bacon, 2021; Sun & Abraham, 2021). Alternative estimation techniques that address this concern are performed in the robustness checks section.

The robustness section also considers whether the results are biased by the unbalanced nature of the panel dataset with respect to event time. Below I restrict the sample to be balanced with respect to event time so that the average treatment effect is calculated for a fixed group. Furthermore, I investigate whether my results are biased by the nationwide downward trend in bankruptcy rates or the long pretreatment trend.

The robustness section also examines spillover effects of paid sick leave laws by augmenting the sample to include both the 327 "primary" counties that enact their own paid sick leave law and the 185 "neighboring" counties that border a county with a paid sick leave law. This analysis captures the effect of paid sick leave laws on the subpopulation of workers that are drawn from outside the county. Relatedly, I perform an analysis that focuses solely on state-level

mandates to minimize measurement error. Finally, I consider heterogeneity of the effects by county size.

## Event study analysis

For the event study analysis, Equation (1) is augmented to estimate separate lead and lag coefficients; the key dependent variable (the dummy that equals 1 if the county has a paid sick leave law in place) is replaced with a series of time dummies denoting the 12 quarters before to the 12 quarters after the implementation of a paid sick leave law<sup>11</sup>:

$$Bankruptcy_{ct} = \alpha + \beta \sum_{j=-12}^{12} \beta_j PSL_{ct+j} + \gamma X_{ct} + \phi_c + \tau_t + \varepsilon_{ct}, \quad (2)$$

where  $\beta_j$  ( $j = -12$  to  $j = -1$ ) are a series of dummy variables denoting the 12 quarters before a paid sick leave law goes into effect and  $\beta_j$  ( $j = 1$  to  $j = 12$ ) are a series of dummy variables denoting the 12 quarters after a paid sick leave law goes into effect. Analogous to Equation (1), the event study analysis includes county fixed effects, time fixed effects, and a vector of control variables. As is standard in the literature, the coefficients of interest,  $\beta_j$ , are estimated relative to the quarter before the paid sick leave went into effect ( $j = -1$ ). Because this specification relies on different counties turning on as treated versus controls for different leads and lags, it is more sensitive in manifesting issues with problematic controls. Thus, it can be used to test the parallel trends assumption by comparing bankruptcy rates in treated and control counties over the 12 quarters before the paid sick leave laws go into effect ( $j = -12$  to  $j = -1$ ).

All regressions described above are weighted by the county population and standard errors are clustered at the county level (Abadie et al., 2017).<sup>12</sup>

<sup>11</sup>As seen in Table 1 and Figure 2, the median treated county enacts a paid sick leave law in the first quarter of 2017. Thus, to ensure adequate sample size, I restrict the treatment window to 12 quarters after the implementation of paid sick leave laws. For symmetry, I also restrict the treatment window to 12 quarters before the implementation of paid sick leave laws. In the results presented below, time periods beyond this window are accumulated, thus assuming that the treatment effects stay constant for any quarter beyond these endpoints. In results not reported, similar estimates are obtained if additional leads and lags are not accumulated.

<sup>12</sup>Clustering at the county level permits valid inference if there is within-county autocorrelation in the errors. As many paid sick leave laws are implemented at the county level, clustering is performed at the county level—clustering at the state level could be “over-clustering” (Abadie et al., 2017). When clustering is performed instead at the state level, the clustered standard errors are systematically too large, resulting in unnecessarily conservative standard errors (Abadie et al., 2017). If there is also geographic-based spatial correlation, a similar issue may be at play with respect to the within-quarter cross county errors (Conley, 1999). In this case, it might also be necessary to cluster by time period as well. In results not shown, similar standard errors are obtained when errors are clustered at the county and quarter level.



## RESULTS

### Difference-in-differences analysis

Table 3 reports the effects of paid sick leave laws on bankruptcy rates using the difference-in-differences specification. Panel A reports the impact on the consumer bankruptcy filing rate, Panel B for the business bankruptcy filing rate. Each column includes additional covariates, showing the robustness of the results to additional controls.

In Panel A, the coefficient on paid sick leave ranges from  $-0.096$  to  $-0.179$  and, in most cases, is significant at least at the 5% level. The first column estimates the most parsimonious regression including only county and time fixed effects. Although the inclusion of county and time fixed effects removes time-invariant unobserved county-level factors and contemporaneous shocks common to all counties, it assumes that bankruptcy rates would have followed similar paths in all counties. As the identification of the treatment effect may come from trends in bankruptcy rates that are correlated with the passage of paid sick leave laws, the next three columns include additional covariates.

The second column includes other public safety nets, such as paid family leave, the ACA, and the generosity of the state's unemployment insurance. With these additional covariates, the coefficient of interest increases in absolute magnitude and becomes statistically significant at the 1% level. These additional variables only increase the adjusted  $R^2$  by 0.004. Together, this suggests that while paid sick leave laws may be correlated with other public safety nets, the results are not driven by these other social welfare programs.

In the third column, bankruptcy covariates are included.<sup>13</sup> With the inclusion of this variable, the coefficient of interest falls in absolute magnitude. In addition, the adjusted  $R^2$  increases by 0.011, which indicates that while the bankruptcy filing rate is correlated with bankruptcy covariates, the estimated effect is not driven primarily by this factor.

The socioeconomic and demographic controls discussed above are included in the fourth column. With the inclusion of these covariates, the primary coefficient remains similar in magnitude and significance. In addition, these variables increase the adjusted  $R^2$  by 0.06. This final specification, the preferred specification, indicates that paid sick leave laws decrease the number of consumer bankruptcies by 0.139 filings per 1000 people per quarter. Recall from Table 2, that during the time period studied here, the average consumer bankruptcy filing rate in treated counties was 1.211 filings per 1000 persons per quarter. Thus, this

<sup>13</sup>As discussed above, because homestead exemption levels and garnishment laws rarely change during the sample period, their level effect is subsumed by county fixed effects. In results not shown, the homestead exemption level and garnishment rate are included but county fixed effects are not. Results are robust to this alternative specification.

TABLE 3 Effects of paid sick leave laws on bankruptcy filing rates

<b>Panel A: Effect of paid sick leave laws on consumer bankruptcy filing rates</b>				
	(1)	(2)	(3)	(4)
Paid sick leave law	-0.096 (0.066)	-0.179*** (0.059)	-0.111** (0.047)	-0.139*** (0.046)
Observations	124,440	124,440	124,440	124,440
Adjusted $R^2$	0.859	0.863	0.874	0.880
County fixed effects	X	X	X	X
Time fixed effects	X	X	X	X
Other public safety nets		X	X	X
Bankruptcy laws			X	X
Socioeconomic and demographic controls				X
<b>Panel B: Effect of paid sick leave laws on business bankruptcy filing rates</b>				
	(1)	(2)	(3)	(4)
Paid sick leave law	-0.001 (0.003)	-0.003 (0.002)	0.001 (0.002)	0.001 (0.002)
Observations	124,440	124,440	124,440	124,440
Adjusted $R^2$	0.253	0.254	0.265	0.265
County fixed effects	X	X	X	X
Time fixed effects	X	X	X	X
Other public safety nets		X	X	X
Bankruptcy laws			X	X
Socioeconomic and demographic controls				X

Note: In Panel A, the dependent variable is the consumer bankruptcy filing rate (the number of consumer bankruptcy filings per 1000 persons). In Panel B, the dependent variable is the business bankruptcy filing rate (the number of business bankruptcy filings per 1000 persons). Sick leave law is a dummy variable that equals one if a paid sick leave law is in effect. Other public safety nets, bankruptcy laws, socioeconomic and demographic controls are detailed in Table 2. Regressions are weighted by the county population and standard errors are clustered at the county level.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

coefficient shows that paid sick leave laws reduce consumer bankruptcy filing rates by 11%.

Although the magnitude of the coefficient is striking, it is not surprising that paid sick leave laws decrease consumer bankruptcies by 11%. To contextualize this number, I remind readers that at least 50% of households live paycheck to paycheck. In addition, over two-thirds of filers report employment-related income reductions as one of their causes of bankruptcy (Sullivan et al., 2000). Moreover, 40% of filers self-report *illness-related* income loss as one of the

causes of their bankruptcy filing (Himmelstein et al., 2019; Thorne et al., 2019). Given these statistics, it is sensible that paid sick leave, which mitigates these income shocks, decrease bankruptcy filing rates by 11%. In “Mechanisms” section, I explore the mechanism through which paid sick leave laws aid consumers. For now, I underscore the magnitude of their effect; it highlights the precarious financial position that many consumers are in.

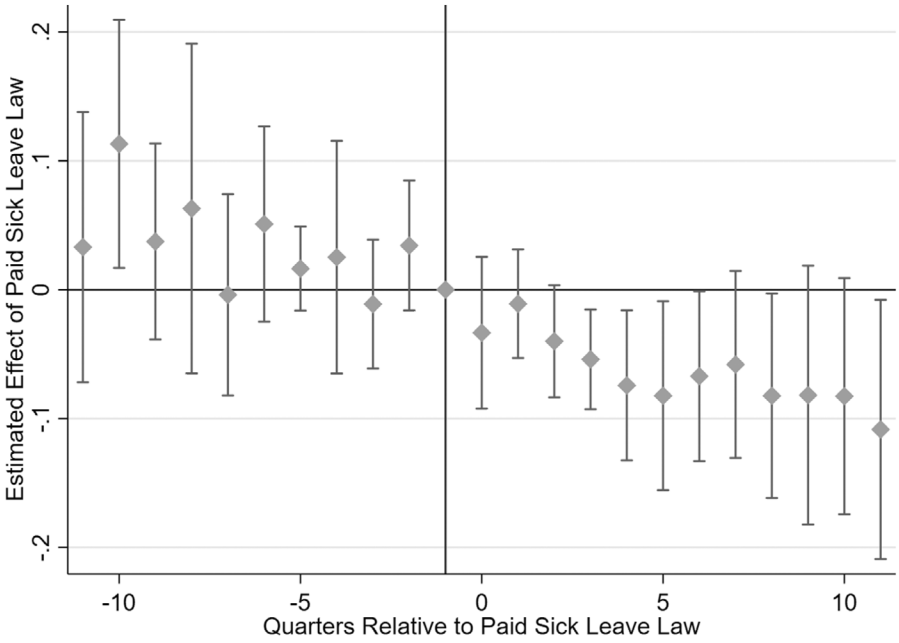
How does this compare to the impact of other social insurance programs on consumer bankruptcy? As detailed in the institutional background, other social insurance programs have different qualification restrictions, different wage replacement rates, and different coverage periods, making a dollar-for-dollar comparison difficult. Nonetheless, it might help readers to contextualize the findings by thinking about prior results. Fisher (2005) found that a 10% increase in unemployment benefits (during the time-period Fisher studied, unemployment benefits averaged \$200 per week for 26 weeks) reduces Chapter 7 bankruptcy rate by 2.2%. In addition, Deshpande et al. (2021) found that access to disability insurance (which, during the time period Deshpande et al. studies, provided recipients with approximately \$1200 per month on a permanent basis) decreases the likelihood of bankruptcy by 20% over a 3-year period. The estimated effect of paid sick leave laws on consumer bankruptcy rates is consistent with the impact of other social insurance programs.

Although Panel A shows that paid sick leave laws lower consumer bankruptcy rates, their impact on businesses, seen in Panel B, is less clear. In the first column, when only county and time fixed effects are included, the estimated effect is  $-0.001$  and is not significant. However, this specification only removes time-invariant unobserved county-level factors and contemporaneous shocks common to all counties. As it is likely that business bankruptcy rates follow different paths in different counties, in the second column other public safety nets are included. When these covariates are included, the coefficient remains negative and insignificant. In the third column, when bankruptcy laws are included, the effect becomes positive but remains insignificant. Finally, in the fourth column, I add socioeconomic and demographic controls. Here the coefficient remains positive but is again insignificant. Specifically, in this preferred specification, the coefficient of interest is  $0.001$ , with the 95% confidence interval ranging from  $-0.003$  to  $0.005$ . Given this wide range, from this table, the impact of paid sick leave laws on business bankruptcy filing rates remains unclear.

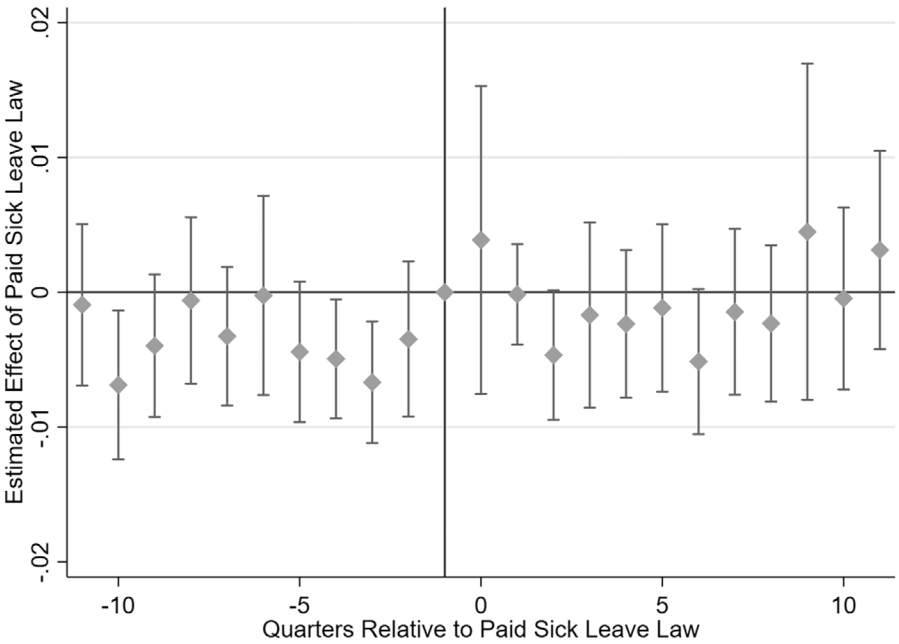
## Event study analysis

To examine the dynamic effects of paid sick leave laws and to test the parallel trends assumption, Figure 3 reports the results of the event study analysis. Again, Panel A shows results for consumer bankruptcy filing rates and Panel B shows results for business bankruptcy filing rates.

(a)



(b)



The analysis in Panel A underscores several key points. First, it validates the parallel trends assumption; it shows that control and treatment counties do not exhibit differential trends before a paid sick leave law is implemented. The coefficients of interest ( $\beta_j$  for  $j = -12$  to  $j = -1$ ) are not statistically different from zero.

In addition, this lead-lag analysis allows for the examination of the impact of paid sick leave laws on bankruptcy rates over time. As seen in Figure 3, initially, paid sick leave laws do not have a statistically significant impact on consumer bankruptcy rates. For example,  $\beta_0$ , representing the quarter a paid sick leave law goes into effect, is not statistically significant. In addition,  $\beta_1$  and  $\beta_2$ , representing the first and second quarter after a paid sick leave law is in effect, are not statistically significant. We would not expect paid sick leave laws to have an immediate impact on consumer bankruptcy—they do not provide any upfront cash benefit, enabling consumers to immediately repay their debts and avoid bankruptcy. These coefficients coincide with prior works detailing the length of time consumers live in a “sweatbox” prior to filing for bankruptcy. As discussed in Foohey et al. (2018), very few filers (less than 10%), file for bankruptcy after 6 months of serious financial struggles. Thus, it is not surprising that paid sick leave laws do not impact bankruptcy rates within the first two quarters.

However, Figure 3 shows that three quarters after a paid sick leave law is in effect, it is estimated to reduce consumer bankruptcy rates by 0.07 filings per 1000 persons. Again, this is consistent with Foohey et al. (2018) who show that substantially more debtors (approximately 10%–20%) struggled for 6 months to 1 year before filing for bankruptcy. The figure shows that the effect remains similar in magnitude and in significance thereafter. Again, this is consistent with the Foohey et al. (2018) who show that many consumers (approximately two-thirds) stay in the financial sweatbox for 2–5 years prior to filing for bankruptcy.

Figure 3b indicates that paid sick leave laws are unlikely to impact business filing rates. In Figure 3b, all the lead coefficients,  $\beta_j$ , from periods  $j = -12$  to  $j = -1$  are not statistically different from zero, again validating the parallel trends assumption. Furthermore, Figure 3 shows that all the lag coefficients of interest,  $\beta_j$  ( $j = 0$  to  $j = 12$ ), are statistically insignificant. While some of the point estimates are negative, some are positive. Moreover, the 95% confidence

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**FIGURE 3** Event study of paid sick leave laws on bankruptcy filing rates. (a) Consumer bankruptcy filing rate. (b) Business bankruptcy filing rate. The graph shows coefficient estimates and the 95% confidence intervals in the 12 quarters before and 12 quarters after paid sick leave laws become effective. Results are from a regression that includes county fixed effects, time fixed effects, other public safety nets, bankruptcy laws, and socioeconomic and demographic controls, detailed in Table 2. Regressions are weighted by the county population and standard errors are clustered at the county level.

**TABLE 4** Heterogeneous impact of paid sick leave laws by policy provisions

<b>Panel A: Heterogenous impact on consumer bankruptcy filing rates</b>			
	(1)	(2)	(3)
Accrual rate	-4.550*** (1.460)		
Maximum hours of leave per year		-0.003** (0.001)	
Paid sick leave law			0.082 (0.133)
Paid sick leave law * short vesting period			-0.266* (0.137)
Observations	124,440	124,440	124,440
Adjusted $R^2$	0.880	0.880	0.880
County fixed effects	X	X	X
Time fixed effects	X	X	X
Other public safety nets	X	X	X
Bankruptcy laws	X	X	X
Socioeconomic and demographic controls	X	X	X
<b>Panel B: Heterogenous impact on business bankruptcy filing rates</b>			
	(1)	(2)	(3)
Accrual rate	0.026 (0.068)		
Maximum hours of leave per year		0.000 (0.000)	
Paid sick leave law			0.004 (0.004)
Paid sick leave law * short vesting period			-0.004 (0.004)
Observations	124,440	124,440	124,440
Adjusted $R^2$	0.265	0.265	0.265
County fixed effects	X	X	X
Time fixed effects	X	X	X
Other public safety nets	X	X	X
Bankruptcy laws	X	X	X
Socioeconomic and demographic controls	X	X	X

*Note:* In Panel A, the dependent variable is the consumer bankruptcy filing rate (the number of consumer bankruptcy filings per 1000 persons). In Panel B, the dependent variable is the business bankruptcy filing rate (the number of business bankruptcy filings per 1000 persons). Accrual rate is the rate at which workers accrue paid sick leave. Maximum hours of leave per year is the maximum number of hours of paid sick leave workers can accrue each year. Short vesting period is a dummy variable that equals 1 if the vesting period is 90 days or less. Other public safety nets, bankruptcy laws, socioeconomic and demographic controls are detailed in Table 2. Regressions are weighted by the county population and standard errors are clustered at the county level.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

intervals all include positive and negative numbers. Like the results from Table 3, the results from this figure do not show a statistically significant link between paid sick leave laws and business bankruptcy filing rates.

## Heterogeneity in policy provisions

As discussed above and detailed in Table 1, localities differ in the provisions offered by their paid sick leave laws. For example, each locality has a different provision regarding the rate at which leave can be accrued, the maximum amount of leave that can be accrued each year, as well as the vesting period. Table 4 examines the heterogeneous impact of paid sick leave laws by these policy provisions. Panel A examines the heterogeneous impact of paid sick leave policies on consumer bankruptcy rates and Panel B examines their impact on business bankruptcy rates. All specifications include the covariates, county fixed effects, and time fixed effects from the final column of Table 3.

In the first column, I examine how provisions regarding the accrual rate impact consumer bankruptcy rates. Most localities ( $n = 176$  counties) allow employees to earn a minimum of 1 h of paid sick leave for every 30 h worked (i.e., most localities have an accrual rate of at least  $1/30 = 0.033$ ). However, other counties ( $n = 151$  counties) have much slower accrual rates. For example, 14 counties specify that employees must earn at least 1 h of paid sick leave for every 52 h worked (i.e., these localities have an accrual rate of  $1/52 = 0.019$ ). To examine the heterogeneous impact of this provision on consumer bankruptcy rates, I include a continuous variable that captures the accrual rate.<sup>14</sup> As expected, in Panel A, this continuous variable has a negative impact on consumer bankruptcy rates. Meaning, when workers can accumulate paid sick leave faster, there is a larger decline in consumer bankruptcy rates. For example, the regression results in the first column show that in counties where paid sick leave can be accrued at the rate of 1 h for every 30 h work (again, this is the median rate), bankruptcy rates will fall by 0.152 bankruptcies per 1000 persons. However, in counties where paid sick leave is accrued at a much slower rate (1 h for every 52 h worked), regression results indicate that bankruptcy rates will only fall by 0.088 bankruptcies per 1000 persons.

In the second column, I examine how the annual accrual cap impacts consumer bankruptcy filing rates. Laws range from ensuring employees accrue at least 24 h ( $n = 56$  counties) to 80 h ( $n = 1$  county) of paid leave per year. However, most localities ( $n = 223$  counties) allow employees to accrue at least 40 h of paid leave each year. To examine the heterogeneous impact of this provision

<sup>14</sup>For counties without paid sick leave, the accrual rate is 0.

Similar results are obtained if instead of using a continuous variable, I include a dummy variable that equals 1 if the county has a provision that allows for rapid accrual (1 h for every 30 h worked).

on consumer bankruptcy rates, I include a continuous variable that denotes the annual cap.<sup>15</sup> As expected, this variable has a negative impact on consumer bankruptcy rates. These results indicate that paid sick leave laws have a larger impact on consumer bankruptcy rates when they include provisions that allow workers to accrue more leave each year. In the median locality, where at least 40 h of paid leave can be accrued each year, the regression results in the second column show that the consumer bankruptcy rate will fall by 0.120 bankruptcies per 1000 persons. However, in counties where 72 h of leave can be accumulated per year, the regression results indicate a much larger drop of 0.216 bankruptcies per 1000 persons.

In the third column, I examine how the vesting period impacts consumer bankruptcy filing rates. Most localities ( $n = 267$  counties) require employees have access to their paid sick leave within 90 days. However, 60 counties have longer vesting periods, where employees may have to wait up to 1 year before using their paid sick leave. To investigate the impact of vesting time on consumer bankruptcy rates, in the third column I include a dummy variable that equals 1 if the locality has a short vesting period, allowing employees to access their paid sick leave within 90 days. I interact this dummy variable with the primary independent variable (the dummy variable that is equal to 1 if the locality has a paid sick leave law).<sup>16</sup> As seen in the third column, when this interaction term is included, the coefficient on the dummy variable denoting that a paid sick leave law is in effect becomes insignificant while the coefficient on the interaction term is negative. As expected, these results indicate that paid sick leave laws have a larger impact on consumer bankruptcy rates when they have short vesting periods.

In Panel B, I perform the same analysis using the business bankruptcy filing rate as my dependent variable. In Panel B, all the coefficients of interest are insignificant. Consistent with the results above, this indicates that paid sick leave laws likely do not impact business bankruptcy rates.

## Mechanisms

How do paid sick leave laws help consumers avoid bankruptcy? The Panel A of Table 5 explores the channels through which paid sick leave laws operate. Each column reports the results from a regression similar to the primary specification but with an alternative dependent variable. That is, each column reports the results from a regression of a separate dependent variable on the  $PSL_{ct}$  dummy

<sup>15</sup>For counties without paid sick leave, the annual cap is 0. Similar results are obtained if instead of using a continuous variable, I include a dummy variable that equals 1 if the county has a provision that allows employees to accrue 40 h per year or more (i.e., have a high annual cap).

<sup>16</sup>Similar results are also obtained if I interact the primary independent variable (the dummy variable that equals 1 if the county has a paid sick leave law) with a continuous variable for the vesting period.



TABLE 5 Mechanisms

<b>Panel A: Other measures of consumers' financial difficulties</b>					
	(1)	(2)	(3)	(4)	(5)
	Unemployment rate	Labor force participation rate	Debt to income	Median income	Mean income
Paid sick leave law	-0.908*** (0.139)	0.095 (0.066)	-0.099*** (0.024)	947.767*** (253.170)	14.067 (280.551)
Observations	124,440	124,440	124,440	124,440	124,440
Adjusted $R^2$	0.916	0.985	0.939	0.986	0.994
County fixed effects	X	X	X	X	X
Time fixed effects	X	X	X	X	X
Other public safety nets	X	X	X	X	X
Bankruptcy laws	X	X	X	X	X
Socioeconomic and demographic controls	X	X	X	X	X
<b>Panel B: Other measures of business dynamics</b>					
	(1)	(2)	(3)	(4)	(5)
	Establishment exit rate	Establishment entry rate	Firm deaths	Job destruction rate	Job creation rate
Paid sick leave law	-0.044 (0.055)	-0.005 (0.047)	87.061 (60.654)	0.077 (0.114)	0.125 (0.127)
Observations	29,818	29,818	29,818	29,818	29,818
Adjusted $R^2$	0.724	0.848	0.994	0.397	0.494
County fixed effects	X	X	X	X	X
Time fixed effects	X	X	X	X	X
Other public safety nets	X	X	X	X	X
Bankruptcy laws	X	X	X	X	X
Socioeconomic and demographic controls	X	X	X	X	X

Note: The measures used in Panel B are only available on an annual basis. Therefore, the regressions are performed at an annual rather than a quarterly rate. Other public safety nets, bankruptcy laws, socioeconomic and demographic controls are detailed in Table 2. Regressions are weighted by the county population and standard errors are clustered at the county level.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

variable, county fixed effects, time fixed effects, other public safety nets, bankruptcy laws, socioeconomic and demographic controls.

The first column shows that paid sick leave laws aid consumer by providing employment security. As discussed above, without paid sick leave laws, workers can be fired for taking time off due to illness. Regression results in the first column indicate that paid sick leave laws decrease the unemployment rate, suggesting that paid sick leave laws promote employment stability. As additional evidence that paid sick leave laws decrease job dismissals, the second column examines their impact on the labor force participation rate. Regression results indicate that paid sick leave laws do not impact the likelihood of joining the labor force. Again, these findings indicate that paid sick leave laws promote assistance to individuals already in the labor force—these laws allow workers to maintain employment when they are ill. In providing employment security, paid sick leave laws enable workers to avoid periods in which they would earn no labor income. Thus, workers are better able to smooth their consumption without increasing their debt. Indeed, the results in the third column show that paid sick leave laws reduce the mean debt-to-income ratio.

The remaining two columns in this panel show that paid sick leave laws are particularly beneficial for low-income workers. Paid sick leave laws increase median income (fourth column) but do not impact mean income (fifth column). Together, these results indicate that paid sick leave laws are particularly impactful for workers at the bottom of the income distribution. This is consistent with the amount of income stability they provide—on average, 40 h of paid leave. Again, this is the most impactful for financially fragile, low-income consumers.

The insignificant coefficients in the tables above likely indicate that paid sick leave laws do not impact business bankruptcies. However, business bankruptcy is, admittedly, an extreme outcome. Therefore, the Panel B of Table 5 explores other ways in which paid sick leave laws may impact business dynamics.<sup>17</sup> For example, paid sick leave laws may cause businesses to exit outside of bankruptcy. To examine this scenario, the first column examines the impact of paid sick leave laws on the establishment exit rate. The establishment exit rate is calculated as the count of establishment exits in year  $t$  divided by the average count of employment active establishments in year  $t$  and year  $t - 1$ . Regression results shows that paid sick leave laws do not impact the rate at which establishments exit. Relatedly, paid sick leave laws may discourage establishments from entering a market. Therefore, the second column examines the impact of paid sick leave laws on the establishment entry rate. Analogous to the establishment exit rate, the establishment entry rate is calculated as the count of establishment entry in year  $t$  divided by the average count of employment active

<sup>17</sup>The sample size is reduced in the regressions in Panel B because the measures used in this panel are only available on an annual basis. An additional 1292 observations were dropped from the sample due to missing data.

**TABLE 6** Effects of paid sick leave laws by chapter

<b>Panel A: Consumer bankruptcy filing rates</b>			
	<b>(1) Consumer bankruptcy filing rate</b>	<b>(2) Consumer Chapter 7 filing rate</b>	<b>(3) Consumer Chapter 13 filing rate</b>
Paid sick leave law	-0.139*** (0.046)	-0.125*** (0.026)	-0.014 (0.031)
Observations	124,440	124,440	124,440
Adjusted $R^2$	0.880	0.831	0.895
County fixed effects	X	X	X
Time fixed effects	X	X	X
Other public safety nets	X	X	X
Bankruptcy laws	X	X	X
Socioeconomic and demographic controls	X	X	X
<b>Panel B: Business bankruptcy filing rates</b>			
	<b>(1) Business bankruptcy filing rate</b>	<b>(2) Business Chapter 7 filing rate</b>	<b>(3) Business Chapter 11 filing rate</b>
Paid sick leave law	0.001 (0.002)	0.001 (0.001)	-0.000 (0.001)
Observations	124,440	124,440	124,440
Adjusted $R^2$	0.265	0.298	0.095
County fixed effects	X	X	X
Time fixed effects	X	X	X
Other public safety nets	X	X	X
Bankruptcy laws	X	X	X
Socioeconomic and demographic controls	X	X	X

*Note:* In Panel A, the dependent variables are the consumer bankruptcy filing rates by chapter (the number of consumer bankruptcy filings by chapter per 1000 persons). In Panel B, the dependent variables are the business bankruptcy filing rates by chapter (the number of business bankruptcy filings by chapter per 1000 persons). Sick leave law is a dummy variable that equals one if a paid sick leave law is in effect. Other public safety nets, bankruptcy laws, socioeconomic and demographic controls are detailed in Table 2. Regressions are weighted by the county population and standard errors are clustered at the county level.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

establishments in year  $t$  and year  $t - 1$ . The results in the second column indicate that paid sick leave laws do not impact the rate at which establishments enter.

Instead of examining the impact of paid sick leave laws at the establishment level, the third column of this panel examines whether paid sick leave laws impact business dynamics at the firm level. Specifically, in the third column, the dependent variable is firm deaths. Firm deaths are the count of firms that have exited in their entirety during the past year—all establishments owned by the firm must exit to be considered a firm death. This definition is stricter than the establishment exit rate. For example, a firm with 100 establishments would not qualify as a firm death if 99 exited while 1 continued under a different ownership (U.S. Census, 2019). As seen in the third column, paid sick leave laws do not impact the number of firm deaths.

The next two columns of the panel examine the impact of paid sick leave laws at the employment level. The fourth and fifth columns examine the impact of paid sick leave laws on the job destruction rate and job creation rate. The job destruction (creation) rate is calculated as the count of all employment losses (gains) from contracting and closing (expanding and opening) establishments in year  $t$  divided by the average employment in year  $t$  and year  $t - 1$ . As seen in the fourth and fifth columns, paid sick leave laws do not impact employment. In conclusion, the Panel B of Table 5 indicates that paid sick leave laws likely do not have a statistically significant impact on other measures of business dynamics.

## Analysis by chapter

Table 5 shows that paid sick leave laws provide the greatest assistance to the most financially fragile workers. As detailed in the institutional background, these consumers are best suited for a Chapter 7 bankruptcy as opposed to a Chapter 13 bankruptcy. Although the primary focus of the paper is on the impact of paid sick leave laws on the overall bankruptcy rate, Table 6 examines the heterogeneous impact of paid sick leave laws by chapter.

As with the other tables, Panel A examines the impact of paid sick leave laws on consumer bankruptcy. The first column reprints the results of the primary specification (the impact of paid sick leave laws on the overall bankruptcy rate). The second column shows the impact of paid sick leave laws on Chapter 7 filing rates (defined as the number of Chapter 7 consumer bankruptcy filings per 1000 persons) while the third column shows the impact of paid sick leave laws on Chapter 13 filing rates (defined as the number of Chapter 13 consumer bankruptcy filings per 1000 persons). Consistent with the discussion in the institutional background, results in the second column show that paid sick leave laws have a negative and statistically significant impact on Chapter 7 filing rates.

Specifically, the results in the second column indicate that paid sick leave laws decrease the Chapter 7 filing rate by 0.125 filings per 1000 people. Recall from Table 2, that during the time period studied here, the average Chapter 7 filing rate in treated counties was 0.747 filings per 1000 persons. Thus, this coefficient shows that paid sick leave laws reduce Chapter 7 filing rates by approximately 17%. Results in the third column show that these laws do not appear to have a significant impact on Chapter 13 filing rates. The coefficient of interest is statistically insignificant. Again, these results align with the discussion in the institutional background. They also reaffirm the results from Table 5, which show that paid sick leave laws are particularly beneficial for low-income consumers, best suited for Chapter 7 bankruptcy.

Panel B performs a similar analysis for business bankruptcy filing rates. Again, Table 3 indicates that, on average, paid sick leave laws do not impact the overall bankruptcy filing rate. Furthermore, Table 5 indicates that, on average, paid sick leave laws do not have a statistically significant impact on other measures of business dynamics. In Panel B, I examine whether they have a heterogeneous impact across firms. Recall that Chapter 7 is typically considered the “chapter of last resort,” predominantly used when a business lacks the financing to pursue reorganization or liquidation through Chapter 11. Thus, by looking at the impact of paid sick leave laws on each chapter’s filing rate, one can consider whether they have a heterogeneous effect on the most financially fragile businesses. Results in the second and third columns indicate that paid sick leave laws do not have a statistically significant impact on either the Chapter 7 filing rate (defined as the number of Chapter 7 business bankruptcy filings per 1000 persons) or the Chapter 11 filing rate (defined as the number of Chapter 11 business bankruptcy filings per 1000 persons). Again, this is consistent with the results above. I do not find evidence that paid sick leave laws harm businesses, even among the most financially fragile firms.

## ROBUSTNESS CHECKS

### Additional tests for spatial heterogeneity

The estimates from Equations (1) and (2) rely on the parallel trends assumption which presumes that bankruptcy rates evolve in a similar manner in all counties. Even though the specifications control for systematic differences in bankruptcy rates across counties through the use of numerous covariates including county fixed effects and time fixed effects, it may still be the case that the identification of the treatment effect comes from trends in bankruptcy rates that are correlated with the passage of paid sick leave laws. And while the event study analysis examines the parallel trends assumption, one concern may be that there is still

TABLE 7 Tests for spatial heterogeneity

<b>Panel A: Consumer bankruptcy filing rates</b>					
	(1)	(2)	(3)	(4)	(5)
Paid sick leave law	-0.139*** (0.046)	-0.061 (0.038)	-0.106* (0.063)	-0.231*** (0.049)	-0.220*** (0.071)
Observations	124,440	124,440	124,440	118,760	118,760
Adjusted $R^2$	0.880	0.926	0.661	0.803	0.859
Other public safety nets	X	X	X	X	X
Bankruptcy laws	X	X	X	X	X
Socioeconomic and demographic controls	X	X	X	X	X
County fixed effects	X	X			
Time fixed effects	X			X	
State fixed effects			X		
State-specific time effects		X			
State-specific time trend			X		
MSA fixed effects				X	X
MSA-specific time trend					X
<b>Panel B: Business bankruptcy filing rates</b>					
	(1)	(2)	(3)	(4)	(5)
Paid sick leave law	0.001 (0.002)	0.000 (0.003)	-0.001 (0.003)	-0.004 (0.002)	-0.003 (0.003)
Observations	124,440	124,440	124,440	118,760	118,760
Adjusted $R^2$	0.265	0.327	0.223	0.238	0.290
Other public safety nets	X	X	X	X	X
Bankruptcy laws	X	X	X	X	X
Socioeconomic and demographic controls	X	X	X	X	X
County fixed effects	X	X			
Time fixed effects	X			X	
State fixed effects			X		
State-specific time effects		X			
State-specific time trend			X		
MSA fixed effects				X	X
MSA-specific time trend					X

*Note:* In Panel A, the dependent variable is the consumer bankruptcy filing rate (the number of consumer bankruptcy filings per 1000 persons). In Panel B, the dependent variable is the business bankruptcy filing rate (the number of business bankruptcy filings per 1000 persons). Other public safety nets, bankruptcy laws, socioeconomic and demographic controls are detailed in Table 2. Regressions are weighted by the county population and standard errors are clustered at the county level.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

spatial heterogeneity in bankruptcy rates. In this section, I address this concern by including additional location-specific time effects.

For example, bankruptcy rates may follow dissimilar paths in states that did and did not adopt paid sick leave laws. To address such heterogeneity, I include state-specific time fixed effects ( $\tau_{st}$ ). These state-specific time fixed effects control for time varying unobservable state-level factors<sup>18</sup>:

$$\text{Bankruptcy}_{ct} = \alpha + \beta \text{PSL}_{ct} + \gamma X_{ct} + \phi_c + \tau_{st} + \varepsilon_{ct}. \quad (3)$$

In this specification, identification comes from counties within the same state that have different paid sick leave laws. Results from this specification can be found in the second column of Table 7. (To assist the reader, the results of the primary specification have been reprinted in the first column of Table 7.) As seen in the second column of Table 7, including these 2000 state-specific time-fixed effects (50 states \* 40 quarters) has a minimal impact on the adjusted  $R^2$ , indicating that the results are unlikely driven by unobserved time varying state-level characteristics.

In the third column, state fixed effects ( $\phi_s$ ) and state-specific linear time trends ( $\theta_{st}$ ) are included. The state-specific fixed effects control for systematic differences between states while state-specific linear time trends control for unobservable state-level factors that evolve at a constant rate over time:

$$\text{Bankruptcy}_{ct} = \alpha + \beta \text{PSL}_{ct} + \gamma X_{ct} + \phi_s + \theta_{st} + \varepsilon_{ct}. \quad (4)$$

In this specification, identification comes from deviations in the bankruptcy rate from linear trends in counties that adopted paid sick leave laws relative to counties within the same state that did not adopt these laws. The limitations of state-specific linear trends have been widely discussed in the literature, mainly that they remove time-varying treatment effects (Lee & Solon, 2011). Therefore, as discussed in Dhaval et al. (2021), the estimates obtained from this regression should be considered lower bounds on the treatment effect. Indeed, as seen in the third column of Table 7, with the inclusion of state-specific linear time trends, the coefficient of interest is smaller and only significant at the 10% level. In addition, the adjusted  $R^2$  declines, indicating the results of the difference-in-differences specification are unlikely driven by state-specific time trends.

The next specification includes MSA-specific fixed effects ( $\phi_m$ )<sup>19</sup>:

<sup>18</sup>In this specification, covariates detailing whether the ACA is in effect and the maximum unemployment insurance benefits are dropped due to multicollinearity as these covariates are defined at the state level.

<sup>19</sup>A MSA consists of one or more counties that contain a city of 50,000 or more inhabitants, or contain a Census Bureau defined Urbanized Area with a total population of at least 100,000 (75,000 in New England). As some counties are not part of a MSA, including MSA specific time effects decreases my sample size.

$$\text{Bankruptcy}_{ct} = \alpha + \beta \text{PSL}_{ct} + \gamma X_{ct} + \phi_m + \tau_t + \varepsilon_{ct}, \quad (5)$$

where  $\phi_m$  sweeps out the variation between MSAs. In other words,  $\phi_m$  controls for unobserved time invariant MSA-level factors that impact bankruptcy rates. Thus, identification is based on counties within the same metropolitan area that have different paid sick leave laws. This specification shows that including these additional location-specific effects decreases the adjusted  $R^2$  relative to the baseline specification, indicating that the results are unlikely driven by time invariant MSA-level factors.

The final specification includes MSA-specific linear time trends ( $\theta_m t$ ):

$$\text{Bankruptcy}_{ct} = \alpha + \beta \text{PSL}_{ct} + \gamma X_{ct} + \phi_m + \theta_m t + \varepsilon_{ct}, \quad (6)$$

where identification comes from deviations in the bankruptcy rate from linear trends in counties that adopted paid sick leave laws relative to counties within the same MSA that did not adopt these laws. As seen in the last column of Table 7, with the inclusion of MSA-specific linear time trends, the adjusted  $R^2$  declines relative to the baseline specification, indicating the results of the difference-in-differences specification are unlikely driven by MSA-specific time trends.

Panel B performs similar analyses for the business bankruptcy filing rate. With the inclusion of various location-specific time fixed effects and location-specific linear time trends, the coefficient of interest remains insignificant in all specifications. Moreover, the adjusted  $R^2$  remains similar in all specifications.

## Biased due to staggered difference-in-differences methodology

The staggered difference-in-differences methodology employed in this paper offers several benefits. For example, with a single treatment period, a typical concern is that the estimated treatment effect is driven by contemporaneous trends other than the treatment of interest. By comparison, with a staggered difference-in-differences methodology, the presence of multiple treatment periods plausibly alleviates concerns of these contemporaneous trends. However, a growing econometric literature (including Goodman-Bacon, 2021; Callaway & Sant'Anna, 2021; de Chaisemartin & D'Haultfoeuille, 2020; Sun & Abraham, 2021) has pointed to potential bias in the staggered difference-in-differences methodology.

Goodman-Bacon (2021) details how the standard TWFE difference-in-differences estimate is a weighted average of all possible two-group/two-period difference-in-differences estimates. Meaning, counties that implement a paid sick leave law at time  $t_k$  are compared to two possible control groups:



**TABLE 8** Alternative methods for estimating causal effect with staggered difference-in-differences

	(1) Consumer bankruptcy filing rate	(2) Business bankruptcy filing rate
Benchmark specification	-0.139*** (0.046)	0.001 (0.002)
Goodman-Bacon	-0.195*** (0.028)	-0.005** (0.002)
Callaway and Sant'Anna	-0.050** (0.024)	0.004 (0.005)
de Chaisemartin and D'Haultfoeuille	-0.049** (0.020)	0.002 (0.009)

*Note:* In the first column, the dependent variable is the consumer bankruptcy filing rate (the number of consumer bankruptcies per 1000 persons). In the second column, the dependent variable is the business bankruptcy filing rate (the number of business bankruptcies per 1000 persons). Regressions include county fixed effects, time fixed effects, other public safety nets, bankruptcy laws, and socioeconomic and demographic controls as detailed in Table 2. Regressions are weighted by the county population and standard errors are clustered at the county level. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

(1) counties that never implement a paid sick leave law and (2) counties that have not yet implemented a paid sick leave law by time  $t_k$ . In this setting, there are  $k = 19$  timing groups. (As seen in Tables 1, 19 groups of counties impose a paid sick leave law in the same quarter.) Thus, the TWFE difference-in-differences estimate is constructed from  $19^2 = 361$  distinct two-by-two treated/control comparison groups. 19 of these treated/control comparison groups compare treated and never treated counties while 342 of these treated/control comparison groups compare earlier-treated counties to later-treated counties. In the presence of time-varying treatment effects, comparisons between these earlier and later implementing counties may introduce bias into the TWFE difference-in-differences estimate. This could bias the TWFE difference-in-differences estimate away from the sign of the true effect (referred to as negative weighting).

In this setting, the potential bias is likely small. Results from Figure 3 show that paid sick leave laws have a homogenous treatment effect over time. Moreover, the number of counties that never implement a paid sick leave law ( $n = 2805$ ) is large relative to previously treated control counties ( $n = 327$ ), thus reducing the share of the problematic two-by-two difference-in-differences comparisons using early treated counties as controls for late-treated counties. Nonetheless, Table 8 explores this possible bias in more detail.

The second row of Table 8 provides results from a difference-in-differences specification estimated using the Goodman-Bacon decomposition method. The

Goodman-Bacon decomposition method provides estimates for each of the two-by-two treated/control comparison groups and calculates the weight associated with each one. This approach yields an estimated effect that is largely consistent with the baseline results. The first column shows that the Goodman-Bacon approach estimates that paid sick leave laws lower the consumer bankruptcy filing rate by 0.195 filings per 1000 persons per quarter.<sup>20</sup> The effect is again significant at the 1% level. The second column finds that paid sick leave laws decrease the business bankruptcy filing rate by 0.005 filings per 1000 persons per quarter.<sup>21</sup>

Table 8 implements several additional approaches to further examine the potential bias caused by staggered implementation. The Callaway and Sant'Anna (2021) approach estimates a group-time average treatment effect on the treated (ATT) that is unique for each of the 19 timing groups. This effect is dynamic—for each group, the parameter is allowed to vary over each quarter. The third row of Table 8 reports the aggregated ATT for all groups and all time periods. This method also shows that paid sick leave laws have a statistically significant negative effect on consumer bankruptcy filing rates and no effect on business bankruptcy filing rates.

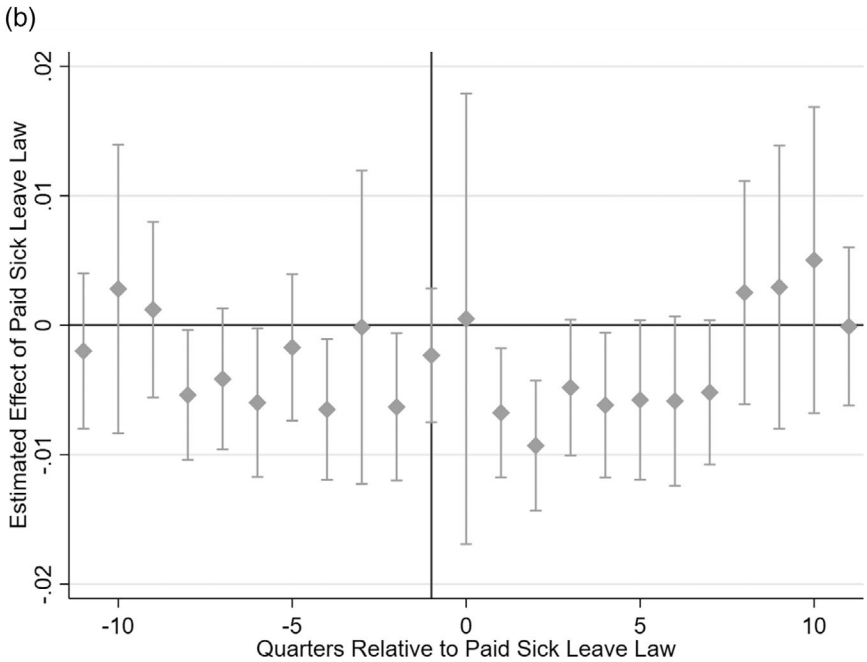
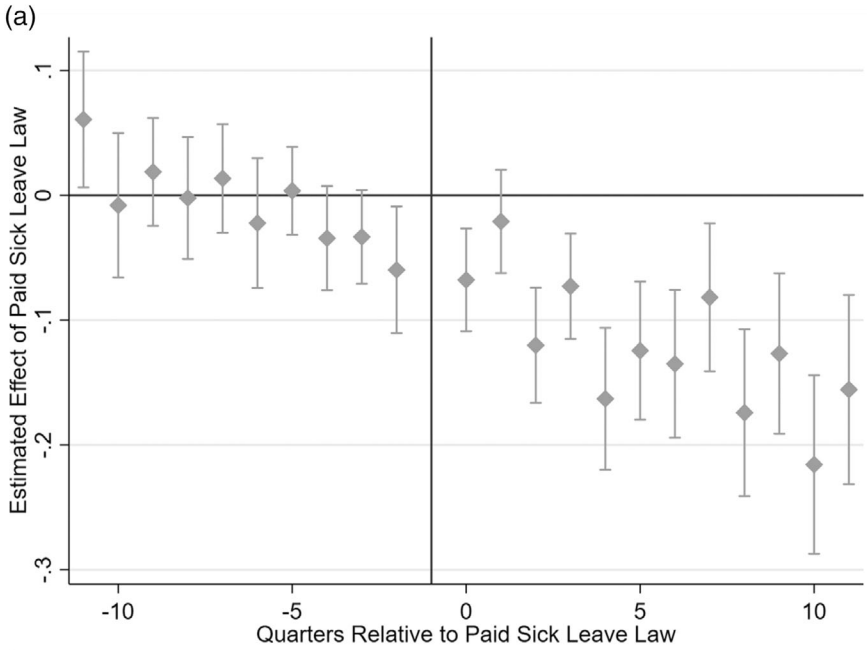
As an alternative procedure, de Chaisemartin and D'Haultfoeuille (2020) develop an estimator corresponding to the average treatment effect of all group-time cells whose treatment status changes between two consecutive time periods. This approach estimates that 99.9% of the treatment effects receive a positive weight. Again, this suggest that there is not likely to be substantial bias in my estimated ATT due to negative weights, that is, problematic two-by-two difference-in-differences comparisons that bias the ATT away from the sign of the true effect. Indeed, the fourth row of Table 8 shows that this approach produces similar estimates to the benchmark specification.

Of additional concern, coefficients presented in Figure 3 may be biased by the staggered implementation of paid sick leave laws if there is heterogeneous treatment across cohorts. This would mean that the coefficients from standard TWFE event study models would not be casually interpretable. Specifically, Sun and Abraham (2021) show that the probability limit of the preperiod coefficients,  $\beta_j$  for  $j < 0$ , may be nonzero and that the probability limit of the postperiod coefficients,  $\beta_j$  for  $j > 0$ , may not correspond with a convex weighted averages of cohort-specific treatment effects. Sun and Abraham's alternative methodology estimates a group-specific dynamic effect and from those calculate

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<sup>20</sup>Detailed decomposition results reveal that each two-by-two comparison group yields a negative difference-in-differences estimate. In addition, the decomposition reveals that 85 percent of the estimated effect is driven by the unproblematic comparisons between treated and untreated counties.

<sup>21</sup>Again, detailed decomposition results reveal that 85% of the estimated effect is driven by the unproblematic comparisons between treated and untreated counties. The difference-in-differences estimate derived from comparing treated and untreated counties yields an estimated effect that is negative. However, the remaining two-by-two comparison groups yield a positive difference-in-differences estimates.



a group-specific estimate. It uses never-treated or last-treated counties as the control group and is constructed as weighted average of treatment effects for each  $k = 19$  timing groups and each relative time after or before the law's implementation. The Sun and Abraham estimator requires excluding from the estimation all time periods in which units in the control group are treated. Results from this alternative estimator are presented in Figure 4. Figure 4 shows results that are similar to the traditional event study plot presented in Figure 3.

In conclusion, while these alternative approaches yield estimates that may differ slightly in magnitude, they, in general, exhibit similar patterns as the baseline results and are not in general statistically different. This should alleviate concerns that the results are biased by the staggered difference-in-differences methodology.

### **Bias due to unbalanced panel with respect to event time**

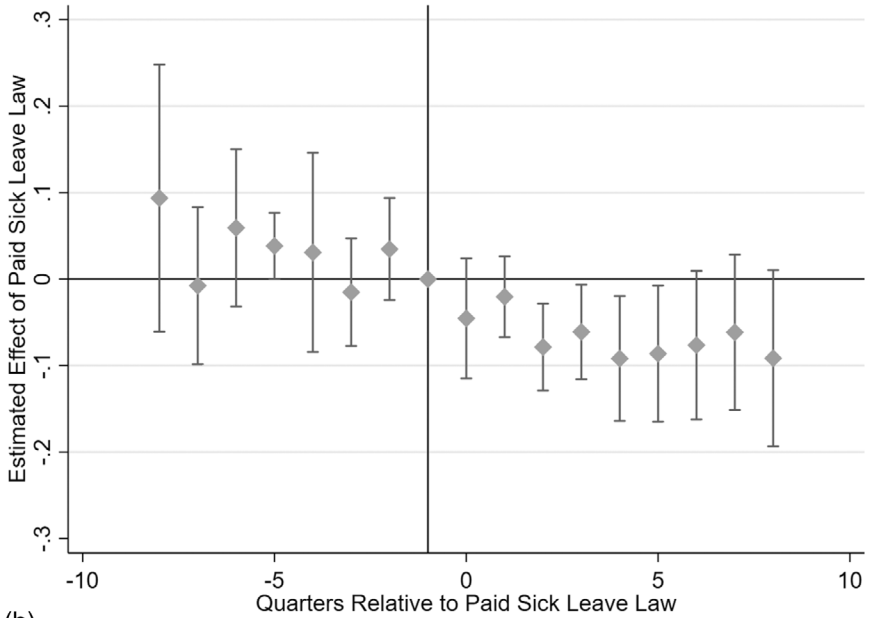
In addition, one might be concerned that the results in Figure 3 are biased because the panel is unbalanced with respect to event time. Again, the dataset is a balanced panel of counties with respect to calendar time; all counties are observed from the first quarter of 2010 to the last quarter of 2019. However, the sample is unbalanced with respect to event time. For example, one locality, San Francisco, is only observed after a paid sick leave law goes into effect. Thus, this locality is only used to identify posttreatment effects. At the other extreme, Westchester County is only observed for two quarters after a paid sick leave law goes into effect and therefore is mostly utilized to identify pretreatment effects. As detailed in Callaway and Sant'Anna (2021), such compositional changes can complicate the interpretation of the parameters—in particular, the parameters capture the treatment effect as well as the different composition of counties at each length of exposure.

Thus, as a robustness check, I restrict the sample to a balanced panel with respect to event time. For this restricted sample, counties must appear eight quarters before and eight quarters after a paid sick leave law goes into effect, so that I can estimate both pretreatment and posttreatment trends from the same set of counties. When I impose this restriction, the sample size declines to

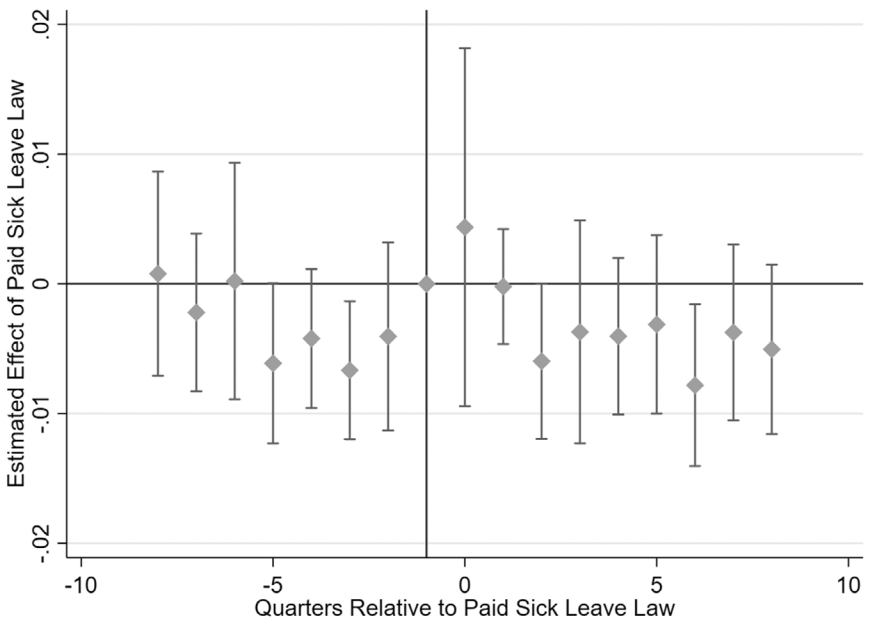
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**FIGURE 4** Event study of paid sick leave laws on bankruptcy filing rates using the Sun and Abraham (2021) technique. (a) Consumer bankruptcy filing rate. (b) Business bankruptcy filing rate. The graph shows coefficient estimates and the 95% confidence intervals in the 12 quarters before and 12 quarters after paid sick leave laws become effective. Results are from a regression that includes county fixed effects, time fixed effects, other public safety nets, bankruptcy laws, and socioeconomic and demographic controls, detailed in Table 2. Regressions are weighted by the county population and standard errors are clustered at the county level.

(a)



(b)



116,393. However, the remaining sample is comparable along many observable dimensions.

With this restricted sample, the aggregated ATT is calculated for a fixed group. Thus, the estimated coefficients do not suffer from compositional changes. As seen in Figure 5, with this sample, I find no statistically significant trends in bankruptcy filing rates before a paid sick leave law goes into effect. Moreover, the estimated treatment effects are similar in magnitude and statistical significance, despite the reduced sample size.

### Nationwide downward trend in bankruptcy rates

The time period studied here is characterized by a consistent decline in bankruptcy filing rates nationwide. The specifications above include time fixed effects to control for any nationwide changes in bankruptcy rates. In addition, robustness checks above include state-specific time fixed effects, state-specific linear time trends, and MSA-specific linear time trends. However, the reader may still be concerned that the estimated effect is biased by this nationwide downward trend. To address this concern, I perform a placebo test that randomly varies the timing of paid sick leave laws among treated counties. Figure 6 plots the distribution of 1000 replications of these randomized timing placebo tests. The mean and standard deviation of the distribution of coefficients from the 1000 replications is used to construct the 95% confidence intervals, also shown in the figure. Finally, the figure plots the coefficient estimates from the primary specification.

Panel A plots the distribution of estimates produced by a placebo treatment on consumer bankruptcy filing rates while Panel B plots the distribution of estimates produced by a placebo treatment on business bankruptcy filing rates. As seen in Panel A, the distribution of these estimates has a mean of 0.001 with a standard deviation of 0.020. The model's estimate of  $-0.139$  lies well below the 95% confidence interval which ranges from  $-0.032$  to  $0.033$ . This suggests that the negative and significant effect of paid sick leave laws on consumer bankruptcy rates is unlikely driven by unobserved factors. In Panel B, the distribution of these estimates is also centered around zero (mean value of 0.000 with a

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**FIGURE 5** Event study of paid sick leave laws on bankruptcy filing rates using a balanced panel with respect to event time. (a) Consumer bankruptcy filing rate. (b) Business bankruptcy filing rate. The graph shows coefficient estimates and the 95% confidence intervals in the eight quarters before and eight quarters after paid sick leave laws become effective. Results are from a regression that includes county fixed effects, time fixed effects, other public safety nets, bankruptcy laws, and socioeconomic and demographic controls, detailed in Table 2. Regressions are weighted by the county population and standard errors are clustered at the county level.

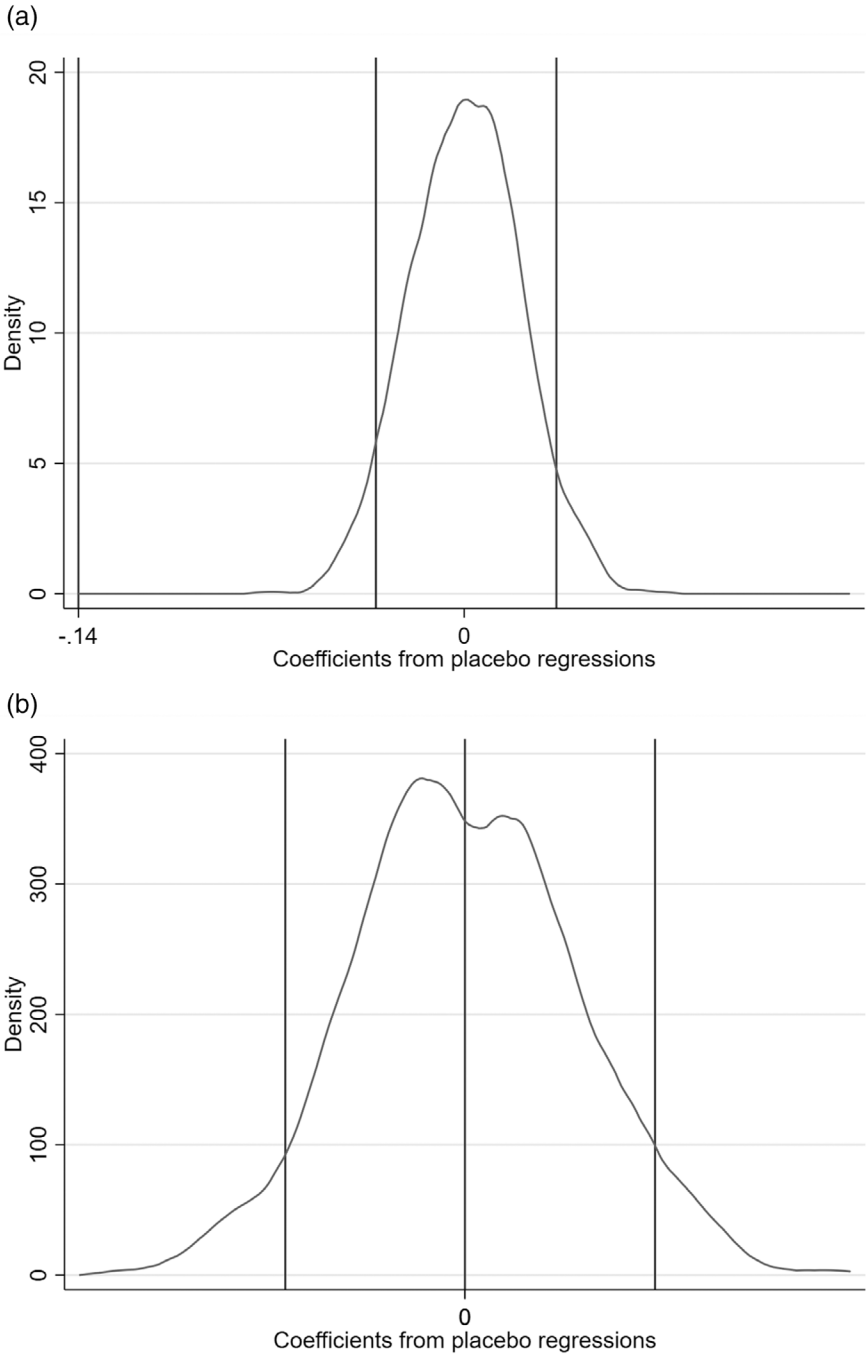


FIGURE 6 Legend on next page.

standard deviation of 0.001). The model's estimate of 0.001 lines well within the 95% confidence interval, again suggesting that paid sick leave laws do not impact business bankruptcy filing rates.

### Shortened pretreatment period

Although the pretreatment effects are not statistically different from zero, the reader may be concerned, when looking at Figures 3–5, of a possible long pretreatment downward trend. Therefore, for the next robustness check, I limit the sample to four pretreatment quarters. Limiting the pretreatment sample to four quarters reduces my sample size to 116,513 but lessens such bias. As seen in the second column of Table 9, the results remain similar in magnitude and significance. Even with the reduced sample size, paid sick leave laws have a negative impact on consumer bankruptcy filing rates and a statistically insignificant impact on business bankruptcy filing rates.

### Widened geographic unit: Potential spillovers

Another concern with the above findings is that they do not fully capture the impact of paid sick leave laws on the subpopulation of workers that are drawn from outside the county. As a significant number of workers commute across county lines, in this section, I augment the treatment group to include both the 327 “primary” counties that enact their own paid sick leave law and the 185 “neighboring” counties that border a county with a paid sick leave law. For example, consider the paid sick leave law that went into effect in Chicago and Cook County in July 2017. In this analysis, Cook County and its six neighboring counties which did not enact a paid sick leave law during the sample period (Lake County, IL; Kane County, IL; Will County, IL; Lake County, IN; DuPage County, IL; and McHenry County, IL) are all defined as “treated” counties exposed to paid sick leave laws. Again, this definition captures those

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**FIGURE 6** Placebo test: randomized timing of paid sick leave laws. (a) Consumer bankruptcy filing rate. (b) Business bankruptcy filing rate. The figure shows the kernel density distribution of 1000 replications of the primary specification where the timing of paid sick leave laws is randomized assigned to counties that pass a paid sick leave law. Results are from a regression that includes county fixed effects, time fixed effects, other public safety nets, bankruptcy laws, and socioeconomic and demographic controls, detailed in Table 2. Regressions are weighted by the county population and standard errors are clustered at the county level. The figure also shows the estimated coefficient from the primary specification and the confidence interval based on the mean and standard deviation of the distribution of coefficients from the 1000 replications.



**TABLE 9** Additional robustness checks

<b>Panel A: Consumer bankruptcy filing rates</b>					
	(1)	(2)	(3)	(4)	(5)
Paid sick leave law	-0.139*** (0.046)	-0.053* (0.032)	-0.111* (0.060)	-0.205*** (0.058)	-0.227*** (0.028)
Observations	124,440	116,513	124,440	123,440	124,440
Adjusted R <sup>2</sup>	0.880	0.885	0.855	0.876	0.792
County fixed effects	X		X	X	X
Time fixed effects	X	X	X	X	X
Other public safety nets	X	X	X	X	X
Bankruptcy laws	X	X	X	X	X
Socioeconomic and demographic controls	X	X	X	X	X
4 Pretreatment quarters		X			
Widened geographic unit			X		
State-level mandates				X	
Unweighted					X
<b>Panel B: Business bankruptcy filing rates</b>					
	(1)	(2)	(3)	(4)	(5)
Paid sick leave law	0.001 (0.002)	0.002 (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.006*** (0.002)
Observations	124,440	116,513	124,440	123,440	124,440
Adjusted R <sup>2</sup>	0.265	0.219	0.243	0.239	0.042
County fixed effects	X		X	X	X
Time fixed effects	X	X	X	X	X
Other public safety nets	X	X	X	X	X
Bankruptcy laws	X	X	X	X	X
Socioeconomic and demographic controls	X	X	X	X	X
4 Pretreatment quarters		X			
Widened geographic unit			X		
State-level mandates				X	
Unweighted					X

*Note:* In Panel A, the dependent variable is the consumer bankruptcy filing rate (the number of consumer bankruptcy filings per 1000 persons). In Panel B, the dependent variable is the business bankruptcy filing rate (the number of business bankruptcy filings per 1000 persons). Other public safety nets, bankruptcy laws, socioeconomic and demographic controls are detailed in Table 2. In the third column, the treatment group includes both the 327 “primary” counties that enact their own paid sick leave law and the 185 “neighboring” counties that border a county with a paid sick leave law. In the fourth column, the treatment group includes all counties in a state that enacts its own state-level paid sick leave law. This analysis omits counties that enact their own law, omitting all county and city level mandates. In the first to fourth columns, regressions are weighted by the county population. Fifth column presents results from the unweighted analysis. In the first, second, fourth, and fifth columns, standard errors are clustered at the county level. In the third column, standard errors are clustered at the widened geographic unit.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

workers who commute from neighboring counties and potentially file for bankruptcy in their home county.

I re-estimate Equation (1), when again, the dummy variable of interest equals 1 for all “treated” counties (primary and neighboring counties). Results from these regressions can be found in the third column of Table 9. In these regressions, standard errors are clustered at the level of the 327 “primary counties” associated with each group of neighboring counties.

To the extent that paid sick leave laws draw workers from neighboring counties, the estimates in Table 9 capture both the impact of these laws on residents of the county as well as the impact of these laws on workers who commute. Not surprisingly, in the Panel A, the coefficient of interest is smaller in magnitude but remains significant. Hence, accounting for potential spillovers over a larger spatial unit to account for commuting across borders does not alter the results. In the Panel B, when examining the impact on business bankruptcy rates, the coefficient of interest is negative but remains statistically insignificant.

### Identification based only on state laws

As an additional robustness check, in this section I examine the impact of state mandates, omitting all county- and city-level mandates. (Again, as seen in Table 1, during the time period studied here, there were 31 county or city-level mandates and 11 state mandates.) For this analysis, the primary dummy variable,  $PSL_{ct}$ , equals 1 if county  $c$  is in a state that has a paid sick leave law in effect in time  $t$ . Focusing on state-level mandates is useful for several reasons. First, city mandates only capture a subset of the county population. Second, the identification is cleaner due to spillover effects detailed in the section above. By focusing only on state-level mandates, these measurement errors are reduced. For this analysis, I omit all counties with county- or city-level mandates. Thus, the sample size is reduced to 123,440. As seen in the fourth column of Table 9, this analysis yields results that are larger in magnitude and similar in significance.

### Unweighted analysis

In the main analysis, regressions are weighted by the county population to produce an average treatment effect at the population level. However, one concern may be heterogeneous effects by county size. In the last column of Table 9, I perform the analysis without weighting. The results from the unweighted analysis of consumer bankruptcies are larger, suggesting that paid sick leave laws have a heterogeneous effect across counties—not surprisingly, paid sick leave laws appear to have a larger impact on smaller counties.

Results from the unweighted analysis of business bankruptcies yield a negative coefficient that is statistically significant at the 1% level. This suggests that paid sick leave laws have a heterogeneous impact across counties, plausibly decreasing the business bankruptcy filing rate in small counties. This refutes arguments made by critics of paid sick leave laws—if anything, paid sick leave laws decrease business bankruptcies in small counties.<sup>22</sup>

## CONCLUSION

The COVID-19 pandemic brought the need for paid sick leave to the foreground of policy debates. Indeed, for the first time, the United States enacted paid sick leave at the federal level through the Families First Coronavirus Response Act and the American Rescue Plan. However, these federal acts only provided temporary relief—the paid sick leave offered by these acts expired on December 31, 2020 and September 30, 2021, respectively. Numerous state and local governments rolled out new or temporary extensions to their paid sick leave laws, drawing additional attention to the public policy.

This paper shows that paid sick leave laws decrease consumer bankruptcy filing rates. It employs two different methodologies, both of which use a quarterly panel dataset at the county level to exploit the geographic and temporal variation in paid sick leave laws. The first approach is a difference-in-differences analysis, comparing the filing rates of counties with and without paid sick leave laws. The second approach is an event study analysis, which provides a dynamic analysis of these laws. Both methodologies show that paid sick leave laws decrease quarterly consumer bankruptcy filings by approximately 0.139 filings per 1000 persons (which represents a 11% decrease in the bankruptcy filing rate). Estimates are larger where paid sick leave mandates are more generous (as measured by the rate at which paid sick leave can be accrued, the number of hours that can be accrued each year, as well as the vesting period).

Results indicate that the employment security and income stability that paid sick leave laws provide is particularly beneficial to financially fragile workers. Estimates are robust to the inclusion of various covariates, include location-specific time effects and location-specific time trends. In addition, estimates do not appear to be biased by the staggered implementation of paid sick leave laws, the unbalanced nature of the panel dataset with respect to event time, the

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<sup>22</sup>Readers may be concerned that the results from the primary specification are biased by the large number of small counties in Texas. For example, results could be biased if there were no business bankruptcies during the entire time period in these small Texas counties. Counties in Texas accounts for 8% of the untreated counties. However, Texas is not overly represented in the sample of untreated counties with no business bankruptcies; 8% of the untreated counties with no business bankruptcies are in Texas. When I perform the unweighted analysis without Texas, results are smaller in absolute magnitude (−0.004) and remain significant at the 5% level. Again, this is consistent with the statement above, that paid sick leave laws likely have a heterogeneous impact across counties, if anything, decreasing business bankruptcy filing rates in small counties.

lengthy pretreatment sample period, or the nationwide downward trend in bankruptcy rates. This paper also explores spillover effects and heterogeneity of the effect by county size.

In addition to highlighting the benefit paid sick leave laws provide workers, this paper addresses concerns raised by the laws' critics—that it is costly for a firm to replace an absent worker. Opponents of these laws argue that they increase firms' costs in a non-trivial manner, that they require costly adjustments to firm's work schedules, HR policies, and monitoring costs, all which may be exacerbated by increased absenteeism. However, this paper does not find evidence that paid sick leave laws have a positive impact on business bankruptcy filing rates or other measures of business dynamics.

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