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ABSTRACT

We investigate the impact of Seattle's Paid Sick and Safety Time (PSST) policy on workers' quarterly hours worked and separation hazard. Using Unemployment Insurance records from before and after the implementation of PSST, we examine individual-level employment behavior at the extensive and intensive margins and compare Seattle workers to workers in Washington state using a difference-in-differences strategy. Importantly, we consider how impacts vary by employment characteristics, including worker wage rate and tenure, and by firm characteristics, including industry and firm size. We find that PSST increased workers' quarterly hours by 4.42 hours per quarter, or around 18 hours per year. While there was no overall impact on workers' separation hazard rates, we observed a 10 percent decrease in separations for workers in firms with more than 50 employees following PSST implementation. Our findings indicate that paid sick leave policies may support workers in increasing their hours and, to a lesser extent, may reduce turnover.

JEL Classification Codes: I18, J08, J63, J68

Key Words: sick pay mandates, hours worked, low-wage employment

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Data availability statement: The data used in this paper come from confidential records on individual employment, hours, places of employment, and earnings from the Washington State Employment Security Department (ESD). These data can be obtained by other researchers, provided they meet select criteria (detailed below). Additionally, the ESD will approve the disclosure of select aggregated data that can be used in the replication process.

1 INTRODUCTION

The United States is unique among OECD countries in its lack of guaranteed paid sick leave (PSL) coverage for workers (Heymann et al. 2021). Most Americans rely on their employers to provide PSL, resulting in inequalities in access and use (Callison and Pesko 2022; Johnson et al. 2022; Susser and Ziebarth 2016). Access to PSL in the absence of public policy varies widely by wage rate: 95 percent of workers with average hourly wages that place them in the top 10 percent of civilian workers have access to paid sick leave, compared to 39 percent of workers with average wages in the bottom 10 percent (Bureau of Labor Statistics 2023). Sick leave policies generally allow workers to accrue job-protected paid time off, which they can use when they or a family member are ill. Workers without access to paid sick leave are more likely to work while sick, due to fear of employer retaliation or of losing their jobs for taking time off work (Romich et al. 2014; Smith and Kim 2010), leading to economic insecurity for their families (Clemans-Cope et al. 2008; Stoddard-Dare et al. 2018), labor market inefficiencies related to turnover (Hill 2013; Wething 2021), and public health challenges (Pichler, Wen, and Ziebarth 2020, 2021).

Lack of sick leave may also impact employers, as workers who come to work sick are more likely to spread disease in the workplace (Pichler, Wen, and Ziebarth 2021), resulting in declines in productivity, poor health outcomes, and ultimately more time out of the workforce (Davis et al. 2005; DeRigne, Stoddard-Dare, and Quinn 2016; Drago and Miller 2010; Smith and Kim 2010). In particular, workers in low-wage jobs, such as service-sector workers, have limited access to sick leave in the absence of public policy, and women are less likely than men to have access (Harknett and Schneider 2022). The COVID pandemic reinforced findings from studies of

influenza showing that access to paid sick leave through public mandates reduces the spread of respiratory illness (Pichler, Wen, and Ziebarth 2020; 2021).

While efforts to establish a federal paid sick leave program by way of the Healthy Families Act have thus far been unsuccessful, many cities and states have passed policies requiring employers to provide paid sick leave benefits to their employees (National Partnership for Women and Families 2021). These policies aim to provide flexibility and job security for workers who become ill and need to take time away from work to care for themselves or others, which can have implications for labor market outcomes. Importantly, mandates will primarily affect low-wage workers who do not otherwise have access to paid sick leave from their employers (BLS 2023).

Paid sick leave laws have been shown to improve population health in the general population (Pichler and Ziebarth 2017; Pichler, Wen, and Ziebarth 2021; Slopen 2023; Wething 2022), reduce the rate of presenteeism (working while sick) (Callison and Pesko 2022; Schneider 2020), increase health-care utilization (Vicente 2017; Jeung, Lee, and Gimm 2021; Ko and Glied 2021) and reduce the rate of absenteeism (Callison and Pesko 2022; Chen, Meyerhoefer, and Peng 2020; Stearns and White 2018).

Moreover, evidence on the labor market suggests that the policy has not been so costly as to be passed down to the worker in the form of losses of employment or earnings (Pichler and Ziebarth 2018), nor does it appear to crowd out nonmandated fringe benefits, such as health, dental, or disability benefits, paid vacation, or holidays (Maclean, Pichler, and Ziebarth 2020). Instead, female workers, the group least likely to have access to paid sick leave prior to such a policy being enacted, experienced increases in employment and earnings in response to state-paid sick leave mandates (Slopen 2022).

Taken together, the available evidence suggests that workers' underlying *work intensity*—shown either by staying on a job longer (altering the extensive margin) or by working more hours (altering the intensive margin)—may be driving these changes by providing a guarantee of flexibility: that short-term, paid, job-secure leave will be available as needed on an intermittent basis. We test these pathways by exploring the impact of paid sick leave policy on the extensive and intensive margin of work for those workers most likely to lack access to paid sick leave in the absence of a public policy: workers employed in low-wage work. We define the extensive margin by workers' employment persistence and the intensive margin by their hours worked within a job. Specifically, we explore the impact of one of the long-standing paid sick leave policies—the 2012 Paid Sick and Safe Time (PSST) Ordinance in Seattle—on workers' quarterly hours worked and hazard rates for those in the bottom twenty-fifth percentile of the wage distribution (workers earning less than $15 per hour).

While there has been some research on how paid sick leave policies have shaped employment and earnings levels (Ahn and Yelowitz 2015; Pichler and Ziebarth 2018; Romich et al. 2014), little is known about the impact of paid sick leave mandates on "work intensity." In her study of employer-provided PSL, Hill (2013) identified reductions in turnover among female employees who had access to paid sick leave through their employers. Given that job turnover is costly to firms and economically destabilizing for workers (Johnson, Kalil, and Dunifon 2012; Kim and von dem Knesebeck 2015; Kuhn and Yu 2021; Morduch and Schneider 2017), it's possible that policies that provide short-term, job-secure leave would lead workers to extend their employment contract.

Recently, Maclean, Pichler, and Ziebarth (2020) examined the number of paid and unpaid sick leave hours taken and the total hours worked in states that had passed paid sick leave laws in

the previous 12 months, using firm-job-level data from the National Compensation Survey. They find no statistically significant evidence of changes in hours worked across all firms. We use administrative data—which allows us to examine hours worked at the individual worker level—to extend this analysis and consider how these impacts might affect the workers least likely to have access to the policy—low-wage workers—and to see how these effects vary by employment characteristics, including tenure, industry, and firm size.

To understand whether the law reached workers who were less likely to have access to paid sick leave benefits before the PSST was implemented, we used a matched difference-in-differences approach to explore the impact of the PSST policy, comparing outcomes for Seattle workers to their matched counterparts in the rest of Washington state before and after the policy was passed. We find that the introduction of the PSST policy led to an increase in hours of 4.423 hours per quarter. The increase in hours was higher for workers in smaller firms (6.164 hours compared to 2.831 hours in larger firms).

Interestingly, we do not find much of a difference in hours worked in service industries compared to other industries. We attribute this to a clause in the law that allowed workers to opt to swap shifts instead of relying on the policy if they preferred. Using Cox proportional-hazard models, we find that the Seattle PSST policy had no impact on workers' separation hazard rates. The results suggest that the policy was too small to impact workers' work-intensity decisions on the extensive margin for the full population, despite the impact on their work intensity at the intensive margin, as workers were able to work more hours under the assurance of flexibility when they needed to take time off to address health-related needs. However, workers in firms with more than 50 employees reduced their hazard of separation by just under 10 percent.

Increasing knowledge in this area is crucial, because in the United States many workplace benefits are tied to the number of hours worked, with part-time workers being more likely to lack access to health insurance (Keisler-Starkey and Bunch 2020) and leave policies (BLS 2020). Studies of the impact of minimum-wage policies on hours worked—which impact similar groups of workers as PSL mandates—have found declines in hours when wages increased (Jardim et al. 2022; Neumark, Schweitzer, and Wascher 2004). However, research on paid family and medical leave policies—which, similar to PSL mandates, provide workers with income replacement and often job security to care for family members—is very limited. There is one study focused on the relatively short-term experiences of workers with a spouse who suffers a health shock (Anand, Dague, and Wagner 2022), but little is understood about the impact of leave policies on hours worked broadly (Bartel et al. 2023). PSL mandates are unique in offering short-term intermittent leave even to part-time workers. If PSL mandates support workers in being able to increase their hours, these relatively low-intensity policies may have broader implications for worker well-being.

The remainder of the paper is structured in the following manner. Section 2 provides additional information on Seattle's paid sick leave policy. Section 3 outlines the administrative data we use from Washington state's Unemployment Insurance records. Section 4 outlines our empirical analyses, and Section 5 describes our results. In Section 6, we conclude with a discussion of the policy implications and future research.

2 POLICY CONTEXT: PAID SICK LEAVE POLICIES

2.1 Seattle's Paid Sick and Safe Time (PSST) Policy

In 2012, Seattle adopted the Paid Sick and Safe Time (PSST) law, becoming one of the first cities in the United States to establish a local PSL policy. Similar to the nationally proposed Health Families Act and other state and local PSL policies, the PSST law requires employers to provide workers in Seattle with intermittent paid leave. Workers can use this leave to care for themselves or a family member with a physical or mental health condition, seek medical care, respond to school closures or place-of-care closures affecting family members, or address issues related to domestic violence (Seattle Office of Labor Standards 2012).[1] Workers were eligible to accrue paid sick leave hours if they were in a firm with four or more full-time-equivalent (FTE) employees. Hours were accrued at the job level: if a worker transitioned from one Seattle firm to another, that worker would have to restart the accrual process, regardless of hours accrued at his or her old firm. The law is enforced through anonymous worker complaints to the Office of Labor Standards.

2.2 Targeting

For employment behavior to change in response to Seattle's paid sick leave law, the policy first had to increase access to paid sick leave and coverage in Seattle's labor market. Survey evidence of 345 Seattle service-industry employers (hospitality, retail, and health care) exposed large gaps in coverage prepolicy, but these gaps were successfully closed because of the policy (Romich 2017). Beyond the average awareness of the policy increasing from 69.1 percent

[1] The Seattle PSST covers all employees whose place of business has been closed by order of a public official for health reasons, and employees of businesses with 250 or ore full-time employees if the business is closed for any health or safety reason.

to 83.5 percent in the year following its adoption, 90.5 percent of Seattle employers reported providing paid sick leave one year after policy enactment, an 11 percentage point increase. These increases were largest for small firms, part-time employees, and the hospitality industry, where coverage rates increased between 27.5 percent and 85 percent.

Moreover, quasi-experimental studies show that state and local paid sick leave policies, such as the policy in Seattle, found the following results: the laws expanded coverage and usage of it (Maury et al., 2023), and reduced presenteeism in the workplace (Callison and Pesko 2022; Pichler and Ziebarth 2017; Stearns and White 2018). In addition, they reduced population-level influenza-like illness and disease rates (Pichler, Wen, and Ziebarth 2021; Pichler and Ziebarth 2017), did not impact attendance, and had little effect on employment and earnings (Pichler and Ziebarth 2018).[2] Taken together, the available literature shows that Seattle's paid sick leave policy had an effect, particularly among low-wage sectors, and that PSL policies improved the health of the affected population in jurisdictions with PSL mandates.

3 DATA

We use longitudinal quarterly employment, hours worked, and earnings records from the Washington State Employment Security Department, which collects quarterly payroll records from employers for all workers that receive earnings in Washington state and thus are eligible for the state's Unemployment Insurance (UI) program. These data are an identifiable version of the

[2] Several studies that don't include Seattle also show that paid sick leave policies increased access to paid sick leave, as well as policy coverage and policy use (Schneider 2020; Callison and Pesko 2022; Maclean, Pichler, and Ziebarth 2020).

Quarterly Workforce Indicator (QWI) data set constructed by the U.S. Census Bureau.[3] Records are uniquely identified by employer-employee matches through employer identification numbers (EINs) and employees' Social Security numbers, respectively. For every quarter the employee-employer match exists in Washington state, employers report the total number of earnings and hours worked by that employee. The employer also reports the physical address of the firm, the firm's industry, and whether there are multiple locations under one EIN (a multiestablishment firm).[4,5,6] Our analysis time frame relies on the 2010Q3-to-2014Q2 data.

While the UI data is advantageous both in its precision and its longitudinal matched nature, there are some limitations. The UI data does not provide wage information from tipped workers or employment information from workers who do not receive a W-2 tax form, including workers in the informal sector, those who are sole proprietors, or those who are independent contractors. While Seattle's local ordinances do not cover self-employed workers or workers in the informal economy, employment effects may be overstated if firms respond to the policy by shifting jobs under the table or outsourcing workers on payroll to contract positions, or if workers shift their employment out of formal work or move out of the state.

[3] The census collects quarterly employment records from all 50 states to create the Longitudinal Employer-Household Dynamics (LEHD) microdata and, from this data, creates data products including the QWI for public use.

[4] Records with missing hours or earnings information were excluded. Earnings include wage and salary earnings and tips (if reported). Hours worked do *not* include paid hours from municipal-level ordinances, like local paid sick leave laws. This allows us to attribute changes in Seattle's paid sick leave to hours worked. We follow convention and trim wages that were less than $7 an hour to avoid measurement error ($7 was the minimum wage in Washington state in 2000), and we drop observations of hours that were fewer than 10 per quarter or greater than 1,000 per quarter to exclude potentially faulty data.

[5] The ESD experienced a record collection issue with certain classes of domestic workers (NAICS code 814000) and home and health-care aides (NAICS 624120). As a result, we exclude jobs in these industries.

[6] We geocode mailing addresses to the exact latitude and longitude coordinates using the Business Analytics 2016 Street Map database from ArcGIS.

4 EMPIRICAL STRATEGY

To estimate the causal effect of paid sick leave on hours worked and separation hazard for low-wage workers—who are most likely to benefit from the policy mandate—we exploit the geography and matched nature of the employee-employer administrative data to identify whether workers are located in and outside of Seattle. The Seattle paid sick leave law went into effect in September of 2012, so our analytic sample consists of workers employed in the quarter prior to the law's enactment, 2012Q2. Table 1 shows that there are 2,407,063 workers in Washington state who were employed during this quarter (2012Q2). To focus on eligible workers, we first drop workers in firms that were not subject to the law: those who work in firms with fewer than four full-time-equivalent workers (219,957), those who work in new firms (66,164), and public-sector workers (87,152). Additionally, because Seattle is located within the larger King County, we drop 486,017 workers outside of Seattle but within King County from the rolls to avoid choosing comparison workers that may be susceptible to policy spillover. (See Appendix Figure A.1 to view a map of Seattle's area delineated from the surrounding state.) We further drop the 558,819 workers who are employed by firms with multiple locations, as we could not confirm whether they were employed in Seattle. The resulting sample consists of 998,954 Washington workers, 247,249 of whom earn less than $15 an hour.

4.1 Matching

The PSST—like all sick leave policies—should only impact workers who do not have preexisting access to PSL through their employers. As noted above, low-wage workers are much less likely to have access to paid sick leave relative to high-wage peers, so we focus our analysis on these workers. Furthermore, workers in Seattle differ from their peers who work in the rest of Washington state with respect to individual and firm-level characteristics. We first identify low-

wage workers in Seattle as workers in the bottom twenty-fifth percentile of the wage distribution, which rounds to the nearest wage value as workers who earn less than $15 an hour. To create a stronger comparison group of low-wage workers in Washington, we then use nearest-neighbor matching to identify workers in Washington with similar employment, industry, and earnings profiles as these low-wage workers in Seattle. Our sample consists of a one-to-one match that was matched using Mahalanobis (1936) distance, D_{ij}, to measure the distance between individual i and individual j, defined as

$$D_{ij} = (X_i - X_j)' \Sigma^{-1} (X_i - X_j),$$

where Σ^{-1} is the sample-covariance matrix of the covariates, X, in the pool of potential control workers. We match exactly on workers' employment and hire status, and we match on industry conditional on employment in the four quarters prior to the enactment of paid sick leave—the baseline quarter as well as the three prior quarters. In addition, we continuously match workers on quarterly hours worked in their main job, hourly wages (conditional on employment), quarterly earnings, the firm-size group of their employer, and the number of quarters since the worker first appeared in Washington state data in the four quarters prior to the enactment of paid sick leave. These duration measures are left-censored for workers whose employment history extends back before 2005. After matching low-wage Seattle workers to workers in the rest of Washington, we are left with 87,424 workers: 43,712 of whom work in Seattle and 43,712 who work in the surrounding Washington state.

The balance of the unmatched and matched samples for the cohort of workers earning less than $15 an hour who are employed in the baseline is shown in Table 2. In the unmatched sample, we observe that these low-wage Seattle workers have higher quarterly earnings and a

higher employment rate than workers in the rest of Washington state. After matching, these differences decline significantly, with the average distance being 0.0018.

4.2 Identification Strategies

We utilize a difference-in-differences framework to estimate the impact of the Seattle PSST on hours worked and workers' separation hazard. A difference-in-differences framework is valuable to policy analysis because it allows for the isolation of the impact of a policy by controlling for differences both before and after policy implementation as well as for differences between treatment and control groups, allowing for causal findings. Here, the first difference examines changes in employment before and after the Seattle PSST went into effect. The second difference accounts for broader trends that may differ between Seattle and the rest of Washington. By using repeated observations, the unobserved heterogeneity is absorbed by the model, resulting in an estimate of the average treatment effect on the treated (ATT). A causal interpretation of the estimate relies on the parallel trends assumption: that outcomes in Seattle and the rest of Washington would have evolved similarly if the PSST had not been implemented.

To assess the impact of the policy on the intensive margin, we examine changes associated with quarterly hours worked by employed workers. Using the 87,424 workers employed in 2012Q2, we follow them backward for eight quarters and forward for eight quarters to create a balanced panel, beginning in 2010Q3 and stopping in 2014Q2, a year before Seattle's minimum wage policy was enacted.[7] We estimate quarterly hours worked in a worker's main

[7] Two years after the Seattle law was passed, Seattle's Ban the Box legislation was enacted in November 2013. If this law affected employment flows, the Ban the Box legislation might contaminate treatment effects. However, evidence shows that the Ban the Box policy had no effect on exoffender employment and earnings, suggesting that the policy is unlikely to be an important factor during the time period of analysis (Rose 2021).

job, which we determine to be the job for which the worker had the most hours recorded. This is also the job for which a worker can accrue the largest amount of paid sick leave time.

To estimate the impact of the policy on the extensive margin, we employ a survival analysis and compare the hazard rate of separation for low-wage workers in Seattle to that of their matched workers in the rest of Washington. A survival analysis requires that all participants "start" at the same time, so we focus our analysis on a subset of the cohort of workers in 2012Q2: those *hired* in 2012Q2. We follow them eight quarters into the postpolicy period. This is the "first difference" in the difference-in-differences framework. A survival analysis framework cannot simply compare the separation hazard of those hired in 2012Q2 to those hired in every prepolicy quarter from 2010 to 2012. That's because the results would be biased to workers who have been in the Washington State Employment Security Department (ESD) data set for longer periods of time and may incorrectly attribute prepolicy effects to workers who may have been hired prepolicy but then make decisions about their separation postpolicy. To create a comparable prepolicy comparison group, we use the exact same nearest-neighbor match technique outlined in Section 4.1 to create a new cohort of low-wage workers (workers paid less than $15 an hour) who were *hired* eight quarters prior to baseline (2010Q2).[8] Our "second difference" comes from comparing the separation hazard between the Seattle workers hired in 2010Q2 and their nearest-neighbor Washington match in 2010Q2. Appendix Table A.1 shows the different samples used for each analysis.

[8] While it is straightforward to compare workers' hours worked in the eight quarters pre- and postpolicy, if we relied on the hires from the 2012Q2 cohort in the prepolicy exclusively, our results would be biased to workers who have been in the ESD data set for longer periods of time. A job that began in 2006Q2, for example, could be observed for as long as 32 quarters in the data, but a job that exists in 2013 could only be observed for as long as four quarters, leading to noncomparable duration estimates.

4.2.1 Estimation of Intensive Margin of Work Intensity

To measure the impact of the PSST policy on hours worked, conditional on employment, we use a standard two-way fixed effect (difference-in-differences) model. The model can be constructed so that

$$y_{ict} = \alpha + \beta_1(Seattle_c \times Post_t) + \rho_t + \tau_c + \epsilon_{ict} ,$$

where y_{ict} is the number of quarterly hours worked for worker i, *Post* is a binary indicator (0/1) for the postpolicy period, and *Seattle* is a policy indicator equal to 1 if the worker is employed in Seattle in the quarter prior to enactment, and 0 otherwise. The interpretation of β_1 is as the impact of paid sick leave law on workers' hours worked relative to workers in regions without a paid sick leave policy after the policy was enacted. We also include quarterly fixed effects, ρ_t, to control for changes associated with specific quarters, and county-level fixed effects, τ_i, to control for unobservable factors associated with specific counties that might simultaneously affect employment outcomes. Standard errors are clustered at the match level to allow for within-match correlation with hours worked.

4.2.2 Estimation of Extensive Margin of Work Intensity

To explore the impact of the PSST policy on the separation hazard, defined as the number of quarters a worker is employed at a consistent job, we estimate a Cox Proportional Hazard model, interacting the treatment-and-comparison cohort with an indicator of whether the worker is hired in Seattle. The Cox proportional hazard model is advantageous, because it does not require that we specify the functional form of the baseline hazard (Lancaster 1990). The specification is as follows:

$$\lambda(t, Z) = \lambda_0(t) exp\left[\beta' Z(t) + \gamma_1' Treat \times After\right] ,$$

where $\lambda_0(t)$ is the baseline hazard, the variable Z is a set of controls including time and county fixed effects and a vector of annual county-level control measures gathered from the American Community Survey, including unemployment rate, the log population, and median household income. The variable $Treat$ is a dummy variable indicating whether the worker is in Seattle, and the variable $After$ is a dummy that takes the value 1 for the 2012Q2 cohort, 0 for the 2010Q2 cohort. $Treat \times After$ is the interaction between the two variables, and γ_1' identifies the impact of the PSST policy on the separation hazards for Seattle workers hired in the baseline quarter, indicating the policy's impact on the extensive margin of work intensity.

5 RESULTS

Treatment effects of the impact of the PSST policy on hours worked are found in Tables 3 and 4, which present a series of models exploring the impact of the PSST on the overall sample, and then by subgroups of workers who were less likely to have access to paid sick leave benefits before the PSST was implemented. The model estimates the impact of PSST on quarterly hours worked as 4.42 hours, or almost 18 hours per year.

To understand whether the law is reaching workers who were less likely to have access to paid sick leave benefits before the PSST was implemented, columns 2 through 5 of Table 3 show the impact of the PSST policy by wage rate and by the length of time a worker has held the position and firm size. Column 2 suggests that the increase in workers might be concentrated among short-term workers, although the large standard error suggests significant baseline variation in hours for this group. Column 4 reveals that the increase in hours was concentrated among workers in small firms, who increased their hours by 6.165 hours each quarter, as opposed to workers in larger firms, who experienced smaller increases of 2.831 hours in their

quarterly hours worked. To understand whether the PSST policy had differential effects based on a worker's industry, treatment effects of the impact of the PSST policy on hours worked for the food- and service-based industries are presented in Table 4. Columns 2 and 3 show that the PSST policy increased hours in food and drinking establishments at a slightly higher level than for workers in nonfood firms. Columns 4 and 5 show that the impact of the PSST policy on service-based industries is almost one hour greater per quarter than those in non-service-based industries (5.11 vs. 4.21, respectively), suggesting that PSST might cause these workers to decide to increase their work intensity.

Table 5 presents estimates of the impact of Seattle's PSST policy on employment. Column 1 provides contextual information from Table 3, demonstrating the increase in quarterly hours by 4.42 hours. Across all workers, we observe a very small and marginally significant increase in employment. Importantly, there is no significant change in employment in multiestablishment firms, indicating that workers are not moving into jobs where they are not observed in the data following the passage of PSST.

Results from the Cox model on separation hazards can be found in Table 6. Column 1 indicates that among all workers, there is no significant change in the separation hazard. These results corroborate existing literature, which found, both on employment and earnings levels and in the aggregate market, that the policy was not large enough to impact employment decisions at the extensive margin (Pichler and Ziebarth 2018). Workers in larger firms (50 or more FTEs) are almost 10 percent (0.908) less likely to leave their jobs following the PSST (column 3). No significant impact on PSST is observed among workers in smaller firms (4–49 workers, column 2) or in key industries (columns 4 and 6). As a robustness check, we re-estimate our survival models using the Weibull proportional hazard models (Appendix Table A.2). Weibull models

help in the event of tied durations, a common occurrence in our data; however, such models require a parametric specification of the hazard, compared to the semiparametric specification of the Cox model.

6 DISCUSSION AND CONCLUSION

In this paper, we investigated the effect of Seattle's 2012 Paid Sick and Safe Time (PSST) policy on the extensive and intensive margin of work intensity. Using both difference-in-differences and a Cox proportional hazard model, we found that the policy had little to no impact on the separation hazard overall, but that it did reduce turnover at firms with more than 50 full-time employees, as well as had a modest, positive increase in hours worked, making our study one of the first to show an employment response (Slopen 2022 does this as well). These findings, which rely on the spatial and firm-size precision of administrative data, demonstrate the importance of studying interventions in a variety of contexts to understand policy impacts and inform future policy.

Workers who were less likely to have access to paid sick leave prior to the policy's adoption may exhibit larger behavioral changes in response to the policy. Our data allow us to further explore impacts by workers' wage rate, industry, job type, and firm size. We find that low-wage workers in short-term jobs, who were less likely to have access to paid sick leave before enactment of the policy, increase the number of hours worked when sick leave is available. Interestingly, we do not find large or significant differences between industries or firm size, though the difference in point estimates is large between smaller and larger firms. We reason that the lack of policy effects found in the food and accommodation industry may be attributed to the fact that workers had the option to swap shifts rather than use their paid leave.

Alternatively, it may take time for the impacts of PSL policies to be fully realized among subgroups of workers because of learning curves and employer discrimination or retaliation (Maury et al. 2023).

Our paper contributes to a small but growing literature on employment responses to PSL policies, with direct and timely policy implications. The rise in hours worked suggests that, for some, the ability to access paid sick leave provides the freedom to work more without fear of retaliation when they need to take time off to care for themselves or a loved one. This in turn suggests that prior to the policy, workers may have taken on jobs with *fewer* hours, possibly so that they could have the flexibility to take time off for child care if the need arose. In a survey conducted prior to Seattle's PSST policy going into effect, one of the reasons workers reported *not* taking time off when they were sick was fear of retaliation from employers, which suggests that this job-protection dimension of compensation is important (Romich et al. 2014). Our results indicate that paid sick leave policies have the potential to have positive employment impacts, both for workers and for employers who seek to increase productivity.

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7 TABLES AND FIGURES

Table 1 Worker Restrictions for Workers Employed in Washington during the Quarter Prior to the PSST Ordinance, 2012Q2

Total number of Washington workers	2,407,063
Policy restrictions	
Workers in FTE size < 4	219,957
Workers in new firms	66,164
Public-sector workers	87,152
Analytic restrictions	
Workers in surrounding King County	486,017
Workers in multiestablishments	558,819
Total workers, prematch	988,954
Total workers, prematch, who earn < $15 per hour	247,239

SOURCE: Authors' analysis of Washington state unemployment insurance records.

Table 2 Balance Table of Sample: Workers Earning < $15 an Hour

Variable	Unmatched					Matched				
	WA		Seattle		Std diff.	WA		Seattle		Std diff.
	Mean	Std. dev.	Mean	Std. dev.		Mean	Std. dev.	Mean	Std. dev.	
Employment	0.84	0.36	0.85	0.36	–0.01	0.78	0.41	0.78	0.41	0.00
Hours worked	291.46	219.94	291.94	219.71	0.00	269.6	217.3	272.8	227.3	–0.01
Wage rate	11.37	2.12	11.95	2.18	–0.27	13.0	6.5	12.8	4.3	0.03
Earnings	3392.2	2721.5	3576.5	2845.8	–0.07	3583.9	3561.3	3513.6	3181.3	0.02
Duration employed	18.26	9.45	17.81	9.41	0.05	15.3	10.3	15.3	10.2	0.01
Hired	0.23	0.42	0.23	0.42	0.01	0.22	0.41	0.22	0.41	0.00
Industry										
Agriculture	0.18	0.38	0.01	0.07	0.62	0.01	0.07	0.01	0.07	0.00
Mining and utilities	0.02	0.15	0.01	0.12	0.06	0.03	0.16	0.03	0.16	0.00
Manufacturing	0.08	0.27	0.08	0.28	–0.01	0.09	0.29	0.09	0.29	0.00
Retail	0.15	0.36	0.11	0.31	0.12	0.12	0.32	0.12	0.32	0.00
Transp., Wholesale trade	0.05	0.21	0.06	0.24	–0.06	0.06	0.24	0.06	0.24	0.00
Info, Finance, Real estate	0.03	0.16	0.05	0.22	–0.12	0.04	0.20	0.04	0.20	0.00
Professional, Mgmt.	0.02	0.14	0.04	0.19	–0.11	0.04	0.20	0.04	0.20	0.00
Administrative services	0.06	0.24	0.11	0.31	–0.16	0.09	0.29	0.09	0.29	0.00
Educational services	0.06	0.23	0.04	0.19	0.11	0.04	0.21	0.04	0.21	0.00
Health care and Social asst.	0.11	0.31	0.12	0.32	–0.02	0.12	0.33	0.12	0.33	0.00
Arts, Entertainment	0.05	0.23	0.06	0.23	–0.02	0.05	0.22	0.05	0.22	0.00
Accommodation, Food services	0.16	0.36	0.26	0.44	–0.26	0.25	0.44	0.25	0.44	0.00
Other services	0.03	0.17	0.05	0.22	–0.11	0.05	0.21	0.05	0.21	0.00
Public administration	0.00	0.06	0.00	0.05	0.02	0.00	0.05	0.00	0.05	0.00
Firm size										
FTE 0 to < 4	0.03	0.17	0.03	0.18	–0.01	0.03	0.17	0.03	0.17	0.00
FTE 4 to < 50	0.49	0.50	0.50	0.50	0.00	0.53	0.50	0.53	0.50	0.00
FTE > 50	0.47	0.50	0.47	0.50	0.01	0.45	0.50	0.45	0.50	0.00
Std. diff. avg.					–0.01					0.002
Observations	813,174		175,780			174,848		174,848		
No. of workers	203,294		43,945			43,712		43,712		

NOTE: Means and standard deviations are generated using the baseline quarter and three quarters prior to baseline (2011Q3–2012Q2) for each worker, with the exception of workers' duration employed in the ESD data, which is created using the total number of quarters for which we can observe a worker from the earliest date we have in the data, 2005Q1, to baseline quarter 2012Q2.
SOURCE: Authors' analysis of Washington state unemployment insurance records.

Table 3 Difference-in-Differences Estimates of the Impact of Seattle's PSST Policy on Hours Worked, Conditional on Employment, 2010Q2–2014Q3

	(1) All workers	(2) Short-term	(3) Long-term	(4) FTE size 4 to < 50	(5) FTE size 50+
Seattle × Post	4.423***	3.706**	3.331***	6.165***	2.831**
SE	(0.827)	(1.881)	(0.890)	(1.071)	(1.296)
Seattle	–23.233***	–10.673***	–27.794***	–21.951***	–26.268***
SE	(1.615)	(2.341)	(2.433)	(2.141)	(2.476)
Post	28.663***	48.637***	24.916***	30.821***	24.732***
SE	(1.082)	(2.186)	(1.202)	(1.379)	(1.724)
Region FE	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y
Observations (worker-quarters)	1,010,040	312,407	697,633	571,230	438,810

NOTE: There are 1,398,784 total worker-quarter observations, and 1,010,040 worker-quarter observations in which workers have positive hours worked. Short-term workers are workers with less than three quarters of consecutive employment with the same employer. Long-term workers are workers with three-plus quarters' employment with the same employer. SE: standard error; FE: fixed effect. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

SOURCE: Authors' analysis of Washington state unemployment insurance records.

Table 4 Difference-in-Differences Estimates of the Impact of Seattle's PSST Policy on Hours Worked, Conditional on Employment, 2010Q2–2014Q3

		Food and drinking places		Service industries	
	(1)	(2)	(3)	(4)	(5)
	All	Yes	No	Yes	No
Seattle × Post	4.423***	4.664***	4.451***	5.106***	4.213***
SE	(0.827)	(1.657)	(0.956)	(1.521)	(0.999)
Seattle	−23.233***	−19.692***	−24.381***	−20.721***	−23.493***
SE	(1.615)	(3.356)	(1.858)	(2.882)	(1.984)
Post	28.663***	23.116***	29.452***	26.338***	29.702***
SE	(1.082)	(2.066)	(1.253)	(1.948)	(1.297)
Region FE	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y
Observations (worker-quarters)	1,010,040	218,508	791,532	300,336	709,704

NOTE: There are 1,398,784 total worker-quarter observations, and 1,010,040 worker-quarter observations in which workers have positive hours worked. Food and drinking places: NAICS 722. Service industries include Retail, Administrative services, Health care and social assistance, Accommodation, and Other services: NAICS 44–45, 56, 62, 71, and 81, respectively. SE: standard error; FE: fixed effect. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.
SOURCE: Authors' analysis of Washington state unemployment insurance records.

Table 5 Difference-in-Differences Estimates of the Impact of Seattle's PSST Policy on Employment, 2010Q2–2014Q3

	Hours worked	Employment	
	Cond. hours	All	In multiestablishment
Seattle × Post	4.423***	0.004*	0.002
SE	(0.827)	(0.002)	(0.002)
Seattle	–23.233***	0.016***	–0.147***
SE	(1.615)	(0.003)	(0.004)
Post	28.663***	0.120***	–0.013***
SE	(1.082)	(0.002)	(0.002)
Time FE	Y	Y	Y
Region FE	Y	Y	Y
Observations	1,010,040	1,398,784	1,010,040

NOTE: There are 1,398,784 total worker-quarter observations, and 1,010,040 worker-quarter observations in which workers have positive hours worked. SE: standard error; FE: Fixed Effect. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.
SOURCE: Authors' analysis of Washington state unemployment insurance records.

Table 6 Impact of Seattle's PSST Policy on Separation Hazard, Using a Cox Proportional Hazard Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Food and drinking places		Service industries	
	All	FTE size 4 to < 50	FTE size 50+	Yes	No	Yes	No
Seattle x Post	0.974	1.018	0.908**	0.972	0.972	0.949	0.963
SE	(0.028)	(0.038)	(0.041)	(0.069)	(0.031)	(0.046)	(0.035)
Seattle	1.364	1.098	2.908	1.81	1.252	3.997	1.121
SE	(0.353)	(0.302)	(1.96)	(0.994)	(0.367)	(3.893)	(0.299)
Post	0.974	1.005	0.932**	1.035	0.961	0.948	1.017
SE	(0.021)	(0.028)	(0.033)	(0.055)	(0.023)	(0.036)	(0.027)
Region FE	Y	Y	Y	Y	Y	Y	Y
Log likelihood	–151743	–86989	–55244	–23051	–122025	–45057	–97661
Observations	56,614	32,640	23,974	10,026	46,588	17,056	39,558

NOTE: Food and drinking places: NAICS 722. Service industries include Retail, Administrative services, Health care and social assistance, Accommodation, and Other services: NAICS 44–45, 56, 62, 71, and 81, respectively. SE: standard error; FE: fixed effect. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.
SOURCE: Authors' analysis of Washington state unemployment insurance records.

Appendix

Additional Tables and Figure

Appendix Table A.1 Sample Sizes

	(1) Unmatched	(2) Matched	(3) Hires
2012Q2 cohort			
Seattle	43,945	43,712	13,460
Washington	203,294	43,712	13,460
2010Q2 cohort			
Seattle	47,308	39,522	14,487
Washington	302,828	39,522	14,487

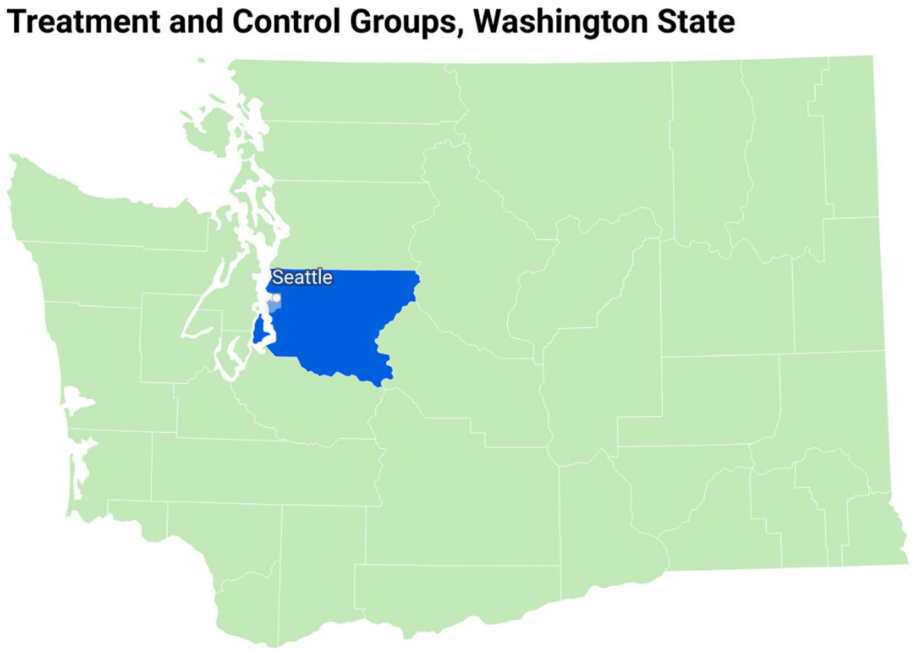
NOTE: The intensive margin analysis on hours worked is based on the 2012Q2 matched sample cohort (column 2). The extensive margin analysis on separation hazard is based on the hires of the matched 2012Q2 and 2010Q2 samples (column 3).
SOURCE: Authors' analysis of Washington state unemployment insurance records.

Appendix Table A.2 Impact of Seattle's PSST Policy on Separation Hazard Using a Weibull Model

				Food and drinking places		Service industries	
	All	FTE size 4 to < 50	FTE size 50+	Yes	No	Yes	No
Seattle × Post	0.964	1.008	0.899**	0.957	0.961	0.929	0.953
SE	(0.032)	(0.043)	(0.046)	(0.078)	(0.034)	(0.054)	(0.038)
Seattle	1.406	1.061	3.355*	1.879	1.298	4.938	1.103
SE	(0.405)	(0.341)	(2.318)	(1.132)	(0.426)	(5.046)	(0.332)
Post	0.977	1.013	0.928*	1.067	0.96	0.942	1.028
SE	(0.025)	(0.033)	(0.037)	(0.066)	(0.027)	(0.043)	(0.031)
Region FE	Y	Y	Y	Y	Y	Y	Y
Log likelihood	–50188	–29919	–20136	–8983	–41148	–16212	–33794
Observations	56,614	32,640	23,974	10,026	46,588	17,056	39,558

NOTE: Food and drinking places: NAICS 722. Service industries include Retail, Administrative services, Health care and social assistance, Accommodation, and Other services: NAICS 44–45, 56, 62, 71, and 81, respectively. SE: standard error; FE: fixed effect. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.
SOURCE: Authors' analysis of Washington state unemployment insurance records.

Appendix Figure A.1 Map Showing Area of Seattle and Washington State



SOURCE: Author-created map from Datawrapper.de.