

The Impact of Mandated Paid Sick Leave Laws on The Long-Term Care Industry

Priyankar Datta ^{*†}

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Abstract

This paper examines the effect of paid sick leave (PSL) mandates on nursing home outcomes, with a focus on low paid nursing staff. I obtain causal estimates of the effect of PSL mandates on nursing home outcomes utilizing geographic and temporal variation in the enactment of PSL mandates. I use data from the near universe of nursing homes in the U.S. and find that PSL mandates lead to improvements in patient health and safety. Nursing assistant hours per resident day increase by 2.3% driven by a 12% increase in the hours for part time workers, and there are no significant reductions in hours by full time nursing assistants. I find improvements along multiple measures of patient health and safety. Changes in patient well-being and part time staffing are stronger in high-Medicaid share nursing homes, indicating improvements in care for low-income and relatively low-revenue residents.

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[†]Department of Economics, Michigan State University, 486 W Circle Dr, East Lansing, MI 48823. Email address: dattapri@msu.edu

1 Introduction

In 2019, less than a third of workers in the bottom 10% of the income distribution had access to paid sick leave (PSL), compared to 90% higher-paid workers in the top quarter of the distribution (BLS, 2020). Nursing assistant is one of the lowest paid occupations in the United States and in 2019 had a median wage of about 14 dollars with almost 34% exposed to increases in minimum wage from 2014-2018 (Ruffini, 2020). Information regarding paid sick leave availability among nursing assistants is varied¹. However, most reports point to the fact that there are many nursing assistant jobs which do not have paid sick leave (Dill et al., 2013). Data from the National Health Interview Survey covering 2014-2018 show that only 55% of nursing assistants receive paid sick leave. As higher-wage earners are more likely to be covered by an employer's PSL policy when not mandated by law, universal requirements can help level the playing field.

The United States along with Japan are the only two industrialized nations without universal access to PSL. The recent Family First Coronavirus Response Act², provides up to two weeks of paid sick time at 100% of the person's salary, however the legislation is temporary and will expire at the end of 2020. Sick workers are less productive than those at full health (Goetz et al., 2004) and coming to work sick can be especially risky in a fragile setting like the long-term care industry. This makes nursing assistants and their patients especially vulnerable. Since facilities do not offer separate paid time off for sickness, those with access to paid vacation or unallocated paid time off may be reluctant to use it when sick, instead preferring to save it for other uses. The majority of nursing assistants are women, minorities, and have less than a college education. Hence, they are more likely to come from low-income households which, increases their likelihood for presenteeism and using unallocated paid time off for other uses.

This paper explores the effect of state mandated PSL laws on the long-term care industry, with a special focus on nursing assistants and residents. I examine how these laws affect

¹Analysis based on data from a 2004 survey Squillace et al. (2009) points to 70% of nursing assistant having access to paid leave. However, the survey does not separate between paid time off and paid sick leave.

²This act exempts health care workers, however, the HEROES Act, passed on May 15, removes this exemption.

nursing assistant staffing, patient health and safety in the nursing home setting. I use objective measures of patient health and safety from the near universe of nursing homes in the United States, and exploit temporal and spatial variation in the implementation of city and statewide PSL mandates. Some nursing assistants may already have PSL which, may improve nursing quality but, state mandated PSL may lead nursing homes to increase the amount of sick time they offer to their staff. Conversely, PSL mandates may lead nursing homes to reduce staff, or even reduce the salaries paid, which may reduce quality of care. Nursing homes may also want keep staff hours constant by increasing the number of part-time staff available to substitute for possible increases in leave taking by full time staff. Since the effects are theoretically ambiguous, the answer to how this policy will affect nursing home quality must be determined empirically.

To examine the effect of mandated PSL laws on quality of care in nursing homes, I use a difference-in-differences (DD) research design to compare changes in outcomes for nursing homes in areas affected by a PSL mandate to those in areas with no mandate in place. The rich temporal and spatial variation in PSL mandates allows for comparison of patient well-being due to changes in non-wage labor costs, along with flexibly accounting for demographic and economic changes at a small geographic level. I leverage nursing home level information from Centers for Medicare and Medicaid's (CMS) OSCAR (Online Survey Certification & Reporting System) and CASPER (Certification And Survey Provider Enhanced Reports) data sets along with data from the [Brown School of Public Health \(2020\)](#) to look at a variety of measures widely considered to be indicators of facility quality and patient well-being.

I show that PSL mandates do not lead to a decrease in full time staffing hours and lead to increases in part-time nursing assistant hours. This is consistent with existing literature on the effects of PSL mandates on the entire economy ([Pichler and Ziebarth \(2019\)](#); [Stearns and White \(2018\)](#)). Increased part time staff hours leads to an increase in average nursing assistant hours per resident. I find that nursing assistants time spent with patients go up by 2.3% following enactment of PSL mandates. Nursing homes in areas with PSL mandates show a 12% increase in part-time nursing assistant hours compared to those in areas without mandated PSL laws.

If PSL mandates reduce the likelihood of presenteeism, health care quality should improve.

In order to explore this further, I look at the impact of PSL mandates on common health care quality measures for nursing homes. I find that higher wages improve patient health and reduce the severity of safety violations. Specifically, I show that PSL mandates reduce the share of residents with pressure ulcers and on anti-psychotic medications by 12 % and 5% respectively. I also find severe violations are reduced by 7.5%. I perform event study analyses and do not find strong evidence of preexisting trends in any outcome. Further, I observe persistent improvements in patient health and nursing home staffing after the mandate.

The nursing home industry serves almost 1.6 million elderly residents across the United States. In spite of the CMS introducing several regulations to ensure quality of care, there are still significant variations in the quality of care provided. It may be the case that lower quality nursing homes are the ones where the PSL mandates are binding and have the strongest effects. Exploring possibilities of heterogeneous outcomes, I find that most improvements in care quality are driven by outcomes from nursing homes with a high share of Medicaid patients. Enactment of PSL mandates also leads to nursing homes getting a change in patient composition along several margins, which includes healthier patients and a slight increase in private-paying patients. However, I find no significant reduction in the share of Medicaid or Medicare paying patients.

CMS has introduced various monitoring and inspection measures to address concerns ([Castle and Ferguson \(2010\)](#); [Institute of Medicine \(1986\)](#)) raised by patient's families and experts. These along with the five-star rating system have improved nursing home quality over the years. However, this is still an industry with a high level of facility churn and nursing homes often face lawsuits from multiple parties for negligence and poor service. Contagious absenteeism behavior by aides and orderlies can be life-threatening for patients, but, can be potentially minimized by paid sick time. The findings from this study provide evidence as to how PSL mandates can impact the long-term care industry. More than half of individuals reaching age 65 will require long-term care at some point in their lives, much of which is provided in residential settings ([Favreault and Dey, 2016](#)). Making up more than 10% of the total expenditure in Medicare and Medicaid, the long-term care industry accounts for a substantial portion of the

U.S. economy. As the elderly share of the U.S. population continues to grow, the effect of paid sick leave mandates on nursing home patient well-being is an increasingly important policy question.

1.1 Research on Sick Leave

State mandated PSL is a recent phenomenon in the United States. Literature on the effects of such mandates is new and growing. There does not exist any work examining the effect of such mandates on the nursing home industry. Nonetheless, there are multiple studies looking at how PSL mandates impact productivity, employment, and health outcomes of workers in general. This paper is the first to look at the effects of PSL mandates on the nursing home industry which is an industry where a significant portion of workers are low paid, and don't have access to PSL, and attending work ill can have large negative effects.

My paper contributes to multiple strands of literature in economics and public health. Existing literature finds mixed evidence of the effects of the mandates on employment. Connecticut was the first state to implement the policy in 2012, and, reports have found reductions in annual hours worked ([Ahn and Yelowitz, 2016](#)) along with increased unemployment and economically insignificant changes in labor force participation ([Ahn and Yelowitz, 2015](#)). However, more recent work looking at a longer timeline and multiple states have found no significant reductions in employment or wage growth ([Pichler and Ziebarth, 2019](#)).

This paper also contributes to a small but growing literature studying the effects of PSL mandates on worker productivity. A survey of New York City businesses found that the large majority of businesses observed no effect on productivity, with only 2 percent reporting that productivity had increased, and 4 percent reporting that productivity decreased ([Appelbaum and Milkman, 2016](#)) from PSL mandates. Additionally, a survey in Jersey City found more than a third of businesses noticing improvements in productivity ([Lindemann and Britton, 2015](#)). Worker satisfaction has also improved following enactments of PSL mandates. More than half of employees in San Francisco who previously had access to PSL reported improved employer support and an increase in the number of sick days provided ([Drago et al., 2011](#)). Productivity of

workers also improves through improved health outcomes of workers. The lowest-income group of workers without paid sick time were at the highest risk of delaying and forgoing medical care for themselves and their family members (DeRigne et al., 2016). PSL mandates have also been shown to reduce aggregate illness related leave taking (Stearns and White, 2018). Thus, existing literature points to substantial public health externalities of PSL mandates through reduced spread of illness and disease to coworkers and customers.

1.2 Research on the Long-term care industry

My paper contributes to the public health literature focusing on the long-term care industry. Increased staffing through laws and business cycle changes have been shown to reduce violations and mortality (Chen and Grabowski (2015); Matsudaira (2014); Park and Stearns (2009); Antwi and Bowblis (2018); Stevens et al. (2015)). Reduced staffing through unionization does not harm patient outcomes, which shows that labor policies may influence worker productivity (Sojourner et al., 2015). I find that PSL mandates increase time spent by staff on patients, similar to results achieved from wage increases and increased staff attention (Grabowski et al., 2011). Changes in staff turnover driven by macroeconomic fluctuations have also been shown to reduce mortality and the number of violations (Antwi and Bowblis (2018); Stevens et al. (2015)). Other state and city level policies like minimum wages have also been shown to improve (Ruffini, 2020) patient health and safety outcomes in nursing homes.

The remainder of this paper proceeds as follows. Section 2 describes the nursing home industry and paid sick leave laws. Section 3 outlines the data. Section 4 describes the empirical framework. Section 5 presents results, and Section 6 describes the robustness checks, and Section 7 concludes.

2 Institutional Details

2.1 Nursing homes

The United States has almost 16,000 nursing homes which provide round-the-clock care to their residents. The 1.4 million residents of nursing homes receive health, personal care, supportive and rehabilitative services. The vast majority of these residents are 65 years or older, with a significant number being 80 years or older. They receive routine assistance in a number of day-to-day activities ranging from eating, bathing, dressing, mobility, and toileting ([Centers for Medicaid and Medicare Services, 2015](#)). Due to the relatively inelastic demand for their service, most nursing homes have very high occupancy rates. These facilities are also extremely labor intensive and employ nearly 1.6 million workers, with around 40% being nursing assistants ([Ruffini, 2020](#)). Due to the considerable amount of time nursing assistants spend with elderly and fragile residents, their tasks can directly affect patient well-being. They provide basic patient care under direction of nursing staff. Their primary duties are to feed, bathe, dress, groom, or move patients, and change linens ([ONET, 2019](#)).

Nursing homes have to fulfill several federal reporting and inspection requirements. The 1987 Nursing Home Reform Act (NHRA), requires annual independent health inspections; nursing credentialing, minimum RN staffing levels, and routine, comprehensive patient assessments ([Castle and Ferguson \(2010\)](#); [Institute of Medicine \(1986\)](#)). Fulfilling these requirements makes nursing homes eligible to receive Medicare and Medicaid reimbursement. The nursing home market has significant barriers to entry: certificate of need laws places limits on construction and the number of beds each facility can have in many states ([NCSL \(2019\)](#) ; [Centers for Medicaid and Medicare Services \(2015\)](#)). Only 26 % of residents pay out of pocket for nursing home stays, with the rest coming from Medicare (12%) and Medicaid(62%) reimbursement. Medicaid reimbursement rates are 30 % lower than Medicare’s on average and are roughly half of out-of-pocket prices. These reimbursement rates are set by expected patient costs, with Medicaid rates depending on state payment structures and Medicare rates on service needs and local cost-of-living adjustments ([Houser et al. \(2018\)](#); [Centers for Medicaid and Medicare](#)

Services (2019)). Residents paying out of pocket are in general, much more responsive to quality and prices than those covered by public insurance (Gertler, 1989).

2.2 Paid Sick Leave

The Family and Medical Leave Act of 1993 (FMLA), is the only existing federal law that provides sick leave. However, it is fairly restrictive compared to recent local mandates providing only unpaid leave to employees with at least 1250 hours worked annually at a business with greater than or equal to 50 employees (Tominey, 2016). The restrictive nature of this bill leaves out 49 million workers, almost 44 percent of all employees (Jorgensen and Appelbaum, 2014). Tables 1 and 2 provide summaries of the mandates evaluated by this paper. The details of the bills differ by jurisdiction, but nearly all sick pay mandates are employer mandates.

The first PSL mandate requiring employers to provide paid sick days was implemented in San Francisco in 2007. Connecticut became the first state in the U.S. to enact PSL legislation in 2012. The Connecticut law mandated that firms with 50 or more employees offer paid sick time to service workers; the San Francisco policy included no such exemptions based on firm size or industry. I study PSL mandates from 8 states, and 12 localities. These states span several regions, from New England (Connecticut, Massachusetts, Vermont, Rhode Island), the West (California, Oregon, Washington, Arizona), and the Mid-Atlantic (Maryland, New Jersey)³. The localities with PSL mandates in my sample consist mostly of large cities and counties located in the above states, as well as New York City ; Philadelphia, PA; Minneapolis and St. Paul, MN; Chicago and Cook County, IL. Twenty-two states have passed preemption laws preventing localities from requiring employers to provide PSL. These include four states that concurrently passed statewide laws that prohibit localities from establishing PSL requirements that differ from existing state standards.

Many local PSL mandates stipulate that employees accrue one hour of time for every 30 hours worked, although some jurisdictions mandate a lower rate of accumulation, such as one hour of time for every 35, 40, or 50 hours worked. Some localities cap the amount of sick time

³The most recent state to enact a PSL mandate is Michigan, coming in to effect March 2019

that can be accrued, oftentimes tying the limit to the size of the employer. A preponderance of localities specify that paid sick time can be used for reasons related to domestic violence or sexual assault as well as to care for oneself or a family member.

Virtually all of the local laws include exemptions, many of them related to the number of hours an employee works. For instance, the law in Cook County, IL, exempts employees who work less than 80 hours a year. There are also laws exempting health care workers, for instance Washington DC's 2009 law exempts health care workers and hence is not part of my sample. Long-term care workers in Vermont who work on a per diem basis are also exempt from the law.

3 Data

My primary sources of data are the online survey certification and reporting (OSCAR) and certification and survey provider enhanced reporting (CASPER) data from the CMS. Nursing facilities are required to report staffing numbers and patient characteristics to CMS in order to be eligible for Medicaid and Medicare reimbursement. During the analysis period, these data are based on staffing numbers for the two weeks before an unannounced health and safety inspection ([Centers for Medicare and Medicaid, 2020](#)). For 2000-2018, the OSCAR/CASPER data provide two measures of employment for nursing assistants: hours per resident per day, and the number of full-time equivalent (FTE) staff by part-time, full-time, and contractor status. Assuming full time staff work 35 hours a week, the number of FTE full-time staff is the total hours worked by full-time staff in the week, divided by 35. Full-time staff are defined as those working at least 35 hours a week, and part time are those working fewer than 35 hours a week. Staffing hours per resident day are provided by the [Brown School of Public Health \(2020\)](#), denoted as the number of FTE multiplied by 35 from the OSCAR/CASPER data, divided by the number of residents in the facility, and then processed to account for implausibly large year-to-year fluctuations in staffing levels.

As with staffing information, facilities are required to report information on patient conditions

to CMS to be eligible for reimbursement. These assessments are conducted by facility staff and are subject to a CMS audit. My analyses focus on the fraction of residents with conditions that are most likely to be affected by the quality and quantity of nursing care: moderate-to-severe pressure ulcers; urinary tract infections (UTI); physical restraints; or psychotropic medication. I focus only on long-term stays (residents in a facility for at least 100 days), as these patients have the longest exposure to a facility's nursing staff.

State surveyors conduct unannounced health inspections every 9-15 months on nursing homes, and, interview staff, patients, and family members about the quality of care ([Abt Associates Inc. \(2013\)](#); [Centers for Medicaid and Medicare Services \(2015\)](#)). OSCAR/CASPER data has the type, number, severity, and scope of each violation a facility has received, as well as the date the inspection occurred. There are a number of violations closely associated with patient safety measures and measures of worker productivity like routinely assessing residents, communicating patient conditions to family members, changing bed linens, avoiding accident hazards, and providing sanitary food preparation.

Following [Ruffini \(2020\)](#), I use every violation a facility has received since 2000 and construct several measures of patient safety. I consider both the total number of violations and the number of severe violations that present immediate harm or danger to residents. I create two measures of violations following [Ruffini \(2020\)](#). The first considers all health violations. The second, considers Quality of Care(QOC) violations. The QOC measure includes violations in the assessment relating to quality of care, nursing, dietary, physician, rehabilitative services, dental, and pharmacy regulation categories. These violations are the subset of violations widely recognized in the public health literature to be most closely related to nursing responsibilities ([Chen and Chen \(2019\)](#), [Harrington et al. \(2000\)](#), [Harrington et al. \(2002\)](#), [Antwi and Bowblis \(2018\)](#)). Violations are not uncommon in nursing homes and almost all nursing homes have at least one recorded violation every year, with the average nursing home having 7 violations. Violations depending on the scope and severity can lead to substantial number of fines and penalties. Reduced violations may lead to significant cost savings for nursing homes.

Average patient age, and the share of female residents and other demographic variables used

are available from the Minimum Data Set and provided through [Brown School of Public Health \(2020\)](#). All the main specifications also control for county-level demographic and economic controls that change over time. Total and elderly population figures are available through the [National Institute of Health \(2020\)](#). To account for local labor market conditions, I control for the overall county unemployment rate using data from [Bureau of Labor Statistics \(2020\)](#). Finally, to ensure my results are not driven by the overall state policy environment or other policy changes coincident with PSL mandates, I control for state EITC parameters, the share of the elderly population receiving Supplemental Security Income (SSI), a proxy for Medicaid-eligibility, and AFDC/TANF caseloads and benefit levels from the [University of Kentucky \(2020\)](#). The share of Medicaid claimants at the establishment level, as well as private ownership and chain status, are provided through [Brown School of Public Health \(2020\)](#). My sample has on average, slightly more than 15,000 facilities and around 3000 counties over a 19-year time span.

Table 3 reports information on the control variables used in my analysis. I find large differences along a number of policy variables like minimum wage and state EITC. Facilities in treatment areas are also larger on average and face lower levels of competition. My treatment counties are on average more urban and have a younger population. These localities, predominantly located along the coasts, also largely vote democratic and have seen a large number of changes in labor laws and safety nets, which explains the higher minimum wages and level of state EITC benefits.

4 Empirical Framework

I estimate the effect of paid sick leave mandates on nursing home staffing and patient outcomes using a difference-in-differences (DD) identification strategy which exploits the temporal and geographic variation in the enactment of PSL mandates. The relationship between PSL mandates

and my outcomes of interest are formalized as follows:

$$Y_{ft} = \alpha + \gamma PSL_{ft} + \theta Z_{ct} + \beta X_{ft} + \delta_f + \mu_t + \epsilon_{ft} \quad (1)$$

PSL is an indicator for the enactment of a PSL mandate in year t ⁴, X is a vector of facility level characteristics (average resident age, for profit or non-profit, chain or single establishment, total number of beds, percentage of female residents, percentage of Medicaid payors), Z is a vector of time-varying county-level factors (unemployment rate, elderly share of the population, share of state SSI recipients who are elderly, AFDC and TANF caseloads, minimum wages, state EITC rate, and degree of competition among nursing home), δ_f is a facility fixed effect, and μ_t is a year fixed effect. In my sample PSL mandates are enacted at the city, state and county level. Hence, I define my variable at the establishment level. This represents a standard DD analysis where outcomes in my treatment regions (i.e., counties and states enacting a PSL mandate) are compared to control regions that have no PSL laws in place. I cluster my standard errors at the county level in all analyses. My dependent variable, Y_{ft} in Equation (1) represents one of several possible outcomes in nursing homes.

I find that PSL laws increase the likelihood of firms exiting the market only slightly. This suggests to an extent that my findings are not driven by low- performing firms exiting the market. The main assumption under which my identification rests is that the trends in outcomes among facilities not receiving the treatment are accurately measuring counterfactual trends among the treated facilities. Figures 1, 2, and 3 present event study analyses on all outcome variables. These figures provide visual evidence of an absence of pre-trends. This lends support to my DD identification strategy.

⁴I define enactment of a PSL mandate as the year in which the mandate actually took effect

5 Results

5.1 Staffing

Recent literature has focused on the impact of PSL mandates in the United States on employment, however, to my knowledge there aren't any papers focusing on this particular market. Using staffing data from the CMS nursing home compare and ltc focus from the [Brown School of Public Health \(2020\)](#), I calculate the effect of PSL mandates on nursing home staffing. I present results for nursing assistant hours per resident day, and the total weekly hours by employee type per resident.

Table 4 reports a statistically significant increase in nursing assistant hours per resident day, driven by increases in part time nursing assistant hours. I find a very slight and statistically insignificant decrease in weekly hours of full-time nursing assistants per resident. I estimate that mandated PSL leads to a 0.356 unit increase in weekly part-time nursing assistant hours per resident in nursing homes on average, and a 0.035 unit increase in weekly hours for contract workers. Compared to baseline estimates this corresponds to around a 12-% increase in weekly hours of part time workers per resident and an almost 20-% increase for contract workers. This drives the 2.3-% increase in nursing assistant hours per resident day which I find. Increased availability of sick time may lead to nursing assistants taking more time off, which may reduce attendance. Nursing homes thus may want to have a cushion for potential nursing assistant leave taking by increasing part-time nursing assistant hiring. As part-time nursing assistant accrue leave at a lower rate and in general have lower privileges, this may be a way nursing homes try to counter potential staffing decreases due to leave taking. Employers may also be looking to reduce over-time hours by hiring part time staff, thus trying to offset possible increases in cost caused by the PSL mandates. No significant changes in the full-time nursing assistant hours may be due to reduced sickness related leave taking by other staff not being infected due to presenteeism behavior of sick workers. The increased presence of part time nursing staff, along with no changes in other staff lead to significant improvements in the net hours per resident per day. Higher hours per resident day are a clear sign of improved quality

at nursing homes.

5.2 Patient safety

As PSL mandates lead to increased time spent with patients and higher part-time and contract nursing assistant hours, it is likely that they may improve patient outcomes.

Panel A of Table 4 shows that PSL mandates significantly reduce the number of severe violations. The results from the table translate to a 7 percent reduction in the number of severe violations. Panel B reports an 8.5 percent reduction in number of severe quality of care violations. Similarly, existing literature on the effect of other policies on patient health show that higher minimum wages and increases in Medicare reimbursement rates in the early 2000's, reduced the number of violations and the likelihood of violations ([Ruffini, 2020](#)). My results are also similar to other studies finding changes in staffing through turnover ([Antwi and Bowblis, 2018](#)) and local unemployment ([Huang et al., 2019](#)), resulting in a significant reduction in the number of deficiencies in a nursing home.

5.3 Patient health

Tables 3 and 4 point to improved staffing outcomes and a reduction in the number of severe deficiencies. Improvements in quality along these measures are usually expected to be associated with improved patient health measures. To explore this argument, I analyze several measures of patient health which facilities submit to CMS every quarter. Previous literature points to the fact that these measures have a strong relationship to service quality provided by direct care staff ([Brandeis et al. \(1994\)](#); [Dorr et al. \(2005\)](#); [Cawley et al. \(2006\)](#); [Grabowski et al. \(2011\)](#)). More than 5 percent of residents in my sample have pressure ulcers, a preventable health condition. As nursing assistants help residents with day to day activities and monitor their health, close attention can reduce the likelihood of developing ulcers. Column (1) of table 6 reports that PSL mandates reduce the share of residents with pressure ulcers by 0.6 percentage points, which translates to an almost 12 percent reduction in the share of pressure

ulcers compared to baseline estimates.

The modal cause of bacterial-related hospitalization among nursing home residents are UTIs. Nursing assistants administer and monitor indwelling catheters, which frequently cause UTIs. Timely removal and minimizing usage of these devices can reduce the likelihood of infection ([Saint \(2000\)](#), [CDC \(2009\)](#)). From columns (3) and (4), I find that PSL mandates bring down the likelihood of UTI's by a negligible amount.

Existing literature does not point to a clear direction in which nursing homes change the usage of physical restraints in response to higher staff wages. However, following the results from previous tables it may be the case that nursing homes are also providing better care along this dimension. Conversely, nursing homes may also be looking to offset increased costs from PSL by increasing the use of physical restraints. As physical restraints reduce movement, greater nursing assistant presence should reduce their usage ([Cawley et al., 2006](#)). Increased staff presence or assembly can also increase the use of these devices during times of higher wage expenditure ([Grabowski et al., 2011](#)). Column (5) looks at the relationship between PSL mandates and physical restraint usage. I find that PSL mandates increase the usage of physical restraints by 0.8 units which translate to a 35 percent increase in usage compared to baseline estimates.

Psychotropic drugs are often used in nursing homes on patients suffering from psychosis, bipolar disorder, dementia, and other behavioral health problems. They include anti-psychotics, anti-depressants, anxiolytics, and hypnotics. They were introduced as a quality measure beginning in 2011 and hence have a restricted analysis sample. These drugs are primarily sedative which may have strong effects on patient's mental processes. Existing literature has found higher licensed nurse staffing leads to reduced usage of anti-psychotic medication ([Grabowski et al., 2011](#)). Column (7) reports that PSL mandates reduce usage of anti-psychotic medication by 5 percent compared to baseline estimates. A lower share of residents receiving anti-psychotic medications is a sign of higher quality.

Nursing homes often manage resident's behavioral health problems by using a combination of labor, medications and physical restraints. It is widely believed that anti-psychotic medications

are a substitute for nursing care, while physical restraint usually require more attention. My findings of higher staffing numbers along with lower usage psychotropic drugs and higher share of patients with restraints are in line with [Grabowski et al. \(2011\)](#) results of a 10 percent increase in wages leading to an increase in psychotropic usage between 1.1% to 3.5% and a decrease in physical restraints between 26% and 28%.

5.4 Patient composition

If nursing homes change the composition of residents, it may have significant social welfare implications. Nursing homes may decide to offset increased costs borne from PSL mandates by increasing the share of patients from relatively wealthy private-paying sources. Medicaid reimbursement rates are lower than private-paying rates which are in turn lower than Medicare rates. In table (7) and (8), I look at the effect of PSL mandates on the characteristics of admitted residents. Columns (1) and (2) of panel A in table 7 show that PSL mandates do not lead nursing homes to significantly change the share of residents who pay via Medicare or Medicaid. I find that PSL mandates lead to an increase in the share of private paying residents by 5.3 percent. I do find increases in the percentage of residents with higher average care needs, shown here by the assisted daily living index and average care index, which go up 2 percent and 1.7 percent respectively. Higher labor costs may lead to changes in facilities discharge or admission practices. Facilities may cycle through patients by sending them to the hospital and then readmitting them to the facility there by gathering higher Medicare reimbursement fees. Column (4) of table 7 shows that facilities do not respond to PSL mandates by increasing resident churn. I do not see significant increases in occupancy rates after the enactment of PSL mandates.

Table 7 looks at effects on patient demographics and care needs, with Columns (1) and (2) showing characteristics that cannot be influenced by admission decisions. I also find a significant reduction in the share of female residents by almost 1 percent. This can happen through two channels, entry and exit. I cannot examine whether there are changes in the gender mix of nursing home mortality or entry cohorts due to data limitations. I find that

nursing homes have a slightly healthier composition of patients, with fewer hospital admits by 1.1 %. Columns (3)-(6) look at care needs that can be altered by assessor judgment. I find favorable changes in care mix for residents, with the share with bladder incontinence going down significantly by 3.5%.

5.5 Heterogeneity

Average effects of the PSL mandate may be hiding the presence of heterogeneous effects. In tables 9, 10 and 11 I look at the effect on health outcomes, violations, and staffing by splitting the sample by profit status, multi-facility, and the share of residents paying via Medicaid. Table 9 looks at the effect of PSL mandates on resident health measures, by facility type. I do not find any heterogeneous effects on the share of residents with pressure ulcers and physical restraint use by facility type. For-profit and high-Medicaid share nursing homes show large drops in the share of residents on anti-psychotic medications.

Panel A of Table 10 does show that the reductions in severe violations are driven by facilities with a higher share of patients paying via Medicaid. Nursing homes with a high share of Medicaid paying residents show a more than 10 percent drop in the number of severe violations, almost ten times that of those with a low share of Medicaid payors. Panel B reports that the decreases in the number of severe violations is driven by chain nursing homes. Multi-establishment nursing homes see a more than 15 percent reduction in the number of severe quality of care violations.

Increases in nursing assistant hours per resident day are driven by for-profit, multi-establishment and high-medicare facilities. The estimates are much stronger for these types of facilities. High-Medicare facilities show a 2.6 increase in the hours per resident day. Increased presence of nursing assistants may be driving the increase in usage of physical restraints which require higher attention from nursing assistants.

Residents paying through medicare provide lower revenues and smaller margins. This may also make them more likely to be present in lower-quality nursing homes. My data does not allow me to identify whether the high-Medicare share nursing homes provided paid sick leave

to their employees or not. However, if that is actually the case, PSL mandates may actually be benefiting the low-income group of an already vulnerable population. Existing literature finds for-profit nursing homes driving improved deficiency scores and lower deficiencies in times of higher unemployment rate (Huang et al., 2019). For-profit and higher-Medicaid share nursing homes were also more likely to be found to have deficiencies in the existing literature (Harrington et al., 2000).

6 Robustness checks

A potential confounding factor is that higher labor costs may cause low-performing firms to exit the market. If low performing establishments were to exit the market, this would attenuate the aggregate benefits of PSL mandates. I construct a balanced panel of facilities that appear at any point in time in my sample and use my main regression equation with an outcome variable being an indicator equal to 1 if that facility appears in that given year. Table 12 shows that there is a slight (1.9 %) reduction in likelihood that a facility exists after the introduction of PSL mandates. The precision and size of the estimates lend support to my estimates not being driven by the exit of low performing firms.

PSL mandates are much more likely to be enacted in areas passing a number of other labor reforms. Minimum wage is one such reform which has been shown in the literature (Ruffini, 2020) to affect nursing assistant performance. Table 12 shows evidence of contemporaneous increases in minimum wage along with paid sick leave mandates. A rough bounding exercise shows that my estimates are quite strong in spite of these changes. Literature finds a 10 % increase in minimum wage to reduce the share of pressure ulcers by 1.4% (Ruffini, 2020). The extent to which this drives my result is about 14%. The estimates for other health measures and staffing hours remain strong after similar bounding exercises.

The main assumption for my identification is that the trends in outcomes among facilities not receiving the treatment are accurately measuring counterfactual trends among the treated facilities. I provide evidence via event study models that this assumption holds in the data.

I run event study analyses which are depicted in figures (1) through (3). I use the timing of enactment of the PSL mandates to carry out an event study analysis of the main outcome variables. This regression model also allows me to assess whether PSL mandates lead to an on-impact change in outcomes. The event studies are generalized difference-in-differences models similar to [Jacobson et al. \(1993\)](#). Instead of my regular difference-in-differences specification, I use dummy variables for each period before and after enactment of the laws for a maximum of 4 periods on either side (leaving out the period before enactment). I do not find any strong indications for presence of preexisting trends for my assessed outcome variables. This lends support to my DD identification strategy. Figures 1 and 2 show the effects of the mandates on health and staffing outcomes persist long after enactment.

I estimate the effect of PSL mandates on a large number of nursing home outcome variables. It is plausible that some of these variables maybe correlated with one another. This creates the issue of multiple hypothesis testing. I provide evidence through Bon-ferroni and Sidak p-values that my outcomes are mostly robust to problems of multi collinearity. The p-values are provided in the appendix. The health outcomes and staffing variables are strongly significant, while the number of severe violations is just insignificant at the 10% level. These p-values are conservative measures and I expect my estimates to be precise to a large extent.

7 Conclusion

This paper finds that state mandated PSL leads to changes in nursing home staffing, and patient well-being. The estimates are precise and meaningful. Nursing homes may be increasing the number of part time nursing assistants to tackle possible increases in leave taking by full time staff. However, I do not witness any significant decreases in full time nursing assistant hours, which combined with increased part time hours leads to a net increase in staff hours per resident. Nursing homes also show improvements in patient health and safety, particularly reductions in the share of patients with pressure ulcers and severe violations. Nursing homes also substitute towards more attentive and less potentially harmful means of care for elderly patients. These

results are mostly driven by high-Medicaid share nursing homes.

Nursing assistants may also be more attentive and productive at work if PSL reduces their likelihood of showing up sick. Cost savings from improved patient outcomes can offset a significant amount of the increased cost due to PSL. As these mandates end up positively impacting vulnerable sections of society, they have large potential social welfare implications. Nursing assistants and Medicaid insurance holders are both more likely to come from low-income backgrounds and thus may receive greater welfare weights by the social planner. As the population of the United States ages, these policies will have significant ramifications.

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Figures

Figure 1: Staffing numbers event study

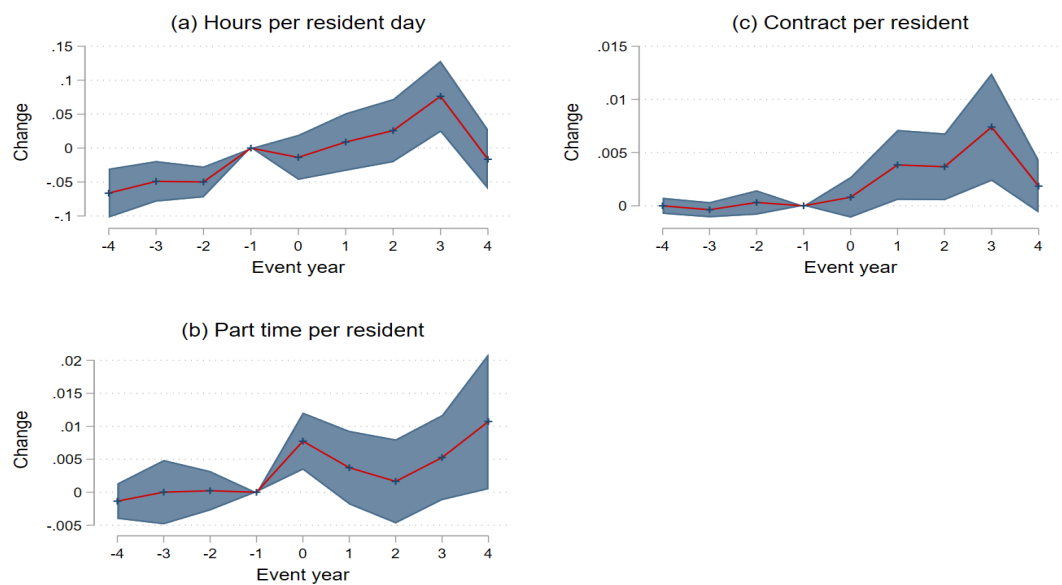


Figure 2: Patient health outcomes event study

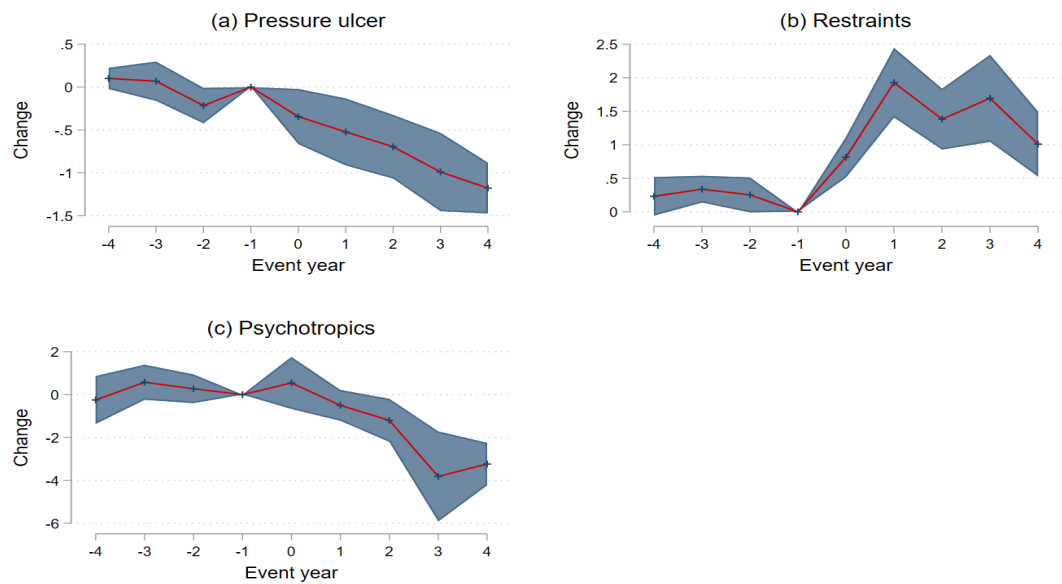
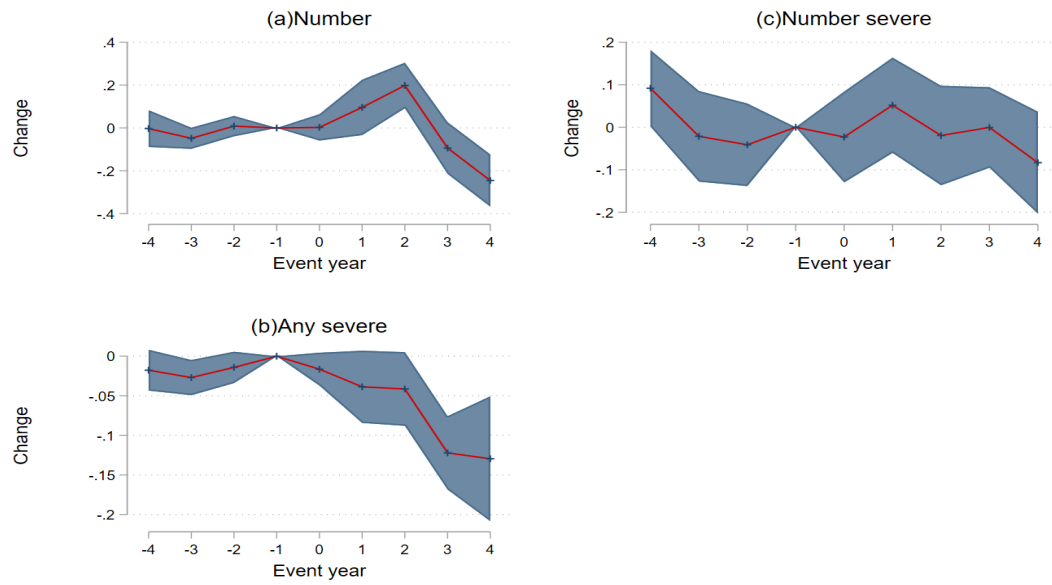


Figure 3: Violations event study



Tables

Table 1: Overview of PSL mandates in the U.S.

(1)	(2)	(3)	(4)
Area	Law effective	hours accrued/40 hours	Benefit under law
San Francisco	Feb 5, 2007	1.33	b/w 5 to 9 days
Connecticut	Jan 1,2012	1	up to 5 days
Seattle, WA	Sep 1,2012	1 or 1.33	b/w to 13 days
New York, NY	April 1, 2014	1.33	up to 40 hours
Portland, OR	Jan 1 2014	1.33	up to 40 hours
Jersey City, NJ	Jan 22, 2014	1.33	up to 40 hours
Newark, NJ	May 29, 2014	1.33	b/w 24 to 40 hours
Philadelphia, PA	May 13, 2015	1	up to 40 hours
California	July 1, 2015	1.33	24 hours minimum
Massachusetts	July 1, 2015	1	up to 40 hours
Montgomery county	Oct, 2016	1.33	b/w 32 to 56 hours
Arizona	July,2017	1.33	b/w 24 to 40 hours
Maryland	Feb,2018	1.33	up to 40 hours
Rhode Island	July, 2018	1.14	b/w 32 to 40 hours
Washington	Jan 2018	1	max carryover is 40 hours/year
Illinois	July, 2017	1	up to 40 hours
Minneapolis	July, 2017	1.33	up to 48 hours
St. Paul	Jan, 2018	1.33	up to 48 hours
Vermont	Jan, 2017	0.77	b/w 24 and 40 hours

Table 2: Nursing home and area characteristics, by treatment

	(1)	(2)
	Control Areas	Treatment Areas
VARIABLES	mean	mean
AFDC/TANF maximum	435.9	723.9
% NH residents female	70.78	67.30
Avg NH resident age	80.67	78.85
% NH residents Medicaid	60.14	61.79
Minimum Wage	7.660	9.082
State EITC Rate	0.054	0.133
Avg facility size	103.8	116.1
County HHI	0.253	0.079
Any state EITC	0.410	0.520
Share popn > 65	0.151	0.132
Share state > 65 ssi recipients	0.020	0.047
Cty unemployment	6.001	6.697

Table 3: Nursing assistant staffing in Facilities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Full time		Part time		Contract		Hours per	
	Weekly employee hours per resident						resident day	
Paid Sick Leave	-0.017	-0.011	0.356***	0.370***	0.035	0.041	0.053***	0.058***
	(0.019)	(0.020)	(0.071)	(0.073)	(0.047)	(0.052)	(0.016)	(0.017)
Observations	225,819	225,813	225,819	225,813	225,819	225,813	245,172	245,169
Number of establishments	16,401		16,401		16,401		16,563	
Establishment FE	YES		YES		YES		YES	
DV Mean	13.087	13.087	2.965	2.965	0.182	0.182	2.315	2.315

Note: Table shows the effect of mandated paid sick leave laws on nursing assistant staffing hours. I report results from the OSCAR/CASPER staffing reports reported by facilities to CMS, covering years 2000-2018 (columns 1-6)) and 2000-2018 (columns (7-8)). Hours per resident day is defined as the total weekly number of nursing assistant staffing hours times 35, divided by the number of residents times 7 (including direct care and administrative time). Full time employees defined as the number of nursing assistants typically working at least 35 hours a week; Part time employees defined as those typically working fewer than 35 hours a week. All specifications include controls for county employment rates and the elderly population share; and state EITC parameters, the share of the elderly population receiving Supplemental Security Income, and AFDC/TANF caseloads and benefit levels. Odd numbered columns include establishment fixed effects and even numbered columns county fixed effects. Demographic controls include average resident age, facility size, and the share of residents female, and covered by Medicaid. Robust standard errors clustered by county. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$.

Table 4: Health inspection violations

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Log(number)		Any severe		Log(number severe)	
Panel A: All health violations						
Paid Sick Leave	0.03	0.023	-0.024	-0.026*	-0.073**	-0.092***
	(0.039)	(0.038)	(0.015)	(0.015)	(0.034)	(0.026)
Observations	201,807	201,804	201,807	201,804	201,807	201,804
Number of establishments	16,516		16,516		16,516	
Establishment FE	YES		YES		YES	
Panel B: Quality of care violations						
Paid Sick Leave	0.019	0.026	-0.011	-0.014	-0.089**	-0.102**
	(0.032)	(0.032)	(0.009)	(0.009)	(0.04)	(0.032)
Observations	201,807	201,804	201,807	201,804	201,807	201,804
Number of establishments	16,516		16,516		16,516	
Establishment FE	YES		YES		YES	

Note: Table shows results from the state health inspection reports reported to CMS, covering years 2000-2018. Severe violations are those presenting actual harm or immediate jeopardy to residents (CMS categories G-L). Quality of care violations follow the definition in Harrington et al. (2001) to include violations in the quality of care, assessment, nursing, dietary, physician, rehabilitative services, dental, and pharmacy regulation categories. All specifications include controls for county employment rates and the elderly population share; and state EITC parameters, the share of the elderly population receiving Supplemental Security Income, and AFDC/TANF caseloads and benefit levels. Odd numbered columns include establishment fixed effects and even numbered columns county fixed effects. Demographic controls include average resident age, facility size, and the share of residents female, and covered by Medicaid. Robust standard errors clustered by county. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$.

Table 5: Patient Health Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Pressure ulcers		UTI		Restraints		Psychotropic	
Paid Sick Leave	-0.615*** (0.124)	-0.628*** (0.128)	0.0170 (0.134)	-0.00389 (0.129)	1.038*** (0.150)	1.080*** (0.154)	-1.091*** (0.422)	-1.024** (0.431)
Observations	169,640	169,637	175,026	175,023	175,153	175,150	92,859	92,851
Number of establishments	15,872		15,896		15,902		15,246	
Establishment FE	YES		YES		YES		YES	
DV Mean	5.225	5.225	6.370	6.370	2.419	2.419	19.27	19.27

Note: Table shows patient outcomes results from long-term resident assessment reports reported by facilities to CMS, covering years 2000- 2018. Reports for psychotropic medications available beginning 2005. All variables are winsorized at the 99th percentile to exclude extreme values. All specifications include controls for county employment rates and the elderly population share; and state EITC parameters, the share of the elderly population receiving Supplemental Security Income, and AFDC/TANF caseloads and benefit levels. Odd numbered columns include establishment fixed effects and even numbered columns county fixed effects. Demographic controls include average resident age, facility size, and the share of residents female, and covered by Medicaid. Robust standard errors clustered by county. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$.

Table 6: Payment methods and care needs

	(1)	(2)	(3)	(4)
Panel a:	Resident Share			
	Medicaid	Medicare	Other	Hospitalizations
Paid Sick Leave	-0.779 (0.771)	-0.534 (0.331)	1.313* (0.701)	-0.00899 (0.0202)
Observations	245,366	245,366	245,366	229,998
Number of establishments	16,569	16,569	16,569	16,492
DV Mean	60.60	14.83	24.57	0.967
Panel b:	Average resident care needs			
	Occupancy Rate	Successful Discharge	ADL index	Care index
Paid Sick Leave	0.241 (0.454)	-0.00513 (0.00316)	0.320** (0.127)	0.0159*** (0.00582)
Observations	245,203	93,943	245,365	245,365
Number of establishments	16,566	15,035	16,569	16,569
DV Mean	83.31	0.517	15.97	0.935

Note: Panel a of table shows the share of nursing home residents by payment source (columns (1) through (3)); Discharge, transfer, and occupancy rate (panel (a) column(4) and panel b column(1) and (2)) average standardized care needs (Panel (b) columns (3) and (4)); derived from resident assessment reports reported by facilities to CMS covering years 2000 through 2017, summarized in LTC focus. All specifications include controls for county employment rates and the elderly population share; and state EITC parameters, the share of the elderly population receiving Supplemental Security Income, and AFDC/TANF caseloads and benefit levels; and establishment fixed effects. Demographic controls include average resident age, facility size, and the share of residents female, and covered by Medicaid. Robust standard errors clustered by county. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$.

Table 7: Payment care needs and demographics

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Patient demographics			Patient care needs	
	%	%	%	% Incontinence	% Incontinence
	Female	Hospital Admit	Hypertension	Bladder	Bowel
Paid Sick Leave	-0.693*** (0.139)	-0.888** (0.370)	-1.057 (0.876)	-2.354*** (0.476)	-0.685 (0.479)
Observations	245,414	230,292	238,394	241,618	232,080
Number of Provider	16,574	16,210	16,347	16,339	16,248
DV Mean	70.13	77.37	61.61	67.55	54.57

Note: Derived from resident assessment reports reported by facilities to CMS covering years 2000 through 2017, summarized in LTC focus. All specifications include controls for county employment rates and the elderly population share; and state EITC parameters, the share of the elderly population receiving Supplemental Security Income, and AFDC/TANF caseloads and benefit levels; and establishment fixed effects. Demographic controls include average resident age, facility size, and the share of residents female, and covered by Medicaid. Robust standard errors clustered by county. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$.

Table 8: Patient health outcome by provider characteristic

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Profit	Non -Profit	Multi -facility	Single	High medicaid	Low medicaid
Panel a: Pressure ulcer						
Paid Sick Leave	-0.500*** (0.134)	-0.601*** (0.161)	-0.612*** (0.148)	-0.522*** (0.162)	-0.584*** (0.148)	-0.477*** (0.143)
Observations	108,918	41,868	95,154	74,486	88,618	81,022
DV Mean	5.372	4.997	5.353	5.059	5.664	4.682
Panel b: Restraints						
Paid Sick Leave	1.220*** (0.159)	0.441*** (0.162)	0.719*** (0.119)	1.171*** (0.216)	1.390*** (0.204)	0.478*** (0.130)
Observations	112,676	43,623	97,900	77,253	91,340	83,813
Establishment FE	YES	YES	YES	YES	YES	YES
DV Mean	2.468	1.544	2.321	2.547	2.693	2.083
Panel c: Psychotropics						
Paid Sick Leave	-0.994* (0.526)	-0.565 (0.406)	-0.659** (0.331)	-1.608*** (0.572)	-1.559*** (0.534)	-0.376 (0.378)
Observations	65,957	26,902	52,897	39,962	47,176	45,683
Establishment FE	YES	YES	YES	YES	YES	YES
DV Mean	20.19	17.52	19.42	19.06	20.90	17.12

Note: Table shows patient outcomes results from long-term resident assessment reports reported by facilities to CMS, covering years 2000- 2018. Reports for psychotropic medications available beginning 2005. All variables are winsorized at the 99th percentile to exclude extreme values. All specifications include controls for county employment rates and the elderly population share; and state EITC parameters, the share of the elderly population receiving Supplemental Security Income, and AFDC/TANF caseloads and benefit levels; and establishment fixed effects. Demographic controls include average resident age, facility size, and the share of residents female, and covered by Medicaid. Robust standard errors clustered by county. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$.

Table 9: Violations by provider characteristic

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Profit	Non	Multi	Single	High	Low
		-Profit	-facility		medicaid	medicaid
Panel a: Log(Number of severe violations)						
Paid Sick Leave	-0.0739*	-0.115*	-0.0923*	-0.0743*	-0.112**	-0.0115
	(0.0424)	(0.0656)	(0.0497)	(0.0440)	(0.0441)	(0.0498)
Observations	21,671	8,288	19,020	14,129	18,031	15,118
Number of Provider	9,844	3,974	7,961	6,688	8,106	7,543
Panel b: Log(number of severe care violations)						
Paid Sick Leave	-0.0998**	-0.203***	-0.166**	-0.0367	-0.0627	-0.0483
	(0.0457)	(0.0638)	(0.0669)	(0.0510)	(0.0605)	(0.0635)
Observations	15,510	5,729	13,779	9,827	12,927	10,679

Note: Table shows results from the state health inspection reports reported to CMS, covering years 2000-2018. Severe violations are those presenting actual harm or immediate jeopardy to residents (CMS categories G-L). Quality of care violations follow the definition in Harrington et al. (2001) to include violations in the quality of care, assessment, nursing, dietary, physician, rehabilitative services, dental, and pharmacy regulation categories. All specifications include controls for county employment rates and the elderly population share; and state EITC parameters, the share of the elderly population receiving Supplemental Security Income, and AFDC/TANF caseloads and benefit levels; and establishment fixed effects. Demographic controls include average resident age, facility size, and the share of residents female, and covered by Medicaid. Robust standard errors clustered by county. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$.

Table 10: Nursing assistant staffing by provider characteristic

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Profit	Non	Multi	Single	High	Low
		-Profit	-facility		medicaid	medicaid
Panel b: Hours per resident day						
Paid Sick Leave	0.059***	0.009	0.061***	0.023	0.058***	0.033
	(0.018)	(0.025)	(0.020)	(0.019)	(0.018)	(0.021)
Observations	160,036	66,365	135,699	109,525	127,572	117,652
DV Mean	2.228	2.528	2.219	2.435	2.205	2.438

Note: I report results from the OSCAR/CASPER staffing reports reported by facilities to CMS, covering years 2000-2018 (columns 1-6)) and 2000-2018 (columns (7-8)). Hours per resident day is defined as the total weekly number of nursing assistant staffing hours times 35, divided by the number of residents times 7 (including direct care and administrative time). Full time employees defined as the number of nursing assistants typically working at least 35 hours a week; Part time employees defined as those typically working fewer than 35 hours a week. All specifications include controls for county employment rates and the elderly population share; and state EITC parameters, the share of the elderly population receiving Supplemental Security Income, and AFDC/TANF caseloads and benefit levels. Odd numbered columns include establishment fixed effects and even numbered columns county fixed effects. Demographic controls include average resident age, facility size, and the share of residents female, and covered by Medicaid. Robust standard errors clustered by county. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$.

Table 11: Robustness Checks

	(1)	(2)
VARIABLES	Presence	Minimum Wage
Paid sick leave	-0.0151*	0.850***
	(0.00793)	(0.0447)
Observations	345,309	54,424
DV Mean	0.767	7.701

Note: Specification includes controls for county employment rates and the elderly population share; and state EITC parameters, the share of the elderly population receiving Supplemental Security Income, and AFDC/TANF caseloads and benefit levels; and establishment fixed effects. Robust standard errors clustered by county. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$.

Appendix

Table A1: Health outcome coefficients p-values adjusted for multi-collinearity

	(1)	(2)	(3)	(4)
VARIABLES	Pressure ulcer	UTI	Restrained	Psychotropic
Unadjusted P-value	0.000***	0.899	0.000***	0.01***
Bonferroni P-value	0.000***	0.899	0.000***	0.02**
Sidak P-value	0.000***	0.877	0.000***	0.019**

*** p<0.01, ** p<0.05, * p<0.1

Table A2: Deficiencies p-values adjusted for multi-collinearity

	(1)	(2)	(3)	(4)	(5)	(6)
	Health violations			Care violations		
VARIABLES	#	Any severe	# severe	#	Any severe	# severe
Unadjusted P-value	0.441	0.082	0.019**	0.839	0.241	0.018**
Bonferroni P-value	0.883	0.327	0.105	0.883	0.722	0.105
Sidak P-value	0.688	0.289	0.101	0.839	0.562	0.101

*** p<0.01, ** p<0.05, * p<0.1

Table A3: Nursing assistant staffing outcomes coefficients p-values adjusted for multi-collinearity

	(1)	(2)	(3)
VARIABLES	Full time	Part time	contract
Unadjusted P-value	0.164	0.001***	0.053*
Bonferroni P-value	0.164	0.004***	0.106
Sidak P-value	0.164	0.004***	0.103

*** p<0.01, ** p<0.05, * p<0.1