Economic Policy Institute

EPI comments on CMS's proposed rule on minimum staffing standards for long-term care facilities

Public Comments • By Monique Morrissey • November 6, 2023

Submitted November 6, 2023 via regulations.gov. Minor changes were made to this document after submission.

November 6, 2023

Attention: CMS–3442–P
Centers for Medicare & Medicaid Services
Department of Health and Human Services
Mail Stop C4–26–05
7500 Security Boulevard
Baltimore, MD 21244–1850

Re: CMS–3442–P, RIN 0938-AV25, Medicare and Medicaid Programs; Minimum Staffing Standards for Long-Term Care Facilities and Medicaid Institutional Payment Transparency Reporting

To whom it may concern:

The Economic Policy Institute (EPI) submits this comment on the Center for Medicare & Medicaid Services (CMS) proposed rule on minimum staffing standards for long-term care facilities. EPI is a nonprofit, nonpartisan think tank created in 1986 to include the needs of low- and middle-income workers in economic policy discussions. EPI conducts research and analysis on the economic status of working America, proposes public policies that protect and improve the economic conditions of low- and middle-income workers, and assesses policies with respect to how well they further those goals.

In general, the proposed standard would take an important step to improve care and wellbeing for nursing home residents, but there is room for improvement in the rule. Below we submit an analysis documenting the effects of the staffing standard as proposed on the nursing home workforce, and provide additional support for the finding that increased staffing, including by Licensed Practical Nurses, has benefits that far outweigh the costs of such a proposal and is associated with better health and safety outcomes.

Sincerely,

Monique Morrissey, PhD
Senior Economist
Economic Policy Institute

SECTIONS

Effect of a new staffing standard on the nursing home workforce and industry

Summary

A new nursing home staffing standard proposed by the Biden administration would improve the health and wellbeing of many nursing home residents while falling short of total nursing hours suggested by previous research. Earlier recommendations based on a 2001 study by Abt Associates centered on 4.1 hours per resident per day (HPRD, or simply "hours") of nursing care, including care by Registered Nurses (RNs), Licensed Practical Nurses (LPNs), and Nurse Aides (NAs). The proposed standard calls for a minimum total of 3.0 hours of care from RNs and NAs only (Abt Associates 2001; CMS 2023a).[1]

The proposed standard requires facilities to have an RN on site around the clock, an improvement over earlier recommendations. The advantages of having an RN on site are well established (Dellefield et al 2015; Harrington et al. 2020), but few nursing homes (16.7%) meet the proposed standard, most falling short of the 24-hour RN requirement. This is fewer than the nursing homes meeting the previously recommended 4.1-hour standard (19.4%) absent a 24-hour RN requirement (see **Figure A**).

The Centers for Medicare and Medicaid Services (CMS) said the proposed standard balanced the need to protect residents' health and safety with practical considerations. Specifically, CMS cited the need to set "achievable staffing targets as the long-term care sector recovers from the effects of the COVID–19 pandemic and the desire to preserve resident access to care as the sector expands hiring to meet staffing standards" (CMS 2023c).

The rationale for a "balanced" standard echoes industry claims that there is a widespread shortage of nursing home workers. In fact, nursing home employment declines during the COVID-19 pandemic mirrored declines in occupancy, and, if anything, suggest that there is a pool of sidelined workers who could be lured back if pay and working conditions improved. This is true in both urban and rural areas.

The real problem is understaffing and low pay, not a worker shortage. Studies have consistently found, and EPI's analysis confirms, a strong connection between staffing levels and resident health and safety. Understaffing also harms workers, many of whom earn poverty wages for difficult and dangerous work, leading to high turnover. While the industry calls this a worker shortage, it is rather a pay shortage, as nursing homes pay nursing staff less than other healthcare providers while tasking staff with unmanageable caseloads.

The Biden administration's proposed standard relies on a new study by Abt Associates commissioned by CMS. The study estimates the impact of increased staffing on the probability of meeting minimal health and safety thresholds. It finds that RN and NA care is associated with higher modified Quality Measure and Health Inspection ratings, while LPN

Figure A

Proposed, alternative, and previously recommended nursing home staffing standards

	RN HPRD	RN or LPN HPRD	NA HPRD	Total HPRD	24-hour RN presence?	Facilities currently meeting standard
Proposed	0.55	—	2.45	3.00	Yes	16.7%
Alternative	0.55	—	2.45	3.48	Yes	16.6%
Previously recommended	0.55	1.15	2.40	4.10	No	19.4%

Notes: Facilities currently meeting the proposed and alternative standards include all those providing at least 24 hours of daily RN care, though there is no way of knowing whether they provide round-the-clock care. HPRD stands for hours per resident per day. The alternative standard is the same as the proposed standard with an extra 0.48 HPRD of care provided by nursing staff (RN, LPN, or NA).

Source: Author's analysis of CMS nursing home provider data, August 2023 (CMS 2023b).

Economic Policy Institute

care appears to have no effect (Abt Associates 2023). Based on this finding, the proposed staffing standard does not include a requirement for LPN or licensed nurse staffing (licensed nurses may be RNs or LPNs). However, this unexpected result is not robust to alternative model specifications.

An alternative standard proposed by CMS—requiring an additional 0.48 hours of unspecified nursing care—would be a modest improvement over the proposed standard, but not as effective as a 4.1-hour standard with a role for LPNs in addition to round-the-clock RN care. Almost all nursing homes that meet the proposed requirement (16.7% of nursing homes) also meet the alternative standard (16.6% of nursing homes). However, the evidence supports an even stronger 4.1-hour standard that includes 1.15 hours of licensed nursing care, much of which would likely be performed by LPNs already employed by nursing homes.

Current staffing standards

The current federal standard for nursing home staffing is vague. Federal law requires nursing homes to employ a full-time director of nursing, employ a registered nurse (RN) at least eight hours a day, have a licensed nurse on duty around the clock, and provide "sufficient" staff to meet the needs of residents. The standard does not take into account the number of residents that workers are caring for, except to allow the director of nursing to serve as the charge nurse in smaller facilities (Harrington et al. 2020). Vague as it is, over half of nursing homes were found to be in violation of the standard on at least one day in 2018, with 7% in violation on at least 30 days (Dept. of HHS OIG 2020).

State staffing standards vary, but most are inadequate. Most states set hours for care or supervision by an RN. Many add requirements for total nursing care, sometimes specifying hours for licensed nurses (RNs or LPNs), and, less commonly, NAs. Fifteen states do not have a nursing hours-per-resident standard; twenty-nine require under 3.5 hours; and six

require 3.5 hours or more, but less than the 4.1 hours suggested by a 2001 study conducted by Abt Associates on behalf of CMS. Only the District of Columbia requires 4.1 hours of nursing care, including round-the-clock care by licensed charge nurses supervised by an RN (Abt Associates 2001; Consumer Voice 2022a; MACPAC 2022).

Consequences of understaffing

Studies commissioned by CMS have found that understaffing harms residents. An influential 2001 study by Abt Associates found that increased staffing reduced the likelihood that a facility would be among the worst 10% across a range of health and safety measures. These included short-stay residents' hospital readmissions for urinary tract infections and other potentially avoidable causes and long-stay residents' quality-of-care issues, such as pressure ulcers (Abt Associates 2001). The study found that measurable improvements plateaued between 4.10 and 4.85 hours of nursing care, depending on the nursing home population. This finding formed the basis for minimum staffing recommendations centered around 4.1 hours of nursing care, even though the 2001 study, like a 2023 study by the same consultants focusing on 25th and 50th percentile thresholds, only considered whether increased staffing affected the probability of exceeding low performance thresholds (Abt Associates 2001 & 2023).

Both studies ignored potential effects on higher-performing nursing homes. The fact that the 2023 study did not find a performance plateau does not contradict the 2001 study since it is possible that staffing beyond a certain level has no effect on whether a facility meets a very low performance threshold but does increase the likelihood that it meets higher thresholds. Neither study looked at whether increased staffing might improve performance in above-average facilities.

Other studies have also found that understaffing is associated with poor resident outcomes. Residents in understaffed facilities are more likely to have pressure ulcers, be restrained or given antipsychotic medication, catch infectious diseases, receive emergency room care, be readmitted to the hospital, and show other evidence of neglect and suffering, such as weight loss and pain (see overview in Harrington et al. 2020). A study examining the effects of a minimum staffing standard in California found that the resulting increase in nursing care significantly reduced mortality (Tong 2011). More recently, understaffed facilities were found to have much higher COVID-19 mortality (see overview in Harrington et al. 2021).

Understaffing is also hazardous to workers. Nursing home workers had high injury and illness rates even before the COVID-19 pandemic due to injuries sustained while lifting patients, among other hazards exacerbated by overwork (Campbell 2018). In nursing care facilities, the incidence of nonfatal occupational injuries and illnesses resulting in days away from work, job restriction, or transfer rose from 3.7 per 100 full-time equivalent (FTE) workers in 2019 to 13.5 per 100 FTE workers in 2020 due to the pandemic—much higher rates than for all workers, which were 1.6 per 100 FTE in 2019 and 1.8 per 100 FTE in 2020 (BLS IIF 2019 and 2020). As of October 22, 2023, the number of nursing home workers who had contracted COVID-19 was 1,786,532 (CMS 2023d).

Figure B

Mean nursing home Quality Measure and Health Inspection ratings, nursing staff turnover, and nursing staff hours, August 2023

	Quality Measure rating	Health Inspection rating	Nursing staff turnover	Total RN hours	RN HPRD	LPN HPRD	NA HPRD	Total HPRD
For-profit	3.5	2.6	55.0%	44.8	0.6	0.9	2.1	3.6
Government	3.5	3.1	48.9%	57.5	0.8	0.9	2.5	4.2
Non-profit	3.7	3.2	49.9%	56.1	0.9	0.9	2.5	4.3

Notes: CMS gives nursing homes one- to five-star Quality Measure and Health Inspection ratings. CMS adjusts Health Inspection ratings so that the average nursing home in each state has the same score. HPRD stands for hours per resident per day. Total RN hours equal RN HPRD multiplied by the number of residents in the facility.

Source: Author's analysis of CMS nursing home provider data, August 2023 (CMS 2023b).

Economic Policy Institute

Current staffing levels

Staffing levels vary considerably. Total nursing hours range from an average of 3.3 in Missouri and Texas to 7.5 in Alaska (Appendix Table 1). In twelve states—Alaska, California, Delaware, Hawaii, Idaho, Maine, Minnesota, Nevada, North Dakota, Oregon, Vermont, and Washington—as well as the District of Columbia, the average nursing home already meets or exceeds 4.1 hours, but individual nursing homes may fall short or fail to meet specific recommendations for RNs, LPNs, and NAs.

Staffing levels are lower in for-profit nursing homes. For-profit facilities provide fewer nursing hours per resident per day (3.6) than government (4.2) and non-profit facilities (4.3). For-profit facilities also have high nursing staff turnover (55.0%) and poor health inspection ratings (2.6) (**Figure B**). Since Health Inspection ratings are adjusted to be equal across states, it is likely that for-profit nursing homes in states with weak staffing standards provide even worse care than is evident in these ratings. The fact that for-profit homes tend to be understaffed and have worse health and safety records has been known for over a decade (Harrington et al. 2012).

Nursing homes owned by private equity firms have an especially poor track record. Studies have found that residents in nursing homes acquired by private equity firms were more likely to experience preventable injuries requiring hospital treatment, had higher overall and COVID-19 mortality, and were much more likely to be prescribed antipsychotic drugs than residents in other nursing homes. These nursing homes also charged taxpayers more for publicly funded services (AFREF 2020; Braun et al. 2021; Gupta et al. 2023; Rafiei 2022).

New staffing standard

The Biden administration has proposed a new federal staffing standard which requires round-the-clock RN care. The proposed standard issued by CMS on September 1, 2023, requires a daily minimum of 0.55 hours of RN care and 2.45 hours of NA care for a total of

Figure C

Share of nursing homes meeting proposed, alternative, and recommended staffing standards, August 2023

	Proposed	Alternative	Recommended
For-profit	9.2%	9.1%	8.8%
Government	34.6%	34.6%	33.8%
Non-profit	36.2%	36.1%	35.1%

Source: Author's analysis of CMS nursing home provider data, August 2023 (CMS 2023b).

Economic Policy Institute

3.00 hours per resident. It also requires facilities to have an RN on site around the clock, an improvement over previous recommendations. CMS also solicited comment on an alternative standard requiring the same hours of RN and NA care plus an additional 0.48 hours of unspecified nursing care, for a total of 3.48 hours (CMS 2023a).

No more than one in six nursing homes (16.7%) currently meets the proposed standard (Figure A). This is likely an overestimate since it assumes that nursing homes that currently average at least 24 hours of RN care per day provide round-the-clock care. The share of nursing homes meeting the proposed standard varies by state, ranging from 0.8% in Louisiana to 94.1% in Alaska (see Appendix). It also varies by sector, with 9.2% of for-profit, 34.6% of government, and 36.2% of non-profit nursing homes currently meeting the proposed standard (**Figure C**).

On average, nursing homes would have to increase RN hours by 17.1% (equivalent to 21,901 full-time workers) and NA hours by 17.8% (equivalent to 83,431 full-time workers) to meet the proposed standard (author's analysis of CMS nursing home provider data, August 2023 (CMS 2023b)).[2] Nursing homes could choose to eliminate some LPN positions because LPNs are not included in the proposed standard. However, some state staffing standards include requirements for LPNs or licensed nurses, and the proposed federal standard requires nursing homes to provide adequate care to meet residents' needs, not just the minimum hours required for RNs and NAs—care that could be provided by LPNs.

Many experts, relying on the 2001 study by Abt Associates, have recommended more hours of nursing care. The study found that the quality of care increased up to staffing levels equal to 0.55 hours for RNs, an additional 1.15 hours for licensed nurses (RNs or LPNs), and 2.4 hours for NAs, for a total of 4.1 hours, with higher thresholds for nursing homes with residents having more complex healthcare needs (Abt Associates 2001; CALTCM n.d.; CANHR et al. 2021; National Academies 2022). As will be discussed below, the new Abt Associates study cited as the basis for the proposed standard should not supersede earlier research backing more hours of total nursing care, including care by LPNs.

New staffing study

The proposed standard is based on a new study conducted by Abt Associates for CMS

that finds that safety and quality increase with hours of nursing care. Among other things, the study found that increased RN and NA hours increased the probability of meeting minimum state-specific performance thresholds, while LPN staffing had no measurable effect. The performance measures used were CMS's Health Inspection rating and a modified Quality Measure rating based on 10 of 15 measures in CMS's Quality Measure (Abt Associates 2023).

The performance ratings use health and safety measures from different sources. Measures used in the Health Inspection rating are from facility inspections conducted by state agencies (CMS 2023e). Measures used in the Quality Rating are from Medicare claims data and standardized "Minimum Data Set" assessments of residents' health conducted by nursing home staff.

Quality Measure ratings are comparable across states, but Health Inspection ratings are not. CMS adjusts Health Inspection ratings such that the top 10 percent of nursing homes in each state receive the highest 5-star rating, the bottom 10 percent receive the lowest 1-star rating, and those in between receive 2-4-star ratings, whether the average nursing home provides 3.3 hours of nursing care, as in Missouri and Texas, or 7.5 hours of nursing care, as in Alaska. This makes Health Inspection ratings an imperfect metric to use in informing a federal standard, a problem that can be mitigated by including state controls when comparing nursing homes across the country.

The Abt Associates study examines the impact of increased staffing on the probability of meeting minimum (25th and 50th percentile) performance thresholds rather than directly estimating the effect of hours on outcomes. As discussed in the next section, more straightforward models that directly estimate the impact of staffing on Health Inspection and Quality Measure ratings show that additional RN, LPN, and NA hours are all associated with higher ratings in one or both measures.

The study controls for nursing home characteristics that are the result of understaffing, which will tend to minimize the effect of staffing on performance. One of these is whether a nursing home is a Special Focus Facility, which is CMS's designation for facilities with persistent records of noncompliance and substandard care. Another is the share of residents covered by Medicaid, which might also be viewed as an outcome since some facilities limit the number of "Medicaid beds," relegating many Medicaid beneficiaries to substandard care in understaffed facilities. While omitting causal factors can bias results, *including* outcomes as if they were causal factors can also bias results, in this case potentially minimizing the positive impact of increased staffing (Angrist and Pischke 2009; Cinelli, Forney, and Pearl, 2022).

The results of the study do not provide a rationale for a weaker standard. The study found that there was "no obvious plateau at which quality and safety are maximized or 'cliff' below which quality and safety steeply decline" (Abt Associates 2023). That is, it found that the more staffing, the better, at least for RNs and NAs, in contrast to the 2001 study, which identified a threshold at around 4.1 total hours above which increased staffing had no measurable effect on quality and health outcomes except in nursing homes caring for more residents with acute needs.

CMS recommends balancing the need to improve resident safety and quality of care with the need to preserve access to care, given workforce and cost considerations.

> We recognize that some of the materials we have relied upon offer support for a higher minimum HPRD standard. For several reasons discussed later in this proposed rule, including the importance of setting achievable staffing targets as the long-term care sector recovers from the effects of the COVID–19 pandemic and the desire to preserve resident access to care as the sector expands hiring to meet staffing standards, we are proposing a set of policies that balance the urgent need to improve resident safety and quality of care alongside these practical considerations. (CMS 2023c)

The new Abt Associates study should not be used to cast doubt on previous research. Whether or not a compromise is politically necessary, it should not be based on the suggestion that earlier research underlying a 4.1 hour standard has been superseded by more credible research. Instead, both these studies, as well as other research, convincingly show that higher staffing levels improve outcomes.

EPI regression analysis

An EPI regression analysis confirms that increased staffing, including LPN staffing, is associated with better health and safety outcomes. As shown in **Figure D**, Equation 2, nursing homes providing more RN, LPN, and NA hours had higher Health Inspection ratings, though the difference was only statistically significant for nursing homes with LPN staffing levels in the top two quintiles (top 40%).

Nursing homes that provided more RN and LPN hours also had higher Quality Measure ratings (Figure D, Equation 1), though this was again limited to nursing homes with LPN staffing in the top two quintiles. Increased RN hours were positively associated with both Health Inspection and Quality Measure ratings at all levels above the baseline (bottom quintile), and nursing homes that provided at least 24 hours of total RN care per day had higher Quality Measure ratings even after accounting for RN hours per resident.

NA staffing was positively associated with higher Health Inspection ratings but not higher Quality Measure ratings, in part because the metrics that make up the Quality Measure ratings are more directly tied to medical care provided by licensed nurses than to assistance with activities of daily living provided by Certified Nursing Assistants. However, alternative model specifications, briefly discussed below, show a positive impact of NA staffing on Quality Measure ratings as well.

The finding that LPN staffing is associated with improved health and safety outcomes is at odds with results of the new Abt Associates study but robust to other model specifications. The EPI regression analysis controls for many of the same factors as the regression analysis in the 2023 Abt Associates study but adds state controls and omits two questionable control variables discussed earlier (the status of the facility as a Special Focus Facility and the share of residents covered by Medicaid). The EPI analysis directly ties staffing levels to CMS Quality Measure and Health Inspection ratings rather than to the

Figure D

Effect of nursing care on Quality Measure and Health Inspection ratings, August 2023

Dependent variable:		(1) Quality Measure		(2) Health Insp.	
Total RN hours >= 24?		0.148	***	0.0119	
		-0.0316		-0.0319	
RN hours per resident					
	2nd quintile	0.0829	**	0.229	***
		-0.0341		-0.034	
	3rd quintile	0.166	***	0.396	***
		-0.0367		-0.0371	
	4th quintile	0.241	***	0.581	***
		-0.0391		-0.0401	
	5th quintile	0.5	***	0.942	***
		-0.0437		-0.0451	
LPN hours per resident					
	2nd quintile	-0.00137		-0.0215	
		-0.0324		-0.0329	
	3rd quintile	-0.00577		0.023	
		-0.0336		-0.0346	
	4th quintile	0.0601	*	0.101	***
		-0.0351		-0.0363	
	5th quintile	0.096	***	0.139	***
		-0.0359		-0.0375	
NA hours per resident					
	2nd quintile	0.045		0.112	***
		-0.0305		-0.0315	
	3rd quintile	0.0478		0.2	***
		-0.0318		-0.0327	
	4th quintile	0.00486		0.247	***
		-0.0335		-0.0347	
	5th quintile	0.0166		0.409	***
		-0.0369		-0.038	

Notes: Standard errors are shown in parentheses. Asterisks denote statistical significance (* p < 0.10, ** p < 0.05, *** p < 0.01). Baseline (not shown) is a facility providing the lowest quintiles of RN, LPN, and NA hours per resident. Regressions include controls for sector (government, non-profit, for-profit); number of residents; state; rural location; whether a facility is based in a hospital; and whether a facility is a continuing care retirement community.

Source: Author's analysis of CMS nursing home provider data, August 2023 (CMS 2023b).

Economic Policy Institute

probability of meeting arbitrary thresholds. It uses actual staffing hours rather than case-mix-adjusted hours because Quality Measure ratings are already adjusted for resident risk factors, while deficiencies identified during health inspections, such as poor infection

control practices, do not result from differences in residents' initial health assessments. The finding that increased staffing, including LPN staffing, is associated with improved Quality Measure and Health Inspection ratings is robust to different statistical models, including nonlinear functional forms, 15- and 30-minute staffing intervals, and regressions omitting control variables (not shown).

Is there a worker shortage?

The nursing home industry claims that staffing ratios will lead to closures. In a letter to Senator Robert P. Casey (D-PA), Chair of the Special Committee on Aging, the Pennsylvania chapter of a nursing home association claimed that complying with a minimum standard would force providers to "find and hire people who do not exist in the labor market," "resort to utilizing costly agency staff at rates that are massively unsustainable," and in some cases cause providers to shutter wings or entire facilities (LeadingAge PA 2023).

Industry claims confuse reduced demand with reduced supply. A report written on behalf of the American Health Care Association (AHCA), the nursing home industry lobby, describes a 13.3% decline in nursing home jobs during the pandemic as a "workforce shortage" causing "wage increase pressures and reliance on contracted or agency nursing, resulting in significant expense increases" (CLA 2023). A "workforce shortage" is a misleading way to describe reduced demand for nursing home services and workers after 168,579 residents died and many would-be residents opted for alternative care arrangements due to the rapid spread of COVID-19 in these facilities (CMS 2023d; Chidambaram 2022). Whether demand rebounds in coming years will depend on the net effect of opposing trends: the aging of the large baby boom generation and growing demand for home- and community-based services (HCBS) and other alternatives to nursing home care (McGarry and Grabowski 2022; Chidambaram and Burns 2022; Keehan et al. 2023).

Short-term shortages are unlikely, and long-term shortages can be averted. Rather than indicating a nationwide shortage of trained staff, the recent downturn in employment suggests that there is a pool of trained and experienced workers who could return to nursing homes if pay and working conditions improved (**Figure E**).

NAs and LPNs can be trained relatively quickly. NAs, who provide the bulk of nursing care, are only required to have 75 hours of training (Consumer Voice 2022b). While increasing the number of these workers would be inadequate for providing quality care, workers could be quickly trained to fill these positions in response to the staffing standard. Like NAs, LPNs do not need to have college educations, and LPN training typically takes about a year to complete (BLS OOH).

Better working conditions would help with recruitment and retention. Even in the case of RNs, who require four or more years of post-secondary study, any future shortage would be the result of increased workloads and unsafe conditions that induced many experienced nurses to quit or retire early during the pandemic and contributed to the first

Figure E

Nursing home workers and residents, 2019–2022

	2019	2020	2021	2022
Nursing home workers				
All occupations	1,603,800	1,534,120	1,407,480	1,343,240
RNs	151,300	143,250	131,320	124,690
LPN	209,440	199,760	177,960	171,030
NAs	566,240	527,480	471,160	447,940
Nursing home residents	1,330,591	1,316,950	1,098,305	1,157,714

Sources: BLS OEWS 2019–2022a and KFF 2023a.

Economic Policy Institute

decline in nursing school enrollment in 20 years (AACN 2023; Spetz 2021; Smiley et al. 2023). Staffing standards would help nursing homes attract and retain scarce nurses by improving working conditions, though steps should also be taken to increase funding for and enrollment in nursing schools to keep pace with rising demand.

Rural communities

Senators from nine states expressed concern that staffing standards could hurt rural residents. In January, senators from Arizona, Colorado, Michigan, Montana, Nebraska, North Dakota, South Dakota, West Virginia, and Wyoming wrote to CMS Administrator Chiquita Brooks-LaSure to express concern that "a one-size-fits-all staffing mandate would undermine access to care for patients, particularly in rural communities … in light of well-known and long-standing obstacles to the recruitment and retention of direct care workers, especially in rural and underserved areas" (Barrasso et al. 2023).

Despite the senators' concern, the difference in nursing care provided by rural and urban facilities is actually small. Rural nursing homes provide 3.7 total hours on average versus 3.8 total hours for urban nursing homes (**Figure F**).[3] Only one of the states represented by the concerned senators—West Virginia—lagged the national average (16.7%) in the share of homes meeting the proposed standard (see Appendix). This is not surprising. Though rural facilities have smaller labor pools to choose from, workers in rural areas also have fewer job options. Nursing homes employ many older workers without college degrees, a good match for a rural workforce that skews toward older non-college workers (author's analysis of IPUMS-CPS 2019–2022 microdata (Flood et al. 2021)).

To support the claim that staffing standards would hurt rural communities, the senators cite a Bipartisan Policy Center (BPC) study on rural hospital closures. This study, however, focuses more on financial challenges than staffing shortages, including high rates of uninsured patients in rural areas (BPC 2022). BPC found that the rural state with the largest share of hospitals experiencing financial losses was Wyoming, which has chosen not to expand Medicaid under the Affordable Care Act (BPC 2022; KFF 2023b).

Figure F

Average Quality Measure and Health Inspection ratings, nursing staff turnover, and staff hours by urban or rural county, August 2023

	Quality Measure	Health Insp.	Turnover %	RN total (hours/ day)	RN HPRD	LPN HPRD	NA HPRD	Total HPRD
Urban	3.7	2.7	53.7	52.9	0.7	0.9	2.2	3.8
Rural	3.2	3.0	52.8	35.3	0.7	0.8	2.2	3.7

Sources: Author's analysis of CMS nursing home provider data, August 2023 (CMS 2023b).

Economic Policy Institute

A rural hospital crisis does not necessarily point to a rural nursing home crisis. Rural hospital closures, though devastating for rural communities, could make it easier for nursing homes in those areas to hire RNs. The expansion of telehealth, which the Bipartisan Policy Center study's authors recommend as a way of addressing service gaps in rural areas, could also free up RNs to work in nursing homes.

There are more LPNs per capita in rural areas than in urban areas. Since more LPNs work in nursing homes than in hospitals, this suggests that LPN staffing shortages are not a concern for nursing homes in rural areas. The BPC report does find that there are more RNs per capita in urban areas, which can be explained by the fact that academic medical centers and other facilities providing specialized care tend to be in urban centers where both urban and rural patients can travel to receive such care. Admittedly, if rural areas do experience staffing shortages, they are more likely to be shortages of RNs than LPNs or NAs. The BPC study does not report differences in NA employment in rural and urban areas.

Worker pay

There is no worker shortage; there is a pay shortage. It is difficult to explain a national shortage of workers in occupations that do not require highly specialized skills or training, unless the supposed "shortage" stems from the fact that employers are not offering pay commensurate with the demands of the job. This is especially true of the underpaid NAs who provide the bulk of nursing home care, whose numbers could easily expand with better pay and working conditions.

Inflation-adjusted wages for nursing home staff have been flat. Real wages for nursing home staff have remained flat in recent years despite the dangers faced by nursing home workers during the COVID-19 pandemic and the tight labor market in the strong economic recovery that followed (**Figure G**). Real wages for RNs employed in nursing homes appear to have even declined.

The real problem is low pay and poor working conditions. NAs in nursing homes, who provide the bulk of the nursing care, earn poverty-level or near-poverty-level wages. More than one in five (21.5%) have incomes below the official poverty threshold. Only a third (35.0%) receive employer-subsidized health benefits (author's analysis of IPUMS-CPS

Figure G

Mean real wages in nursing homes, 2019–2022 ($2022)

	2019	2020	2021	2022
All Occupations	$22.43	$23.20	$22.70	$22.63
RNs	$38.27	$39.51	$37.72	$37.11
LPNs	$27.31	$28.07	$28.01	$28.10
NAs	$16.26	$16.99	$16.75	$16.90

Source: BLS OEWS 2019–2022.

Economic Policy Institute

Figure H

Mean wage in nursing homes and across industries by occupation, 2022

	Nursing homes	All industries
RNs	$37.11	$42.80
LPNs	$28.10	$26.86
NAs	$16.90	$17.41

Source: BLS OEWS 2022a and 2022b.

Economic Policy Institute

microdata, 2020-2023 (Flood et al. 2021)). Many lack paid sick leave, which, along with understaffing, puts pressure on NAs to show up to work even if they are unwell. Unionized nursing homes fared better during the pandemic but are a small percentage of nursing homes (Dean et al. 2022).

Nursing homes pay less than other health care providers. Though almost all NAs earn low wages, those employed by nursing homes earn even less than the average wage for this occupation. LPNs and RNs are better paid than NAs, but RNs also receive lower pay if they work in nursing homes (**Figure H**). A detailed overview of nursing home workers and the challenges they face is provided in Martinez Hickey, Sawo, and Wolfe (2022).

Low pay also harms nursing home residents, as shown by the positive effect of minimum wage increases on resident outcomes. Ruffini (2022) found that minimum wage increases reduced turnover, inspection violations, health conditions such as pressure ulcers, and resident mortality in nursing homes.

Impact of proposed staffing standard on wages

Nursing homes may or may not have to raise wages to attract and retain workers. Some studies have found that nursing homes would not have to raise wages to hire more workers. Others simply assume that nursing homes will not raise wages. The latter includes a study coauthored by four researchers affiliated with the American Health Care Association, which appears at odds with industry claims that nursing homes face a

shortage of workers (Hawk et al. 2022). A study that examined the effects of a 1999 minimum staffing standard enacted in California found that nursing homes that needed to hire more workers did not raise wages relative to nursing homes that were already in compliance with the new policy, though it is possible that they paid new workers the same as experienced workers and so the new workers did see a wage increase compared to what they would have been offered in the absence of the staffing standard (Matsudaira 2014).

Whether nursing homes will have to raise wages depends on their specific circumstances as well as market conditions. Nursing homes that already pay competitive wages may not have to increase them to attract new workers, especially if working conditions improve with the new standard. However, to the extent that a nursing home relies on paying below-market wages to workers who are strongly attached to their jobs, it may need to raise wage offers to attract new workers as well as increase wages for existing workers to maintain wage hierarchies. Whether or not nursing homes must raise wages to attract new workers, underpaid nursing staff, especially NAs, deserve to earn a living wage. Wage increases combined with more manageable caseloads will also reduce turnover and improve the care that residents receive.

Employers who need to pay higher wages to attract more workers even if market conditions do not change are said to exercise "monopsony power." The wages these employers pay are not strictly determined by market conditions but also depend on individual employers' relative bargaining power *vis-à-vis* their employees. Monopsony power in labor markets was once viewed as an exceptional circumstance—occurring, for example, in company towns with a dominant employer or when workers had employer-specific skills that were not easily transferable. However, labor economists have found that monopsony power is widespread even among employers in economically diversified regions who hire from large pools of workers with similar skills. Bassier, Dube, and Naidu (2021), for example, found that a typical employer might need to raise wages by roughly 1% in order to increase employment by 4%.

The reasons for monopsony power are complex. One explanation is that some workers are willing to accept lower wages because they like the hours, location, coworkers, or other aspects of a particular job; or they may have negative reasons to be stuck at a low-paid job, such as past experience with discrimination or low confidence in their job-seeking skills. In either case, their employer would have to pay more to attract new workers whose preferences do not match the job attributes as closely or who have less reason to accept low wages or poor working conditions.

Since employers tend to avoid paying new workers more if such favoritism is likely to become known, they may prefer to remain understaffed rather than raise wages for all workers. This can explain why some low-wage employers increase staffing in response to minimum wage increases, contrary to expectations. It can also explain why some employers—including many nursing homes—rely on staffing agencies to fill gaps, since it may be cheaper to pay a high agency rate to a few temporary workers rather than give all workers a pay raise.

Wages for nursing occupations may also increase if the supply of workers does not respond quickly to greater demand for nursing occupations. This is more likely for RNs, who require extensive training, though evidence from the COVID-19 pandemic suggests that the supply of RNs may be more responsive to increased demand than previously thought (Gottlieb and Zenilman 2020).

Costs and benefits

The estimated cost of adequate staffing represents only a small share of industry revenues. An industry-backed study based on current wages estimated the additional salary cost of a 4.1-hour standard at $7.25 billion, assuming the standard required 0.75 hours of RN care, 0.54 hours of LPN care, and 2.81 hours of NA care (Hawk et al. 2022). The standard proposed by CMS, requiring round-the-clock RN care but fewer hours of overall care, would have a smaller salary cost ($4.4 billion) based on the 2022 hourly pay in Figure G (author's analysis of CMS 2023b).

To put this in proper perspective, nursing home revenues amount to roughly $130 billion (U.S. Census Bureau 2022). CMS's alternative standard, with an additional 0.48 hours of unspecified nursing care, would have an estimated salary cost of $7.4 billion. Requiring nursing homes to also provide 1.55 hours of licensed nursing care would increase the salary cost to $7.7 billion (author's analysis of CMS 2023b). This is a modest increase over the alternative standard because most nursing homes already employ LPNs who are not included in the proposed and alternative standards.

These estimates assume that newly hired workers are paid the same as experienced workers. Actual salary costs could be lower if newly hired workers receive lower wage offers than experienced workers, or higher if employers need to raise wages to attract more workers. Nursing homes might also offset the cost of hiring RNs and NAs by employing fewer LPNs, who are not included in the proposed standard yet represent nearly a quarter of the nursing hours currently provided. The estimates also do not include the additional cost of employee benefits nor the potential savings from lower turnover, higher productivity, and improved resident and worker health.

Focusing on costs ignores the immense benefits of a minimum staffing standard. The proposed standard will save thousands of lives and greatly improve nursing home residents' and workers' health and wellbeing.

One estimate of the mortality cost of 22,542 excess deaths in nursing homes attributed to private equity ownership as compared with other for-profit nursing homes amounted to $22.4 billion dollars over a 12-year period.[4] Private equity-owned homes have lower staffing ratios than other for-profit homes, which in turn have lower staffing ratios (overall, and for RNs and NAs) than non-profit and government nursing homes (author's analysis of CMS 2023b). Since an estimated 10% of for-profit nursing homes are private equity-owned, and for-profit homes in turn account for roughly 70% of the total, this estimate is a fraction of the total cost of inadequate staffing in for-profit homes (Gupta et al. 2023).

Likewise, a study of emergency room visits and hospitalizations among nursing home

residents found that Medicare costs for such services increased by $1,081 annually per resident when private equity firms acquired for-profit homes (Braun et al. 2021). The medical cost savings to taxpayers could exceed the cost of additional staffing in the proposed standard even without putting a dollar value on residents' and workers' suffering.

Adequate staffing would also reduce turnover, increase productivity, and lower employee health expenses associated with overwork. The resulting higher quality of care would also boost demand for nursing home services, increasing occupancy rates and thus reducing *per capita* overhead costs.

Conclusion

There is no evidence of a worker shortage. Nursing homes have difficulty hiring and retaining workers because they do not pay enough and have poor working conditions, leading to high turnover. Rural nursing homes will not be unduly burdened by the staffing standard.

The cost of the proposed standard is manageable and will fall mostly on for-profit nursing homes that provide inadequate care, including private equity-owned homes responsible for some of the worst abuses. Since Medicaid, Medicare and other public programs pay for the bulk of nursing home care, it is reasonable to expect nursing homes to meet minimum staffing standards to ensure that public funds do not enrich owners of nursing homes at the expense of residents and taxpayers. Greater transparency in nursing home finances is also needed and would allow states to assess whether Medicaid reimbursement rates are too low.

Nursing homes are understaffed because the costs of understaffing are mainly borne by residents, workers, and taxpayers. Because most of the cost—but only a portion of the savings associated with improved staffing—will accrue to nursing homes, for-profit nursing homes have an incentive to resist staffing standards despite the immense social benefit these standards will provide.

The Biden administration's proposed standard is a critical step, but there is room for improvement. The strongest feature of the proposed standard is the requirement for round-the-clock RN care. RN care is essential, but LPN care complements RN care and should be included in the standard, too. The alternative standard would require more hours of unspecified care and make it less likely that nursing homes would shed LPNs to offset the cost of hiring RNs and NAs. Even better would be the standard that experts have recommended that requires 1.15 hours of licensed nursing care for a total of 4.1 hours of care.

Appendix

Appendix

Mean Quality Measure, nursing staff turnover, nursing hours, and share meeting proposed standard, by state, August 2023

State	Quality Measure	Turnover (%)	RN total hours/ day	RN HPRD	LPN HPRD	NA HPRD	Total HPRD	Meet Proposed Standard (%)
AK	3.9	51.4	74.4	2.3	0.8	4.4	7.5	94.1%
AL	3.3	51.0	51.0	0.6	0.8	2.3	3.8	20.0%
AR	3.4	54.5	26.3	0.4	1.0	2.5	3.9	4.2%
AZ	4.2	54.7	50.5	0.7	1.0	2.2	4.0	20.7%
CA	4.4	46.1	41.2	0.6	1.2	2.5	4.3	18.5%
CO	3.9	60.0	54.1	0.9	0.7	2.2	3.8	20.5%
CT	3.6	42.0	61.6	0.7	0.8	2.1	3.7	15.9%
DC	4.5	40.6	126.8	1.5	0.7	2.6	4.8	52.9%
DE	4.1	47.7	80.2	1.1	1.0	2.3	4.3	16.3%
FL	3.9	52.5	66.9	0.7	0.8	2.4	3.9	19.6%
GA	2.8	54.0	34.2	0.4	1.0	2.0	3.4	5.1%
HI	4.7	42.3	102.5	1.5	0.4	2.7	4.6	53.7%
IA	3.3	55.9	34.9	0.7	0.6	2.3	3.6	23.4%
ID	4.3	52.9	40.3	0.9	0.8	2.5	4.2	25.0%
IL	3.1	52.5	57.3	0.7	0.7	2.0	3.4	13.4%
IN	3.9	55.7	39.5	0.6	0.8	2.2	3.6	10.0%
KS	3.0	55.1	32.6	0.7	0.7	2.5	3.9	32.1%
KY	2.8	55.3	49.9	0.8	0.9	2.3	4.0	20.2%
LA	2.3	55.3	21.1	0.3	1.2	2.2	3.6	0.8%
MA	3.5	48.1	59.7	0.7	0.9	2.1	3.7	11.4%
MD	3.7	49.4	75.7	0.9	0.9	2.1	3.9	14.8%
ME	3.5	53.3	60.9	1.0	0.5	2.9	4.5	72.9%
MI	4.0	52.6	53.5	0.8	0.9	2.3	3.9	25.2%
MN	3.7	49.9	57.4	1.0	0.7	2.4	4.1	38.7%
MO	2.9	60.8	27.5	0.5	0.7	2.1	3.3	7.8%
MS	2.1	51.3	38.5	0.6	1.1	2.3	4.0	18.1%
MT	3.3	62.6	41.4	0.8	0.5	2.3	3.6	25.4%
NC	3.1	57.3	41.4	0.6	0.9	2.2	3.8	11.5%
ND	3.4	51.8	52.3	0.9	0.6	2.9	4.4	65.3%
NE	3.4	55.9	36.6	0.7	0.7	2.5	4.0	31.1%
NH	3.4	52.3	54.7	0.8	0.8	2.3	3.9	26.0%
NJ	4.3	49.2	72.8	0.7	0.9	2.1	3.8	15.4%
NM	3.2	61.1	45.5	0.6	0.7	2.2	3.5	15.2%
NV	4.1	52.5	60.0	0.8	1.0	2.3	4.1	26.2%
NY	4.0	43.7	99.9	0.7	0.8	2.1	3.6	13.3%

Appendix (cont.)

State	Quality Measure	Turnover (%)	RN total hours/ day	RN HPRD	LPN HPRD	NA HPRD	Total HPRD	Meet Proposed Standard (%)
OH	4.0	58.1	39.7	0.6	1.0	2.0	3.6	8.5%
OK	2.9	60.5	18.9	0.3	0.9	2.5	3.8	2.9%
OR	3.6	55.4	33.0	0.7	0.9	3.2	4.8	50.8%
PA	3.7	52.5	66.3	0.8	0.9	2.0	3.7	14.2%
RI	3.3	49.1	66.3	0.8	0.5	2.4	3.6	36.1%
SC	3.2	56.6	45.4	0.7	1.0	2.2	3.9	16.1%
SD	3.2	52.9	40.6	0.8	0.5	2.3	3.6	27.7%
TN	3.3	54.9	42.0	0.6	1.1	2.0	3.7	5.0%
TX	3.5	59.3	24.4	0.4	1.0	1.9	3.3	2.5%
UT	4.4	60.4	60.9	1.2	0.5	2.4	4.1	30.6%
VA	3.4	57.5	48.0	0.6	1.0	1.9	3.6	10.0%
VT	3.0	61.6	51.8	0.8	1.0	2.5	4.2	33.3%
WA	4.1	53.8	56.4	0.9	0.8	2.5	4.2	47.6%
WI	3.6	53.8	48.4	1.0	0.6	2.3	3.9	34.3%
WV	2.6	50.9	48.6	0.7	0.9	2.1	3.8	15.0%
WY	3.5	54.4	48.6	0.9	0.5	2.4	3.8	26.5%

Source: Author's analysis of CMS nursing home provider data, August 2023 (CMS 2023b).

Economic Policy Institute

Notes

1. Though most aides in nursing homes are Certified Nursing Assistants, we will use the more inclusive term "Nurse Aides" (NA) in this report. Similarly, since Licensed Vocational Nurses (LVNs) have similar qualifications and responsibilities as Licensed Practical Nurses (LPNs), we will use the more common term (LPN) to include both LVNs and LPNs.
2. Full-time-equivalent workers are assumed to work 2,000 hours per year.
3. "Rural" includes nursing homes in "micropolitan" counties, which have towns that are not part of a metropolitan area and have fewer than 50,000 inhabitants.
4. This estimate is based on a somewhat arbitrary $130,000 value placed on each year of life lost, a measure often used by health economists to compare the relative cost-effectiveness of different treatments or policies (the amount was originally set at $100,000 per year and has been updated for inflation) (Cutler and McClellan 2001). Such estimates are loosely based on measures of people's willingness to pay for life-extending treatments or on workers' earnings (Baicker, Chandra, and Skinner 2012).

References

Abt Associates. 2001. *Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes*; Report to Congress: Phase II Final; Volume I, Contract #500-0062/TO#3, December 2001.

Abt Associates. 2023. *Nursing Home Staffing Study: Comprehensive Report*. June.

AFREF. 2020. *The Deadly Combination of Private Equity and Nursing Homes During a Pandemic*. Americans for Financial Reform Education Fund, August 2020.

American Association of Colleges of Nursing (AACN). 2023. "New Data Show Enrollment Declines in Schools of Nursing, Raising Concerns About the Nation's Nursing Workforce" (press release). May 2, 2023.

Angrist, Joshua D., and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.

Baicker, Katherine, Amitabh Chandra, and Jonathan S. Skinner. 2012. "Saving Money or Just Saving Lives? Improving the Productivity of US Health Care Spending." *Annual Review of Economics*. September. https://doi.org/10.1146/annurev-economics-080511-110942

Barasso, John, Steve Daines, John Thune, Jon Tester, John Hickenlooper, Gary C. Peters, Kevin Cramer, Deb Fischer, John Hoeven, M. Michael Rounds, Joe Manchin III, Kyrsten Sinema, and Cynthia M. Lummis. 2023. "Nursing Home Staffing Mandate Letter." January 20, 2023.

Bassier, Ilhsaan, Arindrajit Dube, and Suresh Naidu. 2021. *Monopsony in Movers: The Elasticity of Labor Supply to Firm Wage Policies*. February 8, 2021.

Bipartisan Policy Center (BPC). 2022. *The Impact of COVID-19 on the Rural Health Care Landscape*. May 2022.

Braun, Robert Tyler, Hye-Young Jung, Lawrence P. Casalino, Zachary Myslinski, and Mark Aaron Unruh. 2021. *Association of Private Equity Investment in US Nursing Homes With the Quality and*

Cost of Care for Long-Stay Residents. JAMA Health Forum, November 2021.

Bureau of Labor Statistics Injuries, Illnesses, and Fatalities (BLS IIF). 2019-2020. TABLE 1. Incidence Rates of Nonfatal Occupational Injuries and Illnesses by Industry and Case Types, 2019 and 2020 [online tables 2019 and 2020].

Bureau of Labor Statistics, Occupational Employment and Wage Statistics (BLS OEWS). 2019-2022a. National Industry-Specific Occupational Employment and Wage Estimates: NAICS 623100 – Nursing Care Facilities (Skilled Nursing Facilities) [online tables May 2019, May 2020, May 2021, May 2022].

Bureau of Labor Statistics, Occupational Employment and Wage Statistics (BLS OEWS). 2022b. National Occupational Employment and Wage Estimates [online table May 2022].

Bureau of Labor Statistics, Occupational Outlook Handbook (BLS OOH). Various years. Public data series accessed through the BLS database. Accessed September 2023.

Campbell, Stephen. 2018. *Workplace Injuries and the Direct Care Workforce*. PHI, April 2018.

California Advocates for Nursing Home Reform, Center for Medicare Advocacy, Justice in Aging, Long Term Care Community Coalition, Michigan Elder Justice Initiative, and The National Consumer Voice for Quality Long-Term Care (CANHR et al.). 2021. *Framework for Nursing Home Reform Post COVID-19*. https://theconsumervoice.org/uploads/files/actions-and-news-updates/Framework_and_overview_FINAL.pdf.

California Association of Long Term Care Medicine (CALTCM). n.d. *CALTCM White Paper on Nursing Home Staffing*.

Census Bureau. 2022. "Aging Population Linked to Increased Need for Select Health Care and Social Assistance Services." *America Counts*, August 9. https://www.census.gov/library/stories/2022/08/revenues-for-home-care-elderly-services-increase.html#:~:text=Nursing%20Care%20Facilities%20(Skilled%20Nursing%20Facilities)%20had%20the%20largest%20revenu

Centers for Medicare & Medicaid Services (CMS). 2023a. Medicare and Medicaid Programs: Minimum Staffing Standards for Long-Term Care Facilities and Medicaid Institutional Payment Transparency Reporting (CMS 3442-P). *Fact Sheet,* September 1, 2023.

Centers for Medicare & Medicaid Services (CMS). 2023b. Nursing homes Including Rehab Services (data). August.

Centers for Medicare & Medicaid Services (CMS). 2023c. "Medicare and Medicaid Programs; Minimum Staffing Standards for Long-Term Care Facilities and Medicaid Institutional Payment Transparency Reporting." *Federal Register* 88, no. 171, September 6. https://www.govinfo.gov/content/pkg/FR-2023-09-06/pdf/2023-18781.pdf.

Centers for Medicare & Medicaid Services (CMS). 2023d. COVID-19 Nursing Home Data. Total Staff COVID-19 Confirmed Cases as of October 22, 2023 [accessed online October 2023].

Centers for Medicare & Medicaid Services (CMS). 2023e. *Design for Care Compare Nursing Home Five-Star Quality Rating System: Technical Users' Guide*, September 2023. https://www.cms.gov/medicare/provider-enrollment-and-certification/certificationandcomplianc/downloads/usersguide.pdf.

Chidambaram, Priya. 2022. A Look at Nursing Facility Characteristics Through July 2022. Kaiser Family Foundation, August 24.

Chidambaram, Priya, and Alice Burns. 2022. "10 Things About Long-Term Services and Supports (LTSS)." *KFF Health News*, September 15, 2022.

Cinelli, Carlos, Andrew Forney, and Judea Pearl. 2022. "A Crash Course in Good and Bad Controls." *Sociological Methods and Research*, March. https://doi.org/10.2139/ssrn.3689437.

Clifton Larson Allen (CLA). 2023. *Economic State of Skilled Nursing Facility (SNF) Industry*. February 2023.

Consumer Voice. 2022a. *State Nursing Home Staffing Standards*. The National Consumer Voice for Quality Long-Term Care, 2022.

Consumer Voice. 2022b. High Staff Turnover: A Job Quality Crisis in Nursing Homes. The National Consumer Voice for Quality Long-Term Care, 2022.

Cutler, David M., and Mark McClellan. 2001. "Is Technological Change in Medicine Worth It? *Health Affairs* 20, no.5. https://doi.org/10.1377/hlthaff.20.5.11.

Dean, Adam, Jamie McCallum, Simeon D. Kimmel, and Atheendar S. Venkataramani. 2022. "Resident Mortality and Worker Infection Rates from COVID-19 Lower In Union Than Nonunion US Nursing Homes, 2020–21." *Health Affairs* 41, no. 5. https://doi.org/10.1377/hlthaff.2021.01687.

Dellefield, Mary Ellen, Nikolas G.Castle, Katherine S. McGilton, and Karen Spilsbury. 2015. "The Relationship Between Registered Nurses and Nursing Home Quality: An Integrative Review (2008-2014)." *Nurse Economics* 33, no. 2. https://pubmed.ncbi.nlm.nih.gov/26281280/.

Department of Health and Human Services (Dept. of HHS OIG). 2020. *Some Nursing Homes' Reported Staffing levels in 2018 Raise Concerns; Consumer Transparency Could Be Increased*. Office of Inspector General, August 2020.

Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, J. Robert Warren, and Michael Westberry. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 9.0. Minneapolis, Minn.: IPUMS, 2021.

Gottlieb, Joshua D., and Avi Zenilman. 2020. "When Nurses Travel: Labor Supply Elasticity During COVID-19 Surges." Becker Friedman Institute Working Paper no. 2020-166, November 2020.

Gupta, Atul, Sabrina T. Howell, Constantine Yennelis, and Abhinav Gupta. 2023. "Owner Incentives and Performance in Healthcare: Private Equity Investment in Nursing Homes." National Bureau of Economic Research Working Paper no. 28474, August 2023. http://www.nber.org/papers/w28474.

Harrington, Charlene, Brian Olney, Helen Carrillo, and Taewoon Kang. 2012. "Nurse Staffing and Deficiencies in the Largest For-Profit Nursing Home Chains and Chains Owned by Private Equity Companies." *Health Services Research*, February 2012.

Harrington, Charlene, Mary Ellen Dellefield, Elizabeth Halifax, Mary Louise Fleming, and Debra Bakerjian. 2020. "Appropriate Nurse Staffing Levels for U.S. Nursing Homes." *Health Services Insights*, June 2020.

Harrington, Charlene, Susan Chapman, Elizabeth Halifax, Mary Ellen Dellefield, and Anne Montgomery. 2021. "Time to Ensure Sufficient Nursing Home Staffing and Eliminate Inequities in Care." *HSOA Journal of Gerontology and Geriatric Medicine*, 2021.

Hawk, Terry, Elizabeth M. White, Courtney Bishnoi, Lindsay B. Schwartz, Rosa R. Baier, and David R. Gifford. 2022. "Facility Characteristics and Costs Associated with Meeting Proposed Minimum

Staffing Levels in Skilled Nursing Facilities." *Journal of the American Geriatrics Society* 70, no. 4: p. 1198–1207. https://doi.org/10.1111/jgs.17678.

Keehan, Sean P., Jacqueline A. Fiore, John A. Poisal, Gigi A. Cuckler, Andrea M. Sisko, Sheila D. Smith, Andrew J. Madison, and Kathryn E. Rennie. 2023. "National Health Expenditure Projections, 2022–31: Growth to Stabilize Once the COVID-19 Public Health Emergency Ends." *Health Affairs* 42, no. 7. https://doi.org/10.1377/hlthaff.2023.00403.

Kaiser Family Foundation (KFF). 2023a. Total Number of Residents in Certified Nursing Facilities. https://www.kff.org/other/state-indicator/number-of-nursing-facility-residents/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

Kaiser Family Foundation (KFF). 2023b. "Status of State Medicaid Expansion Decisions: Interactive Map." *KFF Health News*, July 27, 2023.

LeadingAge PA. 2023. "LeadingAge PA Raises Concerns Over Anticipated Federal Staffing Requirements For Nursing Homes Providers with U.S. Sen. Bob Casey" (press release). March 1, 2023.

MACPAC. 2022. "Compendium: State Policies Related to Nursing Facility Staffing" [excel sheet]. Published March 2022.

Martinez Hickey, Sebastian, Marokey Sawo, and Julia Wolfe. 2022. "The State of the Residential Long-Term Care Industry." Economic Policy Institute, July 27, 2023.

Matsudaira, Jordan D. 2014. "Monopsony in the Low-Wage Labor Market? Evidence from Minimum Nurse Staffing Regulations." *Review of Economics and Statistics* 96, no. 1: p. 92–102. https://www.jstor.org/stable/43554915.

McGarry, Brian E., and David C. Grabowski. 2022. "Nursing Homes and COVID-19: A Crisis on Top of a Crisis." *American Academy of Political Science* 698, no. 1. https://doi.org/10.1177/00027162211061509.

National Academies of Sciences, Engineering, and Medicine (National Academies). 2022. *The National Imperative to Improve Nursing Home Quality: Honoring Our Commitment to Residents, Families, and Staff*. The National Academies Press. https://doi.org/10.17226/26526.

Rafiei, Yasmin. 2022. "When Private Equity Takes Over a Nursing Home." *The New Yorker*, August 25, 2022.

Ruffini, Krista. 2022. "Worker Earnings, Service Quality, and Firm Profitability: Evidence from Nursing Homes and Minimum Wage Reforms." *The Review of Economics and Statistics* 2022. https://doi.org/10.1162/rest_a_01271.

Smiley, Richard A., Richard L. Allgeyer, Yetty Shobo, Karen C. Lyons, Rayna Letourneau, Elizabeth Zhong, Nicole Kaminski-Ozturk, and Maryann Alexander. 2023. "The 2022 National Nursing Workforce Survey." *Journal of Nursing Regulation* 14, supplement.

Spetz, Joanne. 2021. "Changes in Registered Nurse Employment and Education Capacity During the COVID-19 Pandemic and the Risk of Future Shortages." *Health Services Research* 56, no. S2: p. 47. https://doi.org/10.1111/1475-6773.13814.

Tong, Patricia K. 2011. "The Effects of California Minimum Nurse Staffing Laws on Nurse Labor and Patient Mortality in Skilled Nursing Facilities." *Health Economics* 20. https://doi.org/10.1002/hec.1638.