ASPE ASSISTANT SECRETARY FOR PLANNING AND EVALUATION
OFFICE OF BEHAVIORAL HEALTH, DISABILITY, AND AGING POLICY

ISSUE BRIEF
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NURSING HOME NURSE STAFF HOURS DECLINED NOTABLY DURING THE COVID-19 PANDEMIC, WITH CNAS EXPERIENCING THE LARGEST DECREASES

KEY POINTS

- By December 2020, because of the COVID-19 pandemic, nursing homes lost about 16% of their resident population compared to 2019.
- There were large declines in hours of nurse staffing, especially for certified nurse assistants (CNAs), in nursing homes in 2020. In each month April-December 2020, total nurse staffing hours decreased by 5%-11%, and CNA hours decreased by 6%-13%, compared to 2019.
- Due to decreases in both the number of residents and staffing hours, nursing homes were able to maintain and even slightly increase their nurse staffing hours per resident day, with increases of between 2%-9% from March to December. However, they did so with great effort and difficulty, including through increasing their reliance on contract staff. Furthermore, nurse staffing workloads increased during the pandemic due to several factors including requirements to implement new infection control procedures

BACKGROUND

It is well known that in the early weeks of the COVID-19 pandemic in the United States, much of the devastation was concentrated in nursing homes. In addition to a staggering death toll, isolation, and suffering from COVID-19 among nursing home residents, the pandemic has also greatly affected nurse staffing for these residents.[1] The COVID-19 pandemic introduced new challenges for nursing home staff that exacerbated substantial ongoing challenges, with staffing levels reduced at the same time occupancy levels declined. In the past two decades, pre-pandemic, researchers and advocacy organizations have extensively documented that the certified nurse assistant (CNA) workforce, which accounts for the largest share of nurse staffing in nursing homes, was characterized by chronic staffing shortages, low wages, difficult working conditions, poor benefits, limited possibilities of advancement, and other challenges.[2] The COVID-19 pandemic stretched the nursing home workers to the breaking point as staff have been required to shoulder many new caregiving and infection control responsibilities, often in hazardous working conditions without adequate personal protective equipment.[3] Staff with caregiving responsibilities at home also have had to deal with new challenges, as many daycares and schools closed.[1] In November 2021, the American Health Care Association, citing recent Bureau of Labor Statistics data, reported that the nursing home sector has lost 221,000 jobs during the pandemic, or 14% of its total workforce, threatening closure to many nursing homes.[4] To help counter the challenges posed by COVID-19 to nursing home staffing, both policymakers and nursing home leaders have acted to attempt to maintain adequate levels of staffing, and prior ASPE research has identified federal, state, and facility-level policies and practices to address these challenges.[1]

This study adds to the growing body of research on COVID-19's impact on nursing home staffing by analyzing the changes using both descriptive statistical analysis of staffing data and stakeholder interviews. We describe changes in staffing patterns between 2019 and 2020 for registered nurses (RNs), licensed practical nurses

(LPNs), and CNAs in nursing homes that serve both short-stay (post-acute) and long-stay (custodial care) residents.

Almost 4 million Americans spend time in a nursing home over the course of a year, receiving services and supports from around 1.2 million direct care workers.[5] Nursing homes require adequate staffing to provide quality care to their residents. Staffing has been shown to be an important predictor of nursing home quality, and the mix of professional staff and staffing stability are important factors.[6,7] Although federal law requires nursing homes to ensure that they are able to safely care for residents and meet their needs, there is no current federal standard for total nursing home staffing levels.[8] Currently, these requirements only include minimums for one RN (eight consecutive hours, seven days per week), in addition to a full-time Director of Nursing, without specifying minimum staffing for other nursing staff (e.g., LPNs and CNAs). Federal regulations state that sufficient staffing in each nursing home must be informed by resident assessment data, care plans, acuity and census data.[9] States have the authority to meet the federal minimum requirements or exceed them. There is significant variation in staffing requirements and policies at the state level as Medicaid rates determine how states set and address their minimum staffing requirements.[10-13]

A 2001 study conducted as part of a report to Congress from the Centers for Medicare & Medicaid Services (CMS) concluded that quality improvements were achieved by increasing staffing up to a threshold of as high as 4.1 hours of daily nursing care per resident, depending on the acuity of the residents.[14] The thresholds ranged from 2.4-2.8 for CNAs, 1.15-1.30 for RNs and LPNs combined, and 0.55-0.75 for RNs. CMS assigns quality ratings to nursing homes based on their staffing levels and adjusts for resident acuity using the Resource Utilization Group system,[15] which estimates required minutes of staffing based on assigning residents to one of 66 acuity categories.

This issue brief, one of three produced under this study,* expands on past research and presents important evidence on direct care staffing changes during the COVID-19 pandemic by combining staffing data from the Payroll-Based Journals (PBJ) with testimonies from subject matter experts. We consider both the pandemic's impact on number of residents, total nursing staff hours, and staffing hours per resident day (HPRD) for RNs, LPNs, and CNAs, and interpret these findings based on insights obtained from subject matter expert testimony.

DATA AND METHODS

This issue brief incorporates findings from descriptive analyses of data from the PBJ[16] for the years 2019-2020, and from interviews with subject matter experts. We present monthly descriptive statistics for average daily census, average daily staffing hours, and nurse staffing HPRD. We present results for nurse staffing as a whole and separately for RNs, LPNs, and CNAs. We conducted interviews with nine subject matter experts to provide additional context for our quantitative findings, after presenting them with a high-level summary of our quantitative findings. We interviewed three experts from each of the following stakeholder categories: academic, industry associations, and nursing home providers.

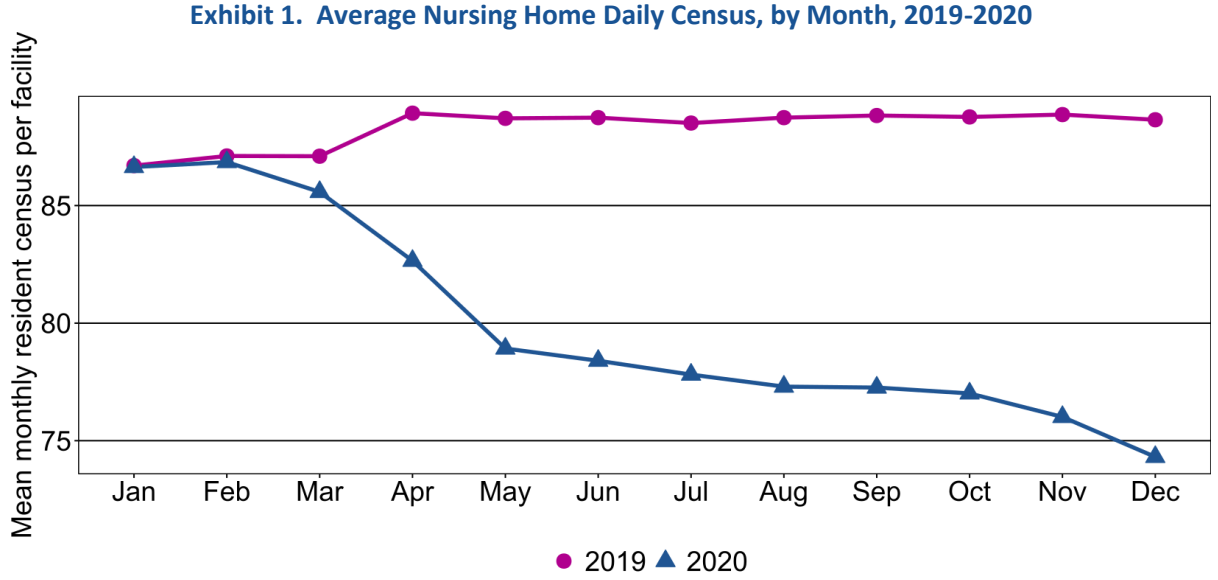
* The two other issue briefs in this series are *Nursing Home Staffing Disparities were Exacerbated during the COVID-19 Pandemic* (Gasdaska et al.) and *COVID-19 Pandemic Increased Nursing Homes' Reliance on Contract Staff to Address Staffing Shortages* (Porter et al.).

FINDINGS

The Average Number of Residents per Nursing Home Declined during the COVID-19 Pandemic

The number of residents in nursing homes decreased in 2020 compared to 2019. Overall, in 2020 there was a sharp decrease in the average daily number of residents from March to May and this decline in resident census slowed but continued for the remainder of the year (***Exhibit 1***). Average daily number of residents was around 89 for every month from April through December of 2019. In 2020, the average daily number of residents was 83 in April, 79 in May, and 74 by December (decreases of 7%-16% between 2019 and 2020 from April to December).

Exhibit 1. Average Nursing Home Daily Census, by Month, 2019-2020



Source: RTI analysis of PBJ data.

Notes: Census is measured as residents per day per facility. The number of facilities included varies by month. Fewer facilities are included in Q1 because CMS waived the requirement to submit PBJ data in Q1 2020 (see ***Appendix A***).

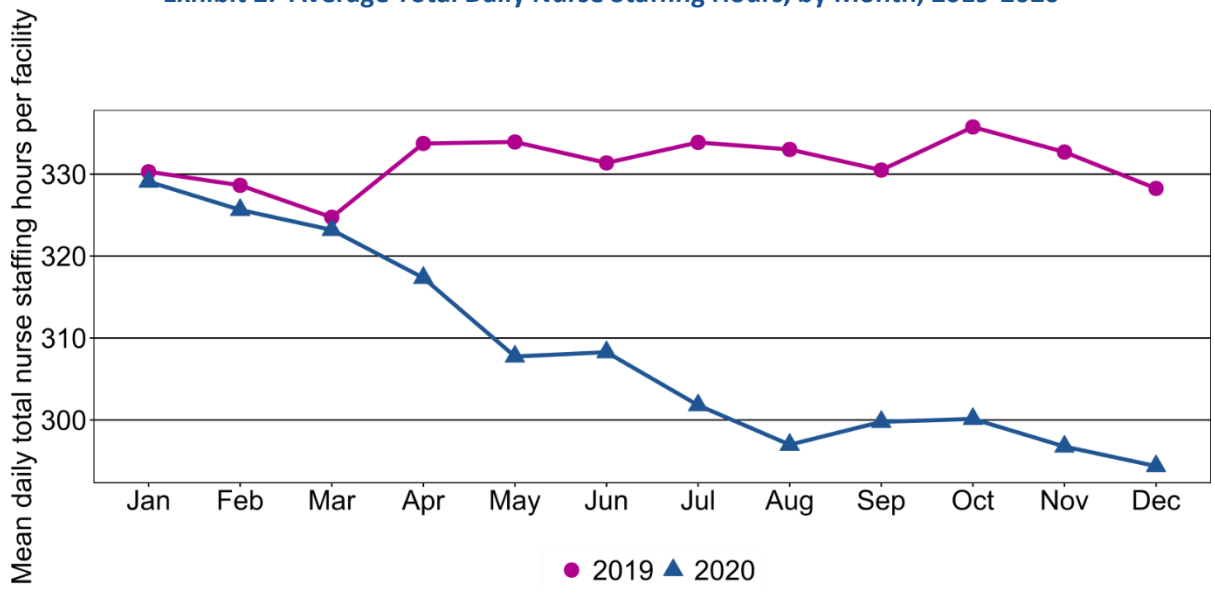
Most of the stakeholders we spoke to reported that the declining number of residents was not just due to resident deaths, but also because nursing homes were admitting fewer people for several reasons. Nursing homes received fewer admissions from hospitals due to the temporary halting of elective procedures that usually result in a nursing home stay afterwards. Stakeholders also mentioned that at times when nursing homes had active COVID-19 outbreaks, they would not admit new residents. Some industry and provider representatives also said nursing homes were unable to accept new residents because they did not have the staffing required to take care of them. However, an academic researcher reported that some nursing homes intentionally reduced staff commensurate with their decreased occupancy. Most academic and industry stakeholders commented that there was anecdotal evidence throughout the pandemic that families wanted to keep loved ones at home because of the safety risks associated with contracting COVID-19. One provider confirmed that some relatives had chosen to discharge and care for family at home.

One academic stakeholder highlights the key reasons why number of residents dropped during the pandemic, stating, *"[There are] three main reasons. One is deaths, obviously resident deaths and the second is reluctance by people to newly be admitted to a nursing home. The third reason would be census drops because those post-acute admissions were cut off because hospitals weren't doing those elective surgeries."*

Nursing Home Nurse Hours Decreased while Nurse HPRD Increased during COVID-19

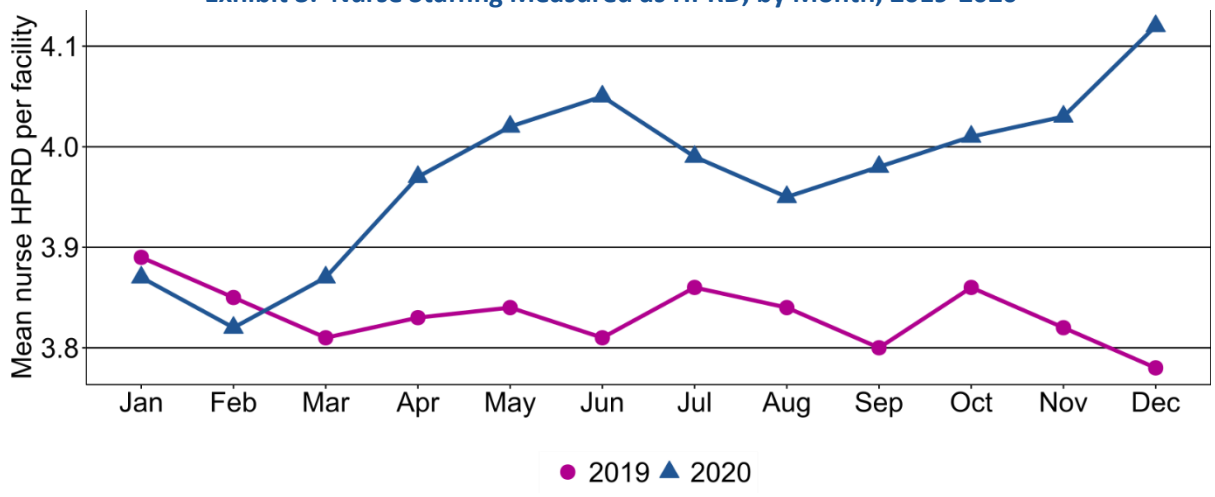
Nursing home average daily total nurse staffing hours (RN, LPN, and CNA hours combined) were lower in 2020 than in 2019 (***Exhibit 2***). There was almost no change between 2019 and 2020 for January-March. Between April and December of 2019, average daily nurse hours for each month were between 328 and 336, and then in 2020, average daily nurse hours were 317 in April and then fell to 294 by December. From April through June, there were between 16 and 26 fewer average daily nurse hours (decreases of 5%-8%), and from July through December, there were between 31 and 36 fewer average daily nurse hours (decreases of 9%-11%).

Exhibit 2. Average Total Daily Nurse Staffing Hours, by Month, 2019-2020



Source: RTI analysis of PBJ data.
Note: The number of facilities included varies by month. Fewer facilities are included in Q1 because CMS waived the requirement to submit PBJ data in Q1 2020 (see ***Appendix A***).

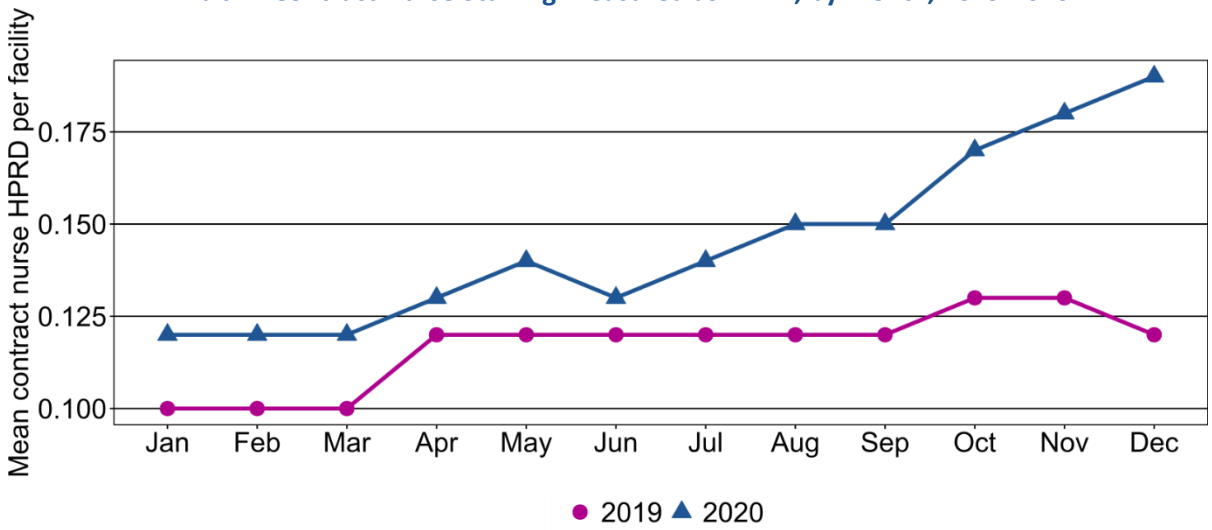
Exhibit 3. Nurse Staffing Measured as HPRD, by Month, 2019-2020



Source: RTI analysis of PBJ data.
Note: The number of facilities included varies by month. Fewer facilities are included in Q1 because CMS waived the requirement to submit PBJ data in Q1 2020 (see ***Appendix A***).

Despite decreases in total nurse staffing hours in 2020, total nurse staffing HPRD increased slightly starting in March 2020 due to decreases in the number of residents (***Exhibit 3***). Total nurse staffing HPRD on average, was slightly higher in each month from March through November of 2020, as compared to 2019, with increases of 2%-6%. In December 2020, nurse staffing HPRD was 9% higher than in 2019, with an average of 4.12 nurse HPRD compared to 3.78 in December 2019, an increase of 0.34 HPRD or about 20 minutes more per resident day. One component of the increase in nurse staffing HPRD was a large increase in the use of contract or agency nursing staff. The contract nurse staffing level was 0.13 HPRD or lower throughout 2019 but was higher in every month of 2020 compared to 2019 and reached 0.18 HPRD or above in November-December 2020 (***Exhibit 4***). We also found that there was substantial variation in average total nurse HPRD across states, and that this measure of staffing increased in *all* states from 2019 to 2020 (results not shown). We note that our findings are consistent with a recent study which indicated that once the declining number of residents were taken into account, the number of nurse staffing HPRD remained relatively stable.[3]

Exhibit 4. Contract Nurse Staffing Measured as HPRD, by Month, 2019-2020



Source: RTI analysis of PBJ data.
Note: The number of facilities included varies by month. Fewer facilities are included in Q1 because CMS waived the requirement to submit PBJ data in Q1 2020 (see ***Appendix A***).

While nursing staff HPRD may have remained stable and even slightly increased during the pandemic, stakeholders emphasized that staff duties and responsibilities also increased. An academic expert emphasized that the decline of residents admitted for post-acute care after elective surgery and families removing and trying to keep their loved ones out of the nursing homes when possible, likely resulted in increased acuity among remaining residents, and therefore, a greater need for care. In addition, all stakeholders described new activities that added to staff responsibilities as a result of the pandemic. Activities that increased the workload of nursing staff included implementing federal, state, local or other infection control requirements and recommendations, such as and separating and tending to infectious residents (cohorting), in-room (rather than group) dining, and reporting COVID-19 cases among residents and staff. Staff

One nonprofit provider explained how the guidance around COVID-19 took more resources, stating, *"We've had a lot of reporting requirements. We've had to dedicate resources to just figuring out guidance, making policy and operational changes, and reporting. When the pandemic hit, we were getting guidance changes daily. We were getting reporting demands from federal, state, associations, everywhere, the press, everywhere. And I strongly believe that all of the regulations and the chaos around the regulations and all of the changes made an impact on our ability to keep good staff. They just couldn't do it anymore."*

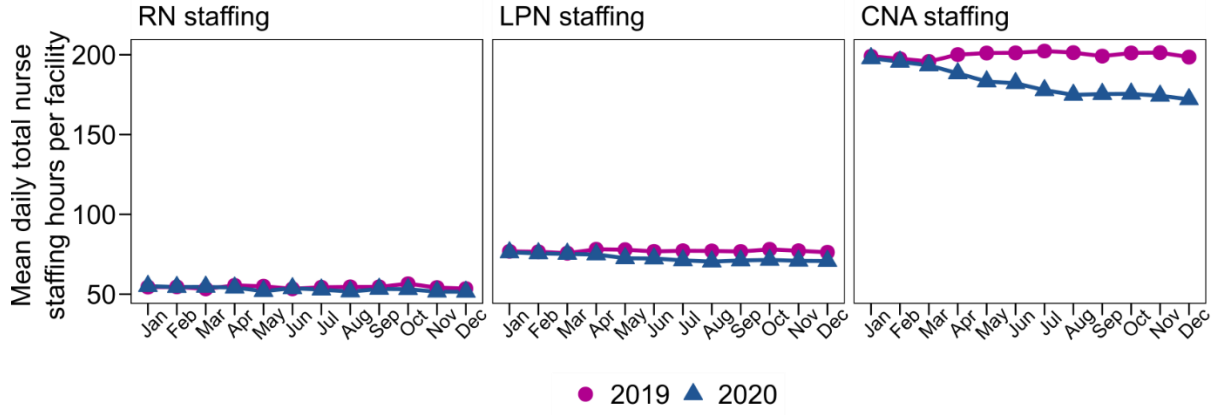
time also increased because of the need to assist residents with electronic communication (e.g., Zoom calls) with family and friends who were barred from visiting nursing homes. Some industry and provider stakeholders also noted that with rapidly changing regulations and guidance in response to the pandemic, staff time had to be devoted to monitoring, understanding, implementing, and reporting the changes. These added responsibilities may also have contributed to challenges with staff retention.

CNAs Hours Dropped by Up to 13% during the Pandemic, While RN and LPN Hours Dropped by No More than 6% and 9%, Respectively

One academic stakeholder shared their thoughts on the higher loss of CNAs as compared to other nursing staff, commenting, *"I'm not surprised that the decline was not so big for RNs, because there [are] minimal [staffing] requirements for RNs. There's fewer of them and RNs aren't as divisible."*

Facility-level average daily hours decreased for all nurse staff types in 2020 (***Exhibit 5***). CNAs saw the largest decreases followed by LPNs and then RNs. For RNs, the change in average daily staffing for each month from April through December ranged from a 1% increase to a 6% decrease. For LPNs in that timeframe, there were decreases of 4%-9% each month, and for CNAs, hours decreased by 6%-13%. When accounting for changes in the number of residents, we found that for every month between April and December, the percentage increase in HPRD was highest for RNs, next highest for LPNs, and lowest for CNAs. For example, in the month of June, RN HPRD was 0.65 in 2019 and increased to 0.74 in 2020 (14% increase), LPN HPRD was 0.86 in 2019 and increased to 0.93 in 2020 (8% increase) and CNA HPRD was 2.30 in 2019 and increased to 2.38 in 2020 (3% increase) (not shown).

Exhibit 5. Average Daily Nurse Staffing Hours, by Staff Type and Month, 2019-2020



Source: RTI analysis of PBJ data.
Note: The number of nursing homes included varies by month. Fewer facilities are included in Q1 because CMS waived the requirement to submit PBJ data in Q1 2020 (see ***Appendix A***).

Some providers emphasized that they had difficulty keeping and hiring all types of nurse staff, although most stakeholders were not surprised that staffing dropped more among CNAs than among licensed nurses. Both wage and education disparities between CNAs and other nursing staff were brought up frequently by stakeholders. For example, some noted that nursing training requires more investment in education and those staff would, therefore, be less likely to leave their occupation. On the other hand, CNAs earn low wages and receive few benefits and can leave the field for similar or better pay in other industries. Across most stakeholders there was

One Industry stakeholder explained that CNAs have more challenges than other nursing staff and, *"encounter a lack of childcare, lack of benefits, [and] lack of pay", all culminating to "create a situation where they're barely getting by." This stakeholder went on to add, "Nurses typically have more means, more resources, and more access to resources."*

also agreement that the loss of more CNA hours could reflect that most nursing homes do not staff with as many RNs as compared to CNAs or LPNs. In many cases it might not be possible to reduce RN staffing, for example where there is only one RN and this RN is required by the minimum staffing requirements.

Multiple stakeholders, particularly providers emphasized that competition for nursing staff had increased and they had seen RNs, LPNs, and CNAs leave for higher wages in other health care settings (e.g., agencies and hospitals), but that competition for CNAs had increased more during the pandemic as other industries (e.g., fast food and retail) offered higher wages they could not compete with.

A nonprofit provider shared how the competition landscape has shifted with the pandemic, particularly for CNAs, stating, *"That is the other big change I've seen pre and post, pre-pandemic and current pandemic is that prior to, we have been generally competing for workforce members within the healthcare industry, even cyclically through the 30 years I've been doing this. Generally, the competition was in healthcare [pre-pandemic]. We're looking for the same people. Now, it's cross industry. It is completely across industry. We're competing with Dunkin' Donuts, we're competing with casinos, McDonald's, Walmart just for workers."*

Multiple stakeholders also discussed the high risk for COVID-19 infection as a factor in CNAs choosing to leave the workforce. Some stakeholders said that CNAs likely had more exposure to COVID-19 within facilities given their close contact with residents, and that outside of facilities many live in communities with higher transmission rates. Further, some stakeholders added that CNAs often work in more than one nursing home, thereby increasing their own risk of contracting COVID-19. CNAs may have also had increased family responsibilities with schools and daycare closings, or may have been caring for sick family members. One industry stakeholder added that many CNAs are single mothers, increasing their need for childcare. They may also have been fearful of infecting family members in their household. A few stakeholders commented on the availability of federal unemployment benefits through the CARES act[17] as a potential incentive for CNAs choosing to leave or staying out of the workforce.

CONCLUSION

The nursing home workforce, which for decades has experienced chronic shortages, was profoundly impacted by the COVID-19 pandemic. The number of nursing home residents and the number of CNAs declined dramatically, with smaller declines for RNs and LPNs. As a result of simultaneous decreases in the number of residents and lower staffing, nurse staffing HPRD slightly increased. Notwithstanding this small increase, our interviewees noted that nursing homes experienced substantial challenges with staffing for two key reasons. One is that the workload of the nurse staff increased substantially due to the pandemic itself because of the need to stay on top of, and implement, federal and state guidance designed to allow nursing homes to provide care as safely as possible, and because of increased resident acuity. Thus, the increase in staffing HPRD may have been allocated to these added responsibilities instead of direct patient care. The second reason is that while nursing homes were largely able to maintain and even slightly increase their staffing in terms of HPRD, they did so with great effort. Nursing homes were faced with staff concerns about the fear of COVID-19 infection and spread to residents and their families, increased family responsibilities due to the pandemic, wage competition in other related (e.g., hospitals or staffing agencies) and unrelated (e.g., service, retail or hospitality) industries, and incentives resulting from the availability of federal unemployment benefits. Future research should explore the impact of changes in staffing during the pandemic on nursing home quality, and policies and strategies to support nursing homes and their staff in future pandemics.

In the other issue briefs produced under this study, we will show that the changes in staffing during 2020 varied in important ways by nursing home characteristics, in many cases reinforcing patterns or disparities that existed before the pandemic.[18] We will also show that while overall staffing declined in 2020, the use of contract staff increased in 2020, and that this pattern also varied based on nursing home characteristics.[19]

APPENDIX A: ADDITIONAL METHODOLOGICAL DETAILS

Measures

Nursing homes are required to submit daily staffing information to CMS through the PBJ system, and the PBJ also has daily facility census based on Minimum Data Set assessments.[16] We measured census for each month by using a single measure, which we calculated by averaging daily staffing for each facility at the monthly level, and then averaging across facilities:

- Average daily census.

We report staffing levels during 2019 and 2020 for nursing staff, including RNs, LPNs, and CNAs. We use two measures to report staffing. Both are calculated for each month for each facility and then averaged (unweighted) across facilities:

- Average daily staffing hours.
- Hours per resident day (HPRD).

To help understand variation across states, we also calculated state-level averages for staffing HPRD for the entire year for both 2019 and 2020. These were calculated by averaging all facility-month observations within each state to obtain a yearly average.

Selection of Stakeholders for Interviews

As already described, we interviewed three experts from each of the following stakeholder categories: academic, industry associations, and nursing home providers. Academic and industry providers were selected based on their expertise. We used a snowball sampling technique to identify three providers. Providers represent one large for-profit chain, one small nonprofit small chain, and one independent nonprofit provider. We thematically categorized each interview and aggregated our findings across interviewees for this brief.

Study Sample

Our study sample included monthly observations for all nursing homes that reported data through the PBJ system for 2019-2020, after applying several exclusions. When creating the nursing home-month observations, we excluded all days in the month that had no nurse staffing or a census of zero. We also required that nursing homes reported data for all quarters in 2019 and 2020, except for calendar quarter 1 (Q1, January-March) of 2020 (see below), and that for a given month, nursing homes had to have reported staffing data and had to have had an average daily census of at least ten in both 2019 and 2020. Note that our study sample included slightly different numbers of nursing homes for each month due to the monthly census requirement, and the sample is considerably smaller for Q1 months (January-March) than for other months because nursing homes were not required to report their staffing data in Q1 2020 (see below). ***Exhibit A-1*** shows the number of nursing homes excluded from the final sample, using June as an example.

PBJ Data in Q1 2020

In March 2020, when the COVID-19 Public Health Emergency began, CMS announced some emergency declaration blanket waivers to help providers during the pandemic. One of the waivers waived the requirement for nursing homes to submit staffing data through the PBJ system. This meant that nursing homes were not required to submit staffing data for Q1 2020. This waiver was terminated effective June 25, 2020, and facilities were required to submit their staffing data for Q2 (March-May) of 2020 and onward. We performed a descriptive analysis to compare the staffing levels and characteristics of facilities that did not report Q1 2020 staffing data to those facilities that did report Q1 2020 data. This can help us understand if there are important differences between the facilities that reported data in Q1 and other facilities.

We found that among all facilities that were present in at least one of the eight quarterly PBJ files for our study period (Q1-Q4 of 2019 and 2020), 78% reported data meeting CMS's requirements for inclusion in the public use files for Q1 2020. The data for Q1 2020 were pulled on April 2, 2021. After applying our study inclusion criteria, including limiting to facilities that reported staffing data in all other quarterly files of interest except Q1 2020 (Q1-Q4 of 2019 and Q2-Q4 of 2020) and facilities with sufficient census, about 80% of facilities in our study sample reported staffing data in Q1 2020.

Exhibit A-2 displays descriptive statistics on select facility characteristics for those in our study sample that did and did not report Q1 2020 data. As compared to facilities that did report staffing data in Q1 2020, a greater percentage of facilities that did not report were for-profit, affiliated with a chain, were in metropolitan locations, and had 1-star or 2-star overall ratings. On average, facilities that did not report had a larger resident census, a greater percentage of their residents were a racial-ethnic minority, and they had slightly lower 2019 nursing staff levels than facilities that did report.

Exhibit A-1. Study Sample Exclusions using June as An Example

Sample/Restriction	Number of Nursing Homes	Percentage of Total Nursing Homes (of 15,507)
Total number of facilities in at least one of the PBJ files	15,507	100.00%
In original PBJ file in June 2019	15,020	96.86%
In original PBJ file in June 2020	14,763	95.20%
After removing facilities where all days in the month had no nurse staffing or a census of zero (2019)	14,985	96.63%
After removing facilities where all days in the month had no nurse staffing or a census of zero (2020)	14,732	95.00%
In both PBJ files for June	14,374	92.69%
Only keeping facilities that were in all PBJ quarterly files except not requiring Q1 2020	13,365	86.19%
Only keeping facilities that had an average daily census of 10 or greater in both June 2019 and June 2020	13,320	85.90%
Note: Total facility-month observations meeting PBJ-based criteria: 151,981.		

Exhibit A-2. Facility Characteristics by Q1 2020 Reporting Status		
Characteristics	**Facilities that Did Not Report Staffing Data in Q1 2020**	**Facilities that Did Report Staffing Data in Q1 2020**
For-profit facility, n (%)	2,085 (78%)	7,412 (70%)
Affiliated with a chain, n (%)	1,663 (65%)	6,140 (61%)
Profit chain status:		
For-profit chain, n (%)	1,316 (52%)	4,754 (47%)
For-profit nonchain, n (%)	686 (27%)	2,288 (23%)
Nonprofit chain, n (%)	347 (14%)	1,386 (14%)
Nonprofit nonchain, n (%)	204 (8%)	1,702 (17%)
Location:		
Metro, n (%)	2,076 (78%)	7,568 (71%)
Urban nonmetro, n (%)	525 (20%)	2,596 (24%)
Rural, n (%)	67 (3%)	488 (5%)
Overall Rating		
1-star, n (%)	535 (20%)	1,737 (16%)
2-star, n (%)	582 (22%)	1,969 (19%)
3-star, n (%)	497 (19%)	1,915 (18%)
4-star, n (%)	553 (21%)	2,418 (23%)
5-star, n (%)	482 (18%)	2,537 (24%)
In a hospital, n (%)	29 (1%)	388 (4%)
2019 census, mean (SD)	97.00 (55.08)	86.67 (51.73)
Acuity index, mean (SD)	12.31 (1.34)	12.21 (1.44)
Percentage of residents that are in a minority racial-ethnic group, mean (SD)	25.83 (24.05)	19.85 (21.54)
Percentage of total nurse hours that are from contract staff in 2019, mean (SD)	3.67 (8.56)	2.94 (7.71)
2019 nurse HPRD, mean (SD)	3.68 (0.71)	3.85 (0.87)

REFERENCES

1. Denny-Brown N, Stone D, Hays B, Gallagher D. 2020. *COVID-19 Intensifies Nursing Home Workforce Challenges*. U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation. Available from: https://aspe.hhs.gov/reports/covid-19-intensifies-nursing-home-workforce-challenges-0.

2. PHI. 2020. *Direct Care Workers in the United States: Key Facts*. Available from: https://phinational.org/resource/direct-care-workers-in-the-united-states-key-facts/.

3. Werner RM, Coe NB. 2021. Nursing home staffing levels did not change significantly during COVID-19. *Health Affairs*, 40(5): 795-801.

4. American Health Care Association & National Center for Assisted Living. 2021. *Long Term Care Industry Facing Worst Job Loss Among All Health Care Providers*. Available from: https://www.ahcancal.org/News-and-Communications/Fact-Sheets/FactSheets/BLS-Report-LTC-Job-Losses.pdf.

5. American Health Care Association & National Center for Assisted Living. *Skilled Nursing Care Centers (SNCC) in the U.S*. Available from: https://www.ahcancal.org/Data-and-Research/Pages/default.aspx.

6. Bostick JE, Rantz MJ, Flesner MK, Riggs CJ. 2006. Systematic review of studies of staffing and quality in nursing homes. *J Am Med Dir Assoc*, 7(6): 366-376. doi.org/10.1016/j.jamda.2006.01.024.

7. Castle NG, Engberg J. 2008. Further examination of the influence of caregiver staffing levels on nursing home quality. *Gerontologist*, 48(4): 464-476. doi.org/10.1093/geront/48.4.464.

8. Centers for Medicare & Medicaid Services. 2016. Medicare and Medicaid programs; Reform of requirements for long-term care facilities. Final rule. *Fed Regist*, 81(192): 68688-68872.

9. Legal Information Institute. 2016. *42 CFR § 483.35 - Nursing Services*. Available from: https://www.law.cornell.edu/cfr/text/42/483.35.

10. Harrington C, Swan JH, Carrillo H. 2007. Nurse staffing levels and Medicaid reimbursement rates in nursing facilities. *Health Serv Res*, 42(3 Pt 1): 1105-1129. doi.org/10.1111/j.1475-6773.2006.00641.x.

11. Harrington C, Dellefield ME, Halifax E, Fleming ML, Bakerjian D. 2020. Appropriate nurse staffing levels for U.S. nursing homes. *Health Serv Insights*, 13: 1178632920934785. doi.org/10.1177/1178632920934785.

12. MACPAC.gov. 2021. State Policy Levers to Address Nursing Facility Staffing Issues. Presentation presented at MACPAC public meeting. Available from: https://www.macpac.gov/publication/state-policy-levers-to-address-nursing-facility-staffing-issues/.

13. National Consumer Voice for Quality Long-Term Care (formerly NCCNHR). n.d. State nursing home staffing standards: Summary report. *Consumer Voice*. Available from: https://theconsumervoice.org/uploads/files/issues/CV_StaffingReport.pdf.

14. Centers for Medicare & Medicaid Services. 2001. *Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes Phase II Final Report*. Baltimore, MD: CMS.

15. Centers for Medicare & Medicaid Services. 2021. *Design for Care, Compare Nursing Home Five-Star Quality Rating System: Technical User's Guide*. Baltimore, MD: CMS. Available from: https://www.cms.gov/medicare/provider-enrollment-and-certification/certificationandcomplianc/downloads/usersguide.pdf.

16. Centers for Medicare & Medicaid Services. 2019. *Payroll-Based Journal Public Use Files: Technical Specifications*. Available from: https://data.cms.gov/sites/default/files/2020-11/PBJ_PUF_Documentation_April_2019.pdf.

17. U.S. Department of Labor. 2021. *Unemployment Insurance Relief During COVID-19 Outbreak*. Available from: https://www.dol.gov/coronavirus/unemployment-insurance.

18. Gasdaska A, Segelman M, Porter KA, Huber B, Feng Z, Barch D, Squillace M, Dey J, Oliveira I. 2022. *Nursing Home Staffing Disparities were Exacerbated during the COVID-19 Pandemic*. ASPE Issue Brief.

19. Porter KA, Tyler DA, Gasdaska A, Gasdaska A, Segelman M, Khatutsky G, Squillace M, Dey J, Oliveira I. 2022. *COVID-19 Pandemic Increased Nursing Homes' Reliance on Contract Staff to Address Staffing Shortages*. ASPE Issue Brief.

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