# PREVALENCE OF COVID-19 IN OHIO NURSING HOMES

John R. Bowblis & Robert Applebaum

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## BACKGROUND

Almost every day news stories describe the high rates of COVID-19 in our nation's nursing facilities. Nursing home residents are among the frailest members of society and direct care workers provide a considerable amount of hands-on care, highlighting the vulnerability of nursing home residents and staff. While the media coverage about the impact of COVID-19 on nursing homes has included differing perspectives, limited research exists on this topic. This brief report addresses the question of whether the presence of COVID-19 cases in nursing homes is associated with facility quality.

## METHODS

The cumulative number of residents infected by COVID-19 in each nursing home was recorded from the weekly Ohio Department of Health reports released on April 28, May 14, and June 3 of 2020. Utilizing the June 3 report, we examined whether a nursing home had at least one resident with COVID-19 and whether the nursing home had a high COVID-19 resident caseload. The definition of a high caseload is having a cumulative number of residents with COVID-19 that is equal to or greater than 20% of the number of licensed beds in the facility. To measure facility quality, we used various 5-star ratings from the Centers for Medicare and Medicaid Services (CMS) Nursing Home Compare website, which range from 1-star (lowest quality) to 5-star (highest quality)[1]. We examined facilities' overall star rating and star ratings for state survey deficiencies, quality indicators, and nursing staff levels.

As of June 3, 2020
**28%**
of Ohio's nursing homes had at least one resident with COVID-19

The pandemic highlights the need to **improve design, structure, and financing mechanisms** of nursing homes across the nation

**No link was found** between having a resident positive for COVID-19 and a facility's CMS star rating

# RESULTS

Results presented in Table 1 show the cumulative number of residents with COVID-19 as reported by the Ohio Department of Health on April 28, May 14, and June 3 in 942 non-hospital-based nursing homes. In the April 28 report, there were 1,873 nursing home residents in 138 (14.6%) facilities that tested positive for COVID-19. The May 14 report showed 3,607 nursing home residents testing positive in 187 (19.9%) facilities. According to the June 3 report, there were 5,036 residents with COVID-19 in 263 facilities (27.9%). This reflects both an expansion in the number of nursing homes that have any positive tests and an expansion of the number of residents testing positive within these facilities. The growth in the nursing homes with 20 or more cases is an important development. In the April 28 report, the facilities with at least 20 cumulative cases comprised 24.6% of all nursing homes with at least one case, but 65.3% of resident cases. By June 3, the nursing homes with at least 20 cumulative cases represented 37.6% of facilities with any residents with COVID-19, comprising 80.9% of total nursing home cases.

| # of Cases | # of Nursing Homes | % of Nursing Homes in State | % of Nursing Homes With Cases | % of Resident Cases |
|---|---|---|---|---|
| **Table 1. Residents with COVID-19 in Ohio: Number of Nursing Homes and Cumulative Cases (April 28, May 14, June 3)** | | | | |
| **Panel A: Cumulative Cases in the April 28 Report (1,873 Residents with COVID-19)** | | | | |
| 1 | 24 | 2.5% | 17.4% | 1.3% |
| 2 to 3 | 25 | 2.7% | 18.1% | 3.4% |
| 4 to 5 | 12 | 1.3% | 8.7% | 2.9% |
| 6 to 10 | 19 | 2.0% | 13.8% | 7.5% |
| 11 to 19 | 24 | 2.5% | 17.4% | 19.6% |
| 20 or Greater | 34 | 3.6% | 24.6% | 65.3% |
| Any Case | 138 | 14.6% | 100.0% | 100.0% |
| **Panel B: Cumulative Cases in the May 14 Report (3,607 Residents with COVID-19)** | | | | |
| 1 | 26 | 2.8% | 13.9% | 0.7% |
| 2 to 3 | 26 | 2.8% | 13.9% | 1.8% |
| 4 to 5 | 14 | 1.5% | 7.5% | 1.7% |
| 6 to 10 | 22 | 2.3% | 11.8% | 4.4% |
| 11 to 19 | 32 | 3.4% | 17.1% | 13.0% |
| 20 or Greater | 67 | 7.1% | 35.8% | 78.3% |
| Any Case | 187 | 19.9% | 100.0% | 100.0% |
| **Panel C: Cumulative Cases in the June 3 Report (5,036 Residents with COVID-19)** | | | | |
| 1 | 54 | 5.7% | 20.5% | 1.1% |
| 2 to 3 | 39 | 4.1% | 14.8% | 1.9% |
| 4 to 5 | 18 | 1.9% | 6.8% | 1.5% |
| 6 to 10 | 21 | 2.2% | 8.0% | 3.3% |
| 11 to 19 | 32 | 3.4% | 12.2% | 11.3% |
| 20 or Greater | 99 | 10.5% | 37.6% | 80.9% |
| Any Case | 263 | 27.9% | 100.0% | 100.0% |
| Information is based on data reported to Ohio Department of Health and released to the public on April 28, May 14, and June 3 of 2020. The Ohio Department of Health notes that the number of resident cases are preliminary and reflect the cumulative cases since April 15, 2020. Data are restricted to all free-standing nursing homes in the state where resident cases could be identified and merged with archived Nursing Home Compare data for February 2020, Payroll-Based Journaling Data, and their most recent CASPER survey. | | | | |

To gain a better understanding of the impact of COVID-19 in Ohio nursing homes, we examined prevalence in the context of nursing home quality for the June 3 report. Table 2 reports the proportion of nursing homes with at least one resident case and a high caseload, adjusting for differences in facilities that could impact the number of residents with COVID-19, such as facility size, whether located in an urban or rural area, and the resident case-mix and payer-mix.

| Table 2. Nursing Homes with Any Case and High Caseloads in the June 3 Report By Nursing Home Compare 5-Star Rating | | | | | | | |
|---|---|---|---|---|---|---|---|
| | % of Nursing Homes | | | | | | Statistical Difference Across Ratings |
| | All Nursing Homes | 1-Star | 2-Star | 3-Star | 4-Star | 5-Star | |
| **Panel A: Overall Star Rating** | | | | | | | |
|   Any Resident Case | 27.9 | 26.5 | 27.7 | 29.6 | 31.9 | 28.9 | No |
|   High Caseload Among Any Cases | 41.4 | 43.4 | 44.2 | 37.5 | 52.0 | 44.8 | No |
| **Panel B: Health Survey Star Rating** | | | | | | | |
|   Any Resident Case | 27.9 | 29.6 | 25.0 | 25.8 | 27.0 | 23.1 | No |
|   High Caseload Among Any Cases | 41.4 | 42.9 | 38.1 | 49.2 | 39.9 | 57.5 | No |
| **Panel C: Quality Measure Star Rating** | | | | | | | |
|   Any Resident Case | 27.9 | 21.3 | 29.2 | 32.9 | 31.3 | 30.8 | No |
|   High Caseload Among Any Cases | 41.4 | 30.0 | 59.3 | 58.2 | 52.7 | 53.2 | No |
| **Panel D: Registered Nurse Staff Star Rating** | | | | | | | |
|   Any Resident Case | 27.9 | 26.8 | 30.6 | 27.8 | 32.9 | 39.4 | No |
|   High Caseload Among Any Cases | 41.4 | 47.9 | 35.2 | 33.1 | 26.3 | 35.4 | No |
| **Panel E: Total Nursing Staff Star Rating** | | | | | | | |
|   Any Resident Case | 27.9 | 26.4 | 30.3 | 29.6 | 35.0 | 40.1 | No |
|   High Caseload Among Any Cases | 41.4 | 45.7 | 40.0 | 33.1 | 31.5 | 35.0 | No |

The table reports an estimate of the proportion of nursing homes with at least one case and among the nursing homes with at least one case, the proportion that have a high caseload as defined as having more cases than 20% of licensed beds, using the number of cases from the June 3, 2020 report. For 1-star facilities, we utilized the actual proportion of facilities with a case. For other star ratings, we added the additional effect of being a higher-rated facility after adjusting for other factors associated with increased risk of having COVID-19, including ownership status, chain affiliation, being part of a continuing care retirement community, payer-mix (e.g., % Medicaid), resident case-mix, and rurality. The final column reports if facilities with higher star ratings have a statistically different probability of having a resident with COVID-19 compared to 1-star facilities at the 10% level. This statistical test accounted for clustering of nursing homes within counties.

Among all non-hospital-based nursing homes, 27.9% of facilities had any COVID-19 resident cases. For the overall 5-star rating, 26.5% of 1-star facilities had at least one resident with COVID-19 compared to 28.9% for the 5-star facilities. When we compare the prevalence rates across each of the overall star rating groupings, we do not find any statistical differences between prevalence rates across any of the overall star rating categories. We repeated this analysis for each of the star rating components including, health survey inspection results, quality measures, and staffing, and found no differences across star rating categories. This means that there is no link between having a resident positive for COVID-19 and a facility's CMS star rating.

Among nursing homes with at least one resident case, we examined the proportion of nursing homes with a high caseload, defined as having more cases than 20% of the number of licensed beds in the

nursing home. Among nursing homes with at least one case, 41.4% had a high caseload. Again, there were no statistically significant differences in prevalence rates by facility overall star rating. As shown in Table 2, 43.4% of 1-star facilities with at least one case were classified as high caseload facilities, compared to 44.8% of nursing homes with a 5-star rating. The comparison across each of the star rating components also did not show any statistically significant differences. This means there is no difference in the probability of having a high caseload by star rating.

## IMPLICATIONS

Currently, 27.9% of Ohio nursing homes have at least one resident with COVID-19. Our comparison of facilities with no reported residents with COVID-19 to those with residents with the virus, showed no differences on the CMS quality star ratings. Even those facilities classified in the high caseload group did not differ on any of the star ratings. The media and the general public want to place blame for the tragedies now occurring in nursing homes. To be sure, there are poorly-managed facilities. But there are also facilities that are well-run and working diligently to protect their residents and staff; yet despite all of their efforts, they have still been hit hard by the virus.

Therefore, the simple notion that any nursing home that has had a resident with COVID-19 or even a high number of residents with the virus, is not adequately protecting their residents and staff, is not justified by these study results. The story is more complex and requires an understanding of the unique circumstances of each facility. The nature and structure of nursing home care in general appear to be the primary drivers in the spread of COVID-19 in Ohio nursing homes. As long as the pandemic is present and we are without a vaccine or rapid and universal testing, nursing home residents and the individuals who care for them will remain the most vulnerable members of society. Our results provide a first look at this data, but these comparisons will need to be examined over time to better understand prevalence rates and their link to quality and other facility factors.

## END NOTES

[1]Centers for Medicare and Medicaid Services [CMS]. April 2019. Design for Nursing Home Compare Five-Star Quality Rating System: Technical Users' Guide.

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## MIAMI UNIVERSITY
### SCRIPPS GERONTOLOGY CENTER
*An Ohio Center of Excellence*

100 Bishop Circle, Upham Hall 396, Oxford, OH 45056
MiamiOH.edu/ScrippsAging.org │ 513.529.2914 │ Scripps@MiamiOH.edu