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The footnotes for Metropolitan statistical area in Figure 1 have been changed from 1,3 to 1,2 to correctly identify the statistically significant differences—December 2, 2016.

Variation in Residential Care Community Nurse and Aide Staffing Levels: United States, 2014

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Abstract

Objectives—This report presents national and state estimates of staffing levels in residential care communities for registered nurses, licensed practical or vocational nurses, and aides in the United States for 2014.

Methods—Data were drawn from the residential care community component of the 2014 wave of the biennial National Study of Long-Term Care Providers, conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics. For each staff type, the "staffing level" measure is presented as average hours per resident per day, defined as the total number of hours worked divided by the total number of residents, which does not necessarily reflect the amount of care given to a specific resident. Analyses examined the extent to which residential care community nurse and aide staffing levels varied by selected organizational characteristics and selected resident composition characteristics of the communities. Differences among subgroups were evaluated using two-sided *t* tests at the 0.05 level.

Results—In 2014, the total registered nurse, licensed practical or vocational nurse, and aide staffing level among all residential care communities was about 2 hours and 50 minutes. Registered nurse staffing levels differed for two of the three organizational characteristics (size and metropolitan statistical area [MSA]) and for only one of the four resident composition characteristics (primarily serving residents needing any assistance with activities of daily living). Licensed practical or vocational nurse staffing levels differed for all three organizational characteristics (size, MSA, and ownership) and for only one of the four resident composition characteristics (primarily serving residents diagnosed with Alzheimer's disease or other dementias). In contrast, differences in aide staffing levels were common when examining both community organizational and resident composition characteristics. Registered nursing, licensed practical and vocational nursing, and aide staffing levels varied geographically by state.

Keywords: long-term services and supports • assisted living • home- and community-based services • National Study of Long-Term Care Providers

Introduction

Assisted living and similar residential care communities are a critical component of the long-term care services and supports spectrum for older adults and younger adults with disabilities who cannot live independently in their home. Growth in this sector has been due, in part, to shifts in federal and state policy, which have incentivized home- and community-based long-term care services and support settings over institutional-based settings (1). Residential care communities serve residents with increasingly complex care needs (2,3). Registered nurses, licensed practical or vocational nurses, and aides are the backbone of care delivery for residents living in this setting (4). "Average hours per resident per day" is a commonly used measure of staffing level in long-term care facilities, representing the amount of time that staff have available to provide care to residents (5).

Research on staffing in residential care communities and other long-term care provider settings indicates that nurse and aide staffing levels are influenced by factors related to the characteristics of the facilities and residents (6–9), and may have implications for resident outcomes and quality of care (10–14).

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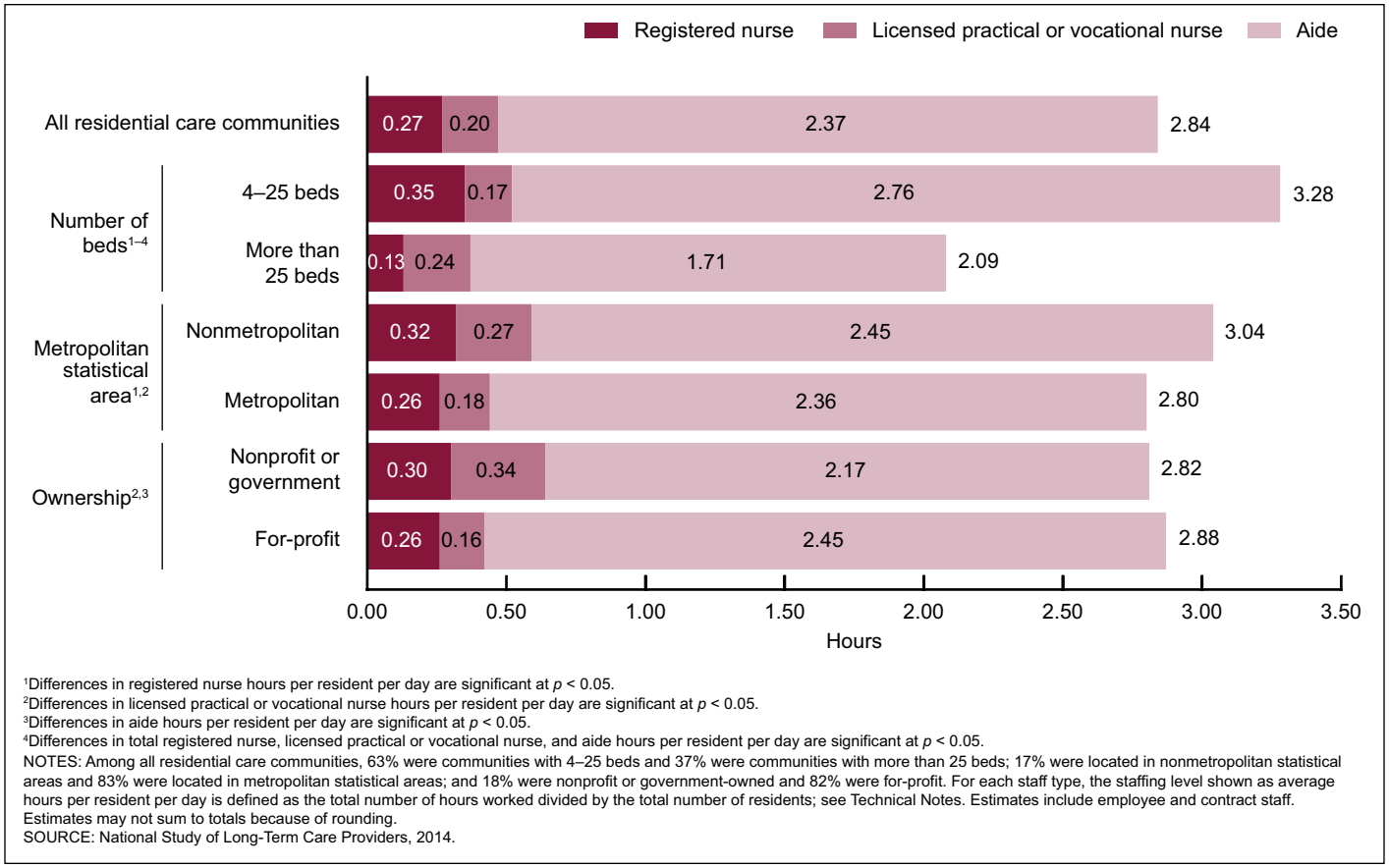


[1]Differences in registered nurse hours per resident per day are significant at $p < 0.05$.
[2]Differences in licensed practical or vocational nurse hours per resident per day are significant at $p < 0.05$.
[3]Differences in aide hours per resident per day are significant at $p < 0.05$.
[4]Differences in total registered nurse, licensed practical or vocational nurse, and aide hours per resident per day are significant at $p < 0.05$.
NOTES: Among all residential care communities, 63% were communities with 4–25 beds and 37% were communities with more than 25 beds; 17% were located in nonmetropolitan statistical areas and 83% were located in metropolitan statistical areas; and 18% were nonprofit or government-owned and 82% were for-profit. For each staff type, the staffing level shown as average hours per resident per day is defined as the total number of hours worked divided by the total number of residents; see Technical Notes. Estimates include employee and contract staff. Estimates may not sum to totals because of rounding.
SOURCE: National Study of Long-Term Care Providers, 2014.

Figure 1. Nurse and aide staffing levels for residential care communities, overall and by selected organizational characteristics and staff type: United States, 2014

Most research to date on nurse and aide staffing levels in long-term care focuses on nursing homes. Less research has examined facility and resident characteristics associated with nurse and aide staffing levels in residential care communities (6). Unlike the federally regulated nursing home industry, residential care community oversight occurs at the state level, including the delineation of staffing requirements (15). This report presents the most current national and state estimates of registered nurse, licensed practical or vocational nurse, and aide staffing levels as average hours per resident per day among residential care communities.

Methods

Data are from the residential care community survey component of the 2014 wave of the biennial National Study of Long-Term Care Providers (NSLTCP). To be eligible for the study, a residential care community must: a) be regulated by the state to provide room and board with at least two meals a day, around-the-clock on-site supervision, and help with personal care such as bathing and dressing or health-related services such as medication management; b) have four or more licensed, certified, or registered beds; c) have at least one resident currently living in the community at the time of the survey; and d) serve a predominantly adult population. The survey used a combination of probability sampling in some states and census-taking in other states. More details about NSLTCP survey design and outcomes are published elsewhere (16,17).

Data analyses were performed using both Stata SE 12.1 (18) and SAS version 9.3/SAS-callable SUDAAN version 11.0.0 statistical package (19). Differences among subgroups were evaluated using *t* tests. All statistical significance tests were two-sided using $p < 0.05$ as the level of significance. Because estimates were rounded, individual estimates may not sum to totals. Cases with missing data were excluded from the analyses on a variable-by-variable basis, ranging from 1.7% for ownership to 8.6% for communities that primarily served participants with a diagnosis of Alzheimer's disease or other dementias. When the value of hours per resident per day for a given staff type was greater than 24, these values were coded as 24 (16).

Results

Nurse and aide staffing levels, overall and by staff type and residential care community characteristics

Among all U.S. residential care communities, 2014

- Staffing levels were 16 minutes (0.27 of 1 hour per resident per day) for registered nurses; 12 minutes (0.20 of 1 hour) for licensed practical or vocational nurses; and 2.37 hours (2 hours 22 minutes) for aides (Figure 1).

- Total registered nurse, licensed practical or vocational nurse, and aide staffing level was 2.84 hours (2 hours 50 minutes per resident per day).

Number of beds

- Registered nurse staffing level was 21 minutes (0.35 of 1 hour per resident per day) among residential care communities with 4–25 beds, compared with 8 minutes (0.13 of 1 hour) in communities with more than 25 beds (Figure 1).
- Licensed practical or vocational nurse staffing level was higher in communities with more than 25 beds (14 minutes or 0.24 of 1 hour), compared with communities with 4–25 beds (10 minutes or 0.17 of 1 hour).
- Aide staffing level was higher in communities with 4–25 beds (2.76 hours or 2 hours 46 minutes) than in communities with more than 25 beds (1.71 or 1 hour 43 minutes).
- Total registered nurse, licensed practical or vocational nurse, and aide staffing level was higher in communities with 4–25 beds (3.28 hours or 3 hours 17 minutes) than in communities with more than 25 beds (2.09 hours or 2 hours 5 minutes).

Geographic locale

- Registered nurse staffing level was higher in communities located in nonmetropolitan areas (19 minutes or 0.32 of 1 hour per resident per day), when compared with communities in metropolitan areas (16 minutes or 0.26 of 1 hour) (Figure 1).
- Licensed practical or vocational nurse staffing level was higher in communities located in nonmetropolitan areas (16 minutes or 0.27 of 1 hour), compared with communities in metropolitan areas (11 minutes or 0.18 of 1 hour).
- Similar aide staffing levels were found in nonmetropolitan (2.45 hours or 2 hours 27 minutes) and metropolitan (2.36 hours or 2 hours 22 minutes) areas.
- Similar total registered nurse, licensed practical or vocational nurse, and aide staffing levels were found in nonmetropolitan (3.04 hours or 3 hours 2 minutes) and metropolitan (2.80 hours or 2 hours 48 minutes) areas.

Ownership status

- Similar registered nurse staffing levels were found in nonprofit and government-owned communities (18 minutes or 0.30 of 1 hour per resident per day), compared with for-profit communities (16 minutes or 0.26 of 1 hour) (Figure 1).
- Licensed practical or vocational nurse staffing level was higher in nonprofit and government-owned communities (20 minutes or 0.34 of 1 hour), compared with for-profit communities (10 minutes or 0.16 of 1 hour).
- Aide staffing level was higher in for-profit communities (2.45 hours or 2 hours 27 minutes), compared with nonprofit and government-owned communities (2.17 hours or 2 hours 10 minutes).
- Similar total registered nurse, licensed practical or vocational nurse, and aide staffing levels were found in nonprofit and government-owned communities (2.82 hours or 2 hours 49 minutes), compared with for-profit communities (2.88 hours or 2 hours 53 minutes).

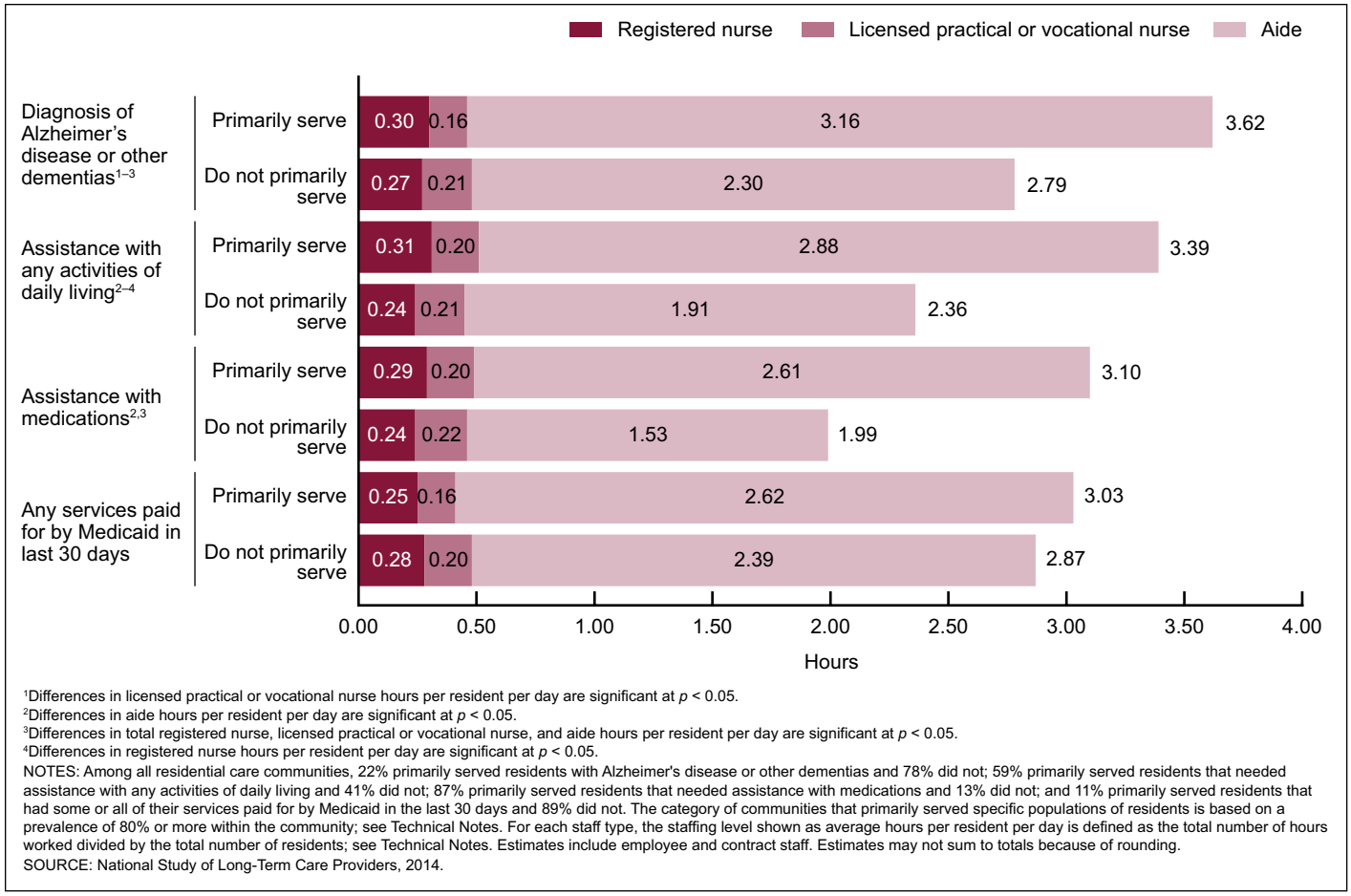
Nurse and aide staffing levels in residential care communities, by staff type and resident composition

Diagnosis of Alzheimer's disease or other dementias

- Similar registered nurse staffing levels were found in communities that did not primarily serve participants with a diagnosis of Alzheimer's disease or other dementias (16 minutes or 0.27 of 1 hour per resident per day) and communities that primarily served this population (18 minutes or 0.30 of 1 hour) (Figure 2).
- Licensed practical or vocational nurse staffing level was higher in communities that did not primarily serve participants with a diagnosis of Alzheimer's disease or other dementias (13 minutes or 0.21 of 1 hour) than in communities that primarily served this population (10 minutes or 0.16 of 1 hour).
- Aide staffing level was higher in residential care communities that primarily served residents with a diagnosis of Alzheimer's disease or other dementias (3.16 hours or 3 hours 10 minutes), compared with communities that did not primarily serve residents with this diagnosis (2.30 hours or 2 hours 18 minutes).
- Total registered nurse, licensed practical or vocational nurse, and aide staffing level was 3.62 hours (3 hours 37 minutes) in communities that primarily served participants with a diagnosis of Alzheimer's disease or other dementias, which is higher than the total nurse and aide staffing level in communities that did not primarily serve this population (2.79 hours or 2 hours 47 minutes).

Assistance with any activities of daily living

- Registered nurse staffing level was higher in communities that primarily served residents needing assistance with any of the activities of daily living (ADLs) examined (19 minutes or 0.31 of 1 hour per resident per day), compared with communities that did not primarily serve this population (14 minutes or 0.24 of 1 hour) (Figure 2).
- Similar licensed practical or vocational nurse staffing levels were found in communities that primarily served residents needing assistance with any of the ADLs (12 minutes or 0.20 of 1 hour) and communities that did not primarily serve this population (13 minutes or 0.21 of 1 hour).
- Aide staffing level was higher in communities that primarily served residents needing assistance with any of the ADLs (2.88 hours or 2 hours 53 minutes), compared with communities that did not primarily serve this population (1.91 hours or 1 hour 55 minutes).
- Total registered nurse, licensed practical or vocational nurse, and



[1]Differences in licensed practical or vocational nurse hours per resident per day are significant at $p < 0.05$.
[2]Differences in aide hours per resident per day are significant at $p < 0.05$.
[3]Differences in total registered nurse, licensed practical or vocational nurse, and aide hours per resident per day are significant at $p < 0.05$.
[4]Differences in registered nurse hours per resident per day are significant at $p < 0.05$.
NOTES: Among all residential care communities, 22% primarily served residents with Alzheimer's disease or other dementias and 78% did not; 59% primarily served residents that needed assistance with any activities of daily living and 41% did not; 87% primarily served residents that needed assistance with medications and 13% did not; and 11% primarily served residents that had some or all of their services paid for by Medicaid in the last 30 days and 89% did not. The category of communities that primarily served specific populations of residents is based on a prevalence of 80% or more within the community; see Technical Notes. For each staff type, the staffing level shown as average hours per resident per day is defined as the total number of hours worked divided by the total number of residents; see Technical Notes. Estimates include employee and contract staff. Estimates may not sum to totals because of rounding.
SOURCE: National Study of Long-Term Care Providers, 2014.

Figure 2. Nurse and aide staffing levels, by residential care communities that primarily serve residents with specific characteristics and staff type: United States, 2014

aide staffing level was higher among communities that primarily served residents needing assistance with any of the ADLs (3.39 hours or 3 hours 23 minutes), compared with communities that did not primarily serve this population (2.36 hours or 2 hours 22 minutes).

Assistance with medications

- Similar registered nurse staffing levels were found among communities that primarily served residents needing assistance with medications (17 minutes or 0.29 of 1 hour per resident per day) and communities that did not primarily serve this population (14 minutes or 0.24 of 1 hour) (Figure 2).
- Similar licensed practical or vocational nurse staffing levels were found among communities that primarily served residents needing assistance with medications (12 minutes or 0.20 of 1 hour) and communities that did not primarily serve this population (13 minutes or 0.22 of 1 hour).
- Aide staffing level was higher in communities that primarily served residents needing assistance with medications (2.61 hours or 2 hours 37 minutes), compared with communities that did not primarily serve this population (1.53 hours or 1 hour 32 minutes).
- Total registered nurse, licensed practical or vocational nurse, and aide staffing level was higher among communities that primarily served residents needing assistance with medications (3.10 hours or 3 hours 6 minutes), compared with communities that did not primarily serve this population (1.99 hours or 1 hour 59 minutes).

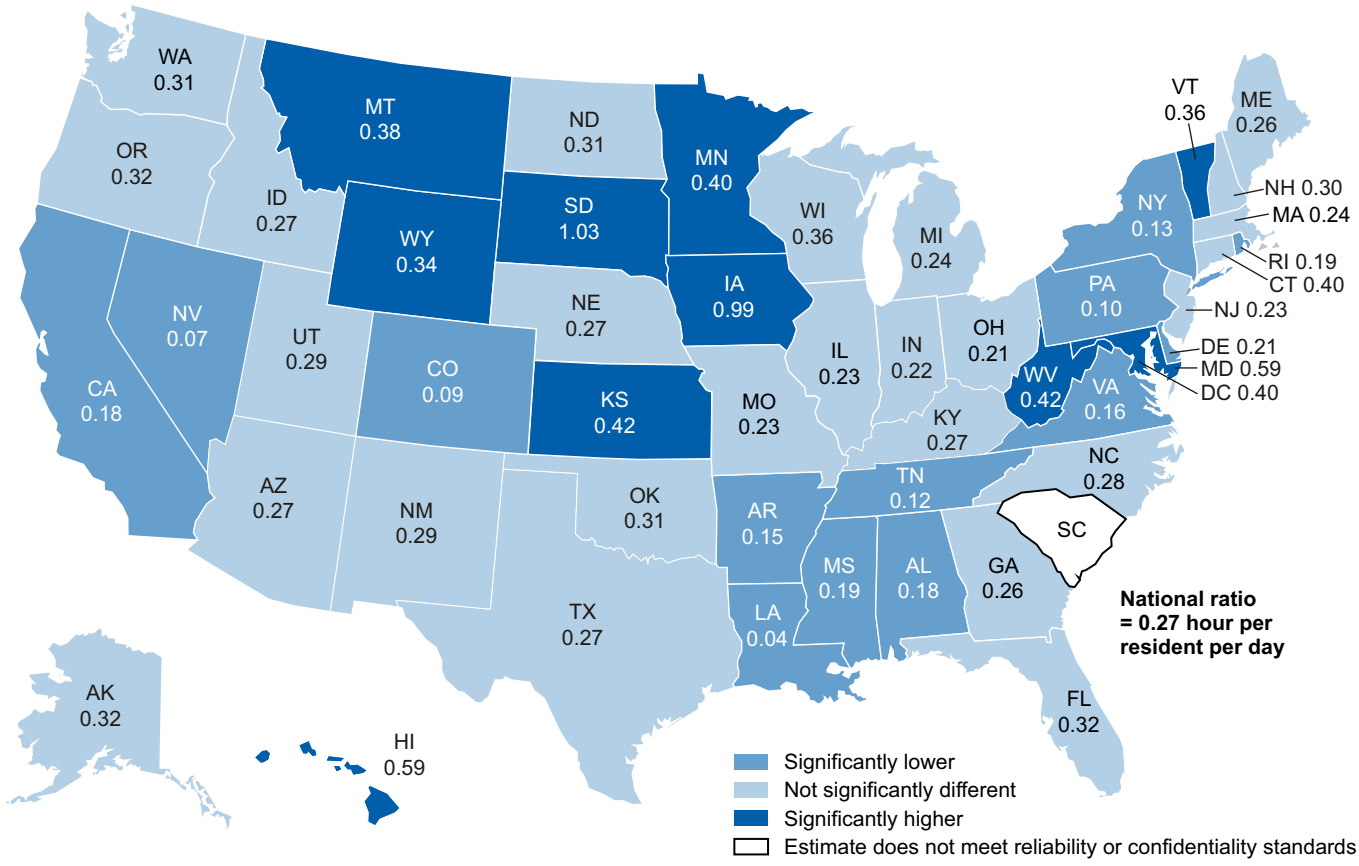
Any services paid for by Medicaid in the last 30 days

- No statistically significant differences were found in registered nurse, licensed practical or vocational nurse, aide, or total nurse and aide staffing levels between communities that primarily served residents who had some or all of their long-term care services paid for by Medicaid and communities that did not primarily serve residents receiving Medicaid (Figure 2).

Nurse and aide staffing levels in residential care communities, by staff type and state

Registered nurses

- Registered nurse staffing level ranged from 2 minutes (0.04 of 1 hour per resident per day) in



NOTES: Significance is tested at $p < 0.05$. The national ratio of 0.27 hour per resident per day is about 16 minutes. Estimates include employee and contract staff. The staffing level shown as average hours per resident per day is defined as the total number of hours worked divided by the total number of residents; see Technical Notes.
SOURCE: CDC/NCHS, National Study of Long-Term Care Providers, 2014.

Figure 3. Registered nurse staffing levels for residential care communities, by state: United States, 2014

Louisiana to 1.03 hours (1 hour 2 minutes) in South Dakota (Figure 3).

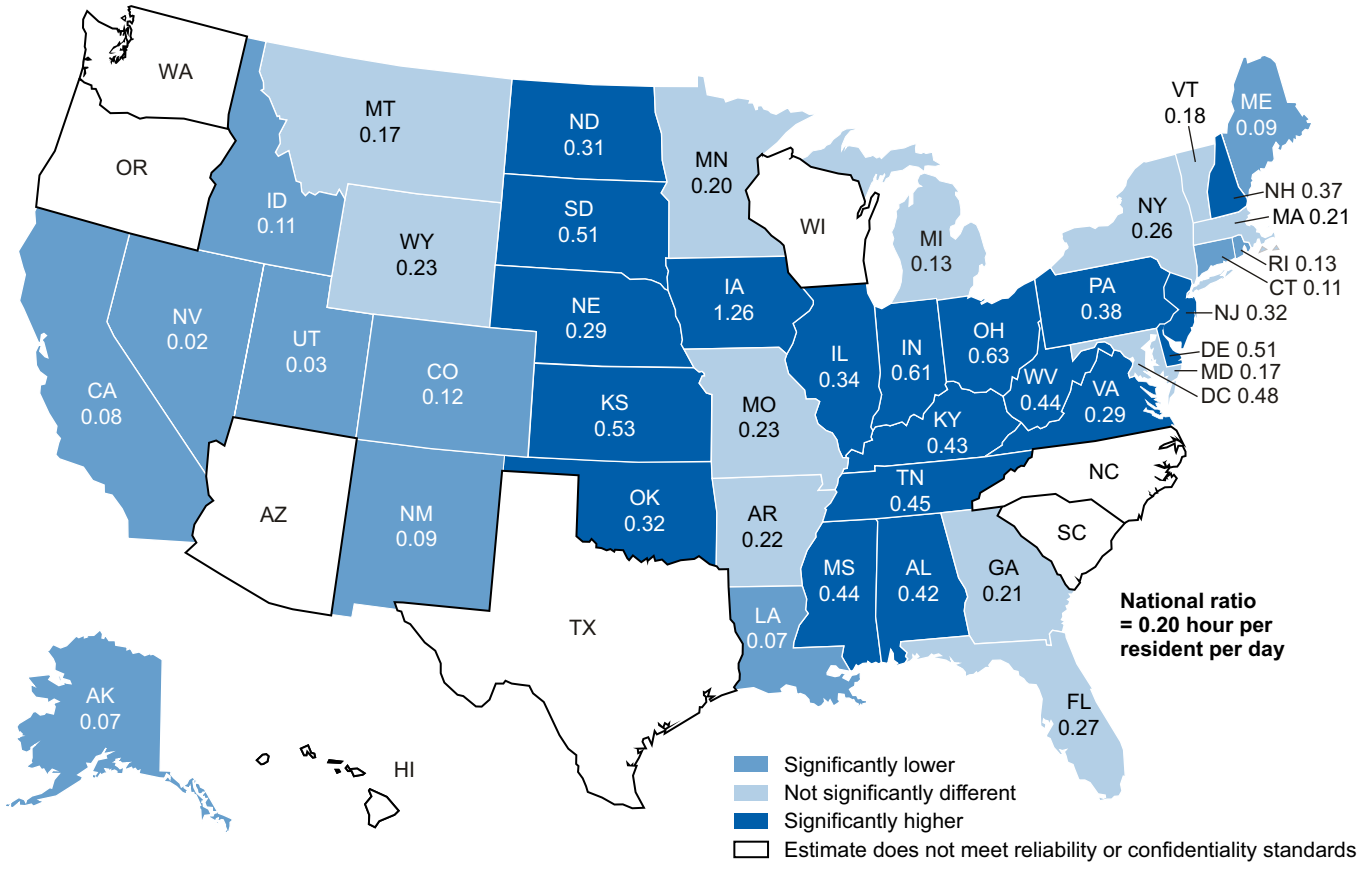
- Registered nurse staffing level was significantly higher than the national ratio (16 minutes or 0.27 of 1 hour) in 10 states (Hawaii, Iowa, Kansas, Maryland, Minnesota, Montana, South Dakota, Vermont, West Virginia, and Wyoming), the majority of which are clustered in the Midwest.
- Registered nurse staffing level was significantly lower than the national ratio (16 minutes or 0.27 of 1 hour) in 13 states (Alabama, Arkansas, California, Colorado, Delaware, Louisiana, Mississippi, Nevada, New York, Pennsylvania, Rhode Island, Tennessee, and Virginia), which are geographically distributed throughout the country.

Licensed practical or vocational nurses

- Licensed practical or vocational nurse staffing level ranged from 1 minute (0.02 of 1 hour per resident per day) in Nevada to 1.26 hours (1 hour 16 minutes) in Iowa (Figure 4).
- Licensed practical or vocational nurse staffing level was significantly higher than the national ratio (12 minutes or 0.20 of 1 hour) in 20 states or areas (Alabama, Delaware, District of Columbia, Illinois, Indiana, Iowa, Kansas, Kentucky, Mississippi, Nebraska, New Hampshire, New Jersey, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Virginia, and West Virginia), which are grouped mainly in the Midwest and South.
- Licensed practical or vocational nurse staffing level was significantly lower than the national ratio (12 minutes or 0.20 of 1 hour) in 11 states (Alaska, California, Colorado, Connecticut, Idaho, Louisiana, Maine, New Mexico, Nevada, Rhode Island, and Utah), grouped mainly in the West and Northeast.

Aides

- Aide staffing level ranged from 1.18 hours per resident per day (1 hour 11 minutes) in Indiana to 3.94 hours (3 hours 56 minutes) in Wisconsin (Figure 5).
- Aide staffing level was significantly higher than the national ratio (2.37 hours or 2 hours 22 minutes) in 7 states (Alaska, Kansas, Minnesota, New Mexico, South Dakota, West Virginia, and Wisconsin), most of which are in the Midwest.
- Aide staffing level was significantly lower than the national ratio (2.37



NOTES: Significance is tested at $p < 0.05$. The national ratio of 0.20 hour per resident per day is about 12 minutes. Estimates include employee and contract staff. The staffing level shown as average hours per resident per day is defined as the total number of hours worked divided by the total number of residents; see Technical Notes.
SOURCE: CDC/NCHS, National Study of Long-Term Care Providers, 2014.

Figure 4. Licensed practical or vocational nurse staffing levels for residential care communities, by state: United States, 2014

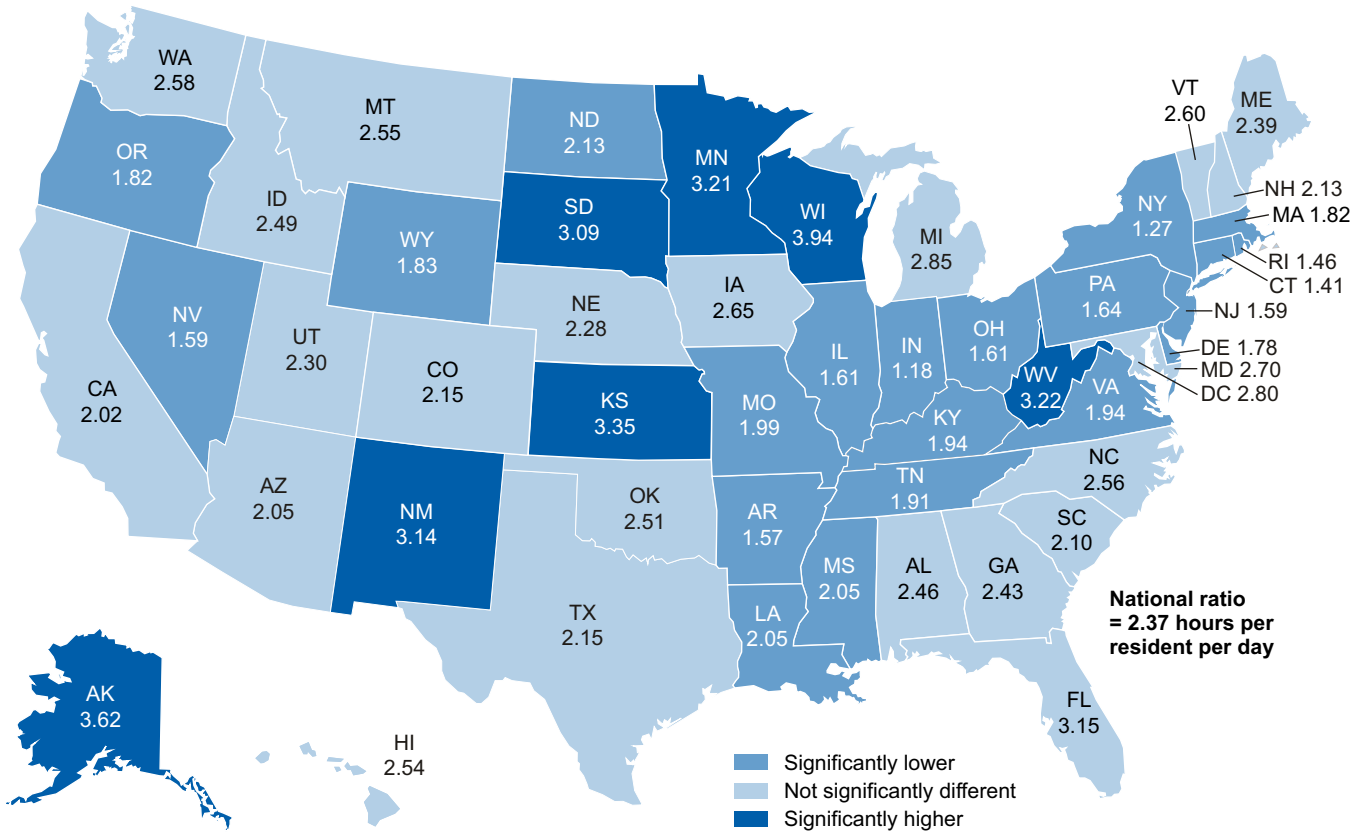
hours or 2 hours 22 minutes) in 21 states (Arkansas, Connecticut, Delaware, Illinois, Indiana, Kentucky, Louisiana, Massachusetts, Mississippi, Missouri, Nevada, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, Virginia, and Wyoming), grouped primarily in the Northeast, Midwest, and South.

Total nurse and aide staff

- Total registered nurse, licensed practical or vocational nurse, and aide staffing level ranged from 1.66 hours per resident per day (1 hour 40 minutes) in New York to 4.9 hours (4 hours 54 minutes) in Iowa (Figure 6).
- Total registered nurse, licensed practical or vocational nurse, and aide staffing level was significantly higher than the national ratio (2.84 hours or 2 hours 50 minutes) in 8 states (Alaska, Kansas, Iowa, Minnesota, New Mexico, South Dakota, West Virginia, and Wisconsin), most of which are in the Midwest.
- Total registered nurse, licensed practical or vocational nurse, and aide staffing level was significantly lower than the national ratio (2.84 hours or 2 hours 50 minutes) in 17 states (Arkansas, California, Colorado, Connecticut, Delaware, Illinois, Indiana, Louisiana, Massachusetts, New Jersey, Nevada, New York, Pennsylvania, Rhode Island, Tennessee, Virginia, and Wyoming), which are geographically distributed throughout the country.

Summary

In 2014, the total registered nurse, licensed practical or vocational nurse, and aide staffing level among all residential care communities was about 2 hours and 50 minutes. In terms of the organizational characteristics of the communities, registered nurse staffing levels were higher in smaller communities and communities located in nonmetropolitan areas. Licensed practical or vocational nurse staffing levels were higher in larger communities, communities located in nonmetropolitan areas, and communities under nonprofit or government ownership. Aide staffing levels were higher in smaller communities and those under for-profit ownership. In terms of the resident composition of the communities, registered nurse staffing levels were higher in communities that primarily served residents needing assistance with any of the ADLs examined. Licensed practical or vocational nurse staffing levels were higher among communities



NOTES: Significance is tested at $p < 0.05$. The national ratio of 2.37 hours per resident per day is about 2 hours 22 minutes. Estimates include employee and contract staff. The staffing level shown as average hours per resident per day is defined as the total number of hours worked divided by the total number of residents; see Technical Notes.
SOURCE: CDC/NCHS, National Study of Long-Term Care Providers, 2014.

Figure 5. Aide staffing levels for residential care communities, by state: United States, 2014

that did not primarily serve residents with a diagnosis of Alzheimer's disease or other dementias. Aide staffing levels were higher in communities that primarily served residents with Alzheimer's disease or other dementias, residents needing assistance with any of the ADLs examined, and residents needing assistance with medications. This report found no statistically significant differences in staffing levels by the percentage of residents in the community that had some or all of their long-term care services paid for by Medicaid.

Registered nurse staffing levels differed for two of the three organizational characteristics (size and metropolitan statistical area [MSA]) but only one of the four resident composition characteristics (primarily serving residents needing any assistance with ADLs). Licensed practical or vocational nurse staffing levels differed for all three organizational characteristics (size, MSA, and ownership) but only one of the four resident composition characteristics (primarily serving residents with Alzheimer's disease or other dementias). In contrast, differences in aide staff hours per resident per day were common when examining both community organizational and resident composition characteristics. Aide staffing levels differed for two of the three organizational characteristics (size and ownership) and three of the four resident composition characteristics (primarily serving residents with Alzheimer's disease or other dementias, needing any assistance with ADLs, and needing assistance with medications).

In 2014, state estimates of nursing staff levels in residential care communities were available for the first time. For each of the three nursing staff types examined (registered nurse, licensed practical or vocational nurse, and aide), the average nursing staff hours per resident per day in Kansas, South Dakota, and West Virginia were above the national rate, while the ratios in Louisiana and Nevada were below the national rate.

This brief profile of residential care community nursing staff provides useful information to policy makers, providers, researchers, and consumer advocates as they plan to meet the needs of an aging population.

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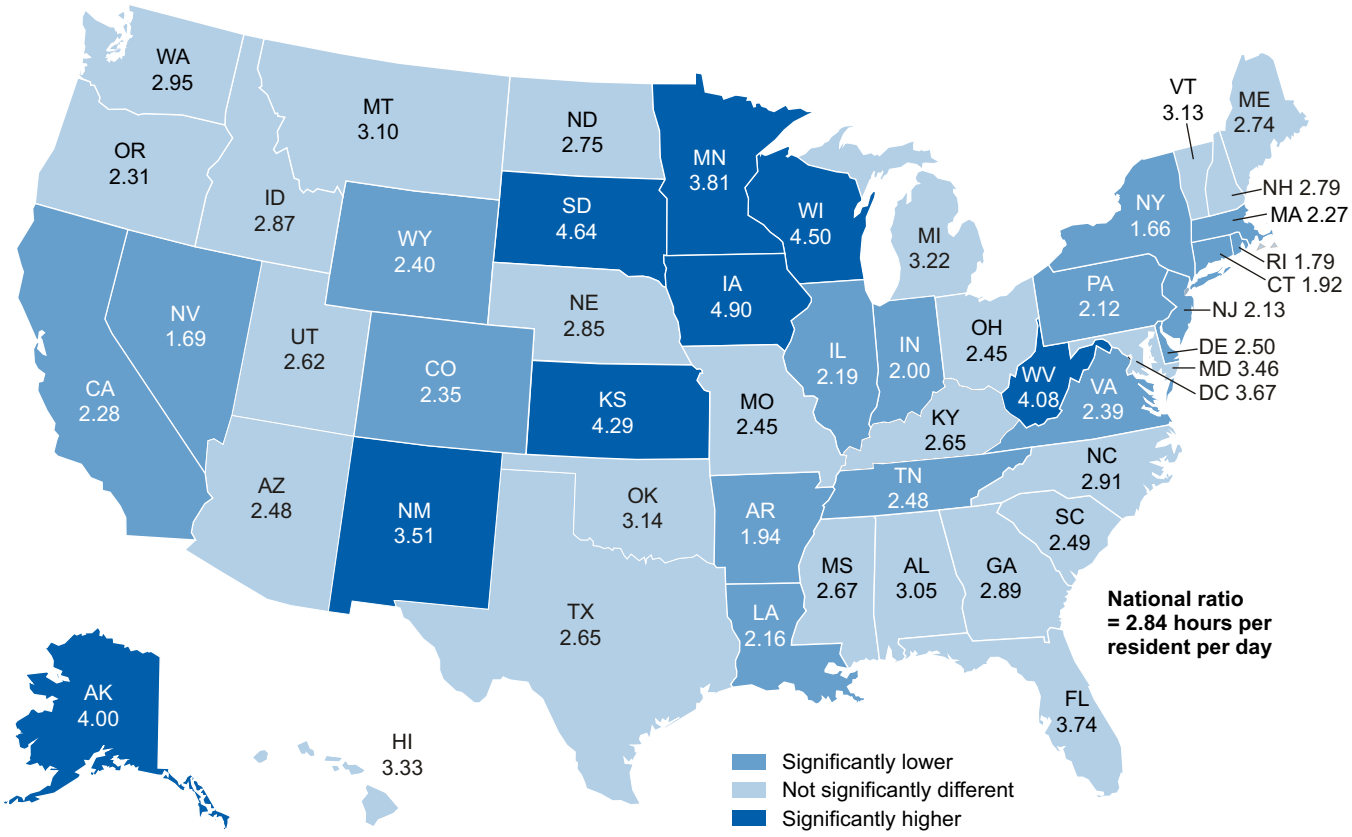

NOTES: Significance is tested at $p < 0.05$. The national ratio of 2.84 hours per resident per day is about 2 hours 50 minutes. Estimates include employee and contract staff. The staffing level shown as average hours per resident per day is defined as the total number of hours worked divided by the total number of residents; see Technical Notes. This measure includes registered nurse, licensed practical or vocational nurse, and aide staff.
SOURCE: CDC/NCHS, National Study of Long-Term Care Providers, 2014.

Figure 6. Total nurse and aide staffing levels for residential care communities, by state: United States, 2014

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Technical Notes

Definition of terms

Aide—Refers to certified nursing assistants, nursing assistants, home health aides, home care aides, personal care aides, personal care assistants, and medication technicians or medication aides.

Assistance with activities of daily living (ADLs)—Refers to needing any help or supervision from another person with any of six limitations in ADLs (transferring in or out of a bed, eating, dressing, bathing or showering, toileting, and locomotion or walking) that reflect a resident's capacity for self-care; also includes the use of special equipment.

Communities that primarily serve residents with specific characteristics (resident composition)—Based on a prevalence of 80% or more within the community. The methodology used to determine the cutoff for communities that primarily served specific populations of residents was derived from a recent study by Anderson, Park, Monteleone, and Dabelko-Schoeny on adult day services centers (20).

Community bed size—Based on the number of licensed, registered, or certified residential care beds (both occupied and unoccupied) in a residential care community: 4–25 beds and more than 25 beds.

Metropolitan statistical area (MSA)—Contains an urban core of 50,000 or more population. A nonmetropolitan area contains an urban cluster of fewer than 50,000 residents.

Ownership type—Categorization of residential care communities into two ownership types: 1) private, for-profit and 2) nonprofit. The private, for-profit category includes publicly traded communities and limited liability communities. Nonprofit includes private nonprofit, as well as federal, state, county, and local government ownership.

Residential care communities—Includes assisted living communities and other residential care communities (e.g., personal care homes, adult care homes, board care homes, and adult foster care) that meet the study eligibility criteria specified in "Methods."

Residential care bed—Refers to licensed, registered, or certified residential care beds.

Staffing level—The average number of staffing hours per resident per day, which is the ratio of the average number of hours providing care for a resident per day for a given nursing staff type, or for all nursing staff types combined. The number of full-time equivalents (FTEs) for a given staff type for a community was converted into hours by multiplying each FTE (or fraction of FTE) for the staff type at the community by 35 hours, then dividing the total number of hours for the staff type by the number of current residents in the community, and dividing that estimate by 7 days to arrive at hours per resident day. Nursing staff hours per resident per day does not necessarily reflect the amount of care given to a specific resident. Estimates include employee and contract staff hours.

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