

Analysis of United States Nursing Home Providers

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Executive Summary

Nursing homes are residential facilities providing 24-hour access to medical care and supervision for individuals who are unable to live independently due to chronic disease, illness, or cognitive impairment. There are a total of 14,742 nursing homes in the United States that serve 1.2 million patients and employ 4.7 million workers who provide short and long-term care to its residents (Mehboob & Sharma, 2025). Staffing shortages and funding are the key issues facing nursing homes as the demand for their services continues to increase with Americas aging population. The number of staff who are employed at nursing homes has not caught up with the demand causing many nursing homes to be understaffed. Furthermore, it is not uncommon for staff, especially certified nurse aides to leave their jobs within weeks of being hired due to the demands of the job (Mehboob & Sharma, 2025). A sufficient number of staff are needed to ensure that the nursing home is run efficiently, providing adequate care for its residents, and providing a safe living space for its residents.

There have been significant structural shifts in terms of ownership and control within the healthcare industry over the past few decades. Community based and smaller healthcare systems have increasingly been consolidated into larger health networks and nearly three-quarters of nursing homes in the United States are now for-profit (August, 2024). Previously, the majority of nursing homes were either non-profit or funded by the government, which tend to provide better quality of care to its residents than for-profit nursing homes (August, 2024). A shift in ownership of nursing homes has had a significant impact on staffing and overall quality of care for its residents which will be analyzed in this project.

There are three main ownership categories for nursing homes including privately owned for profit, non-profit, and government owned. There are subcategories for each ownership type such as privately owned LLC, privately owned partnership, non-profit church related, government – state, or government – city. For analysis purposes, each ownership type will be grouped into either privately owned, non-profit, or government owned. Private equity firms have been purchasing nursing homes with the goal of maximizing profits, and that often comes at the expense of its residents. On the other hand, non-profit and government funded nursing homes lack sufficient funding, so each ownership type has their own drawbacks. This project will analyze the impact that ownership has on resident outcomes and nursing home ratings. Data from nursing homes across the United States will also be compared on a state level to see which states provide better quality of care in nursing homes and which states need significant changes.

Description of Dataset:

The nursing home providers dataset captures relevant data from 14,713 out of the 14,742 nursing homes nationwide for 2025. Each row represents one nursing home. The data included in this dataset is data on location, overall rating, total number of registered nurses and staff members,

number of beds, ownership information, deficiencies, average number of daily residents, and provider type. The data is sourced from the Centers for Medicare & Medicaid Services. The dataset contains 14,713 rows and 101 columns.

Link to dataset:

<https://data.cms.gov/provider-data/dataset/4pq5-n9py#data-table>

Problem:

The biggest challenges facing nursing home facilities across the United States are persistent staffing shortages and loss of financial aid which can potentially force them to shut down (“Survey: Nursing Home Providers Say Workforce Challenges Continue To Persist”, 2023). A survey conducted by the American Health Care Association (AHCA) and National Center for Assisted Living (NCAL) showed that “77 percent of facilities face moderate to high level staffing shortages that require hiring agency staff or staff overtime to cover shifts” (“Survey: Nursing Home Providers Say Workforce Challenges Continue To Persist”, 2023). As a result, 72 percent of nursing home facilities have concerns about having to shut down and are forced to use waiting lists for new patients (“Survey: Nursing Home Providers Say Workforce Challenges Continue To Persist”, 2023). Staffing shortages are clearly a complicated problem facing nursing home facilities as many individuals are unable to receive the care they need at nursing homes. The problem of staffing shortages in nursing homes is brought on by a gradually increasing number of residents in nursing homes as nursing home residents increased from 1.10 million to 1.24 million from 2021 to 2025 (Chidambaram & Burns, 2025). During the same period, the number of certified nursing facilities decreased from 15,291 to 14,742 (Chidambaram & Burns, 2025). This is a significant problem facing the healthcare industry as the demand for nursing homes continues to rise while the supply is decreasing.

Another problem facing nursing home facilities is funding. During the COVID-19 pandemic, the Medicaid Federal Medical Assistance Percentage (FMAP) and American Rescue Plan Act were able to provide sufficient funding for nursing home facilities, but financial aid is starting to run out (“Survey: Nursing Home Providers Say Workforce Challenges Continue To Persist”, 2023). In 2023, 86 percent of facilities were concerned about the loss of financial aid while more than 50 percent of providers were operating at a loss, and 45 percent of providers reported being unable to sustain operations for more than a year at their current trajectory (“Survey: Nursing Home Providers Say Workforce Challenges Continue To Persist”, 2023). Moreover, the 2025 reconciliation law is predicted to cut federal Medicaid spending by \$911 billion over the next decade worsening this problem (Chidambaram & Burns, 2025). Loss of financial aid is a significant problem because it is only going to worsen the existing staffing shortages and

increase wait lists for prospective residents. Reduced spending on nursing home facilities is also going to decrease the quality of life for residents in nursing homes.

Nursing home facilities are cited for 9.5 deficiencies on average throughout a survey cycle which is about one year (Chidambaram & Burns, 2025). Deficiencies are defined as violations of state and federal regulations which are discovered during inspections (“Trends in Deficiencies at Nursing Homes Show That Improvements Are Needed To Ensure the Health and Safety of Residents”, 2019). Deficiencies may include failure to adhere to proper infection control, not administering or providing medication prescribed by a physician, serving expired food, or not adhering to dietary restrictions mandated by the patient’s physician (“Trends in Deficiencies at Nursing Homes Show That Improvements Are Needed To Ensure the Health and Safety of Residents”, 2019). Facilities that are sufficiently staffed receive less citations than facilities that are understaffed suggesting that the root cause of this problem is related to being understaffed (Chidambaram & Burns, 2025). Another cause of deficiencies may be that 73 percent of nursing home facilities in the United States are for profit, and private equity firms have been purchasing nursing homes and increasing profit margins (Chidambaram & Burns, 2025). Maximizing profits often comes at the expense of quality of care so this is another cause for concern when it comes to an increasing number of deficiencies in nursing homes. The next section emphasizes the importance of these key issues in nursing home facilities and issues that need to be further analyzed.

Project Importance:

As Americas population continues to age, more nursing home facilities will be needed, and more staff will be needed making staffing shortages especially problematic. More than 1 in 5 nursing homes nationwide are having to reduce the number of available units due to staffing shortages (“Survey: Nursing Home Providers Say Workforce Challenges Continue To Persist”, 2023). Finding qualified staff who are invested in working at a nursing home facility is a significant contributing factor to staffing shortages. To combat staffing shortages, “90 percent of nursing homes have increased wages and 85 percent of nursing homes have offered bonuses” (“Survey: Nursing Home Providers Say Workforce Challenges Continue To Persist”, 2023). Despite these incentives, providers are still having trouble recruiting new staff (“Survey: Nursing Home Providers Say Workforce Challenges Continue To Persist”, 2023). Increasing wages and providing monetary incentives are not enough to provide enough staff for nursing homes so this is a systemic issue of nursing shortages nationwide. Although attempts at increasing staff wages at nursing homes has been introduced, financial problems are still a huge concern for nursing homes which relates to cuts in Medicaid spending.

Many nursing homes are operating at a loss and funding for nursing home operations is inadequate. New provisions to the reconciliation law are causing cuts to federal spending which may impact more than 15,000 nursing home facilities as well as more than 1.2 million people

who rely on nursing homes (Chidambaram & Burns, 2025). More than a third of all federal Medicaid spending goes toward long-term care, and changes to Medicaid brought on by the 2025 reconciliation law will result in reduced funding from Medicaid toward nursing home facilities, and fewer people having Medicaid coverage for facility care (Chidambaram & Burns, 2025). As of 2023, 44 percent of long-term institutional care costs were covered by Medicaid and 37 percent was paid out of pocket, so having Medicaid funding cut even more may be catastrophic for lower income individuals who reside in nursing homes (Chidambaram & Burns, 2025). Since more than one million people rely on nursing homes, budget cuts towards these facilities will impact a significant number of people and increase barriers to receiving necessary care. These budget cuts and staffing shortages will also decrease the quality of care at nursing homes.

A survey conducted in 2025 showed that 27 percent of inspected nursing homes received serious deficiencies for harm posed to a resident (Chidambaram & Burns, 2025). Moreover, roughly 23 percent of deaths from Covid-19 in the United States occurred in long-term care facilities (August, 2024). This is a serious problem because one in four nursing home facilities pose immediate jeopardy to the health and safety of its residents which may cause serious harm, impairment, or even death to a resident. Most patients seek nursing homes when they are no longer able to live independently or do not have someone who can adequately care for them. The number of deficiencies has consistently increased overtime from 6.8 in 2015 to 9.5 in 2025 (Chidambaram & Burns, 2025). That is a 40 percent increase in the number of deficiencies within a 10-year period. The biggest issues facing nursing homes listed above such as staffing and nursing shortages, budget cuts, and deficiencies are barriers that must be overcome so that nursing homes can serve their given purpose and provide adequate care for its residents.

Data Attributes & Definitions:

Attribute	Definition	Data Type
Provider_SSA_County_Code	3-digit code assigned by the social security administration to specific counties, used by centers for Medicare & Medicaid Services to identify a beneficiaries location.	Continuous
Ownership_Type	Whether the facility is owned by the government, a private entity, or a non-profit organization.	Categorical
Provider_Type	Whether funding comes from Medicare or Medicaid.	Categorical
QM_Rating	Quality measure rating that measures the average quality of care for the chain.	Discrete
Continuing Care Retirement Community	If the facility allows residents to stay in the same facility as their health needs	Categorical

	change, from independent to assisted living.	
Abuse_Icon	If the nursing home has been cited for abuse or neglect, potentially causing harm to its residents.	Categorical
With a Resident and Family Council	Organized groups within nursing homes that allow residents and their families to discuss care, voice concerns, and influence policies.	Categorical
Nursing_Case_Mix_Index	Measures the average resource intensity of patients in a nursing home influencing Medicare/Medicaid reimbursement rates. A higher index means a more resource intensive patient mix resulting in a higher payment.	Continuous
Standard Health Deficiencies	Federal or State violations found during inspection	Continuous
Complaint Health Deficiencies	Reports of noncompliance from residents, families, or staff.	Continuous

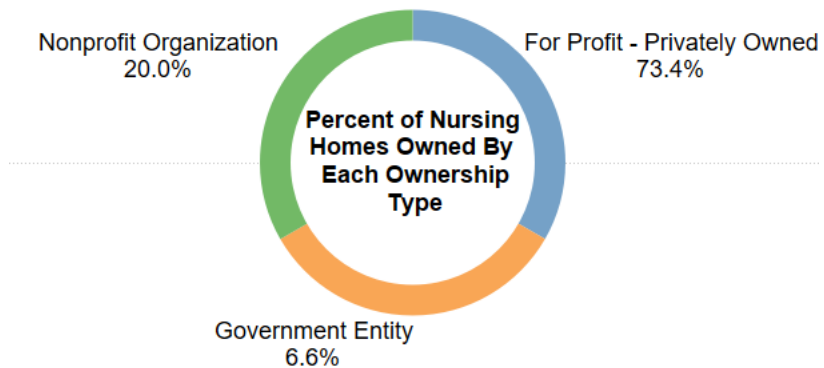
Data Cleaning:

First, set proper capitalization for column values for provider name, provider address, city, legal business name, chain name, and location columns. Then replaced “Y” and “N” with “Yes” and “No”. Next, the ‘Telephone’ and ‘geocoding footnote’ columns were deleted along with all duplicate rows. Lastly, set all values for each date column to ‘yyyy-mm-dd’. All outliers were kept in the dataset for future analysis. After data cleaning, the dataset is left with 14,713 rows and 99 columns.

Exploratory Data Analysis:

Nearly three-quarters (73.4%) of nursing homes in the United States are privately owned and are for profit.

Nursing homes that are privately owned have lower overall ratings and are more likely to be understaffed compared to non-profit nursing homes and government funded nursing homes. Looking at the effect of ownership on ratings, as the rating increases, the



number of privately owned nursing homes decreases (figure 2). This is likely due to them being understaffed while being more utilized compared to government funded nursing homes. As a result, privately owned nursing homes have significantly more health deficiencies, money owed from fines, and lower health inspection scores. When comparing the total average amount of fines owed, privately owned nursing homes average \$38,724 in fines, government funded nursing homes average \$24,309 in fines, and non-profit nursing homes average \$19,240 in fines. Reasons for this are that owners of privately owned nursing homes want to increase and will often take shortcuts at the expense of the health and safety of its residents to increase profit margins.

Effect of Ownership Type on Ratings

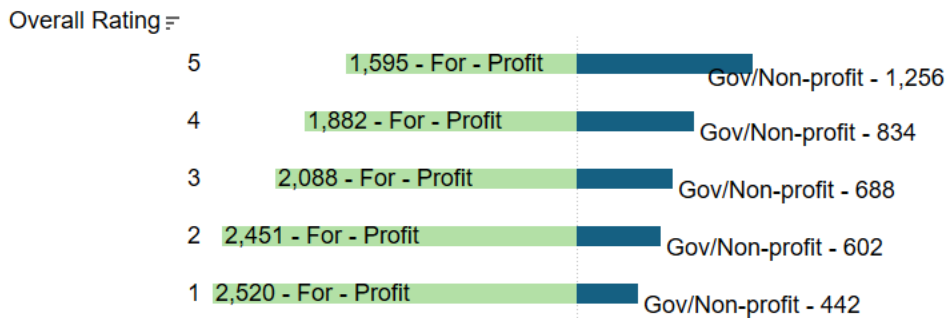
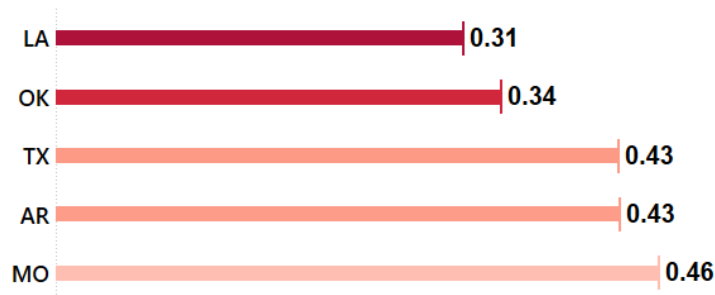


Figure 2

States that have the lowest average registered nursing staff measured by total registered nurse staffing hours per resident per day are Louisiana, Oklahoma, Texas, Arkansas, and Missouri.

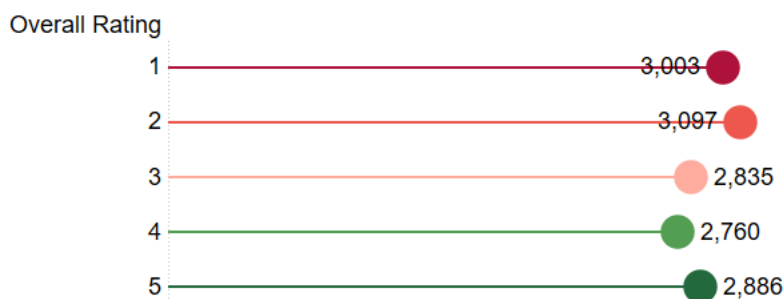
States With The Lowest RN Staffing Hours per Resident per Day



Interestingly, all 5 of these states are located in the southern United States and all border one another. The southern United States generally has higher levels of poverty and lower household incomes, so analysts can conclude that states with higher poverty levels and lower incomes do not have nursing homes that have an adequate number of nurses. Furthermore, 77 percent of nursing homes across these five states are privately owned, which likely impacts the number of nurses. As mentioned above, privately owned nursing homes tend to have a higher ratio of residents to staff since privately owned nursing homes are for profit. Another finding among these states is that 45% of their nursing homes have a health inspection rating that scored a one or a two out of a possible score of five along with total amount owed in fines that are 77% above average. These insights are realistic because less nurses and overall staff means that there are less people available to ensure the cleanliness of the facility and ensure that all residents are provided with adequate care. Interestingly, the average number of deficiencies across these states is slightly below average at 21.6 deficiencies per nursing home. One explanation for this may be that there is less enforcement in some states. Deficiencies are mandated by the federal government in all facilities that use Medicare or Medicaid, so the standards are the same across all states. However, states that have a smaller tax base and a higher percentage of residents who are below the poverty line may have less frequent inspections, and the standards may not be enforced as much.

Another alarming trend is that the number of nursing homes slightly increases as the overall rating decreases, although there are more nursing homes with an overall rating of 5 than an overall rating of three or four. In other words, there is a slightly higher count of nursing homes with lower overall ratings than higher overall ratings.

Ratings of Nursing Homes Across U.S.



Although overall ratings seem to be evenly distributed, this is still an alarming trend because 1 in 5 nursing homes in the United States is given an overall rating of one, and only 1 in 5 nursing homes are given an overall rating of 5 stars. The average rating for all nursing homes included in the dataset is only 2.96. This highlights the problem that residents do not receive adequate care at most nursing homes and it highlights the problem that most nursing homes are understaffed. The average overall rating is negatively affected by the average health inspection rating of 2.8 and only 10.5% of all nursing homes received a rating of 5 for the health inspection score. As mentioned previously, most nursing homes are privately owned and are for profit, and staffing costs are one of their biggest expenses, which is why many nursing homes across the United States receive low ratings.

Findings

After researching the key issues related to nursing home facilities in the United States, the main findings are that the quality of care and low staffing levels are the biggest concerns. Low staffing levels result in facilities having lower health inspection scores and lower overall ratings. Furthermore, if there are not enough nurses and staff to adequately serve its residents, problems such as not receiving prescribed medications, serving expired food, not providing residents with an adequate diet, or inability to maintain a clean facility will arise. It is clear that private equity firms are increasingly purchasing nursing homes as nearly three-quarters of nursing homes in the United States are privately-owned for-profit facilities. Private equity firms' main goals are to increase profit margins when purchasing nursing homes and that often comes at the expense of its residents. Since staff are the biggest expense, reducing the number of staff at nursing homes is one of the best methods to reduce expenses. This has a rippling effect as less staff means there are less people to care for their residents, and less staff to ensure the facilities are clean so illnesses do not spread. These problems are even more prevalent in lower income states as states that have the lowest average staffing hours per resident tend to be in the southeastern U.S. This is also a systemic issue since there are less nurses and medical doctors who are born in states that have high levels of poverty. The southeastern United States does have a lot of rural areas with high levels of poverty which relates to the next finding which compares nursing homes in rural and urban areas.

When comparing urban nursing homes to rural nursing homes, rural nursing homes have better health inspection scores, higher staff ratings, more government funded nursing homes, less health deficiencies, and less fines. Rural areas tend to have less resources and government assistance than urban areas, so this information is interesting when analyzing nursing homes. Explanations for this may be that retirees tend to live in rural areas so there are more nursing homes funded by Medicare in rural areas. Furthermore, private equity firms may want to avoid rural areas since there are lower population densities in rural areas. Although nursing homes in rural areas may have better quality of care compared to urban nursing homes, rural nursing homes face

challenges when it comes to funding since they have a higher count of nursing homes that are funded by the government. Many rural nursing homes have financial difficulties that are putting them at risk for shutting down (Galler et al., 2024). 472 nursing homes across 400 rural counties closed between 2008 and 2018 and the COVID-19 pandemic has exacerbated this trend (Galler et al., 2024). It is apparent that rural nursing homes face different challenges than urban nursing homes since they have better quality of care and health inspection scores but have funding issues and accessibility issues. Therefore, allocating more money from Medicare and Medicaid towards rural nursing homes must be implemented so that residents in rural areas who are no longer able to live independently have sufficient access to care.

Proposed solutions to the issue of staffing may include reducing the requirements needed to become a nurse aide, providing staff with more benefits, and increasing wages. Nurse aides must receive 75 hours of training in a state approved program in order to become a certified nurse aide (Nursing Home Staffing at All-Time Low; Which Solutions Will Help?, 2022). Many states have proposed a temporary nurse aide (TNA) program allowing nurse aides to provide care to residents with considerably less training (Nursing Home Staffing at All-Time Low; Which Solutions Will Help?, 2022). Even though reducing training requirements may help solve problems with nursing staff shortages, this is not the most effective solution because reducing training endangers staff and residents. Furthermore, minimally trained staff are a lot more likely to get injured on the job being exposed to illnesses, and certified nurse aides who are better trained for the job are able to handle challenging aspects of providing care, thereby reducing injuries (Nursing Home Staffing at All-Time Low; Which Solutions Will Help?, 2022). Decreasing the requirements needed to become a certified nurse aide is not a long-term solution so other proposed solutions such as improving working conditions and increasing wages must be discussed, especially in rural nursing homes.

Staff at nursing homes have a high rate of turnover because of limited benefits, insufficient wages, and exposure to illness and infections (Mehboob & Sharma, 2025). Studies have shown that nursing homes that increase wages with benefits and reasonable working hours have less staff turnover (Mehboob & Sharma, 2025). Some states have proposed increasing financial incentives and hazard pay for employees in life sustaining occupations including nursing homes in response to employee burnout and employee turnover (Mehboob & Sharma, 2025). Although, improving benefits and increasing wages may decrease profits for private equity firms who own nursing homes, it is a better long-term solution. Reducing staff turnover will improve the quality of care for its residents, and having more staff may allow nursing homes to serve more residents. More research is needed to assess the impact of the number of staff on the number of residents. The next step is to find solutions so that Medicare and Medicaid programs are able to fund more nursing homes as privately owned nursing homes are proven to have staffing shortages and worse quality care for its residents.

Recommendations For Future Analysis

Future research should include researching the effect of nursing home facility size on ratings and staffing levels, the resource intensity of patients at nursing homes, and comparing the quality of nursing homes across various cities. Researching whether larger nursing home facilities have worse ratings can determine if larger nursing homes are sufficiently staffed for the large amount of residents they house. The size of the facility can be ranked by average number of residents per day and number of certified beds in the facility. Contrarily, analysts can also research if smaller facilities that only house a few residents result in better or worse ratings on average. There may be an optimal size of a nursing home where it is big enough to house a sufficient number of residents and care for them, but not too large that not all its residents could be properly cared for. Although there may be an optimal size of a nursing home, that does not take into consideration the types of residents at each nursing home and the amount of care they require.

Another metric that needs to be further researched is the types of patients at each nursing home. Nursing case mix index measures the average resource intensity of patients in a nursing home. A higher index means a more resource intensive patient mix. This is important information to know because patients that require more resources are often in poor health and need more care. Resources patients may require include needing physical therapists, rides to frequent doctors appointments, and more nurses and staff to care for them. When analyzing nursing homes for a patient who requires more intense care, it is important to know which facilities offer good quality care measured by overall rating, quality measure rating, health inspection rating, number of deficiencies, and number of staff per resident.

Lastly, comparing nursing homes across cities may help analysts see if wealthier cities have better nursing homes than cities with more poverty. Cities that have a higher poverty rate have a lower tax base so there is likely less funding for nursing homes than compared to wealthier cities. Furthermore, nursing homes in wealthier areas may be able to pay their staff with higher wages and attract more educated staff since wealthier cities are often desirable places to live. This is especially true for privately owned nursing homes because they may be more likely to invest in higher income cities to maximize profits. Therefore, areas for future analysis include researching the effect of nursing home size on ratings and quality of care, more research on nursing homes that have higher nursing case mix index, and comparing the quality of nursing homes across different cities.

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