ORIGINAL RESEARCH

# Beyond the Balance Sheet: Investigating the Association Between NHA Turnover and Nursing Home Financial Performance

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**Introduction:** Nursing homes (NHs) serve as a safety net for vulnerable populations such as older adults and people with disabilities. Nursing Home Administrators (NHAs) play a crucial role in managing the daily operations of NHs, including overseeing direct care staff and establishing the facility's strategic direction. Unfortunately, NHs have consistently faced high NHA turnover rates, which have been linked to poor organizational performance. This study aims to investigate the relationship between NHA turnover and financial performance in NHs.

**Methods:** Using an integrated perspective based on the upper echelons theory and the resource-based view of the firm, we investigated the association between NHA turnover and financial peformance using multiple secondary data sources, such as the Care Compare: Skilled Nursing Facility Quality Reporting Program and Brown University's Long Term Care Focus. We conducted a cross-sectional study using a multivariate linear regression model, measuring financial performance using operating margin while NHA turnover represents the number of administrators that left the organization.

**Results:** Our findings indicate that NHs with higher NHA turnover rates have lower operating margins. Specifically, compared to facilities with no turnover, one NHA turnover is associated with a 1.14% decrease in operating margin, and two or more turnovers are associated with a 2.25% decrease.

**Discussion:** This study contributes to the existing literature by demonstrating the financial impact of NHA turnover and provides further evidence of the need for targeted organizational and policy interventions to improve NHA retention.

**Keywords:** nursing homes, administrators, turnover, financial performance

## Introduction

The nursing home industry is an important component of the US healthcare system. According to the National Center for Health Statistics, there are approximately 15,600 nursing homes in the USA, with 1.7 million licensed beds, and 1.3 million residents.[1] Nursing homes in the United States are predominantly privately owned, with 70% operating as for-profit, 23% as not-for-profit, and only 7% falling under government ownership. Nursing homes are funded by Medicaid (state/federal program for long-term care for low-income residents), Medicare (federal program for post-acute care for older adults 65+ and people with disabilities), and private pay (out of pocket). Nursing homes serve vulnerable individuals who are often physically and cognitively challenged, acting as a safety net for older adults and people with disabilities.[2]

Nursing home administrators (NHAs) play a significant role in managing nursing homes. They supervise daily operations, manage direct care staff, and determine the strategic direction of the facility. Their other responsibilities include controlling the budget, ensuring the availability of necessary resources for staff training, and directing performance improvement initiatives.[3] The literature has described NHAs as "the critical variable affecting quality of care".[4]

A substantial body of research has demonstrated the impact of top leadership on organizational performance.[3,5] As such, NHAs can considerably shape the overall performance of the nursing facility.[6,7]

Unfortunately, nursing homes have consistently faced high NHA turnover. The average annual NHA turnover rate has remained consistent at approximately 40% since the 1990s, which is significantly higher than turnover rates for hospital administrators.[8–10] NHAs struggle to balance the competing demands of the growing complexity of residents' needs with organizational efficiencies while operating in an onerous regulatory environment, leading to high levels of job dissatisfaction.[11] Other factors responsible for high NHA turnover rates include low pay, poor staff morale, chronic staff shortages, and constant ethical dilemmas.[12] It is likely that NHA turnover has further increased over the last few years as nursing homes faced the brunt of the COVID-19 pandemic.

High turnover rates have been strongly associated with poor organizational performance in nursing homes. Castle et al[3,13] have shown that NHA turnover can have a wide-ranging negative impact on nursing home quality, including increased levels of catheterization and deficiencies, and poorer resident-level outcomes. More recently, Zheng et al[5] utilized the payroll-based journal (PBJ) data and found that NHA turnover negatively affects nursing home quality. However, the literature has focused almost exclusively on the relationship between NHA turnover and quality of care excluding other salient performance variables.

Despite the critical role of NHAs in shaping nursing home performance, there have been no recent studies examining how NHA turnover influences financial performance. Using a national sample of nursing homes, with data of recent provenance, this study aims to fill this critical gap in the literature. We believe that our findings have important insights for policymakers and other stakeholders invested in the sustainability of this critical part of the US healthcare system.

## Background: Nursing Homes' Current Financial Performance Environment

The nursing home industry has struggled to remain financially solvent due to a variety of reasons such as the growing competition from a slate of alternative providers (home and community-based services), insufficient Medicaid reimbursement rates, declining occupancy rates, high staff turnover, and the ever-shifting regulatory environment.[14–16]

Nursing homes that are financially constrained often experience lower resident quality of care and a higher risk of consolidation and closure, which can have significant consequences for long-term services and supports (LTSS) access, particularly in rural and underserved areas.[2,17–19] A recent study has shown that nursing homes with the lowest profit margins had significantly higher odds of receiving deficiency citations.[20] On the other hand, research suggests that better financial performance is associated with higher quality, particularly after the implementation of public reporting.[21] Quality has long been a concern, and it remains at the forefront of the nursing home policy agenda.

COVID-19 exacted a devastating toll on nursing homes. According to a US government report, two in five Medicare beneficiaries in nursing homes were diagnosed with COVID 19.[22] In February 2022, the US reached the grim milestone of 200,000 fatalities among residents and staff in nursing homes, highlighting the severity of the crisis. In response, nursing homes occupancy rates plunged from 81% in 2019 to 72% in 2022, exacerbating concerns over financial sustainability.[22,23] Or as Bern-Klug and Beaulieu[24] have described it, the pandemic "forced a new psychosocial playbook in nursing homes across the country as fears run high, emotions run hot, and distress runs rampant".

Therefore, as we transition towards a post-pandemic world, it is important to consider nursing home financial viability as a pressing issue. However, addressing poor nursing home financial performance is complex as it requires simultaneously balancing multiple competing interests including minimum staffing mandates, high rates of staff turnover, falling occupancy rates, high liability insurance costs, state Medicaid funding cuts, and the threat of new pandemics that can decimate the demand for institutionalized long-term care.[14,15,25] Despite the evident complexity, it is crucial to recognize individual factors such as NHA turnover, particularly because they can potentially be managed at the facility or organizational level. Indeed, the relationship between NHA turnover and financial performance can be synergistic, as lower turnover can lead to improved financial performance, which can facilitate the possibility of offering higher wages and better benefits. This, in turn, can initiate a virtuous cycle of employee retention and enhanced financial stability.

To summarize, US nursing homes operate within a financially constrained environment, which can adversely affect the quality of care provided to residents and even lead to facility closures. As such, it is important to understand factors that impact nursing home financial performance, including NHA turnover.

## Conceptual Framework

Our conceptual framework is based on tenets from the upper echelons theory (UET) and the resource-based view of the firm (RBV). UET asserts that top leadership has a significant impact on organizational performance as it influences the strategic responses to environmental changes.[26,27] UET rejects the notion that organizations are passive recipients of their environment and suggests that upper management's knowledge, skills, experiences, personalities, and cognitive biases shape the organization's performance. Or to borrow from Hambrick and Mason,[26] the organization reflects its top leadership.

UET has been utilized in the literature as a predictor of organizational performance. Zhang et al[27] have shown that CEO turnover has a negative impact on performance in IT firms. Eckhaus et al[28] have applied the UET framework to investigate the impact of healthcare executive seniority on the likelihood of innovative prevention and diagnosis methods being adopted by the organization. Unplanned executive succession—an unavoidable consequence of high upper management turnover— can have a disruptive effect on an organization's processes and routines, which can negatively affect performance including financial results.

The resource-based view (RBV) of the firm attributes differences in firm performance to variances in the availability of organizational resources and capabilities. Unique and difficult-to-imitate resources provide the basis for sustained competitive advantage.[29] Such resources include human capital resources (leadership and management sustainability),[30] and organizational capital resources (such as human resource management and organizational culture).[31]

Nursing home leadership stability can be considered a resource, as it can provide greater consistency in policy, decision-making procedures, and best practices.[25] A longer-tenured executive acquires embedded knowledge of the organization and has long-established relationships with stakeholders.[32] As such, abrupt and repeated administrator departures can represent a loss of firm-specific knowledge and effectiveness. Therefore, within the firmament of RBV, NHA tenure stability can be considered a valuable resource and can potentially be a source of sustained competitive advantage, potentially translating into higher profitability. Furthermore, there is a learning period when managers start working at a new organization. This can be disruptive to organizational effectiveness as new managers are initially concerned only with understanding their new working environment and learning about people, equipment, and routines at the facility.

Prior studies generally suggest that increased leadership turnover is associated with lower financial performance.[33] Top leadership tenure, on the other hand, may have a positive association with financial performance.[34] In the nursing home literature, leadership stability has been associated with reduced nursing staff turnover,[35] which can lower staffing costs. Furthermore, higher NHA turnover can reduce quality[5,13,36,37] which can increase operational costs and reduce profitability.[38]

Integrating the UET and RBV frameworks, we argue that nursing home performance is a strong reflection of its leadership, and high NHA turnover represents the loss of a valuable and difficult-to-imitate resource. This may adversely affect nursing home performance.

Therefore, we hypothesize: Nursing homes with higher NHA turnover will report lower financial performance.

## Materials and Methods

Our study utilized the following secondary data sets for 2021 and 2022: Center for Medicare and Medicaid Services' (CMS) Cost Report, Brown University's Long Term Care Focus (LTCFocus), Care Compare: Skilled Nursing Facility Quality Reporting Program (SNF QRP) 2021, and the Area Health Resource File (AHRF). The CMS cost report file includes data on nursing home financial performance. LTCFocus data provides nursing home organizational, demographic, quality, and market information. Care Compare contains data on the nurse administrator turnover and staffing ratios. AHRF provides county-level data. We used the Medicare identification numbers to merge the different datasets, except for AHRF that was merged by using county FIPS code. After merging all datasets, there were 8316 nursing home observations. We then deleted observations with missing turnover data (n = 1355), which resulted in a final analytic data file comprising 6950 nursing homes (see Appendix A for data merge steps).

The administrator turnover data was first published by CMS in Care Compare in January 2022, and comprised turnover data for 2021. To address potential reverse causality or endogeneity, we lagged the administrator turnover data by one year (2021), and used financial performance data for 2022, the latest data available. The practice of substituting an explanatory variable with its lagged value to address endogeneity is prevalent across a wide variety of disciplines in economics and finance.[39]

We compared the organizational and market characteristics of the facilities with data on NHA administrator turnover (N = 6950) and those with missing data (N = 1366). Facilities with missing data on NHA administrator turnover were more likely to be not-for-profit and independent, smaller in size, with higher staffing ratios, and located in rural areas (Table 1).

**Table 1** Bivariate Statistics Tests Between Missing and Non- Missing Observations for Administrator Turnover Variable (N = 8316)

| Variable | Facilities with Administrator Turnover Data (N = 6950) | Facilities Missing Administrator Turnover Data (N = 1366) |
|---|---|---|
| Operating Margin (M/SD) | 9.2 (19.16) | 8.09 (20.34)*** |
| **Nursing Home Characteristics** | | |
| Ownership (N/%) <br> For-profit <br> Non-profit | 5235 (75.32) <br> 1715 (24.68) | 939 (68.74)*** <br> 427 (31.26)*** |
| Chain Affiliation (N/%) <br> Independent <br> Affiliate | 2610 (37.55) <br> 4340 (62.45) | 661 (48.39)*** <br> 705 (51.61)*** |
| Medicaid Share (M/SD) | 62.03 (18.86) | 62.0062 (0.2) |
| Medicare Share (M/SD) | 12.92 (10.75) | 13.53 (14.59) |
| Number of Beds (M/S) | 114.85 (60.83) | 99.76 (56.31)*** |
| RN Hours PRD (M/SD) | 0.47 (0.31) | 0.53 (0.61)*** |
| LPN Hours PRD (M/SD) | 0.81 (0.36) | 0.83 (0.49)** |
| CNA Hours PRD (M/SD) | 2.3 (0.69) | 2.42 (1.01)*** |
| Acuity index | 12.25 (1.66) | 12.06 (1.63)*** |
| Quality (star rating) | | |
| 1 | 405 (79.1) | 107 (209) *** |
| 2 | 910 (79.96) | 228 (20.04) *** |
| 3 | 1409 (82.93) | 290 (17.07) *** |
| 4 | 1912 (83.75) | 371 (16.25) *** |
| 5 | 2314 (79.86) | 358 (2014) *** |
| **Environmental Factors (County Level)** | | |
| Percent 65 over (N %) | 17.88 (6.11) | 17.75 (6.00) |
| Poverty Level (N%) | 13.53 (7.45) | 13.72 (7.72) |
| Unemployment Rate (N%) | 3.15 (1.48) | 3.09 (1.53) |
| Medicare Advantage Penetration (N%) | 28.61 (14.81) | 28.47 (15.01) |
| Herfindahl-Hirschman Index (M/SD) | 0.21 (0.24) | 0.22 (0.25) |
| Location (N/%) <br> Urban <br> Rural | 6537 (94.06) <br> 413 (5.94) | 1262 (92.39)** <br> 104 (7.61)** |

**Note**: **(p < 0.01), ***(p < 0.001).
**Abbreviations**: M, mean; SD, standard deviation.

Measures: Appendix B shows the list of all variables with their operationalization and data sources.

Dependent Variable: Profitability is a key metric for measuring a firm's efficiency in generating profits.[40] In our study, we utilize operating margin, a commonly used financial performance measure in the nursing home literature. Operating margin focuses on the core business functions and excludes the influence of non-operating income and expenses such as endowments and interest income.[41] Operating margin is calculated as Net Patient Revenue – Operating Costs)/Net Patient Revenue.

Independent Variable: The main independent variable represents NHA turnover. It reflects the number of administrators that left a facility during the last year. Given the distribution of the turnover data, we formed a categorical variable consisting of 0 = no administrators left; 1 = 1 administrator left; 2 = 2 or more administrators left.

Control Variables: Based upon an extensive literature review, we controlled for facility-level and environmental characteristics of a nursing home that may affect its financial performance.[15,42,43] Facility-level control variables include the following: ownership status (0 = not-for-profit; 1 = for-profit), chain affiliation reflects whether the nursing home is part of a chain (0 = free-standing; 1 = chain affiliated), nursing home payer-mix (percent of Medicare and Medicaid residents), size (number of nursing home beds), staffing ratios for registered nurses (RNs), licensed practical nurses (LPN), and certified nurse assistants (CNAs), quality (nursing home star rating), and resident case mix (acuity) at the facility level that is based on resident mobility and nursing factors, such as proportion of residents who are bedfast, and who require assistance with ambulation or transfers.

We also controlled for the following nursing home environmental characteristics at the county level: percent of the population 65 years and older, poverty level (percent of people under the federal poverty line), unemployment rate (percent of people without a job), Medicare Advantage (MA) (managed care) penetration (percent of Medicare beneficiaries in MA), Herfindahl-Hirschman Index (HHI) as a measure of competition (sum of the squared of the market shares based on inpatient days, with values ranging between 0 and 1 with "1" signifying more monopolistic markets), and location of nursing home (1 = urban, 0 = rural). The urban-rural classification was based on the Rural-Urban Continuum Codes (RUCC), a classification system developed by the U.S Department of Agriculture to categorize geographic areas in the US based on their degree of urbanization and proximity to larger urban centers. Metropolitan, micropolitan, and small towns have been collectively categorized as urban (RUCC codes 1–6). All other nursing homes fall within the rural group (RUCC codes 7–9)

## Analysis

Our unit of analysis was the nursing home. We checked for potential multicollinearity among control variables using variance inflation factors (VIF) from the regression models. We did not find any evidence of multicollinearity among the variables (ie, VIF ≤ 5, r < 0.8). As an additional test for potential multicollinearity, we examined the correlation matrix (Appendix C: correlation coefficients are <0.8 for all variables). To address outliers, particularly in the Medicare cost reports, we used 5 standard deviations from the mean and dropped observations out of this range. We used descriptive statistics to summarize our dependent, independent, and control variables: mean and standard deviation for continuous variables, and frequency and percent for categorical variables. We tested for normality and used a multivariate linear regression model to test our hypothesis. The results of these models are reported as beta coefficients. We utilized state-level fixed effects to account for unobserved interstate differences. Stata 16.1 was used for statistical analysis. Statistical significance was evaluated at a 0.05 or smaller alpha level.

## Results

The descriptive analysis (Table 2) shows that there were no significant differences across the different levels of nursing home administrator's turnover in terms of facility operating margin. Regarding nursing home characteristics, a higher proportion of not-for-profit (32%) and independent (42%) facilities had no administrator turnover, compared to for-profit and chain affiliated facilities. Nursing homes with no administrator turnover broadly reported superior quality, were smaller (110 beds), had a lower proportion of Medicaid residents (61%), and had higher RN and CNA staffing ratios. In terms of environmental factors, nursing homes with no administrator turnover are located in communities with a higher

**Table 2** Descriptive Statistics of Dependent and Independent Variables (N = 6950)

| Variable | No Administrator Left | One Administrator Left | Two or More Administrators Left | P-value |
|---|---|---|---|---|
| Operating Margin (M/SD) | 9.24 (19.61) | 9.16 (19.06) | 8.86 (18.43) | P=0.09 |
| Nursing Home Administrator Turnover (Frequency/Percentage) | 3163 (45.53) | 2122 (30.39) | 1674 (24.09) | P=0.01 |
| **Nursing Home Characteristics** | | | | |
| Star rating (N/%)<br>　1<br>　2<br>　3<br>　4<br>　5 | 160 (39.51)<br>380 (41.76)<br>621 (44.07)<br>877 (45.87)<br>1115 (48.99) | 144 (35.56)<br>296 (32.53)<br>432 (30.66)<br>575 (30.07)<br>655 (28.78) | 101 (24.94)<br>234 (25.71)<br>356 (25.27)<br>460 (24.06)<br>506 (22.23) | P=0.002 |
| Ownership (N/%)<br>　For-profit<br>　Non-profit | 2167 (68.49)<br>997 (31.51) | 1640 (77.65)<br>472 (22.35) | 1428 (85.3)<br>246 (14.7) | P= 0.001 |
| Chain Affiliation (N/%)<br>　Independent<br>　Affiliated | 1330 (42.04)<br>1834 (57.96) | 738 (34.94)<br>1374 (65.06) | 542 (32.38)<br>1132 (67.62) | P= 0.001 |
| Medicaid Share (M/SD) | 60.7 (18.9) | 63.16 (18.37) | 63.09 (19.25) | P= 0.001 |
| Medicare Share (M/SD) | 12.85 (10.98) | 12.74 (10.63) | 13.28 (10.48) | P=0.066 |
| Number of Beds (M/SD) | 110.61 (60.13) | 114.04 (58.78) | 123.89 (63.7) | P= 0.002 |
| Occupancy Rate (M/SD) | 75.28 (13.03) | 73.48 (13.92) | 72.6 (13.16) | P=0.001 |
| RN Hours Per Resident Day (M/SD) | 0.48 (0.33) | 0.45 (0.28) | 0.47 (0.32) | P= 0.001 |
| LPN Hours Per Resident Day (M/SD) | 0.81 (0.35) | 0.8 (0.31) | 0.82 (0.41) | P= 0.02 |
| CNA Hours Per Resident Day (M/SD) | 2.35 (0.8) | 2.26 (0.55) | 2.25 (0.64) | P= 0.001 |
| Acuity Index (M/SD) | 12.07 (1.64) | 11.98 (1.8) | 12.16 (1.36) | P=0.04 |
| **Environmental Factors (County Level)** | | | | |
| Percent 65 over (%) (M/SD) | 17.98 (6.13) | 17.86 (5.95) | 17.69 (6.24) | P=0.093 |
| Poverty Level (%) (M/SD) | 13.66 (7.5) | 13.44 (7.38) | 13.36 (7.42) | P=0.72 |
| Unemployment Rate (%) (M/SD) | 3.31 (1.45) | 3.68 (1.56) | 3.97 (1.67) | P= 0.01 |
| Medicare Advantage Penetration (%) (M/SD) | 28.32 (15.08) | 28.74 (14.94) | 29 (14.1) | P=0.006 |
| Herfindahl-Hirschman Index (M/SD) | 0.23 (0.26) | 0.21 (0.230) | 0.18 (023) | P= 0.001 |
| Location (N/%)<br>　Urban<br>　Rural | 2941 (92.95)<br>223 (7.05) | 1982 (93.84)<br>130 (6.s16) | 1614 (96.42)<br>60 (3.58) | P= 0.001 |

65+ population (18%), lower unemployment rate (3.3%), lower Medicare Advantage penetration (28%, and lower competition (HHI = 0.23), and more were likely to be in rural communities.

The results of the multivariate linear regression are presented in Table 3. Nursing home administrator turnover is found to have a negative association with operating margin. Specifically, nursing homes with one administrator turnover

**Table 3** Regression Analysis Between Administrator Turnover and Operating Margin (N = 6950)

| Variables | Operating Margin (Beta Coefficient) |
|---|---|
| **Independent Variable** | |
| Administrator Turnover (Ref.= No turnover) | |
| If one administrator left | −1.14 * (0.74) |
| If two or more administrators left | −2.25** (0.81) |
| **Nursing Home Characteristics** | |
| Star rating (Ref.= 1) | |
| 2 | 1.45 (1.53) |
| 3 | 1.26 (1.42) |
| 4 | 2.89* (1.4) |
| 5 | 2.54* (1.4) |
| Ownership (Ref. For-Profit) | −9.89*** (0.8) |
| Chain Affiliation (Ref. Independent) | 4.42*** (0.67) |
| Medicaid Share | 0.08*** (0.02) |
| Medicare Share | 0.31*** (0.04) |
| Number of Beds | 0.004 (0.003) |
| Occupancy Rate | 0.33*** (0.02) |
| RN Hours PRD | 4.15** (1.28) |
| LPN Hours PRD | 1.46 (1.14) |
| CNA Hours PRD | −2.35*** (0.62) |
| Acuity Index | 0.17 (0.2) |
| **Environmental Factors (County Level)** | |
| Percent 65 over | −0.06 (0.05) |
| Poverty Level (%) | −0.06 (0.05) |
| Unemployment Rate (%) | −0.3 (0.27) |
| Medicare Advantage Penetration (%) | 0.06** (0.02) |
| Herfindahl-Hirschman Index | −0.32 (1.48) |
| Location (Ref. Urban) | 1.37 (1.4) |

**Note**: *($p < 0.05$), **($p < 0.01$), and ***($p < 0.001$).
**Abbreviation**: SE, Standard errors.

have a 1.14% decrease in operating margin compared to nursing homes without any turnover. Similarly, nursing homes with two or more administrator turnovers have a 2.25% lower operating margin compared to those with no administrator turnover.

Among nursing home characteristics, a higher star rating (4 or 5 stars) was associated with significantly higher operating margins compared to a 1-star rating ($p < 0.05$). Among variables related to ownership, for-profit status and chain affiliation are both associated with higher operating margins (p-value<0.001). The Medicare payer mix was also

positively associated with operating margin (p < 0.001). Among staffing variables, higher RN hours PRD were associated with significantly higher operating margin (p < 0.01), while higher CNA hours PRD were associated with significantly lower operating margin (p < 0.001). With respect to the environmental factors, we found that higher MA penetration was associated with higher operating margin (p < 0.01)

## Discussion

Based on tenets from UET and RBV, we hypothesized a negative association between NHA turnover and financial performance. Our results support our hypothesis. Our findings are consistent with other studies that have reported a negative association between NHA turnover and nursing home performance in terms of quality, thereby affirming the role and importance of NHAs.[3] For instance, Castle and Lin[13] have shown that high levels of top management turnover are associated with poorer quality on measures such as pressure sores, catheterization, and urinary tract infections (UTI). Utilizing the payroll-based journal data, Zheng et al[5] have shown that higher staff turnover is consistently associated with lower quality of care.

NHAs play an important role in managing day-to-day facility operations and in setting the strategic direction of the organization. Their role may be particularly critical in instances of major unanticipated disruptions, such as the COVID-19 pandemic, as the continuity of management ensures that disaster and contingency plans are in place and updated regularly. Frequent leadership turnover can inhibit long-term planning processes as it takes time for new administrators to familiarize themselves with the organization and to initiate strategic change. Nursing homes with higher turnover may struggle to manage environmental and regulatory complexities, resulting in poorer overall performance, including negative financial outcomes.

There are other organizational mechanisms by which administrator churn may affect nursing home financial performance. NHA turnover has been associated with higher nurse staffing turnover,[35] leading to increased operating costs. Additionally, NHA turnover is associated with lower quality of care.[5,13] Research suggests that nursing homes with lower quality of care report higher operating costs and poorer financial performance[19,38,44,45] In a recent study on US nursing homes, Weech-Maldonado et al have shown that financial performance (operating margin) was lower in facilities that reported higher use of catheters, lower pressure ulcer prevention, and hospitalizations.[19]

One intriguing finding from our study is the positive association between quality and financial performance. It appears that nursing homes that performed better on quality (star rating) exhibit improved operating margin. This supports the assertion previously made by Weech-Maldonado et al,[19] who have advocated a business case for quality. Quality improvement assumes particular significance in the contemporary healthcare landscape, characterized by stringent reimbursement and a pronounced emphasis on Value-Based Purchasing (VBP).[21] Thus, our findings suggest that nursing homes should prioritize quality improvement not only as a regulatory imperative but also as a potential financial strategy for achieving long-term sustainability.

## Operational/Managerial Implications

NHAs serve in one of the most consequential leadership positions in the healthcare industry, and significantly influence nursing home outcomes. NHAs navigate an uncertain environment that includes regulatory complexities, potential penalties for administrative misconduct, uncertain revenue streams, staffing shortages, and exposure to unanticipated pandemics such as COVID-19.[46]

The constant job stressors lead to disenchantment and high levels of job dissatisfaction. It is no surprise that the nursing home industry has long struggled to hire and retain administrators.[47] A shortage of qualified and experienced NHAs is likely especially as many administrators exit the industry following the post-COVID-19 pandemic burnout. As demand for LTSS continues to grow with the aging of the US population, the challenge of attracting and retaining healthcare managers will only be more imperative.

The nursing home industry is aware of these challenges. Some facilities have adopted strategies such as increased wages, facilitating a better work-life balance, and the provision of healthcare benefits to attract and retain NHA talent.[48] Recognizing the positive association between reduced NHA turnover and financial performance, it becomes apparent that nursing homes have the opportunity to initiate a virtuous cycle of improved retention, financial stability, and the overall quality of care provided to residents.

While the belated recognition of administrators' poor monetary compensation is certainly welcome, it may not be enough. In her study on California Civil Services, Kim[49] reports that the wages California paid relative to its competitors had little impact on voluntary turnover rates. In a recent study conducted in Iowa nursing homes, Sharma and Xu[50] found a limited impact of wages on staff turnover rates; they concluded that"focusing on higher wages alone may not lead to lower turnover of all types of nursing staff in nursing homes". [51] It is crucial to consider approaches beyond wage augmentation including allowing administrators greater autonomy in resource allocation and policy development. We also believe that adopting strategies such as raising educational standards and implementing appropriate reward and recognition systems could help reduce administrator turnover.

Overall, successful recruitment and retention of administrators requires a multi-faceted approach that includes competitive compensation, professional development opportunities, a positive work environment, clear career paths, diversity and inclusion, and a clear mission and vision. It requires a seismic shift in organizational culture with an acknowledgement of the pivotal role of NHAs in managing nursing homes. Our study findings identifying the association between NHA turnover and financial performance will hopefully stimulate these important conversations among nursing home management.

## Policy Implications

The Biden administration has proposed new policies for nursing homes including regulations establishing minimum nurse staffing requirements. It reiterates previous attempts to improve nursing home quality, where policy attention has been focused primarily on nursing shortages and turnover.[52,53] This has led to an array of programs to enhance recruitment and retention of nursing staff. However, nursing homes are still faced with an acute nursing scarcity, with nearly 28% of facilities reporting at least one staffing shortage. Research has established the importance of NHAs in limiting the turnover of nursing staff; "turnover begets turnover.[35]"

Therefore, there is a need for greater governmental and policy attention to NHA recruitment and retention. The American Health Care Association has called for increased financial support including enhanced Medicaid reimbursement rates to address the staffing shortage in nursing homes.[54] While the exhortations of an industry group need not be taken at face value, it is critical that the issue of NHAs forms a separate and significant part of nursing home policy agenda. Nursing homes face a conundrum: NHAs may be an essential component towards improved financial performance, but facilities already operate in a financially delicate environment. Despite their best intentions, it may be impossible for nursing homes to financially package NHAs as an attractive career option. It presents a classic chicken and egg impasse that fortifies the case for considered government interventions.

## International Implications

The world is aging, and the number of people over the age of 60 years will rise to 2 billion by 2050.[54] This demographic trend is no longer restricted to advanced countries, and it will increase the demand for LTSS globally. As societies age, the burden of chronic diseases is also expected to rise.[55] The COVID-19 pandemic has emphasized the challenges faced by LTSS providers in addressing growing demand while still ensuring the health and safety of their staff and residents. It has also emphasized that we live in a global village and policy challenges and their responses can no longer be localized.

As governments worldwide prepare to address the increasing demand for LTSS, our findings may have international applications. Nursing homes in other countries are also likely to face staffing challenges, including shortages of trained and experienced NHAs. Therefore, it is important for governments to proactively address these impending obstacles to delivering high-quality care. It requires prioritizing the establishment of innovative models of institutionalized LTSS and sustainable reimbursement mechanisms.

## Limitations

Despite the importance of our findings, we do acknowledge that there are limitations associated with this study. First, inherent to the nature of secondary data, it was not collected to address the specific research question and may not have all variables needed to test our hypothesis. For instance, the variables related to organizational behavior, including human resource practices or leadership characteristics, are not readily available for analysis. Using secondary data also imposes other limitations such as

having missing values and their retrospective nature. For instance, our analysis suggests that facilities with missing data tended to be smaller, not-for-profit, independently operated, and located in rural areas. The potential impact of these disparities on the study's findings and their generalizability remains an area for future research. While examining nursing homes at the national level increases the generalizability of findings, it limits the ability to account for state-level differences in regulations and other environmental factors. However, we attempted to address this limitation by incorporating state-level fixed effects in our model. Future research should include longitudinal data to capture the impact of administrator's tenure and type of departure (voluntary or involuntary). Our findings may be reinforced by conducting qualitative studies focused on understanding the specific reasons for administrator turnover. Nursing homes could then conceivably design organizational policies as well programs to reduce NHA attrition.

## Conclusions

NHAs are instrumental to nursing home performance. Previous studies have demonstrated that high rates of administrator turnover can adversely affect the quality of care in nursing homes. Our study extends this relationship to financial performance and emphasizes the urgent need for organizational and policy interventions to address NHA retention. Collectively, the findings of this study underscore the importance of reducing NHA turnover to improve nursing home performance, particularly in terms of financial outcomes.

## Data Sharing Statement

Publicly available datasets were analyzed in this study. This data can be found here: https://www.cms.gov/.

## Ethics Statement

Prior studies of this type have been reviewed by the Texas State University Research Integrity and Compliance (RIC) office. According to the provisions in 45 CFR § 46.102 pertaining to "human subject" research, the RIC has determined that studies of this type exclusively involve the examination of data originally collected from the public domain and curated by Definitive Healthcare is anonymous and publicly available. Therefore, the RIC has concluded research of this type does not use human subjects and is not regulated by the provisions in 45 CFR § 46.102 and therefore an IRB review of the study is not required.

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## Disclosure

The authors declare no conflicts of interest in this work.

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