How Firms Respond to Changes in Competitors' Quality Ratings: Evidence from Nursing Homes*

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This paper studies how firms respond to changes in the ratings of their competitors. We examine how a focal nursing home's start rating (i.e their performance rating) changes after a new competitor is rated. We find that a newly rated entrant leads to an increase in the average nursing home's star rating. This is particularly true when a focal nursing home is for-profit, urban, small, or when its rating is lower than that of the newly rated entrant. These results suggest that firm ratings can spur competition in firms.

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1 Introduction

The process of rating firms across various dimensions of performance is ubiquitous across industries and serves two main purposes. First, ratings can alleviate the information asymmetry between consumers and firms that is prevalent in particularly opaque markets (Akerlof 1970). Second, ratings are also thought to be useful to encourage and discipline firm behavior. Within this latter domain, a substantial amount of work has attended to whether firms respond to being rated. However, less work has examined whether firms are responsive to and inspired by changes in ratings of their competitors. Extending the perspective from a firm's rating to its competitors ratings is important, especially as rating systems continue to proliferate and potentially create new competitive dynamics.

In this paper we hypothesize that firms will be responsive to changes in their competitor's star ratings. The logic underlying our hypothesis is that when firm's competitors are doing well, the focal firm will need to improve as means to remain strategically competitive to retain their market share. To examine our hypothesis, we look at nursing homes, which are rated by the Center for Medicare and Medicaid Serves, at least annually. Our identification strategy relies upon the somewhat exogenous entry of new nursing homes and uses difference-in-difference methods to understand how a focal firm responds to the first rating a of a new competitor. We find that following the first rating of an entrant, focal nursing homes experience an increase in their star ratings 5 quarters later. Subsequent heterogeneity analyses highlight that this response is driven by nursing homes that are smaller, rather those that are classified as medium and large. Ultimately, our research aims to contribute to the rich literature on nursing home ratings as well the literature on ratings and competitive dynamics.

2 Ratings and Quality Disclosure

The process of rating firms across various dimensions of performance serves two main purposes. Ratings can alleviate the information asymmetry between consumers and firms that is prevalent in particularly opaque markets (Akerlof 1970). This notion has inspired a rich body of research examining how quality disclosure shifts consumer preferences, often towards higher quality products and services, across industries including, but not limited to, restaurants (Jin and Leslie 2003, Dai et al. 2018), health care (Kaye et al. 2024, Chartock 2025, Brown et al. 2023, Jin and Sorensen 2006, Pope 2009), education (Sauder and Espeland 2009), and financial services (Beaver et al. 2006).

Ratings are also thought to be useful to encourage and discipline firm behavior (Dranove and Jin 2010). Under this framework, other research has focused on understanding whether firms are responsive to their own ratings. Much of this work is concentrated within the literature on corporate social responsibility with the proliferation of different environmental, social, and governance (ESG) ratings (Chatterji and Toffel 2010, Sharkey and Bromley 2015). For example, Chatterji and Toffel (2010) finds that firms initially receiving poor environmental ratings, were more likely to reduce their toxic emissions in future rating cycles.

Firms may be differently motivated to improve their own ratings. For example, firms may be open to improving their own rating if it confers legitimacy (Espeland and Sauder 2007). Moreover, firms may be driven by a ratings influence on financial performance. In this vein, research suggests that improving ESG ratings reduces systematic risk, which improves firm values (Benlemlih et al. 2018). In the context of hospitals, Pope (2009) finds that hospitals that were able to improve their rankings in the US News and World Report were able to attract significantly more patients.

Even with the lure of legitimacy or financial performance, there may be other factors coloring a firm's response to their own ratings, as evidenced by research suggesting that managers have different motivations for responding to their ratings (Clementino and Perkins 2021). Research suggests that firms' responses may be moderated by the degree of regulation

in an industry (Chatterji and Toffel 2010), with greater attention to one's own rating when in a more scrutinized industry. Moreover, research suggests that firm's are more likely to respond to their ratings when the cost of changing their behavior is relatively low (Chatterji and Toffel 2010).

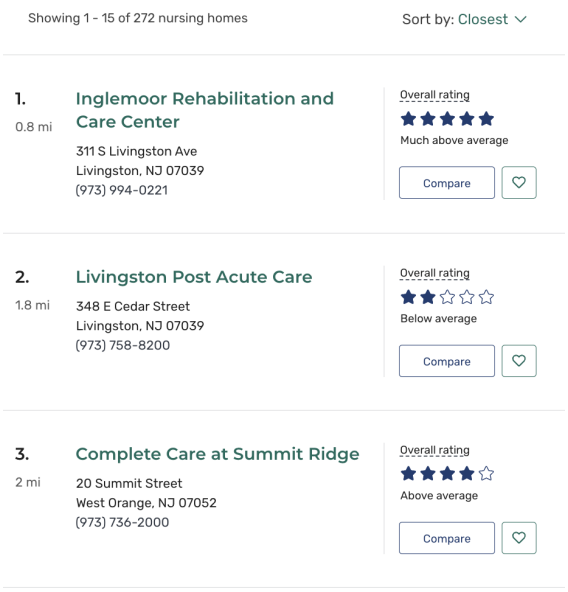
3 Empirical Context

To answer our research question, we leverage nursing homes as a our empirical context. Broadly, nursing homes are organizations that serve patients who do not need to be in hospitals, but who may also be challenged to care for themselves at home. For example, nursing home residents may include individuals whose complex medical needs require advanced management or individuals with advanced dementia. There are approximately 15,600 nursing homes in the United States, serving 1.3 million individuals (Harris-Kojetin et al. 2016) and employing 1.5 million individuals (U.S. Bureau of Labor Statistics 2026). Thus, nursing homes are not just important for residents and their families during challenging periods but also constitute great economic importance.

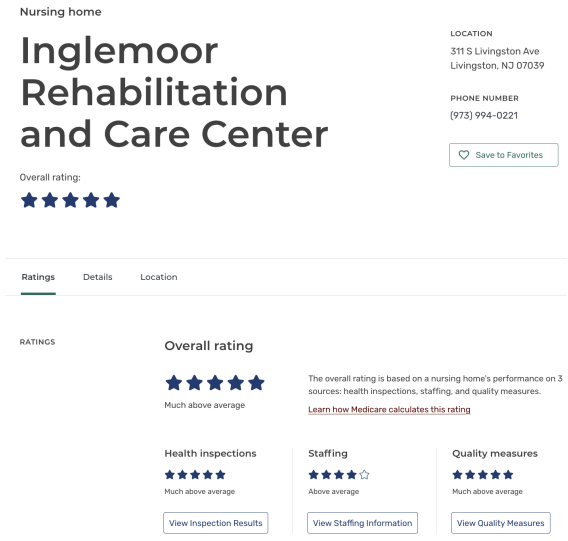
In 2002, Centers for Medicaid and Medicare Services (CMS) introduced Nursing Home Compare – a web based report card containing ten quality based metrics for prospective nursing home resident and their loved ones to consider (Konetzka et al. 2021). Then, in 2008, CMS simplified their information offerings by introducing the five star composite rating for nursing homes which distilled information related to health inspections, quality, and staffing. In addition to the overall rating, CMS also published the staffing and quality-specific ratings. Figure 1 show how this information is portrayed on the Nursing Home Compare website. Specifically Figure 1a shows an example list of nursing homes located within a particular zipcode. Notably, in the list view, individuals are privy to the overall star rating of each nursing home. Figure 1b shows the expanded view, where an individual can find the health inspection, staffing, and quality rating of each nursing home.

Figure 1: Snapshot of the Nursing Home Compare Website

(a) Example List of Nursing Homes



(b) Expanded Single Nursing Home



The Nursing Home Compare data has been extensively used in the the literature to understand both consumer and firm responses to nursing home ratings (Konetzka et al. 2021). Early research leveraged the introduction of publicly available nursing home ratings via Nursing Home Compare as a natural experiment to understand potential consumer responses. Following the introduction of this data, research found that the occupancy of highly rated nursing homes increased slightly (Stevenson 2006) and that 12% of family members of nursing home residents at the time reported using this publicly available information to identify a nursing home facility (Castle 2009a,b). In subsequent years, with longer data panels and causal methodologies, research found that increases in some components of the quality scores led to significant market share changes for nursing homes (Werner et al. 2012). Specifically, there were fewer residents treated in one star nursing homes and more residents treated in five star nursing homes (Werner et al. 2016, Perraillon et al. 2019b).

From the perspective of a firm response, there has generally been an upward trend in within-facility ratings over time (Han et al. 2018, Konetzka et al. 2015, Werner et al. 2016,

for Medicare et al. 2014), implying that nursing homes are responsive to being rated. In fact, administrators of nursing homes in the bottom 20th percentile of scores reported being more likely to take action to improve scores relative to administrators of nursing homes that scored better (Zinn et al. 2008). Moreover, nursing homes that were more likely to improve their scores were ones that inhabited more competitive areas (Castle et al. 2007, 2008, Grabowski and Town 2011, Kim 2016a, Zinn et al. 2008, 2010), existed in areas with lower occupancy (Castle et al. 2007, 2008, Kim 2016b), or belonged to chains that had managerial support to monitor and respond to ratings (Perraillon et al. 2019a). Consistent with other literature in health care, firm responses were not contingent upon differences in ownership (i.e. non-profit/for-profit status) (Lu 2016, Zinn et al. 2010, 2005).

Despite the practical relevance and economic significance of nursing homes, this context is especially advantageous for understanding firms' responses to competitors' ratings for a few reasons. First, CMS is the sole aggregator and distributor of star ratings for all nursing homes in the United States[1]. In other words, the methodology behind each nursing home's rating is consistent and comparable. This contrasts from other types of ratings such as ESG ratings or restaurant ratings, that vary across different data aggregators, and thus suffer from lack of convergence (Chatterji et al. 2016, Berg et al. 2022). Second, a unique feature of the nursing home context allows us to negate price competition as most patients in nursing homes are covered by Medicare, and thus not considering the price of their stays (Konetzka et al. 2021). As a result, nursing homes are unable to change their prices as means to attract consumers, and instead can only compete on quality.

[1]Nursing homes may not receive a rating if they are too new, have too few patients, experienced a force majeure (e.g. environmental disaster), or if there were any data entry errors.

4 Methods

4.1 Data

Our inquiry relies upon two sources of data. First, we used the Nursing Home Compare Data from the CMS from 2015-2023 (Centers for Medicare & Medicaid Services 2026a). This dataset contains different parameters measuring the quality of all certified nursing homes as well as relevant nursing home characteristics. Data for each nursing home is provided monthly, although nursing home ratings are only updated quarterly. Second, we used data obtained from LTCFocus[2], which aggregates additional organizational attributes of nursing homes across years (LTCFocus 2025).

4.2 Identifying Potential Competitors

Understanding how a nursing home responds to a change in the rating of a competitor requires the identification of each nursing home's market. Many researchers have considered a nursing home's market to be at the county or hospital referral regional level (Hackmann 2019, Zinn 1994, Zhao 2016, Castle 2005, Gupta et al. 2024). However, as Gandhi et al. (2026) notes: "*nursing home markets are much more localized that that.*" In fact, nursing home choice is known to be elastic to demand (Gandhi 2020) with the average resident traveling 11 kilometers (approximately 7 miles) from their home Hackmann (2019). Thus, to acknowledge the fact that nursing home selection is localized, we follow other work and instead use distance-based measures to define the market (Grabowski and Town 2011, Gandhi et al. 2026, Brunt and Bowblis 2026).

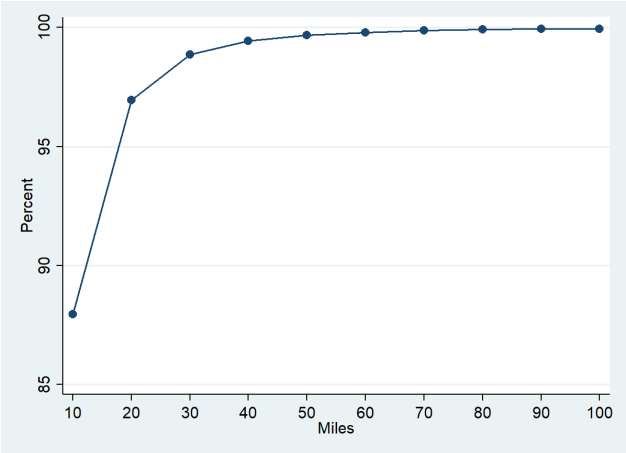
In using a distance-based measure to define the market, we effectively drew circles with varying radii around each nursing home and considered any nursing home within that circle to be a competitor. We first geocoded the addresses in the Nursing Home Compare Data

[2]LTCFocus is sponsored by the National Institute on Aging (1P01AG027296) through a cooperative agreement with the Brown University School of Public Health.

in order to obtain the latitude and longitude of each nursing home using the *opencagegeo* package in Stata (Zeigermann 2016). We then considered any two nursing homes within a state to *possibly* be competitors, which allowed us to construct a dataset of all nursing home competitor dyads within each state. We calculated the distance between the the nursing homes in each dyad using the previously capture latitude and longitude using a distance formula (Picard 2019). Using these distances, we were able to identify "real" competitors based on a varying distance threshold. Figure 2 displays the percentage of nursing homes in our sample that had a competitor within each specified distance threshold.

Our main analysis relies on the 25 mile radius given it's precedent in other work (Brunt and Bowblis 2026) and because the majority of nursing homes in our sample had at least one competitor within 25 miles . Our market definition does not consider nursing homes on either side of a state border to be competitors. Despite proximal distance of such border straddling nursing homes, navigating administrative procedures to relocate to a nursing home out of state is an arduous process, which leads us to believe that nursing homes are less attentive to their out-of-state counterparts.

Figure 2: Percentage of Nursing Homes with at Least One Competitor Within Different Distance Thresholds



4.3 Star Rating Measures

As previously mentioned, the Nursing Home Compare website display an overall star rating for each nursing home, ranging from 1-5 with 1 representing the lowest quality and 5 representing the highest quality. This aggregate measure distills information from three core areas: health inspections, quality, and staffing. Each of these core areas is similarly rated on a scale from 1-5. The health inspection rating captures results from annual health inspections. The staffing rating captures information about staffing levels and turnover within the nursing home. The quality rating captures information from clinical data pertaining to resident outcomes. Fewer inspection violations, more stable staffing, and better functioning nursing home residents would cumulatively lead to a higher overall rating. The mapping from each of the subcomponents to the overall rating is nonlinear and described in Table 1.

Table 1: Five-Star Overall Rating Calculation Steps

Step	Description
1	Start with the health inspection rating.
2	Add one star if the staffing rating is 4 or 5 stars and also greater than the health inspection rating. Subtract one star if the staffing rating is 1 star. The rating cannot go above 5 stars or lower than 1 star.
3	Add one star if the quality measure rating is 5 stars; subtract one star if the quality measure rating is 1 star. The rating cannot go above 5 stars or lower than 1 star.
4	If the health inspection rating is 1 star, then the overall quality rating cannot be upgraded by more than one star based on the staffing and quality measure ratings.

4.4 Estimating the Average Response to a Change in Competitors' Ratings

An ideal experiment would be one in which the treated group consisted of nursing homes that had a competitor experience a change in a star rating and the control group consisted

of nursing homes whose competitors did not experience any change. However, an analysis in this form suffers from three main challenges. First, most nursing homes in our sample had more than one competitor, which would necessitate assumptions about whether all competitors are equally relevant or not, and what dimensions make them more or less salient. Second, competitors could experience changes in their star ratings in varying directions and magnitudes. For example, Nursing Home A may have a competitor Nursing Home B and Nursing Home C. Nursing Home B may have experienced a one star increase whereas Nursing Home C could have a one star decrease, making the average change zero. Third, if a nursing home had many competitors, it is possible that changes in a competitor's star rating could change each quarter, making it hard to identify if and when a nursing home was actually responding to a change in the star rating of their competitor.

In order to mitigate these challenges, we looked to other studies that exploit the entry of new firms (Arcidiacono et al. 2020) as an exogenous shock. However, given that there is a lag between a nursing home's opening and its rating, we considered our treatment event to be the first rating of a new competitor entrant. This allowed us to estimate the change in a nursing home's rating in response to their new competitor's first rating. We excluded any nursing homes that had more than two competitors with new ratings in the same time period. We then employed difference-in-difference methodologies, considering treated units to be focal nursing homes that experienced the rating of a new entrant in a particular year-quarter. Since treatment timing varied for each nursing home, we employed estimators from (Callaway and Sant'Anna 2021). Nursing home entry likely not exogenous. Given this potential selection effect, our analysis compared treated nursing homes to those that that would eventually be treated in subsequent quarters, instead of ones that were never treated. Our regressions controlled for a nursing home's total number of beds, for-profit status, hospital-affiliation, chain-affiliation, occupancy, and urban/rural status. For each nursing home's competitor subset, we controlled for the average of all of these variables. We included state and quarter fixed effects and robust standard errors were clustered at the level

of the nursing home to minimize intra-class correlation (White 1980).

5 Results

5.1 Descriptive Statistics

We first provide some information on the distribution of star ratings in nursing homes temporally and cross-sectionally. Figure 3 shows a downward trend in the average star ratings for all nursing homes from 2015 to 2023. The sharp decline in 2019 reflects a change in how the star ratings were computed (Centers for Medicare & Medicaid Services 2019). Figure 4 shows that the distribution of star ratings in 2023, which highlights that the distribution of ratings in one year is approximately uniform. Whereas the distribution in 2023 suggests that more nursing homes have lower ratings as compared to higher ones, the opposite is true in previous years.

Figure 3: Average Star Ratings 2015-2023

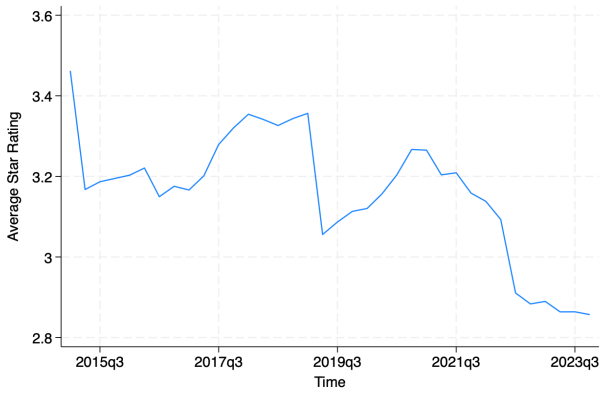
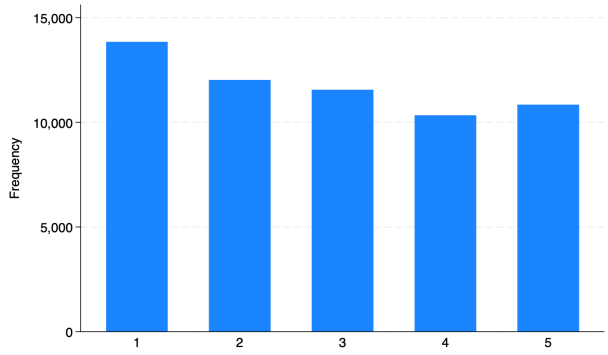


Table 2 describes nursing homes in our data who experience a newly rated entrant and thus are in our analytical sample, and compares them to nursing homes that did not experience any entrant in our time horizon. Overall, both samples are similar, despite a few key differences. Specifically, nursing homes that experience a newly rated entrant are larger and score higher in their overall rating and their quality rating. Importantly, nursing homes

Figure 4: Distribution of Star Ratings in 2023



with newly rated entrants have significantly more competitors within 25 miles as compared to those without.

Table 3 replicates the summary statistics for the newly rated entrants. The bulk of newly rated entrants are medium (51-100 meds), 58% are affiliated with a chain, 70% are for-profit, have a smaller share of residents on Medicaid, and have less occupancy compared to the focal nursing homes. Figure 5 shows the number of newly rated nursing homes that open each quarter in our sample. Newly rated nursing homes often have higher ratings than the average focal nursing home in the sample (Table 2, Table 3).

Figure 5: Nursing Home Openings 2015-2023, by Quarter

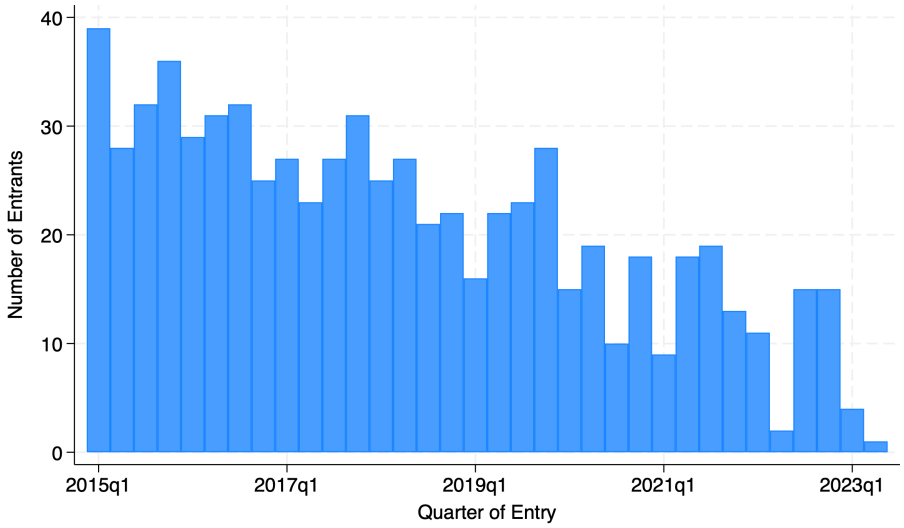


Table 2: Description of Focal Nursing Homes

	All Nursing Homes	NH with Entrant	NH without Entrant
N			
Unique Nursing Homes	15,979	9,882	6,097
Nursing Home Quarters	532,791	333,412	199,379
States Represented	49	49	49
A. Focal NH characteristics			
Total Beds, %			
Small (≤50 beds)	14.56	12.49	17.93
Medium (51-100 beds)	38.44	35.87	42.61
Large (100+ beds)	46.99	51.64	39.46
Affiliated with Chain, %	57.26 (49.47)	58.70 (49.24)	54.93 (49.76)
For Profit, %	69.86 (45.89)	71.99 (44.91)	66.41 (47.23)
Hospital-based, %	4.93 (21.64)	3.47 (18.31)	7.28 (25.99)
Residents on Medicaid, %	57.51 (24.59)	55.86 (25.80)	60.19 (22.22)
Patient Acuity	12.09 (1.69)	12.20 (1.74)	11.90 (1.61)
Bed Occupancy, %	81.11 (15.92)	82.05 (14.85)	79.58 (17.40)
Census Region, n(%)			
West	2,654 (16.61)	1,382 (13.99)	1,272 (20.86)
Midwest	5,360 (33.54)	3,336 (33.76)	2,024 (33.20)
Northeast	5,588 (34.97)	3,405 (34.46)	2,183 (35.80)
South	2,377 (14.88)	1,759 (17.80)	618 (10.14)
B. Focal Quality Performance, mean(sd)			
Overall Star Rating	3.47 (1.32)	3.51 (1.32)	3.40 (1.32)
Health Inspection Rating	2.83 (1.28)	2.85 (1.28)	2.81 (1.29)
Quality Metrics Rating	4.18 (0.96)	4.28 (0.91)	4.02 (1.03)
Staffing Rating	3.32 (1.17)	3.31 (1.18)	3.33 (1.16)
C. Competitors Quality Performance, mean(sd)			
Overall Star Rating	3.45 (0.56)	3.49 (0.47)	3.39 (0.68)
Health Inspection Rating	2.81 (0.53)	2.82 (0.44)	2.80 (0.64)
Quality Metrics Rating	4.18 (0.47)	4.28 (0.36)	4.03 (0.57)
Staffing Rating	3.30 (0.62)	3.30 (0.56)	3.31 (0.71)
D. Market Characteristics, mean(sd)			
Number of Competitors within 25 miles	54.17 (70.98)	76.30 (79.35)	18.31 (30.34)
HHI	0.08 (0.10)	0.04 (0.06)	0.14 (0.12)
Average Distance to Competitors (mi)	14.04 (3.93)	13.79 (3.50)	14.45 (4.51)
Distance to Entrant (mi)	13.83 (7.10)	13.83 (7.10)	()

5.2 Main Analysis

Our main analysis aimed to estimate the effect of having a newly rated entrant on the overall star rating of the focal nursing home. As suggested by Figure 6, we find no immediate change in overall star ratings following entry. However, the focal nursing home's star ratings begin to increase five quarters after the new entrant is rated and continues to persist. Nursing home ratings are known to not be dynamically updated. Rather, a present day star rating reflects previous month's data (Centers for Medicare & Medicaid Services 2026b). Thus, any immediate changes would not reflect the effect of a newly rated nursing home and support the legitimacy of our findings.

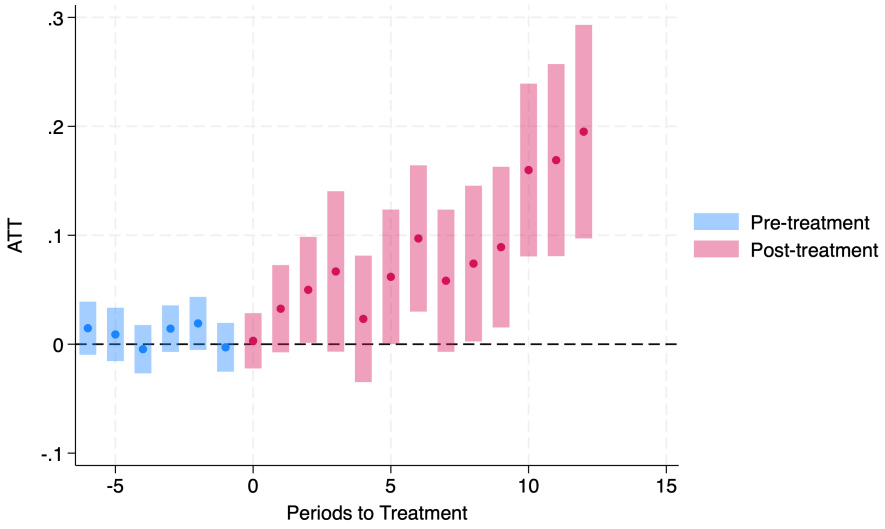
Table 3: Description of Newly Rated Entrants

	All Entrants
N	
Unique Nursing Homes	578
Nursing Home Quarters	9,540
States Represented	46
A. Entrant NH characteristics	
Total Beds, %	
Small (≤50 beds)	29.93
Medium (51-100 beds)	45.50
Large (100+ beds)	24.57
Affiliated with Chain, %	58.30 (49.35)
For Profit, %	70.24 (45.76)
Hospital-based, %	4.33 (20.36)
Residents on Medicaid, %	34.03 (31.70)
Patient Acuity	11.59 (2.95)
Bed Occupancy, %	66.57 (28.12)
Census Region, n(%)	
West	35 (6.06)
Midwest	236 (40.83)
Northeast	205 (35.47)
South	102 (17.65)
B. Entrant Quality Performance, mean(sd)	
Overall Star Rating	3.76 (1.32)
Health Inspection Rating	3.50 (1.30)
Quality Metrics Rating	3.60 (1.28)
Staffing Rating	3.37 (1.43)

We then consider the subcomponents of the overall rating in Figure 7. Figure 7a shows the effect on the health inspection rating, which looks very similar to that of the overall rating. This is consistent with the fact that the health inspection rating constitutes the base of the overall star rating (Table 1). Figure 7b does not show a significant change in the focal nursing home's star rating following the rating of a new entrant. Quality data incorporates information about nursing home residents' health and clinical data and are not reflected in publicly reported star ratings for six months or are somewhat more challenging to budge. In addition, these data are not reflected in publicly reported star ratings for at least six

months, introducing data lags that mean that any responses by focal nursing homes takes longer for changes to be reflected in star ratings. Figure 7c shows that there is a decrease in the focal nursing home's staffing rating following the rating of a new entrant, possibly reflecting changes in staffing from the focal nursing home to the newly rated entrant.

Figure 6: Effect of a Newly Rated Entrant on the Focal Nursing Home's Overall Rating

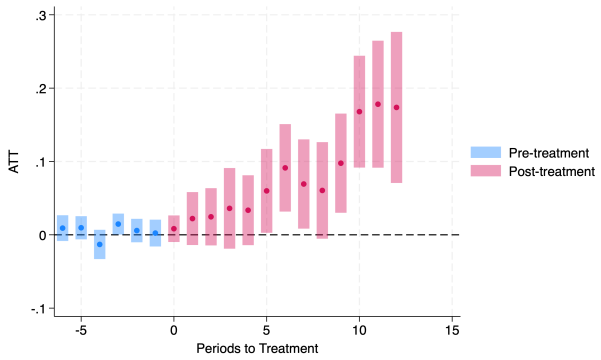


5.3 Heterogeneity Analyses

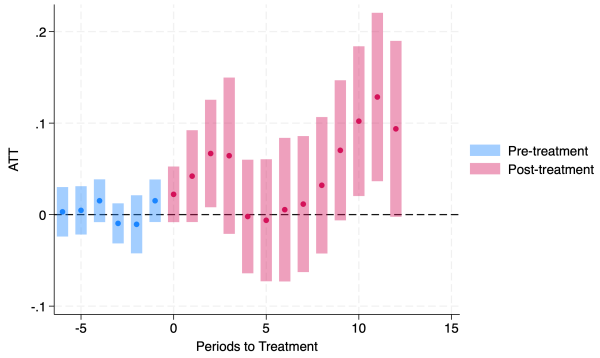
We explored different potential sources of heterogeneity in our main estimates. First, we explored the role of ownership, which has been a large focus in the study of health care organizations. We may expect to see differences across nonprofit and for profit nursing homes, as both ownership structures may lead to differences in what they prioritize. At the same time, much of the literature on health care organizations suggests that while there are different legal implications of ownership status, this has not lead to a divergence in behavior or strategy (David 2009). Figure 8 supports the former by illustrating that following the rating of a new entrant, nonprofit nursing homes did not experience a significant change in their ratings (Figure 8a), whereas for-profit nursing experienced a significant increase in their rating (Figure 8b). Aside from ownership patterns coloring motivations, it is also

Figure 7: Effect of a Newly Rated Entrant on the Focal Nursing Home's Subcomponents

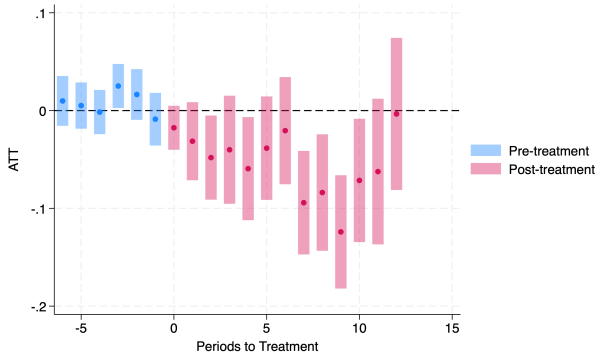
(a) Health Inspection



(b) Quality



(c) Staffing

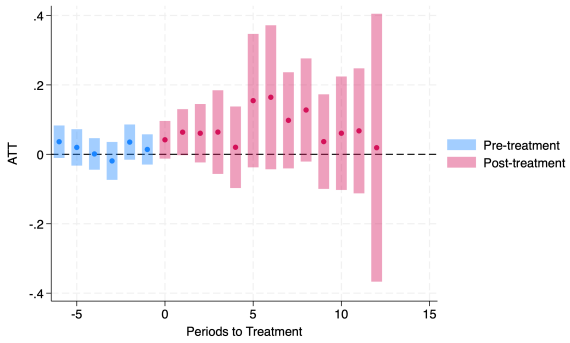


possible that the heightened increase of private equity in the nursing home industry may offer for profit nursing homes certain resources to monitor their competitive landscape more effectively.

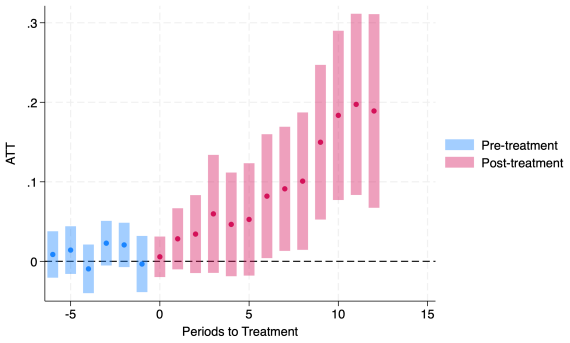
Second, we examined differences in our main effect by urban and rural status. We might expect to see our main effect driven by nursing homes in urban environments because more competitive environments may exacerbate the importance of competing on quality as means to attract potential residents with many options. However, in contrast, we might expect to see our main effect driven by nursing homes in rural environments, where the supply of residents may be limited and thus any competition is threatening. Figure 9 indicates that our main effect is indeed driven by nursing homes in urban environments (Figure 9a), but

Figure 8: Effect of Newly Rated Entrant on a Focal Nursing Home's Rating, Stratified by Ownership

(a) Nonprofit



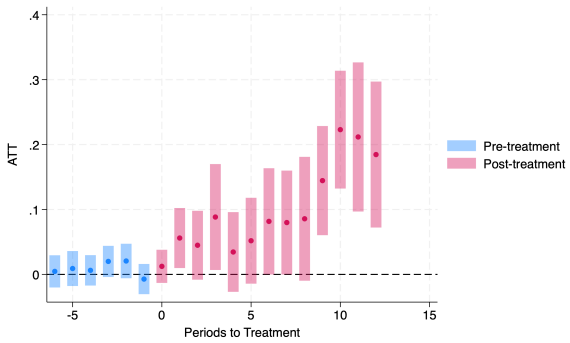
(b) For Profit



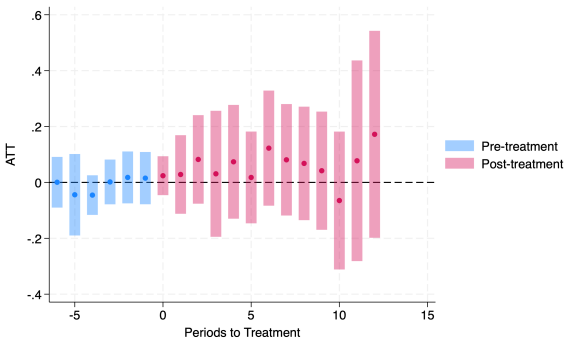
not rural ones (Figure 9b).

Figure 9: Effect of Newly Rated Entrant on a Focal Nursing Home's Rating, Stratified by Urban/Rural Status

(a) Urban



(b) Rural

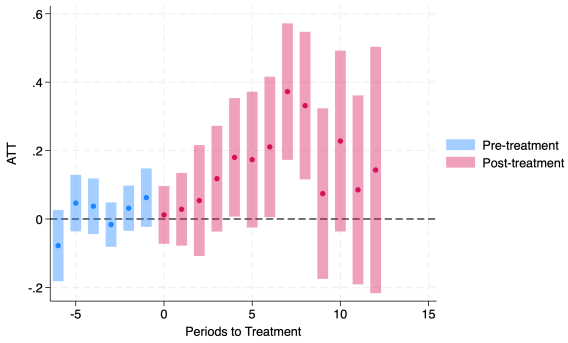


Third, we explore facility size using bed count, which plausibly captures both the salience of entrant competition and the resources available for investing in quality improvements. Figure 10 presents the estimated effects separately for small, medium, and large nursing homes, respectively. The results reveal that our main effects appear to be driven by smaller focal nursing homes. Whereas focal nursing homes skew towards being classified as medium or large (Table 2), entrants are most likely to be medium sized and then are split between being small and large (Table 3).

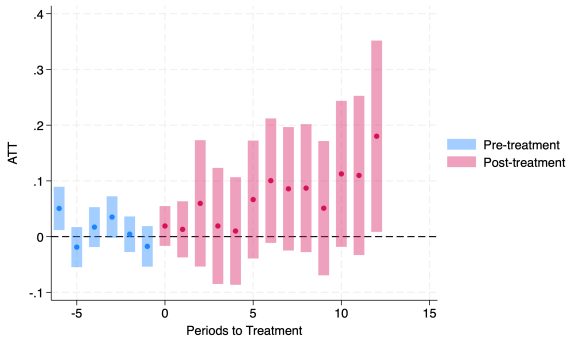
Whereas our previous three sets of heterogeneity analyses examined heterogeneity in the

Figure 10: Effect of Newly Rated Entrant on a Focal Nursing Home's Rating, Stratified by Focal Nursing Home Size

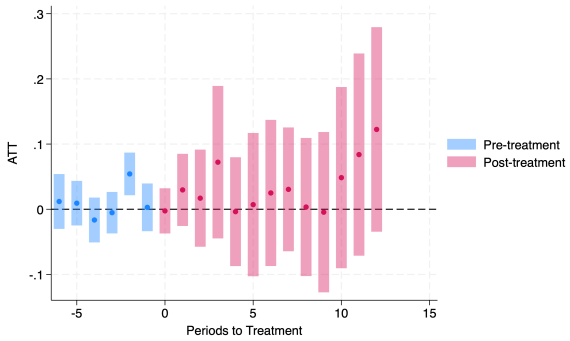
(a) Small (50 or fewer beds)



(b) Medium (51-100 beds)



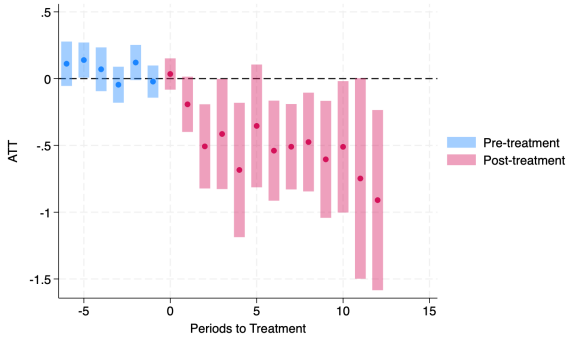
(c) Large (100+ beds)



focal nursing home, they do not account for relative differences between the focal and newly rated nursing home. Thus, we examine the relative difference between the rating of the focal and newly rated entrant by examining subsamples in which the focal nursing home was rated higher than the newly entrant and vice versa. Figure 11 shows that when the focal rating is higher than that of the newly rated entrant, the focal nursing home experiences a decline in their rating (Figure 11a). In contrast, when the focal rating is lower than that of the newly rated entrant, the focal firm experiences a sharp increase in their rating (Figure 11b). One explanation for this finding is that focal nursing homes with higher ratings at the time of a newly rated entrant may have "more to lose," before jeopardizing their position in their market. In contrast, focal nursing homes rated lower than the entrant at the time of rating, may need to "catch up" in effort to remain a competitive alternative.

Figure 11: Effect of Newly Rated Entrant on a Focal Nursing Home's Rating, Stratified by Relative Rating Difference Between Focal and Entrant

(a) Focal Rating Higher than Entrant Rating



(b) Focal Rating Lower than Entrant Rating

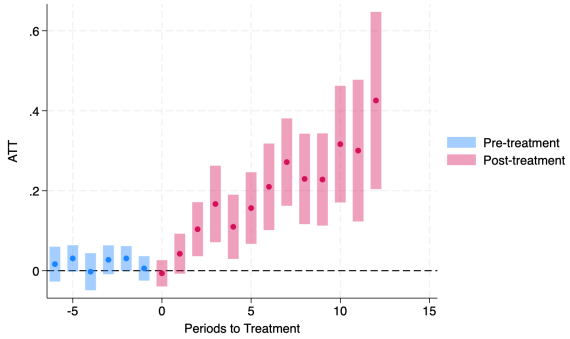
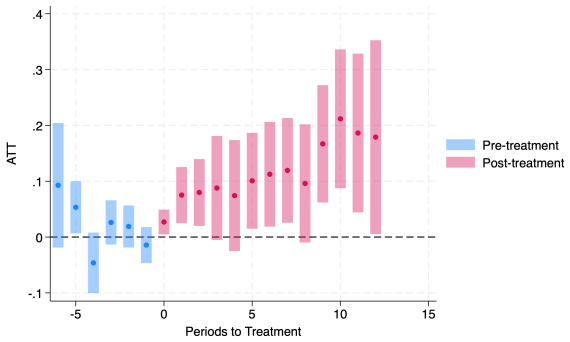


Figure 12: Effect of a Newly Rated Entrant on the Focal Nursing Home's Overall Rating, Excluding Nursing Homes that Experienced a Change in Their Star Rating a Quarter Prior to Entry



5.4 Robustness

Research suggests that nursing homes may be responsive to lower ratings (Zinn et al. 2008). This may bias our results if nursing homes are not responding to the rating of their new entrants, and instead are responding to changes in their own rating. To address this concern, we excluded any nursing homes that experienced a change in their star rating a quarter prior to the rating of their new entrant. Figure 12 displays estimates that are similar and more precise than those in our main analysis.

6 Discussion

This paper leverages the staggered timing of market entry to estimate the effect of competitor entry on firm quality ratings in the nursing home industry. To our knowledge, this is the first paper to study the effect of quality ratings from the perspective of how organizations respond to the quality ratings of their competitors, thereby contributing to a broader understanding of how firms strategically respond to competitive pressures in regulated quality environments.

Our findings suggest that increased competition, as measured by competitor entry, leads to improvements in nursing home star ratings. These gains are observed in both overall quality star ratings and inspection star ratings, indicating that competitive pressures may incentivize firms to improve multiple dimensions of performance. In addition, heterogeneity analyzes reveal that smaller, urban, and for-profit nursing homes exhibit a stronger response to competitor entry. This suggests that resource constraints, market positioning, or competitive vulnerability may increase the salience of competitor performance and amplify responsiveness. Furthermore, when we focus on the relative difference in star ratings between the focal and entrant nursing homes, we find that a focal nursing home's star rating declines when the newly rated nursing home has a lower star rating. In contrast, a focal nursing home's star rating improves when the newly rated nursing home has a higher star rating.

Our results demonstrate a positive effect of competition on ratings, driven by the health inspection component of the star ratings. Inspection star ratings are derived from both standard inspections and complaint-triggered inspections, while quality star ratings are composed of measures for both short-stay and long-stay residents. Furthermore, these measures rely on different data sources, including claims data and Minimum Data Set (MDS) assessments. Despite these insights, the mechanisms through which nursing homes achieve improved star ratings remain unclear.

Several avenues for future research emerge from this study. First, future work could investigate whether improvements in star ratings translate into meaningful improvements

in patient outcomes, thereby assessing the real welfare implications of competition-driven quality changes. Second, further exploration of the decline in staffing star ratings could reveal insights into how entrant can impact the local labor market.

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