

Technical Report: Change of Ownership in Minnesota Nursing Facilities

Evaluation of the Nursing Facility Payment Reform Legislation 2021 Report to the Legislature

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Executive Summary

Purpose

The Value Based Reimbursement (VBR) legislation, effective January 1st 2016, coincided with a substantial uptick in change of ownership (CHOW) of nursing facilities in the state, often from out of state buyers and/or buyers with complex ownership structures. The VBR appears to have made Minnesota facilities more attractive financially. Beyond their financial motivation, are these buyers committed to upholding and/or improving quality of care for Minnesota's nursing facility residents? The purpose of our report is to examine the relationship between the CHOW event and changes in nursing facility quality and/or expenditures.

Methods

We obtained data for this analysis from Medicaid Nursing Facility Cost Reports and Minnesota Nursing Facility Quality Report Card. The data covered the 2013-2019 cost years, with partially unaudited cost data in 2019. Information about change of ownership came from internal records from the Minnesota Department of Human Services (DHS). We compared cost and quality metrics between CHOW and non-CHOW facilities using line plots and other analytical techniques. We plotted trends in cost and quality between groups of facilities and for individual CHOW facilities. We also compared cost and quality metrics for CHOW facilities in year prior to and year after the CHOW event.

Results

- CHOW facilities performed worse than facilities with consistent ownership on every quality related metric (quality scores and subcomponents, staffing, retention, community discharge, hospitalization).
- There was a discernable downwards trend in quality for facilities after their CHOW event. Moreover, the gap in quality scores between CHOW and non-CHOW facilities widened after a CHOW event.
- CHOW facilities reduced spending on laundry and dental benefits, while increasing spending more slowly than other facilities on medical and scholarship benefits. They increased administrative management fees at a higher rate than other facilities.

Introduction

The Value Based Reimbursement (VBR) legislation, effective January 1st 2016, coincided with a substantial uptick in change of ownership (CHOW) of nursing facilities in the state, often from out of state buyers and/or buyers with complex ownership structures. The VBR appears to have made Minnesota facilities more attractive financially. Beyond their financial motivation, are these buyers committed to upholding and/or improving quality of care for Minnesota's nursing facility residents? The purpose of our report is to examine the relationship between the CHOW event and changes in nursing facility quality and/or expenditures.

An evaluation team from the University of Minnesota and Purdue University has been conducting an ongoing external evaluation of VBR through a contract from the Minnesota Department of Human Services. In January 2019 the evaluation team prepared a major report, Evaluation of the NF Payment Reform Legislation: Background for the 2019 Report to the Legislature. The team just completed another major report: Evaluation of the NF Payment Reform Legislation: 2020 Report to the Legislature. This Technical Report on change of ownership is part of that major report.

Methods

We obtained data for this analysis from Medicaid Nursing Facility Cost Reports and Minnesota Nursing Facility Quality Report Card. The data covered the 2013-2019 cost years, with partially unaudited cost data in 2019. Information about change of ownership came from internal records from the Minnesota Department of Human Services (DHS). We compared cost and quality metrics between CHOW and non-CHOW facilities using line plots and other analytical techniques. We plotted trends in cost and quality between groups of facilities and for individual CHOW facilities. We also compared cost and quality metrics for CHOW facilities in year prior to and year after the CHOW event.

When comparing the Change in Ownership (CHOW) group to the Same Owner group, there are two basic mechanisms that can lead to differences between the groups over time. The first is that facilities within the group are improving/declining in a given metric at a different rate than the other group over time (eg. if the CHOW group is performing more poorly over time than the same owner group, the gap in mean scores for a metric will grow over time). The second mechanism that can create a gap between the two groups is if there is a selection bias in which sort of facilities go through a CHOW (eg. if poorer performing facilities are more likely to be sold, than there will be a gap between the groups over time as poorer performing facilities are added into the CHOW pool). We present two plots for each metric, one with a constant CHOW group (all facilities with a CHOW between 2014-2019 are in the CHOW group for all years) and a variable CHOW group (facilities enter on or after their sale cost year). Change due to facilities should be most prevalent in the constant CHOW group plot and can be calculated as a difference-in-difference metric ($[2019 \text{ Same group mean} - 2013 \text{ Same group mean}] - [2019 \text{ CHOW group mean} - 2013 \text{ CHOW group mean}]$). Change due to selection can be seen by comparing the Variable CHOW group plot to the constant CHOW group plot. How much of the gap between groups is due to facilities in the constant CHOW group who have not yet been sold can be calculated for a given year as

$$\frac{(2014 \text{ CHOW mean}_{\text{variable}} - 2014 \text{ CHOW mean}_{\text{constant}}) - (2014 \text{ Same mean}_{\text{variable}} - 2014 \text{ Same mean}_{\text{constant}})}{(2014 \text{ Same mean}_{\text{constant}} - 2014 \text{ CHOW mean}_{\text{constant}})}$$

Findings

The findings from the analysis focus on group comparisons and patterns of change in quality and cost from 2014-2019. The ownership change group (CHOW) includes 78 facilities with an ownership change and continuous operation during the period, and not attached to a hospital (2014 cost year – 5 facilities, 2015 – 7, 2016 – 13, 2017 – 26, 2018 – 19, 2019-8). The remainder of facilities experienced no ownership change (same owner group) during the period.

Care-Related Costs

Figure 1 shows trends in costs from 2014-2019. The same owner group increased care related costs per standardized day by \$5.45 more than the CHOW group over the period (difference-in-difference metric). Most of this increase occurred in the 2019 cost year. The percentage of the gap in the constant group plot due to inclusion of future CHOWs (getting at the idea of selection) by year is: 2014 – 168%, 2015 – 32%, 2016 – 30%, 2017 – 16%, 2018 – 4% (and 2019 – 0%). In 2014, the percentage being greater than 100% indicates that the gap was reversed by the inclusion of future CHOWs (the black line is vertically higher in the variable CHOW group plot on the right), meaning that future CHOWs had much lower costs than the 2014 cohort of CHOWs. By 2017, future CHOWs had similar cost structure to the CHOW cohort (as future CHOWs made up 16% or less of the gap).

Figure 1: Care Related Cost Trajectories by Ownership Change Status

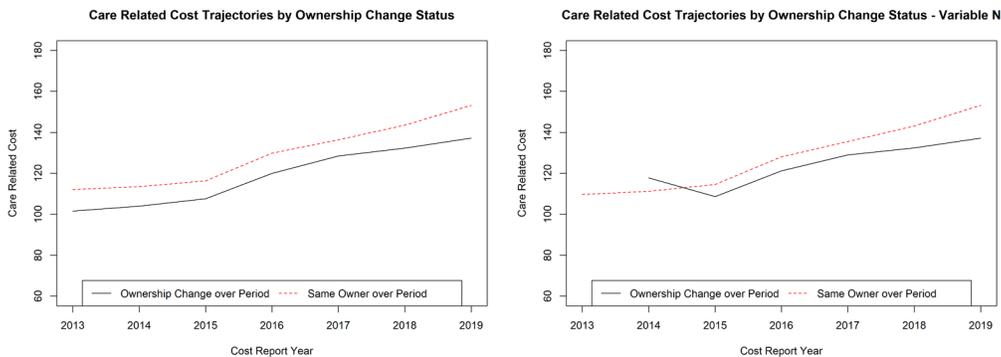
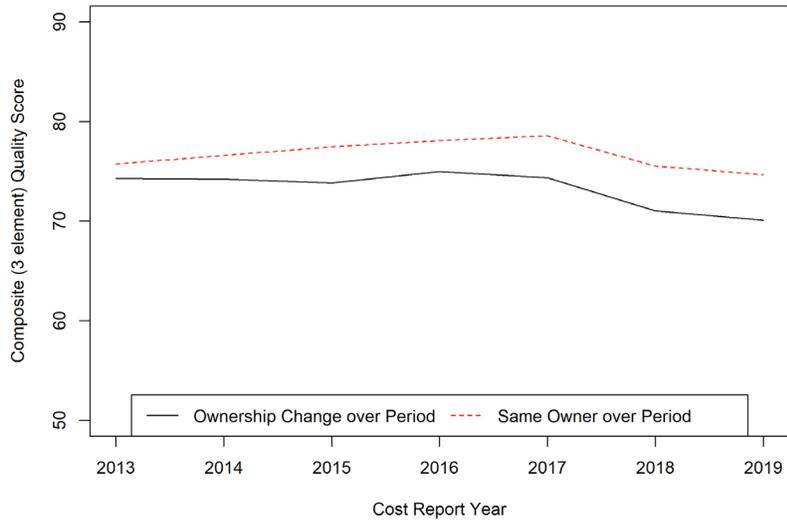


Figure 2: Quality Score Trajectories by Ownership Change Status (Constant Groups)



Quality Scores

Despite the fairly close tracking of mean costs, the two groups began with similar mean quality scores and had a growing gap over time (diff-in-diff metric – the same owner group had a 3.11 quality point increase over the time period relative to the CHOW group). The annual percentage of the gap between the two groups due to including future CHOWs in the CHOW group: 2014 – 12%, 2015 – 53%, 2016 – (-11%), 2017 – 20%, 2018 – 22%. In 2016, future CHOWs (those sold in 2017-2019) were actually performing slightly better than the CHOW group (sold 2014-2016) leading to a reduction in the gap in the constant CHOW group plot (Figure 2).

Figure 3 Quality Score Trajectories by Ownership Change Status (Cumulative CHOW Group)

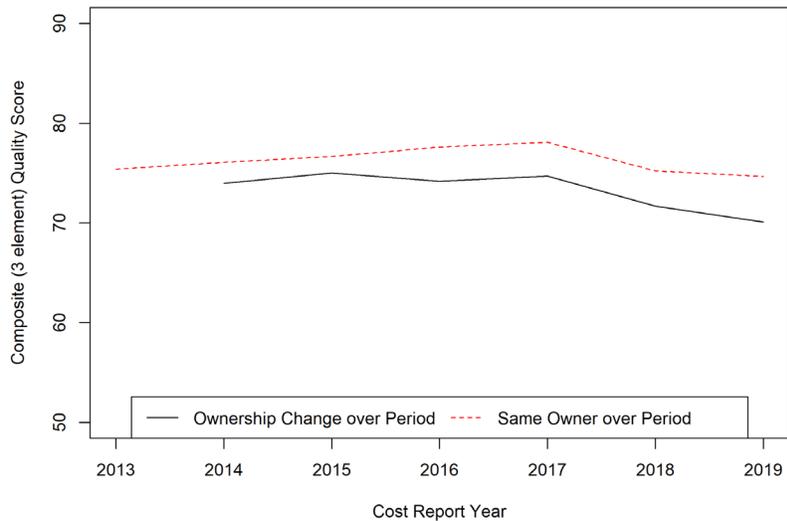
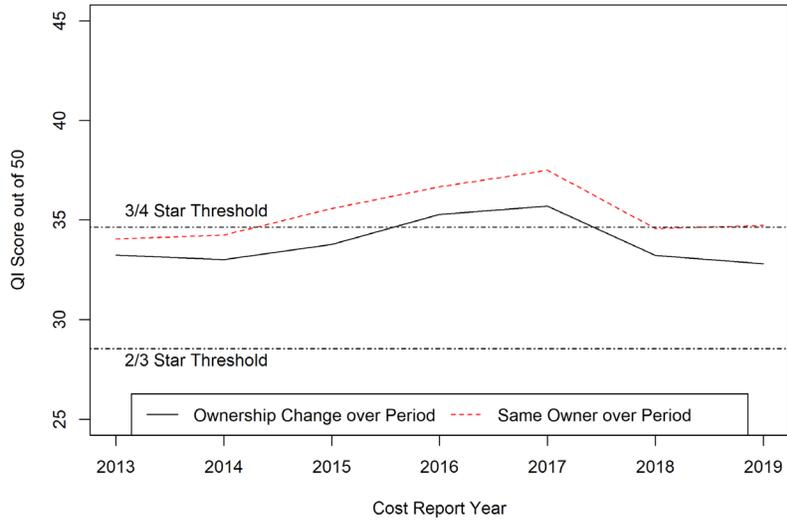


Figure 4: Quality Indicator Score Trajectories by Ownership Change Status (Constant Groups)



Quality Indicators

The Quality Indicator score tracks fairly closely between the two groups, with a 1.1 point increase in the same owner group relative to the CHOW group (diff-in-diff metric Figure 4). Most of this change appears to occur by 2015. The amount of annual gap due to including future CHOWs (Figure 5) is quite volatile: 2014- (-11%), 2015 - 82%, 2016 - (-36%), 2017 - 16%, 2018 - 44%. In 2016, future CHOWs (those sold in 2017-2019) had relatively higher QI scores than those who were already in the CHOW group (those sold between 2014-2016).

Figure 5: Quality Indicator Score Trajectories by Ownership Change Status (Cumulative CHOW Group)

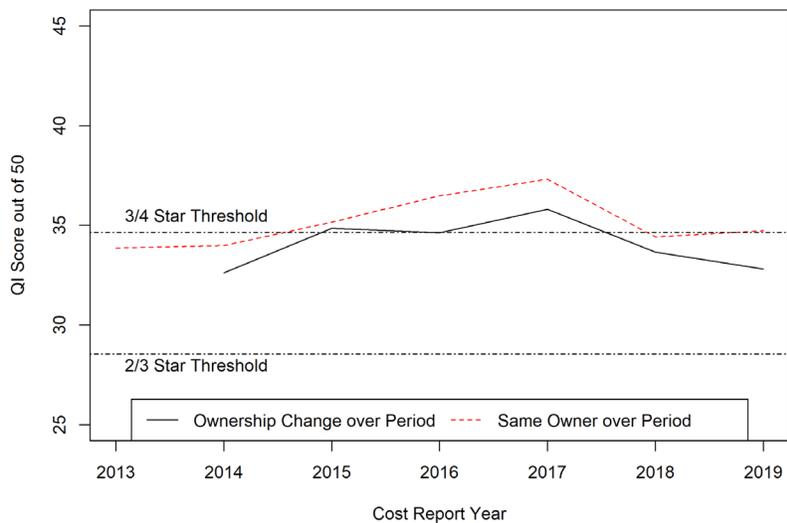
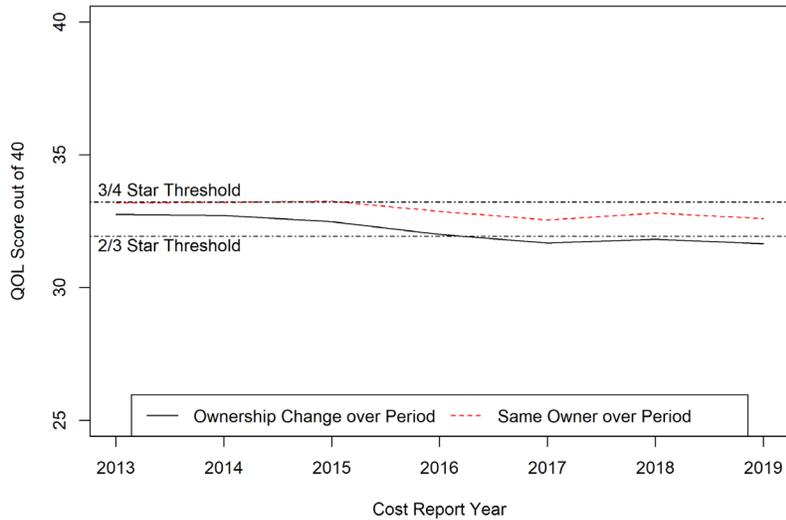


Figure 6: Quality of Life Score Trajectories by Ownership Change Status (Constant Groups)



Quality of Life

Quality of life scores are down slightly over the period, but slightly less so for the same owner group (0.5 points higher relative to the CHOW group diff-in-diff metric Figure 6). The impact on the gap between the groups from including future CHOWs is concentrated in the early years: 2014 – 144%, 2015 - 69%, 2016 - 5%, 2017 – 5%, 2018 – 5%. There was essentially no average quality of life difference between the groups in 2014, and very little in 2015 (CHOWs occurring 2016-2019 had relatively worse QOL scores in 2014 and 2015 compared to CHOWs occurring in 2014-2015).

Figure 7: Quality of Life Score Trajectories by Ownership Change Status (Cumulative CHOW Group)

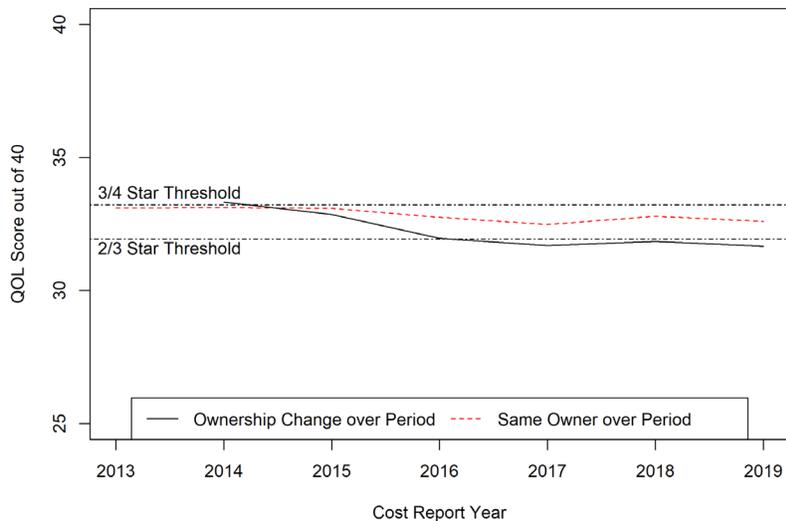
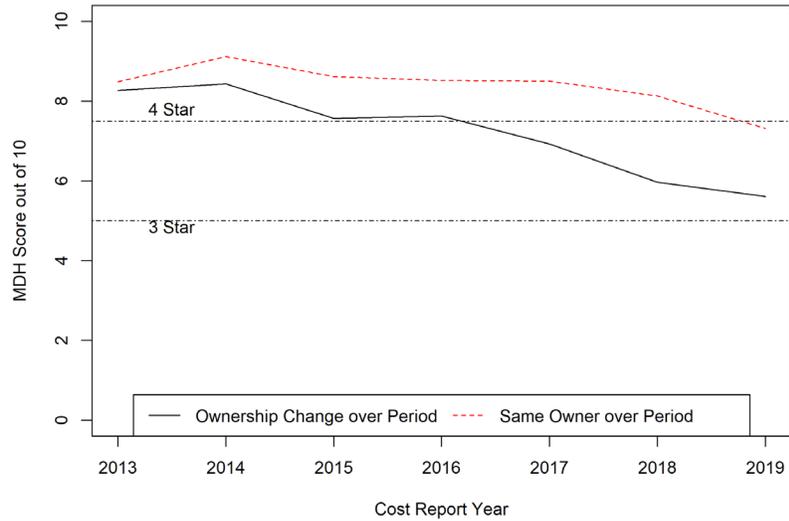


Figure 8: MDH Score Trajectories by Ownership Change Status (Constant Groups)



Minnesota Department of Health Survey Score

The same owner group had a 1.5 point increase in score on the 10 point Minnesota Department Health score over the CHOW group (Figure 8). The percentage of the gap due to including future CHOWs: 2014 – (-42%), 2015 - (-7%), 2016 – 14%, 2017 – 31%, 2018 – 16%. Chows occurring in 2016-2019 had relatively better MDH scores in 2014-15 than CHOWs occurring in 20154-15 (included later CHOWs reduced the gap in Figure 8).

Figure 9: MDH Score Trajectories by Ownership Change Status (Cumulative CHOW Group)

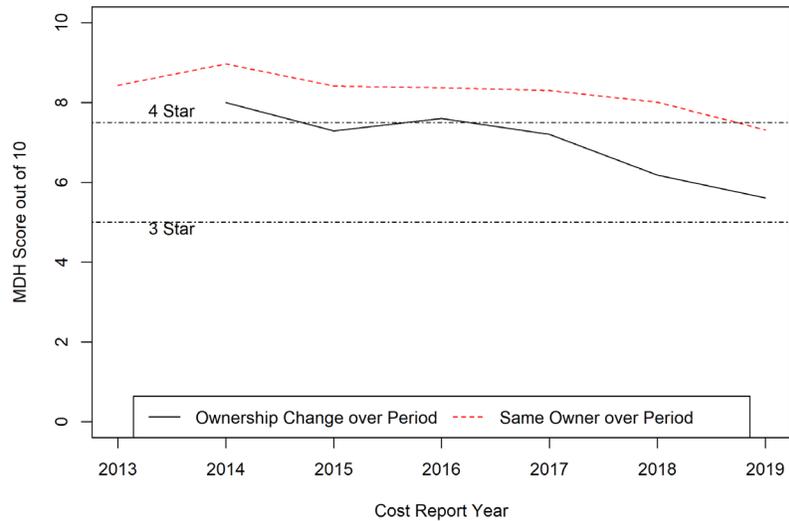
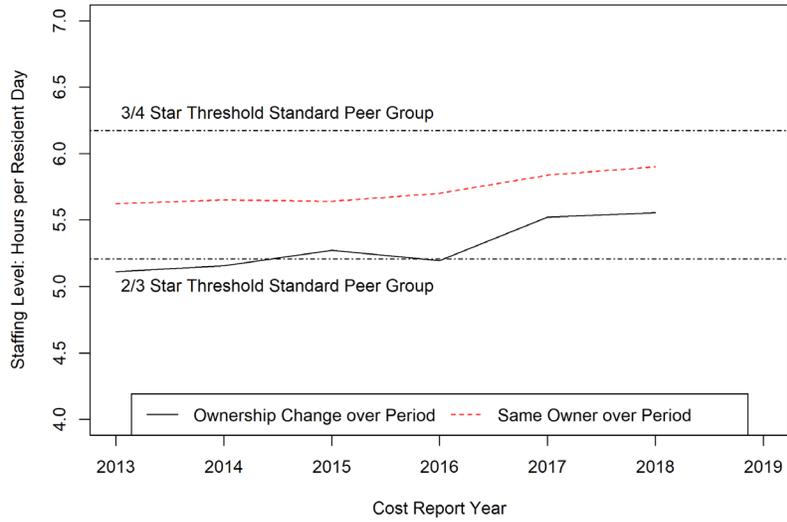


Figure 10: Staffing Score Trajectories by Ownership Change Status (Constant Groups)



Staffing Hours

The gap in staffing hours per resident day between the CHOW and same owner groups was reduced by 0.16 hours over the period (diff-in-diff metric). Much of the early gap in Figure 10 is attributable to the inclusion of future CHOWs, indicating that facilities going through a CHOW were more likely to have lower staffing levels. The percentage of the gap due to future CHOWs for each year: 2014 – 103%, 2015 – 81%, 2016 – 50%, 2017 – 23%, 2018 – 24%.

Figure 11: Staffing Score Trajectories by Ownership Change Status (Cumulative CHOW Group)

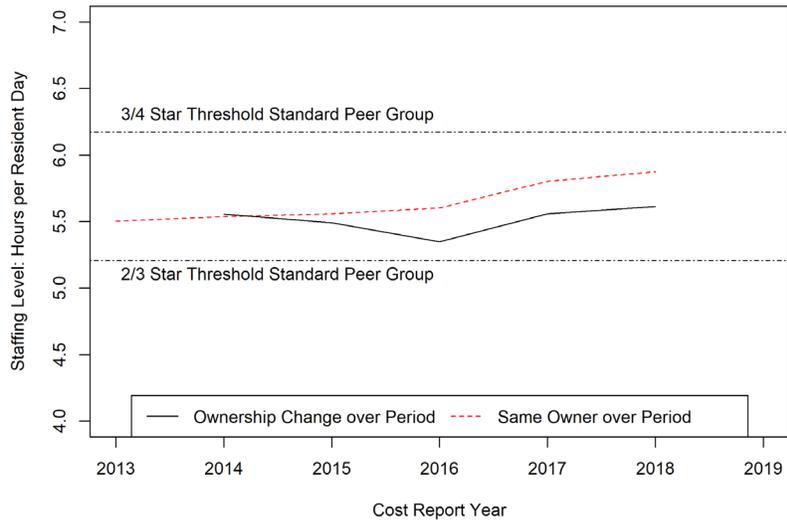
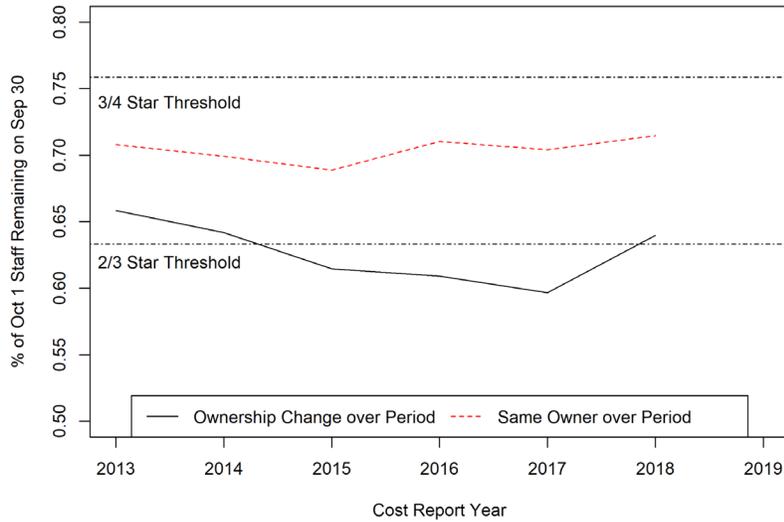


Figure 12: Retention Score Trajectories by Ownership Change Status (Constant Groups)



Staff Retention

From 2013 to 2018, facilities experiencing a CHOW saw a 2.5% drop in retention relative to facilities with the same ownership (diff-in-diff metric). This figure would have been much larger in 2017, but the gap shrunk notably in 2018 (Figure 12). The percentage of the gap between groups due to the inclusion of future CHOWs: 2014 – 61%, 2015 – (-39%), 2016 – (38%), 2017 – (6%), 2018 – (-2%).

Figure 13: Retention Score Trajectories by Ownership Change Status (Cumulative CHOW Group)

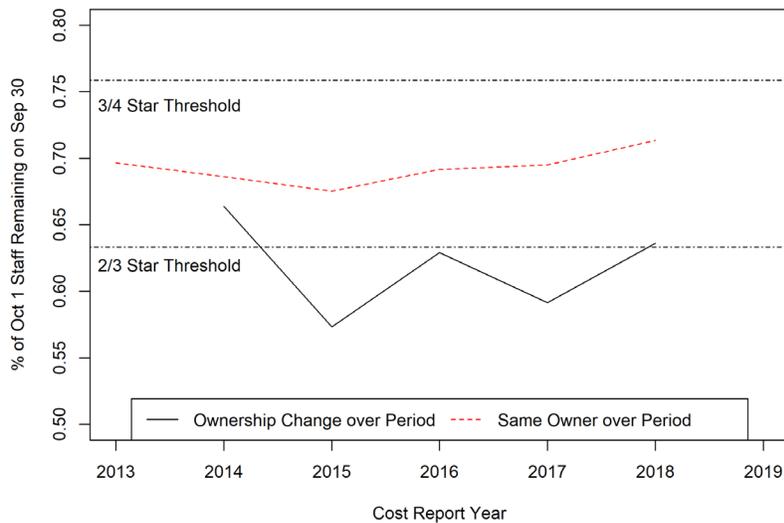
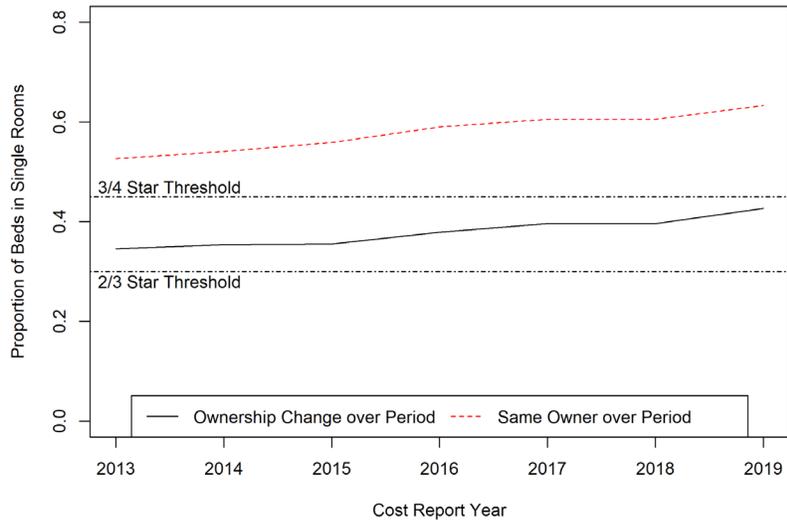


Figure 14: Private Room Score Trajectories by Ownership Change Status (Constant Groups)



Private Rooms

The gap between same owner and CHOW facility proportion of private rooms widened by 2.5% over the period (diff-in-diff metric). Much of the visible gap in Figure 14 is due to facilities going through a CHOW in 2017. Percentage of gap due to future CHOWs: 2014 – 39%, 2015 – 54%, 2016 – 65%, 2017 – (-15%), 2018 – (-1%).

Figure 15: Private Room Score Trajectories by Ownership Change Status (Cumulative CHOW Group)

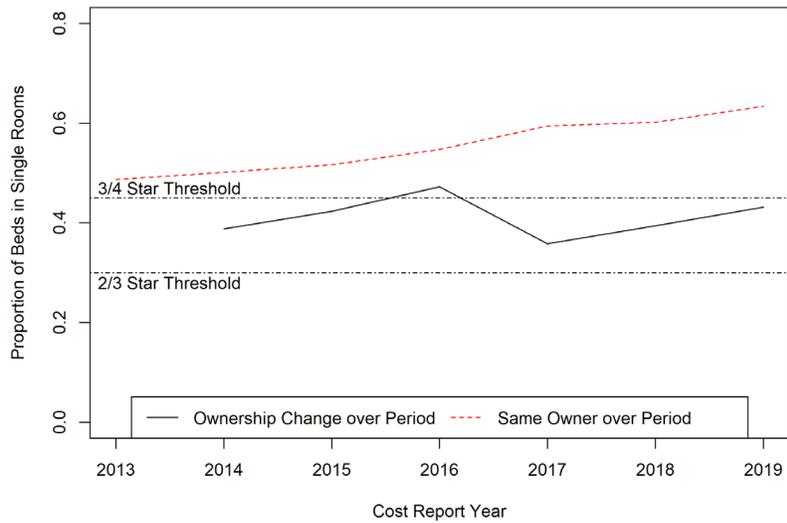
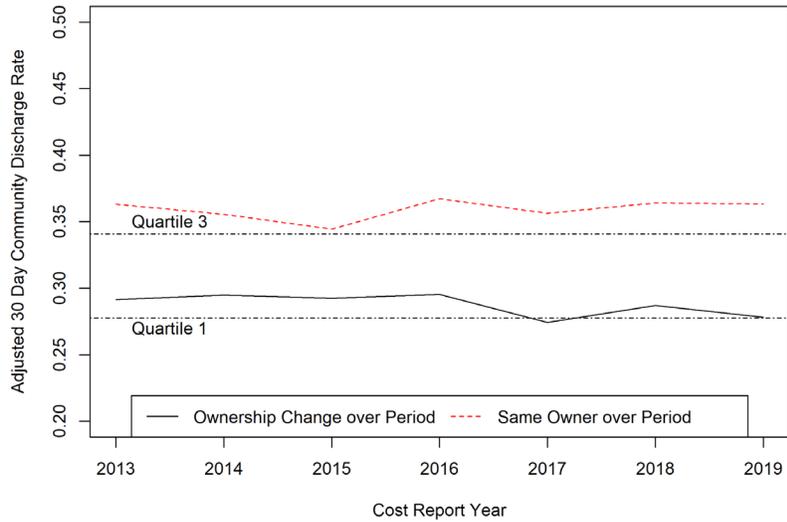


Figure 16: CD30 Score Trajectories by Ownership Change Status (Constant Groups)



Residents Discharged to the Community

The adjusted 30 day community discharge rate between the CHOW group and same owner group grew slightly over the period (1.2% increase, diff-in-diff metric). Initial CHOWs (2014) had much higher CD30 rates relative to later CHOWs. Percentage of gap due to future CHOWs: 2014 – 218%, 2015 – 1%, 2016 – 40%, 2017 – (-10%), 2018 – (-16%).

Figure 17: CD30 Score Trajectories by Ownership Change Status (Cumulative CHOW Groups)

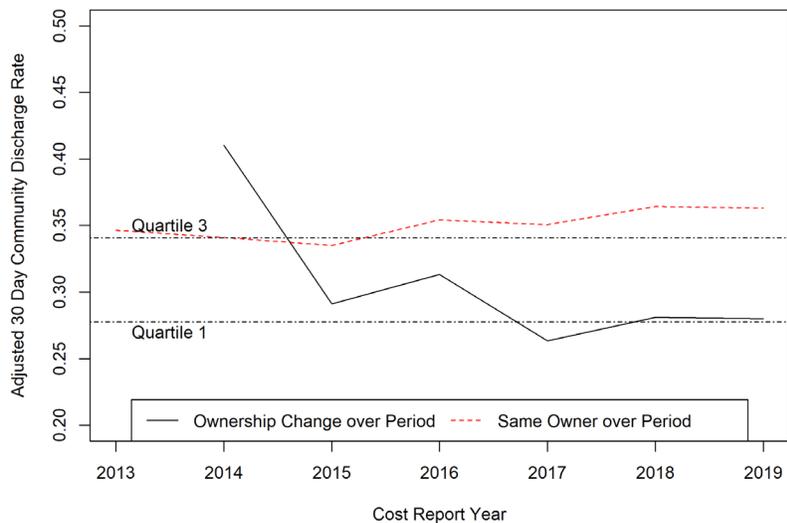
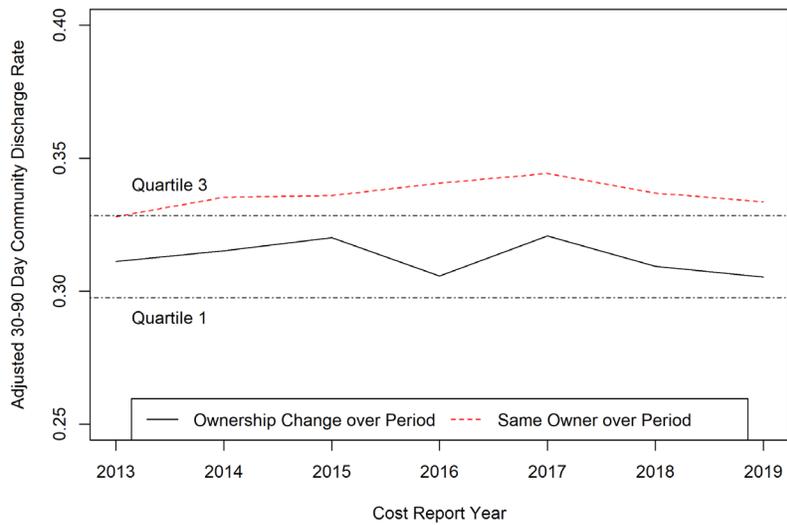


Figure 18: CD90 Score Trajectories by Ownership Change Status (Constant Groups)



The gap in adjusted 30-90 day community discharge rate between the CHOW group and same owner group grew slightly over the period (1.1% increase, diff-in-diff metric). Initial CHOWs (2014) had much higher CD90 rates relative to later CHOWs. Percentage of gap due to future CHOWs: 2014 – 113%, 2015 – (-42%), 2016 – 50%, 2017 – 8%, 2018 – (-15%).

Figure 19: CD90 Score Trajectories by Ownership Change Status (Cumulative CHOW Groups)

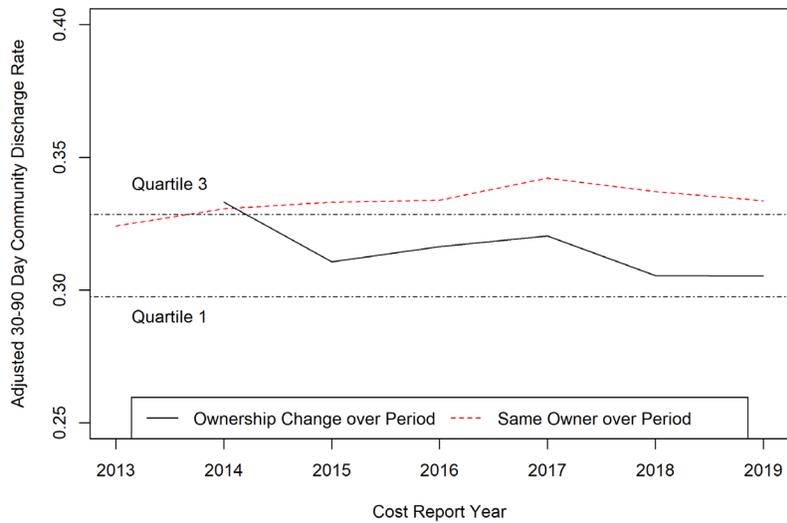
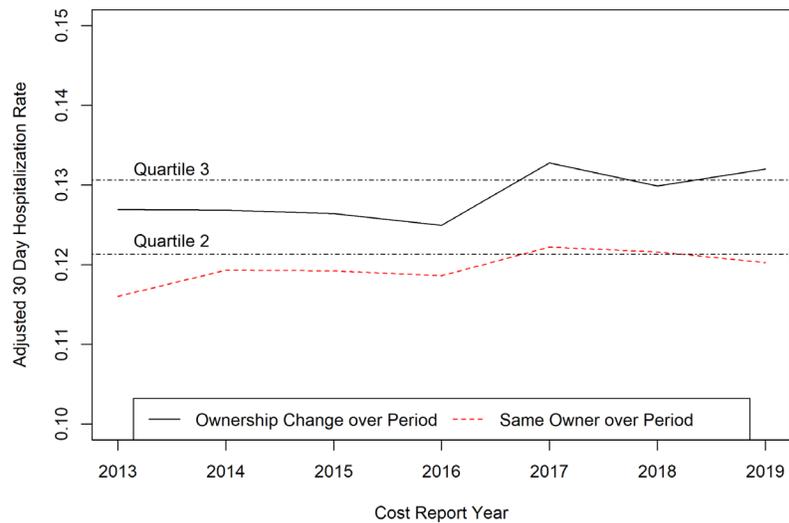


Figure 20: HRP Hospitalization Score Trajectories by Ownership Change Status (Constant Groups)



Hospitalizations from the Nursing Facility

The gap in adjusted 30 day hospitalization rate between the CHOW group and same owner group did not change appreciably over the period (0.07% increase, diff-in-diff metric Figure 20). The impact of future CHOWs was highly volatile. Percentage of gap due to future CHOWs: 2014 – 72%, 2015 – (-47%), 2016 – 103%, 2017 – (-10%), 2018 – (-10%).

Figure 21: HRP Hospitalization Score Trajectories by Ownership Change Status (Cumulative CHOW Group)

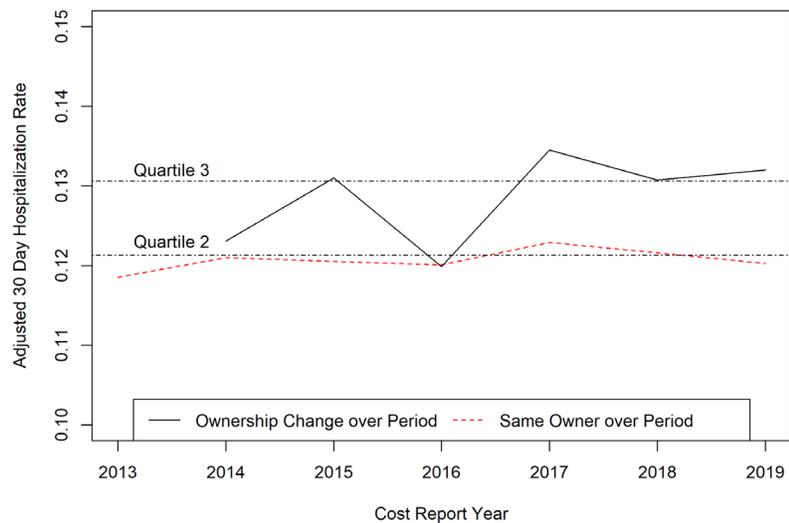
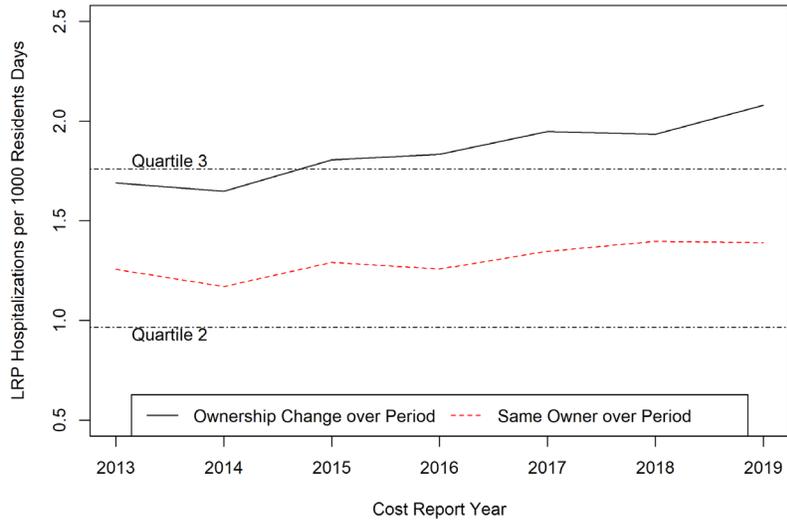
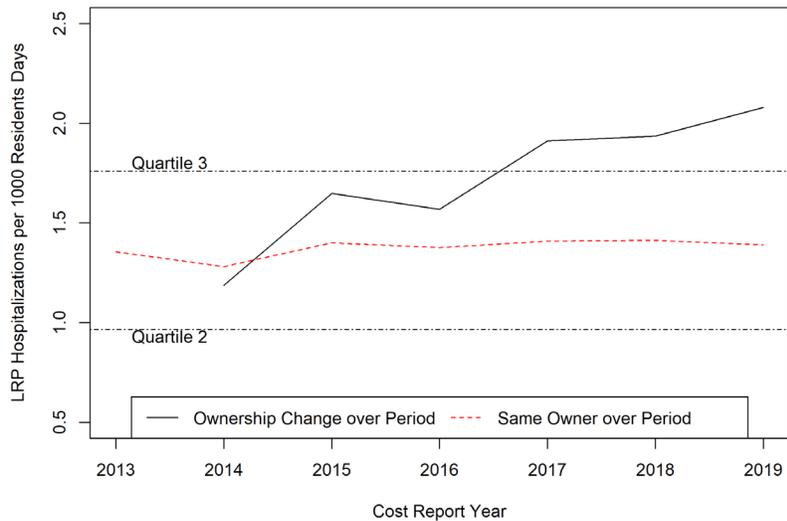


Figure 22: LRP Hospitalization Score Trajectories by Ownership Change Status (Constant Groups)



The gap in hospitalizations after 30 days per 1000 residents between the CHOW group and same owner group grew over the period by 1 hospitalization per 10,000 resident days (0.1 increase, diff-in-diff metric Figure 22). Later CHOWs (2017-2019) appear to contribute much of the low risk period hospitalization gap. Percentage of gap due to future CHOWs: 2014 – 120%, 2015 – 51%, 2016 – 69%, 2017 – 17%, 2018 – 2%.

Figure 23: LRP Hospitalization Score Trajectories by Ownership Change Status (Cumulative CHOW Group)



Patterns in Quality for CHOW Facilities

The following figures display overall quality scores for CHOW related facilities. Figure 24 displays the means by ownership groups (note that ownership names associated with groups 4-7 contained the same facilities and are represented by group 4, groups 9,11, and 12 contained 2020 CHOWs and so do not appear in these plots).

Groups size (number of facilities) is variable and impacts the volatility in the mean trend lines of Figure 24. Group size ranges from 1 (group 10) to 22 (group 3). The three largest groups (2 – 8 facilities, 3 – 22 facilities, and 8 – 13 facilities) begin the period with the highest relative quality means and end the period with an apparent downwards quality trajectory. The three smallest groups (1 – 4 facilities, 4 – 7 facilities, and 10 – 1 facility) appear to end with an upwards rebound in quality, although their means are more volatile over the period.

Figure 24: Mean Quality Scores by Ownership Group

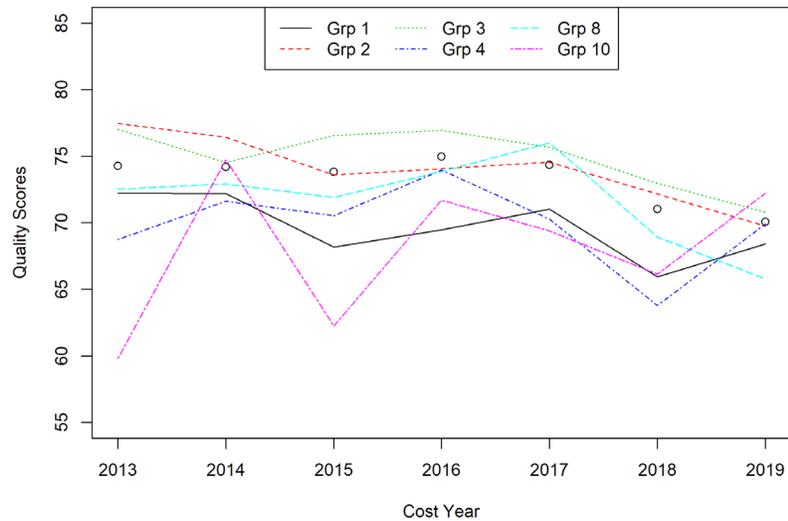


Figure 25- Figure 30 display individual facility quality scores within each ownership group. Since each line represents a single facility, trends are more volatile. However, comparing the solid line prior to the CHOW and to the dashed line following the CHOW can inform if new ownership is able to maintain or improve facility quality. A bolder dashed line has been added to each plot to display the loess smoothed ownership group trend and the individual circle give the overall CHOW group quality mean for each year. With the exception of ownership group 4 (CHOWs occur 2019 or later) and group 10 (single facility), all other ownership groups show a general decline in quality. For some groups this began prior to the CHOWs and continued after (groups 1 and 2) for others quality scores appear to have begun declining around the time of the CHOWs (groups 3 and 8). It is worth noting that not all facilities in the CHOW group appear to be experiencing declining quality scores, even within the same ownership group.

Figure 25. Facility Quality Scores for Ownership Group 1

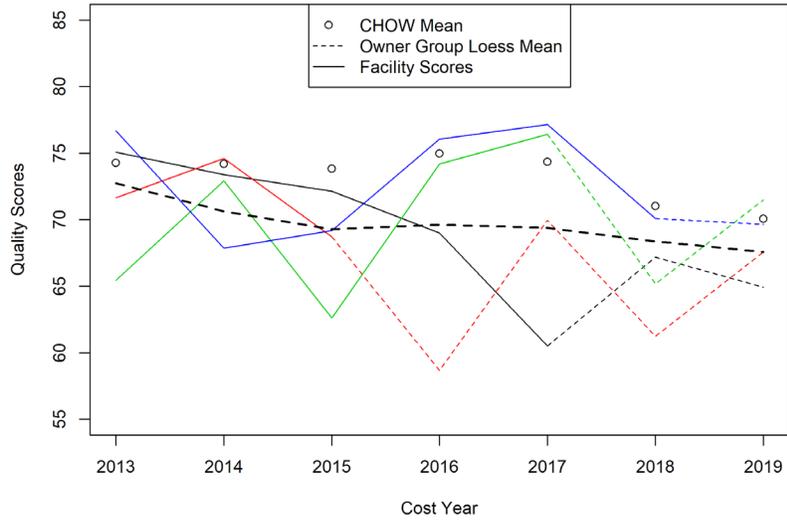


Figure 26: Facility Quality Scores for Ownership Group 2

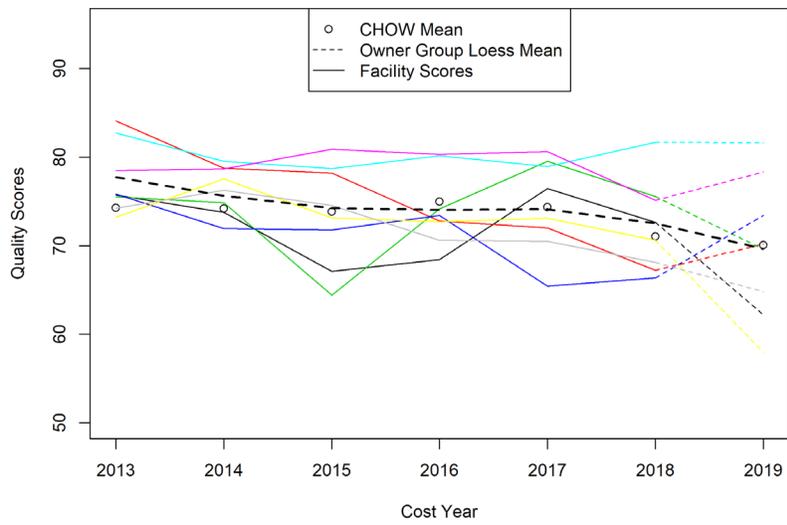


Figure 27: Facility Quality Scores for Ownership Group 3

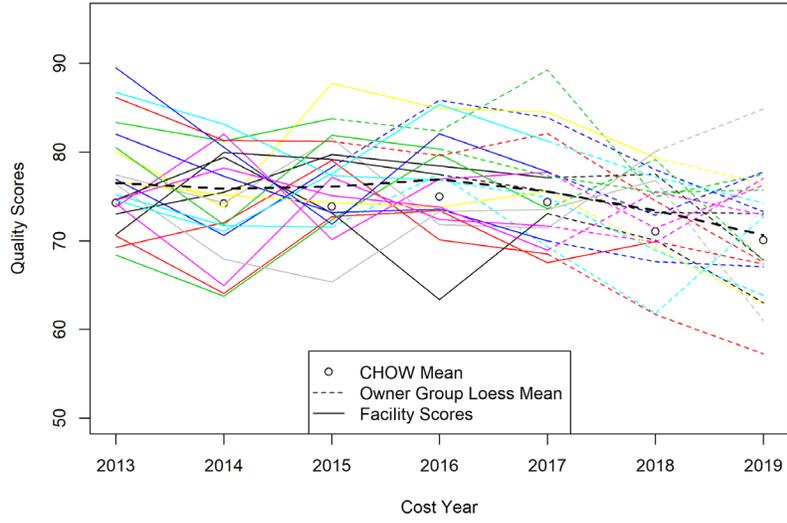


Figure 28: Facility Quality Scores for Ownership Group 4

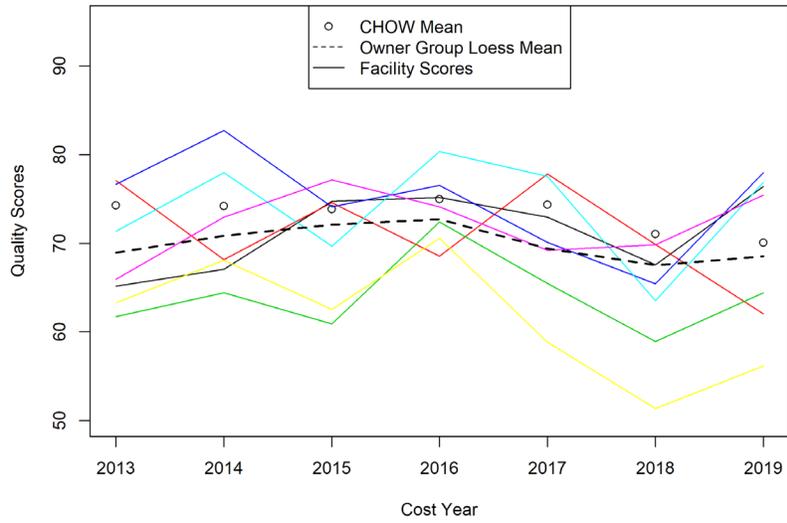


Figure 29: Facility Quality Scores for Ownership Group 8

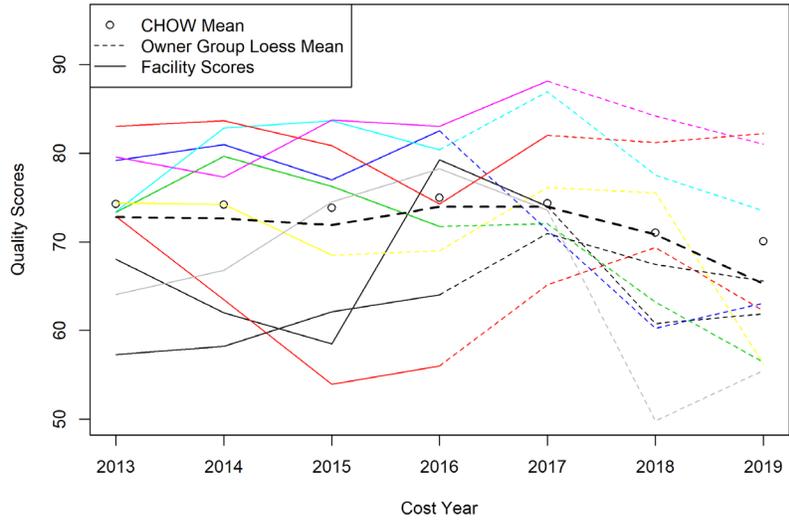
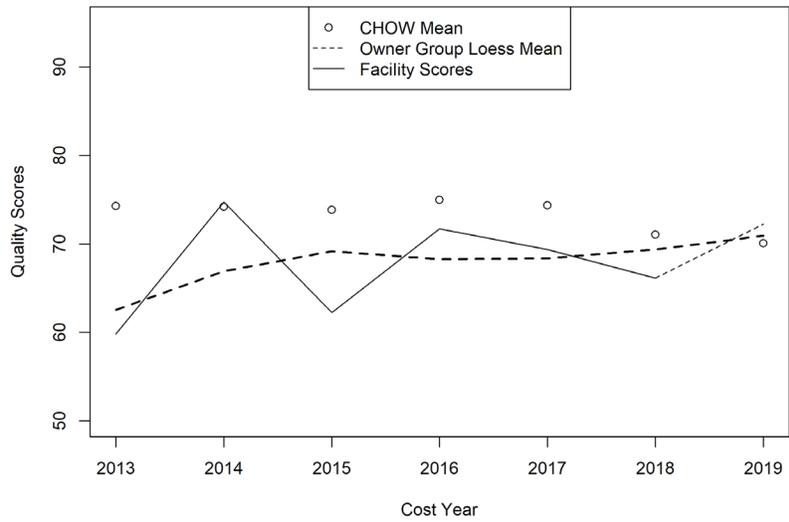


Figure 30: Facility Quality Scores for Ownership Group 10



Comparisons Before and After Change in Ownership

The following tables (*Table 1* and *Table 2*) present means for resident, staff, and quality variables in the year prior to and year following the CHOW cost year. Seventy four facilities were included in the CHOW group as having a cost year prior and post the CHOW cost year. This comparison is intended to highlight any changes that represent potential shift in operation related to the CHOW. A comparison group (non-CHOW) consists of all facilities that did not go through a CHOW in the following (for pre numbers) or previous (for post numbers) year. This will help differentiate changes due to CHOWs from general trends in the industry.

From *Table 1*, CHOWs experienced an 11% drop in admissions in the cost year after the CHOW year relative to the cost year prior to the CHOW year. In comparison, facilities with constant ownership over the three year time frame experienced an increase in annual admission of 4%. The year following a CHOW, the CHOW group saw a slight increase in staff retention driven primarily by 16% increase in Nurse Administrator retention rates and 7% increase in RN retention rates. Conversely, social worker retention rates in CHOWs dropped from 63 to 57% (-10% change). Despite the slight improvement, CHOW retention rates still lag substantively behind constant ownership facilities (*Figure 12*). CHOW facilities increased salary per resident day of Nurse Administrators (27%) and Social Workers (33%) by more than the non-CHOW group, but RN salary increases lagged. CHOWs appear to be making cuts to laundry expenses, dental and pension benefits, while increasing medical and scholarship benefits at a slower rate than peers, and increasing administrative management fees at a higher rate (40% increase vs. 13%).

Table 1: Staffing and Resident Profile Before and After the Change of Ownership

	Pre CHOW	Post CHOW	CHOW Change	Pre Non-Chow	Post Non-Chow	Non-CHOW Change
Annual Admissions	201	178	-11%	183	190	4%
Medicaid Revenue (Thousands)	\$2,876	\$3,115	8%	\$2,781	\$3,087	11%
Medicaid Resident Days	14,199	13,424	-5%	13,919	13,392	-4%
Total Resident Days	23,103	21,623	-6%	25,412	24,481	-4%
Acuity	1.02	1.02	0%	1.01	1.01	0%
Total Retention	60%	61%	1%	68%	68%	0%
Retention: Activities Staff	68%	69%	3%	77%	76%	-2%
Retention: CNA	57%	58%	1%	63%	63%	0%
Retention: LPN	66%	65%	-2%	73%	73%	0%
Retention: NA	61%	71%	16%	77%	75%	-2%
Retention: ODC	17%	10%	-41%	35%	34%	-2%
Retention: RN	57%	61%	7%	67%	68%	1%
Retention: Social Worker	63%	57%	-10%	74%	74%	-1%
Retention: TMA	31%	32%	4%	50%	51%	3%
Retention: CNA/TMA	57%	58%	2%	65%	65%	0%
Nurse Administrator Salary PRD	\$9.27	\$11.80	27%	\$9.00	\$10.45	16%
RN Salary PRD	\$18.92	\$20.43	8%	\$17.38	\$20.66	19%
LPN Salary PRD	\$19.22	\$18.55	-3%	\$16.62	\$17.80	7%
CNA Salary PRD	\$33.66	\$37.35	11%	\$34.40	\$38.75	13%

	Pre CHOW	Post CHOW	CHOW Change	Pre Non-Chow	Post Non-Chow	Non-CHOW Change
TMA Salary PRD	\$2.89	\$3.22	11%	\$3.91	\$4.84	24%
DC Trainer Salary PRD	\$0.70	\$0.41	-42%	\$0.56	\$0.67	20%
Medical Records Salary PRD	\$2.85	\$3.25	14%	\$3.01	\$3.36	12%
Social Worker Salary PRD	\$2.90	\$3.85	33%	\$3.04	\$3.47	14%
Activities Staff Salary PRD	\$3.64	\$4.08	12%	\$4.35	\$4.85	12%
Other DC Staff Salary PRD	\$0.22	\$0.35	60%	\$0.71	\$0.70	-1%
Therapy Salary PRD	\$0.06	\$-	-100%	\$0.04	\$0.02	-58%
Other Care Staff Salary PRD	\$9.68	\$11.52	19%	\$11.20	\$12.47	11%
Dietary Total Cost PRD	\$13.75	\$15.11	10%	\$14.42	\$15.56	8%
Laundry Total Cost PRD	\$4.14	\$3.77	-9%	\$3.54	\$3.77	7%
Housekeeping Total Cost PRD	\$6.83	\$7.59	11%	\$6.38	\$6.93	9%
Plant Total Cost PRD	\$12.26	\$13.80	13%	\$12.97	\$14.14	9%
Admin Total Cost PRD	\$34.73	\$36.63	5%	\$30.79	\$34.28	11%
Dental Cost PRD	\$0.32	\$0.09	-72%	\$0.23	\$0.26	13%
Pension Cost PRD	\$0.55	\$0.54	-2%	\$1.29	\$1.50	16%
Admin Management Fees PRD [^]	\$8.00	\$11.20	40%	\$7.10	\$8.02	13%
Scholarship Cost PRD	\$0.32	\$0.50	58%	\$0.45	\$0.77	71%
Group Medical PRD	\$7.90	\$8.30	5%	\$9.71	\$12.11	25%
Group Medical&HSA per Employee ^{&}	\$2,670	\$2,789	4%	\$2,893	\$3,473	20%
Total Insured Employees (Medical) ^{&}	36.8	37.8	3%	42.8	42.7	0%
LPN DC Hours PRD	0.79	0.73	-7%	0.77	0.74	-5%
RN DC Hours PRD	0.60	0.62	4%	0.60	0.65	9%
CNA DC Hours PRD	2.24	2.27	1%	2.38	2.41	1%
Licensed DC Hours PRD	1.39	1.35	-2%	1.37	1.39	1%
Total DC Hours PRD	4.48	4.62	3%	4.75	4.89	3%
Activities DC Hours PRD	0.23	0.25	7%	0.29	0.30	5%
Nurse Administrator DC Hours PRD	0.30	0.35	15%	0.29	0.31	9%
Social Worker DC Hours PRD	0.13	0.16	23%	0.14	0.15	6%
TMA DC Hours PRD	0.16	0.19	17%	0.24	0.27	12%
Other Direct Care Hours PRD	0.02	0.02	30%	0.04	0.03	-8%
Nursing Pool Hours (%)	0.02	0.03	63%	0.01	0.02	73%

*Pre numbers come from the cost report prior to the sale cost year and post numbers come from the cost report following the sale cost year (i.e. For a facility occurring in 2014 cost year, the 2013 cost report is used for the pre-numbers and the 2015 cost report is used for the post-numbers). CHOW change is the percentage change in the post period from the pre-period. Non-CHOW change is the percent change in the post period from the pre-period for all facilities that did not go through a CHOW in the following (for pre numbers) or previous (for post numbers) year. [^]Cost report line item 8073. [&]Pre group consists of 2017 cost reports for 2018 CHOW or NonCHOW and post group is 2019 cost reports for 2018 CHOW or NonCHOW (20 CHOW facilities and 343 NonCHOW facilities, per Employee includes all FT and PT employees).

Table 2 displays changes in quality scores following the same format as Table 1. The most notable change in CHOW facilities relative to the comparison group were a dip in adjusted 30 day community discharge rates, a two point drop in quality indicator scores, and a drop of a point in MDH inspection scores.

Table 2: Quality Scores Before and After CHOW Event

	Pre CHOW	Post CHOW	CHOW Change	Pre Non-CHOW	Post Non-CHOW	Non-CHOW Change
Adjusted 30 Rate CD Rate	0.31	0.28	-9%	0.35	0.35	1%
Adjusted 31-90 Day CD Rate	0.31	0.31	-1%	0.33	0.34	1%
Adjusted 30 Day Hospitalization Rate	0.13	0.13	3%	0.12	0.12	1%
Unadjusted Low Risk Period Hospitalizations per 1000 Resident Days	1.90	2.04	7%	1.42	1.53	8%
VBR Quality Score (Old Version)	75.03	72.42	-3%	76.51	75.96	-1%
Quality Indicator Score (50 Points)	35.36	33.54	-5%	35.20	35.38	0%
MDH Score (10 Points)	7.64	6.79	-11%	8.45	7.92	-6%
Quality of Life Score (40 Points)	32.26	31.88	-1%	32.88	32.65	-1%
Staffing Score	5.42	5.61	3%	5.64	5.76	2%
Case Mix	1.02	1.01	-1%	1.02	1.01	0%
Staff Retention Score	0.60	0.60	0%	0.69	0.68	0%
Private Room Score	0.38	0.40	4%	0.53	0.57	6%

*Pre numbers come from the cost report prior to the sale cost year and post numbers come from the cost report following the sale cost year (i.e. For a facility occurring in 2014 cost year, the 2013 cost report is used for the pre-numbers and the 2015 cost report is used for the post-numbers). CHOW change is the percentage change in the post period from the pre-period. Non-CHOW change is the percent change in the post period from the pre-period for all facilities that did not go through a CHOW in the following (for pre numbers) or previous (for post numbers) year.