Findings Brief
NC Rural Health Research Program

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2018-23 Profitability of Rural Hospitals by Ownership and System Affiliation

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BACKGROUND

System Affiliation and Ownership

Rural hospitals provide vital health care services to the remote and underserved regions of rural America. However, access to care in many communities has been reduced by rural hospital closures.[1] Between January 2010 and December 2023, there were 146 rural hospital closures.[2] The causes of rural hospital closures are complex and multifaceted,[3] but long-term unprofitability has been identified as a major contributing factor.[4]

The profitability of rural hospitals is affected by many factors. In a companion study we examine profitability by Medicare Payment Classification.[5] In this study, we focus on two that have been found to be important—system affiliation and ownership.

- *System affiliation* - Many rural hospitals decide to affiliate with a health system as an alternative to closure. Through system affiliation, rural hospitals may benefit from shared resources, access to technologies, cash infusion, increased supply chain efficiencies, and improved performance through clinical integration.[6] Financially struggling rural hospitals facing possible closure have shown a positive association with increased profitability after merging with a health system, as compared to independent hospitals with poor financial health.[7] Two studies found system affiliation was associated with improved financial performance for rural hospitals.[8,9]
- *Ownership* - Hospitals with for-profit status tend to be more profitable than other hospitals.[10,11] Between 2011-17, for-profit rural hospitals also experienced a more rapid decline in financial viability when compared to nonprofit rural hospitals.[12] Both not-for-profit and government-owned hospitals are less vulnerable to financial challenges and closures compared to for-profit hospitals.[13,14]

COVID-19

COVID-19 increased financial pressures on hospitals and health systems, with cancelled procedures, decreased patient volume, and increased costs for treating COVID-19 patients. [15] Rural hospitals had particular difficulty responding to the pandemic which compounded their pre-existing challenges.[16] In response, the federal government provided financial support through Public Health Emergency (PHE) funding utilizing Provider Relief Funds, Paycheck Protection Program, and other funds,[17] to compensate for the loss in revenue and support high costs due to the pandemic.

KEY FINDINGS

This study compares profitability of rural hospitals with and without system affiliation, and among ownership types – government, not-for-profit, and for-profit. The study includes two years before COVID-19 (2018-19, 2019-20) and three years after COVID-19 (2020-21, 2021-22, 2022-23). Taking into account Public Health Emergency funds received during the pandemic, we found:

- Rural hospitals with system affiliation had a higher median total margin than those without a system affiliation in every period except 2021-22. Median profitability of rural hospitals both with and without system affiliation increased over the first four periods, but there was a large decrease in profitability of both in 2022-23.
- For three of the five study periods, the median total margin was highest among for-profit hospitals and lowest among government-owned hospitals. Median profitability of all ownership types increased over the first four periods, but there was a large decrease in profitability among all three types in 2022-23.
- Profitability of rural hospitals in 2020-21 and 2021-22 was influenced by Public Health Emergency (PHE) funding distributed during the COVID-19 pandemic.

In a previous study, we discuss how timing differences in hospital recognition of PHE revenue versus PHE expenses on Medicare cost reports could distort reported profitability in 2020 and 2021.[18] For this reason, in this study we considered it important to clearly separate study years without PHE funds (before COVID-19 years) and study years with PHE funds (after COVID-19 years). Therefore, the purpose of this brief is to describe the profitability of rural hospitals 1) with and without system affiliation, and 2) that are government-owned, not-for-profit, and for-profit over a five-year period consisting of two years before and three years after COVID-19.

STUDY METHOD

Data

Financial data were obtained from hospital cost report data produced by the Centers for Medicare & Medicaid Services (CMS) Healthcare Cost Report Information System (HCRIS). We excluded cost reports for Indian Health Service hospitals (due to lack of data), cost reports with days in period < 360, and cost reports where net patient revenue was ≤ $0. Hospitals were defined as rural using the 2022 definition by Federal Office of Rural Health Policy (FORHP).[19]

Measure of Profitability

Hospital profitability is expressed as total margin, which is defined as the ratio of net income to total revenue. This ratio provides a measure of the hospital's profit relative to the total revenue it generates. To illustrate, a hospital with a five percent total margin signifies that for every dollar of revenue generated, the hospital makes five cents in net income. The total margin definition and source of data from the Medicare Cost Report are shown below.

	Description	Medicare Cost Report Source
Numerator	Net income	Worksheet G Line 29
Denominator	Total revenue	Worksheet G Lines 3 + 25

COVID-19 PHE funding is included in calculation of total margin.

Hospital Type

We used a binary variable for system affiliation, and a 3-category variable for ownership (government, for-profit, not-for-profit). The sources of data from the Medicare Cost Report are shown below.

Description	Medicare Cost Report Source
Part of a chain organization (System affiliation)	S2 Part I, column 1, line 141
Type of control (Ownership)	S2 Part I, column 1, line 21

Study Periods

For study purposes, we defined the start of the COVID-19 period as April 1, 2020, because the PHE funding was first distributed to hospitals in April 2020.

Period	Data Label	Cost Reports Ending Between	
Before COVID-19	2018-19	Apr 1, 2018	Mar 31, 2019
	2019-20	Apr 1, 2019	Mar 31, 2020
After COVID-19	2020-21	Apr 1, 2020	Mar 31, 2021
	2021-22	Apr 1, 2021	Mar 31, 2022
	2022-23	Apr 1, 2022	Mar 31, 2023

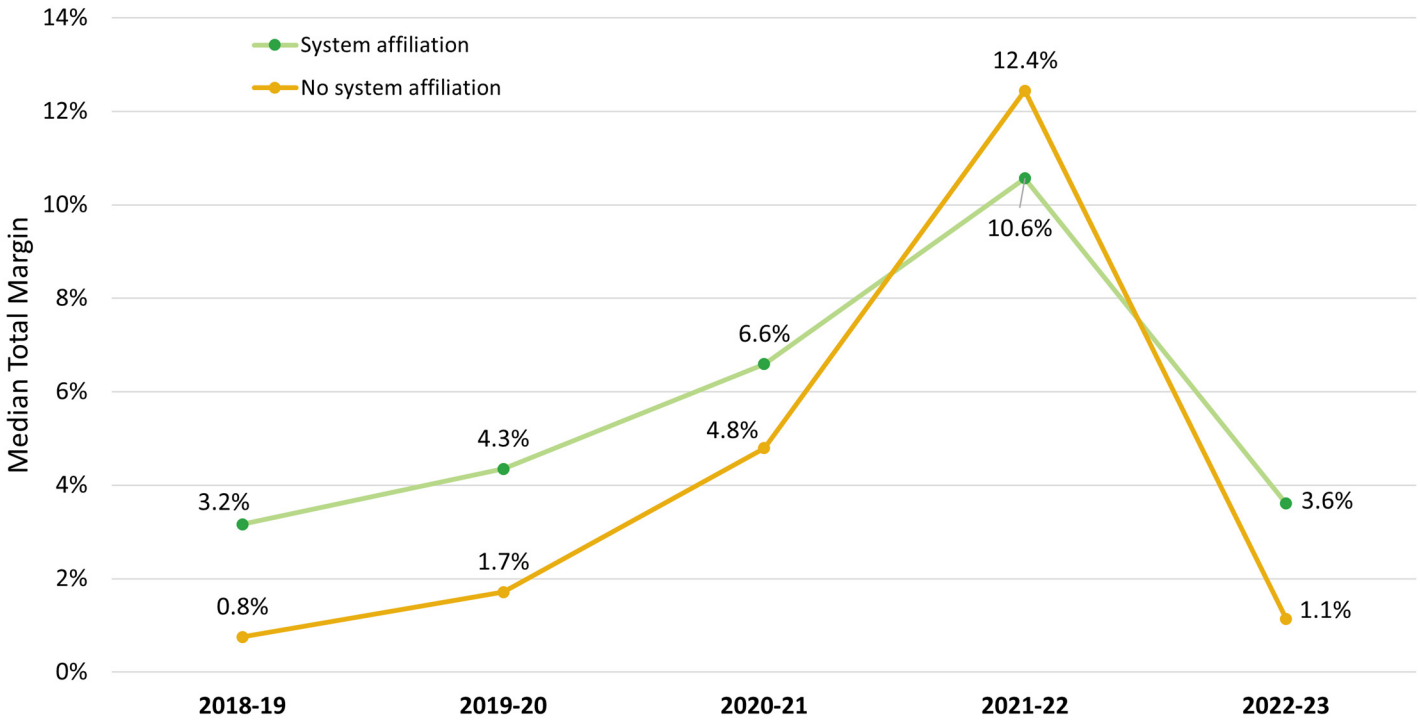
Number of Cost Reports by System Affiliation, Ownership, and Year

Period	System Affiliation			Ownership			
	Yes	No	Total	Government	Not-for-profit	For profit	Total
2018-19	902	1,253	2,155	732	1,187	236	2,155
2019-20	939	1,199	2,138	720	1,196	222	2,138
2020-21	991	1,148	2,139	723	1,202	214	2,139
2021-22	1,024	1,121	2,145	721	1,213	211	2,145
2022-23	1,048	1,093	2,141	718	1,219	204	2,141

RESULTS

Figure 1 shows the median total margins of rural hospitals with and without system affiliation in each of the five periods. Rural hospitals with system affiliation had a higher median total margin than those without a system affiliation in every period except 2021-22. Median profitability of rural hospitals both with and without system affiliation increased over the first four periods, but there was a large decrease in profitability of both in 2022-23. The distribution of total margin of rural hospitals with and without system affiliation by period is shown in Appendix A.

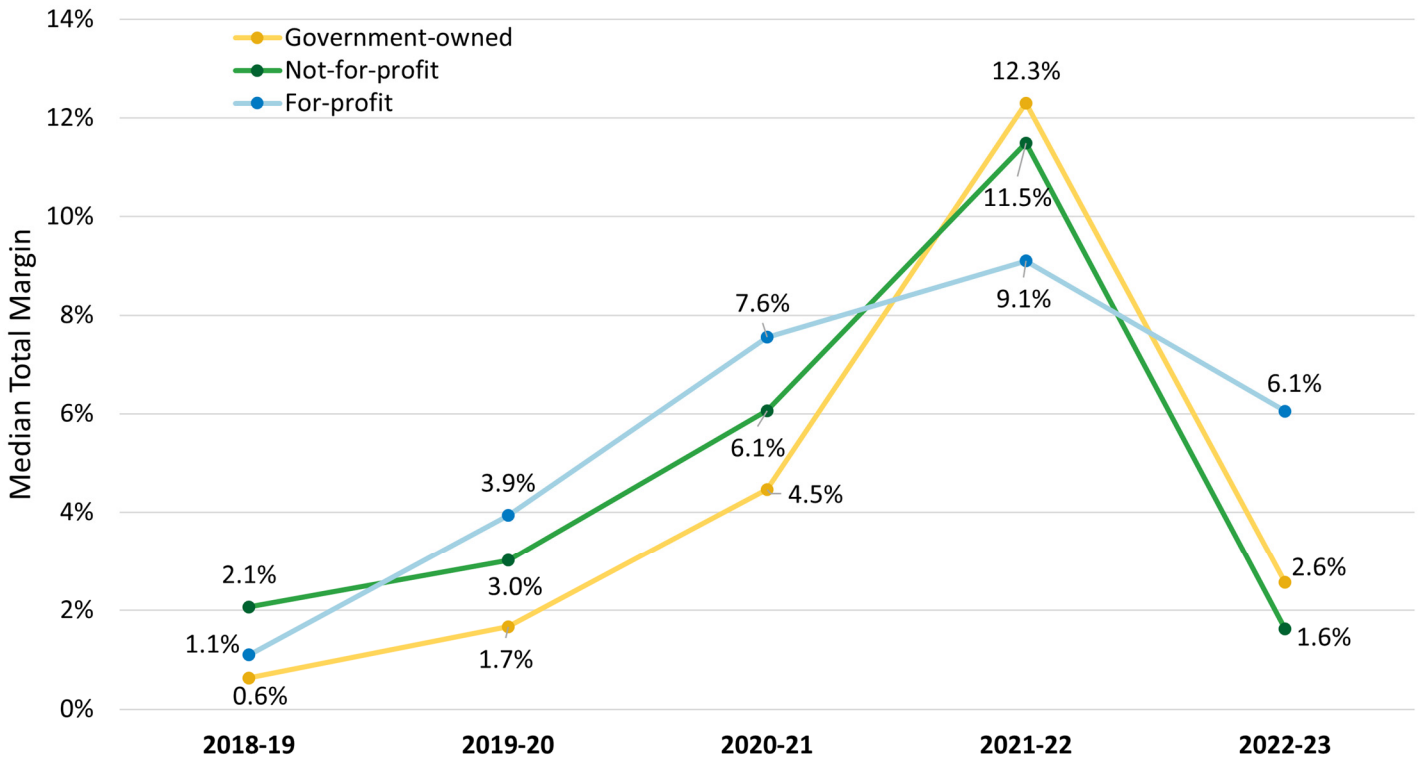
Figure 1. Median Total Margins of Rural Hospitals with and without System Affiliation by Year



Note: PHE funding started in 2020-21

Figure 2 shows the median total margins of rural hospitals by ownership type in each of the five periods. For three of the five study periods, the median total margin was highest among for-profit hospitals and lowest among government-owned hospitals. Median profitability of all ownership types increased over the first four periods, but there was a large decrease in profitability among all three types in 2022-23. The distribution of total margin of rural hospitals by ownership type and period is shown in Appendix B.

Figure 2. Median Total Margins of Rural Hospitals by Ownership and Year



Note: PHE funding started in 2020-21

DISCUSSION

There are three principal findings in the study.

Profitability of rural hospitals in 2020-21 and 2021-22 was influenced by PHE funding distributed during the COVID-19 pandemic.[20] The PHE funds were an important financial lifeline for many rural hospitals and likely contributed to the reduction in the number of rural hospital closures, with only three recorded closures in the year 2021 and seven in the year 2022. However, the PHE funds were temporary and are now fully distributed, and the effect is shown in the large decrease in profitability in 2022-23. Long-term financial pressures remain, and profitability of rural hospitals may be returning to pre-pandemic levels. This puts rural hospitals at higher risk of financial distress, complete closure, or conversion of the hospital to some other type of non-inpatient health care facility. For these reasons, it is important for policy makers to carefully interpret profitability increases during the pandemic and to recognize the long-term financial challenges facing rural hospitals.[18]

Rural hospitals with system affiliation had a higher median total margin than those without a system affiliation in every period except 2021-22. The 2021-22 median may be different from previous years because of timing differences in hospital recognition of PHE revenue versus PHE expenses on Medicare cost reports, random variation, or other factors that affected hospitals affiliated with systems. Otherwise these findings are consistent with other studies that found higher profitability among rural hospitals with system affiliation.[10] System affiliation may enhance access to technology, staff recruitment and retention, expanded health care and operational services, group purchasing, and reduced cost of capital.[4] For the affected communities, system affiliation may result in services to a more diverse population, a greater range of services available, and reduction in duplicative services.[21] However, studies have also

highlighted potential concerns regarding reduced access to care after system affiliation[8] and risk of closure of financially stable rural hospitals.[10] Hospital consolidation has accelerated over the past decade, so ongoing monitoring of the effects on cost, quality, and access of rural hospitals will be important.[22]

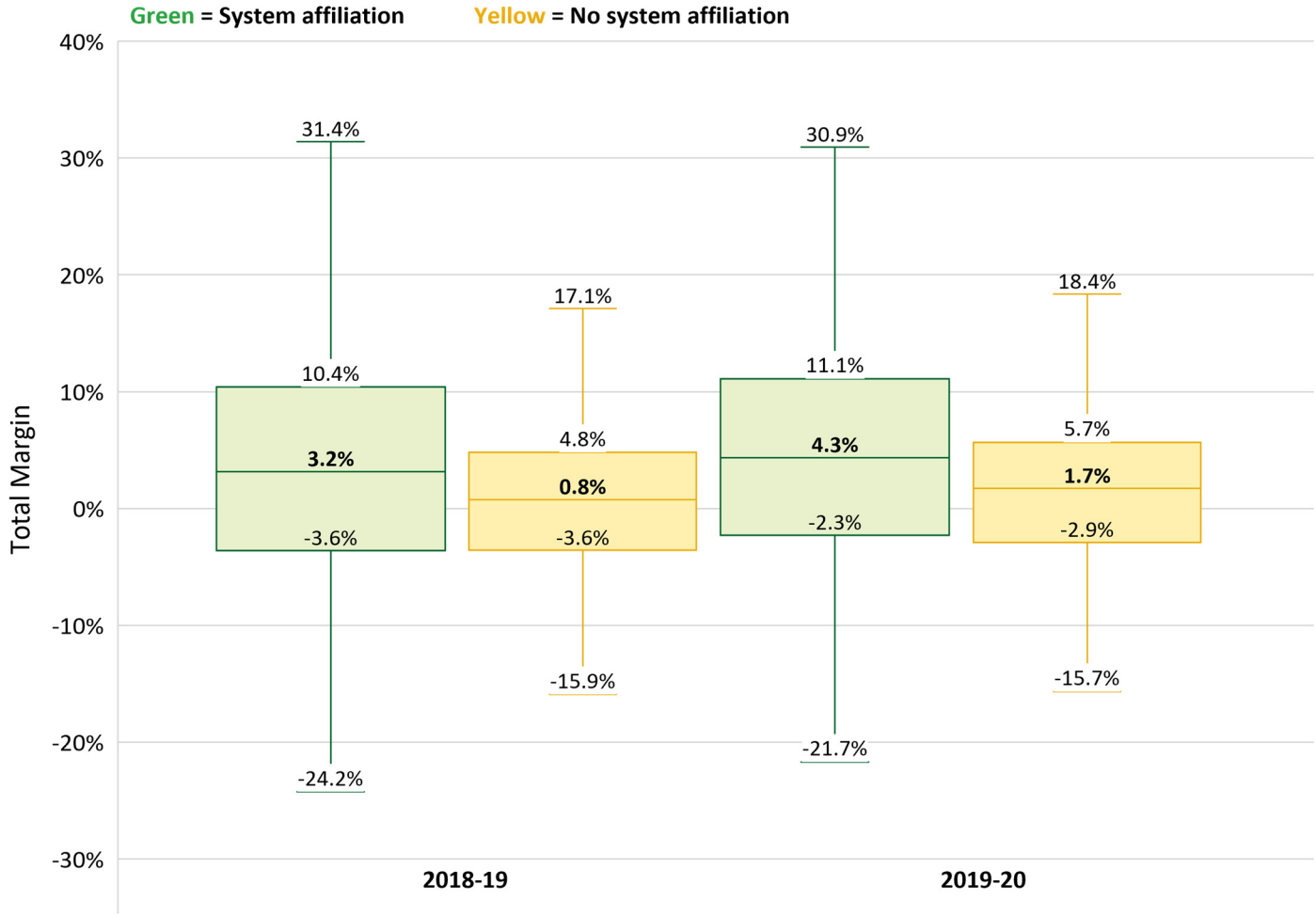
For three of the five study periods, the median total margin was highest among for-profit hospitals and lowest among government-owned hospitals. This could be because government-owned hospitals offer comparatively unprofitable services and are funded through tax revenues and other sources of public funding.[23,24] In contrast, for-profit hospitals are less likely to offer unprofitable medical services compared to not-for-profit and government hospitals.[25]

This study found differences in profitability between rural hospitals that were and were not affiliated with a system, and among rural hospitals with three types of ownership. Given that PHE funding positively disrupted the financial trajectory of many hospitals, it will be important for policy makers to monitor the impact of system affiliation and ownership on rural hospital profitability, especially now that PHE funding has ended, and pre-COVID profitability trends may re-emerge.

APPENDIX A:

Distribution of Rural Hospitals with and without System Affiliation by Year

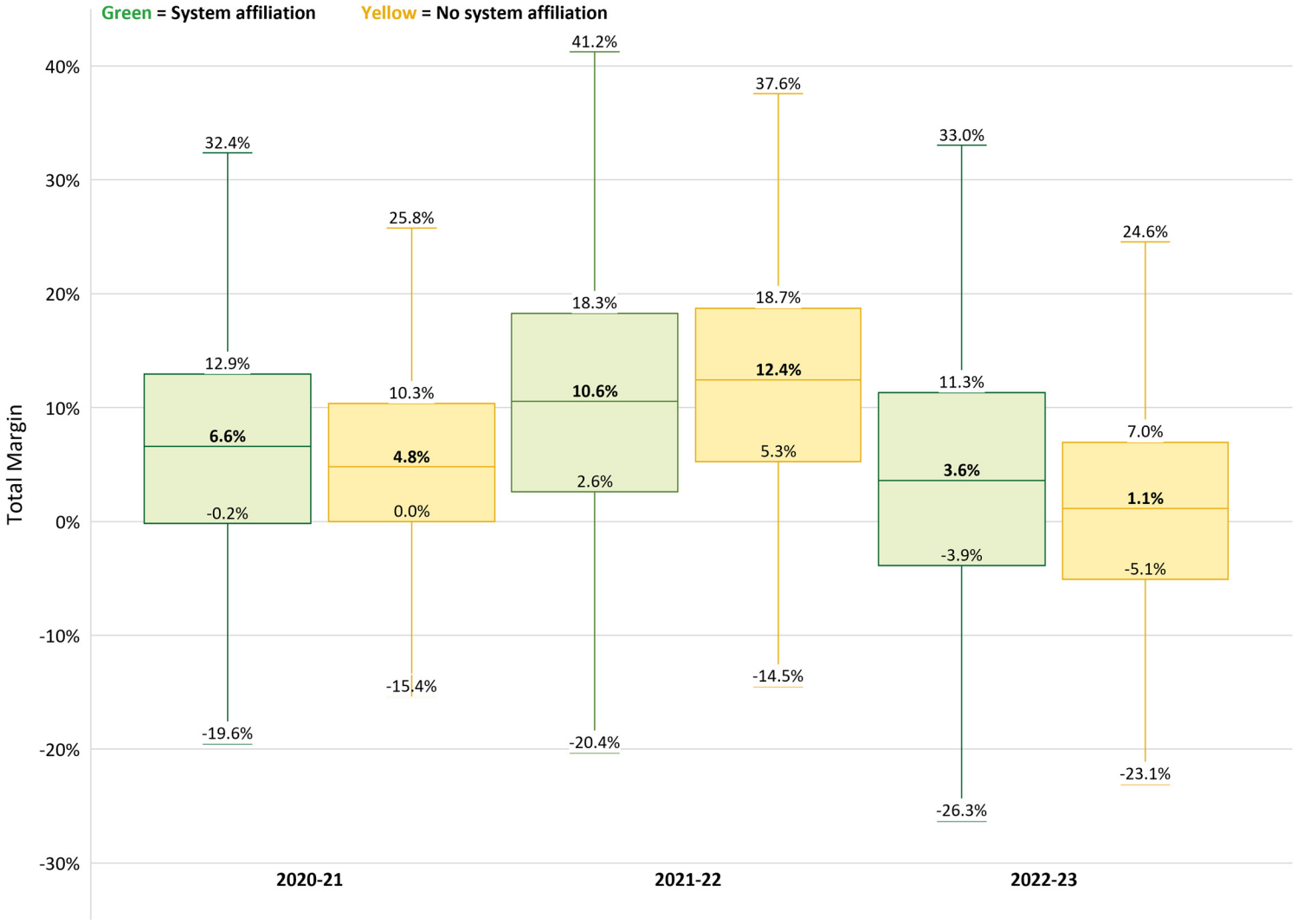
Appendix A shows a boxplot of total margins of rural hospitals from the year 2018-19 to 2022-23. In the shaded box, the horizontal line in the middle is the median, the top of the box is the 75th percentile, and the bottom of the box is the 25th percentile total margin. The interquartile range (IQR) is the length of the box in a box-and-whisker plot. The "whiskers" above and below the shaded box represent values that lie more than one and a half times the length of the box from either end of the box. That is, the lower whisker is Q1 – 1.5×IQR, and the upper whisker is Q3 + 1.5×IQR.



Note: PHE funding started in 2020-21

APPENDIX A (continued):

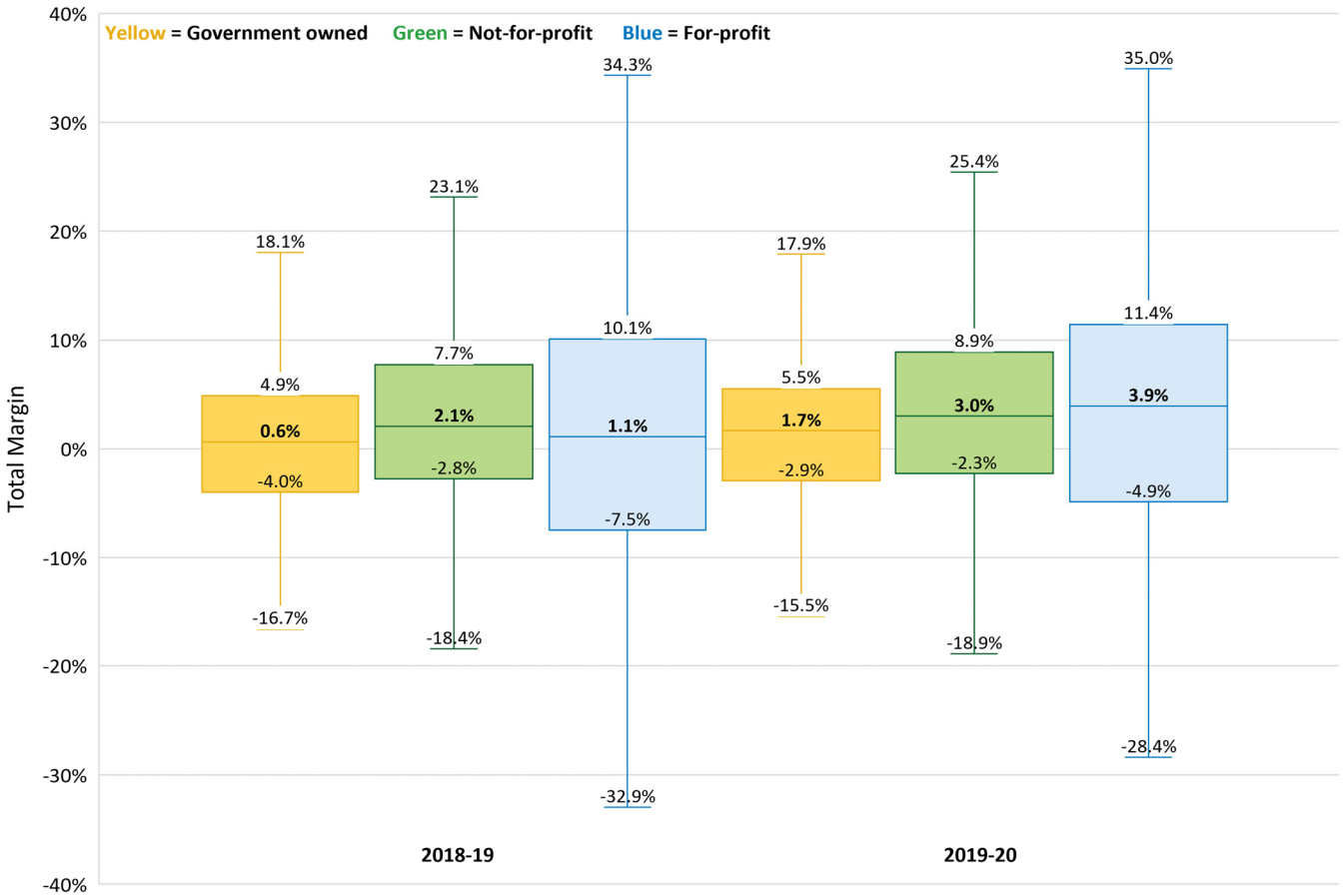
Distribution of Rural Hospitals with and without System Affiliation by Year

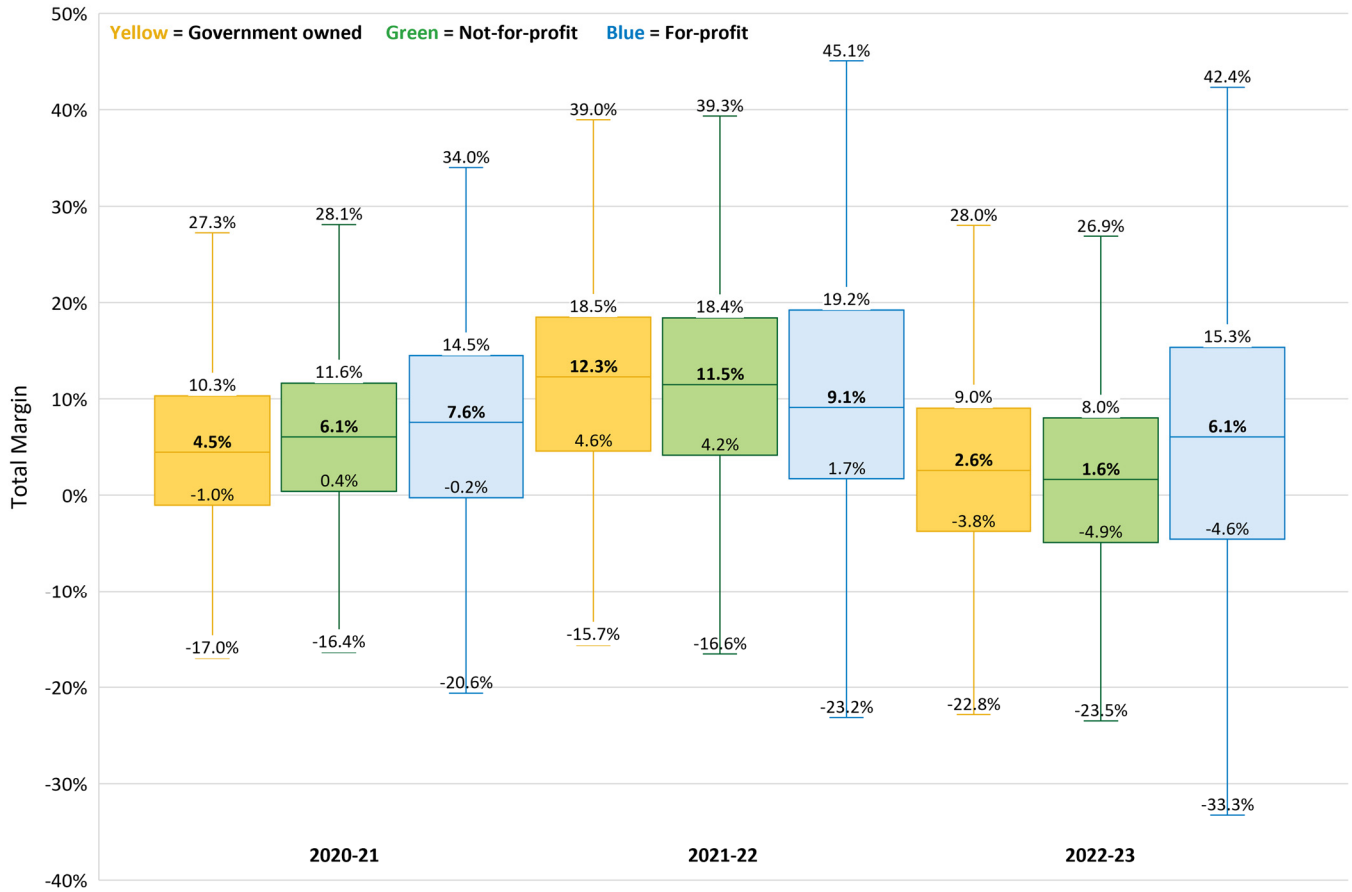


Note: PHE funding started in 2020-21

APPENDIX B:

Distribution of Total Margin of Rural Hospitals by Ownership and Year





Note: PHE funding started in 2020-21

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