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Characteristics of Critical Access Hospitals with High Financial and Quality Metric Performance

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KEY FINDINGS

- **Hospital characteristics**: CAHs in the high finance / high quality group were more likely to be located in a state that had expanded Medicaid, have a higher average daily census (swing), and a lower average daily census (acute) compared to CAHs in the low finance / low quality group.
- **Financial characteristics**: CAHs in the high finance / high quality group were more likely to have lower average net patient revenue (also a proxy for hospital size), but a higher percentage of total revenue coming from outpatient services.
- **Quality infrastructure components**: CAHs in the high finance / high quality group were more likely to have a dedicated quality improvement leader and have incorporated quality into all components of the strategic plan.
- **Service lines**: CAHs in the high finance / high quality group were more likely to offer specialty services including ear, nose, and throat; gastroenterology; oncology; pulmonology; and cardiac rehabilitation; and were less likely to offer intensive care, in-home hospice care, and wound care.

PURPOSE

The purpose of this study is to describe Critical Access Hospitals' (CAHs') performance on five benchmark measures of financial performance and five benchmark measures of quality performance, and to compare selected characteristics of CAHs that fall into different performance quadrants corresponding to whether they met 0-2 benchmarks (indicating low performance) or 3-5 benchmarks (indicating high performance). Findings from this study can be used to inform rural communities and collaborators, State Flex Programs, and hospital leaders about the current state of CAH performance across both financial and quality measures. Further, these hospitals and their partners may benefit from understanding the contextual factors that may influence CAHs' abilities to simultaneously maintain high financial and quality performance, both of which are important in determining hospitals' ability to be successful in value-based care models. For these reasons, we conducted this study, which provides additional information on the relationship between quality and finance in CAHs by summarizing the results of a quantitative analysis of CAHs' performance across financial and quality metrics, and related characteristics.

BACKGROUND

It is well known that quality and finance are important in health care,[1-2] as is value which is determined by both quality and cost.[3] The Centers for Medicare & Medicaid Services (CMS) has recognized the importance of value since the passage of the Patient Protection and Affordable Care Act (2010) and its creation of the CMS Innovation Center, dedicated to developing and testing models

to improve patient care while lowering costs.[4] CMS and other payors continue to encourage hospitals' participation in alternative payment models, such as Accountable Care Organizations (ACOs), that provide incentives for providing quality care and reducing costs.[5] CMS has a goal that by 2030, 100% of traditional Medicare beneficiaries (and the vast majority of all Medicare beneficiaries) will be in accountable care relationships.[6]

For rural hospitals specifically, there have been additional initiatives, such as the Pennsylvania Rural Health Model, and other federal funding allocated to support the transition to value-based care for rural facilities.[7-9] A recent literature review examining the relationship between hospital quality and financial performance showed mixed results; but is suggestive of a positive relationship, at least in certain contexts.[10] Little is known, however, about the specific characteristics that contribute to CAHs' ability to perform well on both financial and quality metrics. This brief summarizes a quantitative analysis examining how CAHs performed across financial and quality metrics, as well as related organizational characteristics. A companion brief compiles insights from interviews with leaders at CAHs that were excelling in both areas.

DATA AND SAMPLE

Data on hospital quality performance for the years 2023 and 2024 were from various sources as a part of the Medicare Beneficiary Quality Improvement Project (MQBIP), the quality reporting program that is a part of the Medicare Rural Hospital Flexibility (Flex) Program. Specific sources include CMS, the Centers for Disease Control and Prevention's National Healthcare Safety Network Annual Survey, and other data collected by the Flex Program directly. Hospital financial data for 2022 (the most recent, complete year available at the time of the study) were obtained from Medicare cost report data in the Healthcare Cost Reporting Information System (HCRIS). Data on CAH characteristics and CAH Quality Infrastructure came from the 2023 National CAH Quality Inventory and Assessment, and additional characteristics came from the 2022 American Hospital Association Annual Survey. The initial sample included 1,349 CAHs with cost reports for fiscal year 2022 with at least 360 days in period. A CAH was excluded if it was missing key financial or quality data measures. The final sample included 914 CAHs.

APPROACH

CAHs in the study sample were categorized as high or low performers on five financial and five quality measures using established benchmarks developed by the Flex Monitoring Team (Table 1).[11-12] Measures were selected to reflect a broad view of performance. The financial measures included total margin and operating margin as indicators of profitability, current ratio and days in net accounts receivable as measures of liquidity, and average age of plant. The quality measures included the percentage of healthcare personnel given influenza vaccine annually (HCP-IMM/3), Healthcare Consumer Assessment of Healthcare Providers and Systems (HCAHPS) overall rating, a composite measure of emergency department transfer processes (EDTC), time from arrival to discharge in the emergency department (OP-18b), and the number of Core Elements of CAH Quality Infrastructure met.[13]

CAHs in the study sample were categorized as: "High Finance" if 3 to 5 financial benchmarks were met; "Low Finance" if 0 to 2 financial benchmarks were met; "High Quality" if 3 to 5 quality benchmarks were met; and "Low Quality" if 0 to 2 quality benchmarks were met. Hospitals were then grouped into four quadrants: high finance / high quality, high finance / low quality, low finance / high quality, and low finance / low quality. Hospital characteristics were then analyzed across these quadrants to identify whether there were differences among them. Characteristics examined included system affiliation, size (net patient revenue), volume [2023 average daily census (ADC) swing and acute, and 2023 annual Emergency Department (ED) volume], ACO participation, hospital ownership, and measures of payer mix, service mix, and Quality Infrastructure components. Market characteristics included location (region and rurality) and whether the hospital was located in a state that had expanded Medicaid during or prior to 2022.

TABLE 1: Financial and Quality Measures, Definitions and Benchmarks

Measures	Definition	Benchmark
Finance		
Total margin	Net income / Total revenue	> 3.0
Operating margin	Operating income / Operating revenue	> 2.0
Current ratio	Current assets / Current liabilities	> 2.3
Days in net accounts receivable	Net patient accounts receivable / (Net patient revenue / Days in period)	< 53 days
Average age of plant	Accumulated depreciation / Depreciation expense * (365 / Days in period)	< 10 years
Quality		
HCP/IMM-3	Percentage of healthcare personnel given influenza vaccination annually	100%
HCAHPS Overall Rating of Hospital	HCAHPS measure of Overall Rating of Hospital provides a rating by patients of their hospital stay (0 = worst hospital; 10 = best hospital), with the percentage measures ("top box") value being those with a 9-10 rating	≥ 86%
EDTC-All	Composite measure that assesses how well CAHs communicate during ED patient transfers to other facilities	100%
OP-18	Median time from patient arrival at ED to departure for discharged patients	≤ 85 minutes
CAH Quality Infrastructure elements	Number of CAH Quality Infrastructure elements met (e.g., Leadership Responsibility and Accountability, Quality Embedded Within the Organization's Strategic Plan)	9 elements met (of 9)

RESULTS

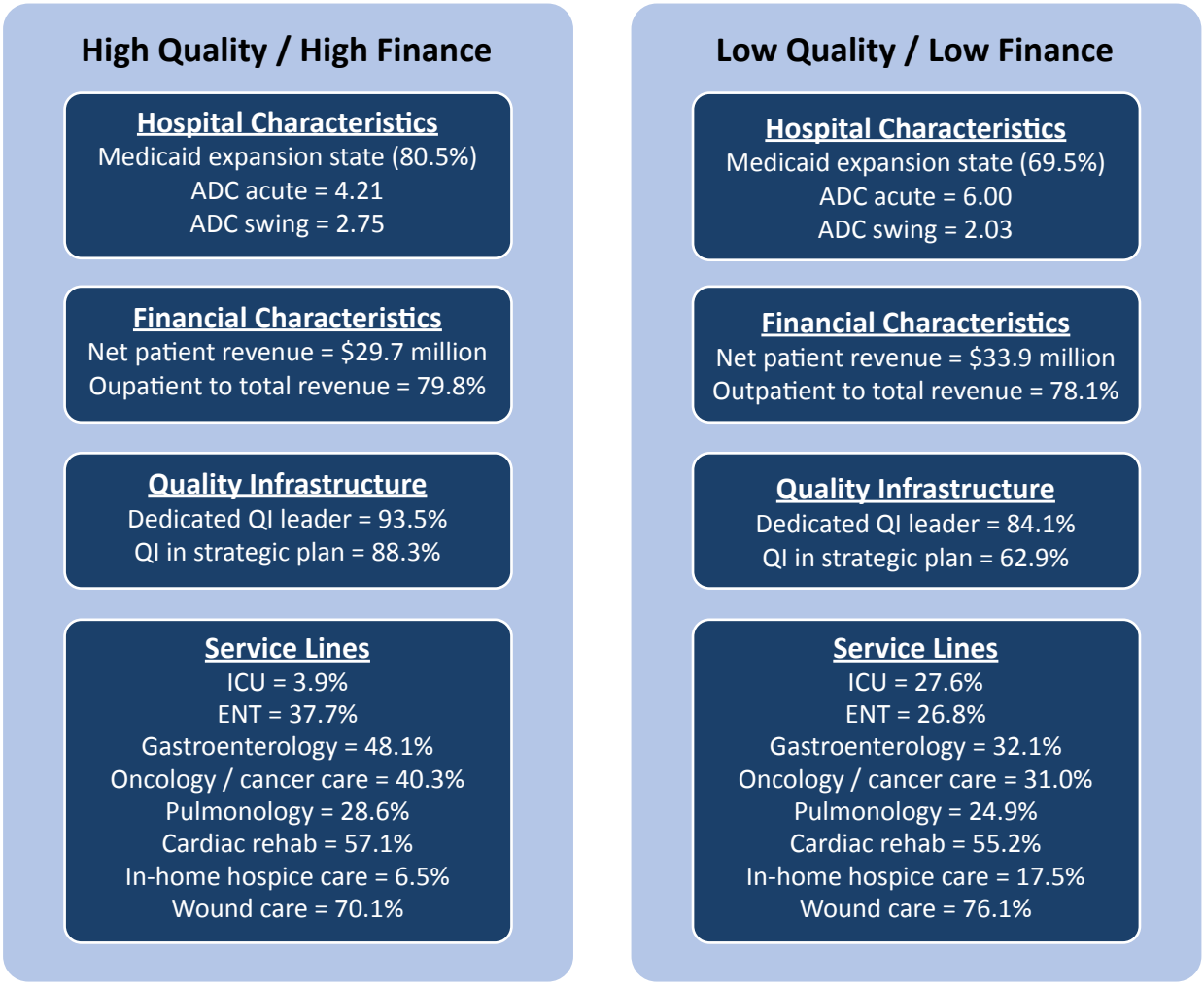
Figure 1 shows the distribution of CAHs across the four performance quadrants. Of the 914 CAHs included in the final sample, 423 (46.3%) were categorized as "Low Quality, High Finance"; 377 (41.2%) as "Low Quality, Low Finance"; 77 (8.4%) as "High Finance, High Quality"; and 37 (4.0%) as "High Quality, Low Finance".

FIGURE 1. CAHs Grouped by Number of Finance and Quality Benchmarks Met

Figure 2 shows the means of CAH characteristics that had a statistically significant difference ($p<0.05$) between hospitals in the high finance / high quality and low finance / low quality groups. The full set of CAH characteristics examined, stratified by group, are presented in the Appendix.

Our analysis showed statistically significant associations between finance / quality performance and several hospital and market characteristics. As compared to CAHs in the low finance / low quality group, CAHs in the high finance / high quality group were more likely to be located in a state that had expanded Medicaid. Strong performers on both quality and finance also had a higher swing bed average daily census but lower acute average daily census, had lower average net patient revenue but a greater percentage of total revenue coming from outpatient services, and had a dedicated quality improvement leader and had incorporated quality into all components of their strategic plan. As compared to the lower performers, strong performers were also more likely to offer specialty services including ENT (Ear, Nose, and Throat), gastroenterology, oncology, pulmonology, and cardiac rehabilitation. In contrast, the high performers were less likely than the low performers to have an intensive care unit (ICU), in-home hospice care, and wound care.

FIGURE 2. Characteristics of the High Quality / High Finance and Low Quality / Low Finance Groups



DISCUSSION

Results from this study identified 77 CAHs as high performing across the included quality and financial measures. Consistent with previous studies,[10-12,14] results from this analysis showed that financial and quality performance were significantly associated with hospitals' organizational and market characteristics. Notably, high quality / high finance performance did not appear to be limited to larger CAHs - there were only small differences in mean net patient revenue between high quality / high finance hospitals and low quality / low finance hospitals. CAHs with strong performance in both quality and finance had a slightly higher ADC for swing beds and lower ADC for acute beds suggesting, perhaps, a focus on swing bed services, but the differences were small.

The most notable differences within a hospital's control were the prioritization of quality in the strategic plan and through dedicated quality leadership, and some variations in hospital service offerings. High quality performance requires active management – having dedicated quality leaders and including quality in all components of the strategic plan are statements to hospital clinicians and staff that quality is important. Providing certain specialty services also appears to be associated with strong performance on both financial and quality measures; however, it is not clear whether the services drive quality and financial performance, or rather that strong quality and financial performance are precursors to being able to support these specialty services. More investigation of the role of service offerings is warranted. Some factors affecting quality / financial performance are beyond the control of management. In this case, being located in a state that expanded Medicaid appeared to be related to performance.

The results of this study can be useful for State Flex Programs (SFPs) in supporting CAHs in their state. Understanding characteristics that may lead to high finance and quality can help SFPs consider interventions that may help CAHs simultaneously make progress in more than one program area. Results may also help SFPs consider contextual factors that may serve as barriers or facilitators of financial and quality improvement in CAHs.

Study Limitations

When the included CAHs were stratified into four groups based on the selected quality and financial benchmarks, the number of hospitals in each group was not equally distributed; 500 hospitals demonstrated strong financial performance, while only 114 demonstrated strong quality performance. This study was conducted prior to recent updates to the financial benchmarks which may have resulted in more hospitals meeting financial versus quality benchmarks.

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For more information on this report, please contact Kristin Reiter, reiter@email.unc.edu.

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REFERENCES

1. Hussey PS, Wertheimer S, Mehrotra, A. The association between health care quality and cost: a systematic review. *Annals of internal medicine*. 2013;158(1), 27-34. DOI: 10.7326/0003-4819-158-1-201301010-00006
2. Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. *Health Affairs*. 2008;27(3):759-769. DOI: 10.1377/hlthaff.27.3.759
3. Teisberg E, Wallace S, O'Hara S. Defining and implementing value-based health care: a strategic framework. *Academic Medicine*. 2020;95(5),682. DOI: 10.1097/ACM.0000000000003122
4. Centers for Medicare & Medicaid Services. The CMS Innovation Center. Accessed 2/1/24. Available at: https://www.cms.gov/priorities/innovation/overview
5. Centers for Medicare & Medicaid Services. Accountable Care Organizations. Accessed 2/1/24. Available at: https://www.cms.gov/priorities/innovation/innovation-models/aco
6. Rawal P, Quinton J, Hughes D, Fowler L. The CMS Innovation Center's strategy to support high-quality primary care. 2023;CMS Blog. Available at: https://www.cms.gov/blog/cms-innovation-centers-strategy-support-high-quality-primary-care
7. Centers for Medicare & Medicaid Services. Pennsylvania Rural Health Model. Accessed 2/1/24. Available at: https://www.cms.gov/priorities/innovation/innovation-models/pa-rural-health-model
8. Government Accountability Office. Information on the transition to alternative payment models by providers in rural, health professional shortage, or underserved areas. 2021. Available at: https://www.gao.gov/products/gao-22-104618
9. Rural Health Value. Accessed 2/1/24. Available at: https://ruralhealthvalue.public-health.uiowa.edu/
10. Dubas-Jakobczyk K, Kocot E, Tambor M, Szetela P, Kostrzewska O, Siegrist Jr RB, Quentin W. The Association Between Hospital Financial Performance and the Quality of Care – A Scoping Literature Review. *International Journal of Health Policy and Management*. 2022;11(12):2816-2828.
11. Pink GH, Holmes GM, Thompson RE, Slifkin RT. Financial Benchmarks for Critical Access Hospitals. *Health Care Financing Review*. 2009;30(3):55-69.
12. Pink G, Holmes G, Slifkin R. Critical Access Hospitals and Financial Benchmark Performance. Flex Monitoring Team Policy Brief #11; 2009. Available at: https://www.flexmonitoring.org/publication/cahs-and-financial-benchmark-performance-policy-brief-11. Accessed November 16, 2022.
13. Flex Monitoring Team. Critical Access Hospital Quality Infrastructure Measure Data Specifications Manual. March 2025. Available at: https://www.flexmonitoring.org/sites/flexmonitoring.umn.edu/files/media/CAH_Quality_Infrastructure_Specifications_2025.pdf. Accessed June 9, 2025.
14. Reiter KL, Gurzenda S, Thompson K, Holmes GM, Pink GH. Supporting Critical Access Hospital operational and financial improvement through the Medicare Rural Hospital Flexibility Program. *The Journal of Rural Health*. 2023;39;710-715. DOI: 10.1111/jrh.12762

APPENDIX: Summary Statistics and Bivariate Analysis Results

	Total (n=914)	High Finance, High Quality (n=77)	High Finance, Low Quality (n=423)	Low Finance, High Quality (n=37)	Low Finance, Low Quality (n=377)	P-value*	Test
Location						0.1666	Chi-Square
Northeast	48 (5.3%)	5 (6.5%)	20 (4.7%)	2 (5.4%)	21 (5.6%)		
Midwest	480 (52.5%)	38 (49.4%)	243 (57.4%)	21 (56.8%)	178 (47.2%)		
South	188 (20.6%)	19 (24.7%)	74 (17.5%)	10 (27.0%)	85 (22.5%)		
West	198 (21.7%)	15 (19.5%)	86 (20.3%)	4 (10.8%)	93 (24.7%)		
Rural	841 (92.0%)	67 (87.0%)	385 (91.0%)	36 (97.3%)	353 (93.6%)	0.1143	Chi-Square
System Affiliation and Ownership						0.0744	Chi-Square
Independent	543 (59.4%)	43 (55.8%)	242 (57.2%)	18 (48.6%)	240 (63.7%)		
Owned	212 (23.2%)	22 (28.6%)	112 (26.5%)	10 (27.0%)	68 (18.0%)		
Managed	159 (17.4%)	12 (15.6%)	69 (16.3%)	9 (24.3%)	69 (18.3%)		
Government-owned	403 (44.1%)	32 (41.6%)	184 (43.5%)	16 (43.2%)	171 (45.4%)	0.9152	Chi-Square
State expanded Medicaid in or before 2022	661 (72.3%)	62 (80.5%)	320 (75.7%)	17 (45.9%)	262 (69.5%)	**0.0002**	Chi-Square
Participates in any type of ACO	458 (50.1%)	39 (50.6%)	219 (51.8%)	22 (59.5%)	178 (47.2%)	0.3863	Chi-Square
Volume							
ADC (Mean)	5.53	4.21	5.45	4.38	6.00	**0.0229**	ANOVA
ADC Swing (Mean)	2.04	2.75	1.92	2.10	2.03	**0.0291**	ANOVA
Annual ED Visits (Mean)	5,911	5,992	5,965	5,707	5,853	0.9840	ANOVA
CAH Quality Infrastructure							
CAH has a dedicated quality improvement leader (at least 0.5 FTE)	782 (85.6%)	72 (93.5%)	357 (84.4%)	36 (97.3%)	317 (84.1%)	**0.0269**	Chi-Square
QI is reflected in all core components/pillars of CAH's strategic plan	633 (69.3%)	68 (88.3%)	293 (69.3%)	35 (94.6%)	237 (62.9%)	**<0.0001**	Chi-Square
Finance							
Net patient revenue (Mean)	$34,435,910	$29,677,081	$36,942,899	$20,747,917	$33,938,375	**0.0028**	ANOVA
Net patient revenue (Median)	$24,456,129	$24,307,569	$28,271,475	$18,506,545	$23,379,685	**0.0002**	Kruskal-Wallis Test
Outpatient revenue to total revenue (Mean)	79.8%	79.8%	81.4%	78.9%	78.1%	**0.0001**	ANOVA
Outpatient revenue to total revenue (Median)	82.3%	81.9%	83.9%	82.3%	79.9%		
Uncompensated care (Mean)	4.0%	4.3%	3.8%	3.8%	4.0%	0.8112	ANOVA
Uncompensated care (Median)	2.7%	2.6%	2.6%	2.9%	2.8%		
Medicare inpatient payer mix (Mean)	62.0%	64.1%	60.7%	67.0%	62.6%	0.0617	ANOVA
Medicare inpatient payer mix (Median)	62.2%	67.2%	60.7%	67.0%	62.4%		

	Total (n=914)	**High Finance, High Quality** (n=77)	**High Finance, Low Quality** (n=423)	**Low Finance, High Quality** (n=37)	**Low Finance, Low Quality** (n=377)	**P-value***	**Test**
Medicare outpatient payer mix (Mean)	34.0%	31.4%	33.7%	36.1%	34.7%	0.1063	ANOVA
Medicare outpatient payer mix (Median)	33.1%	31.8%	32.8%	33.5%	34.3%		
Medicaid payer mix (Mean)	14.9%	15.4%	15.2%	13.3%	14.7%	0.5834	ANOVA
Medicaid payer mix (Median)	13.5%	14.8%	14.1%	12.6%	12.9%		
Services							
Outpatient Services							
Emergency medicine	99.8%	100.0%	99.8%	100.0%	99.7%	0.9613	Chi-Square
Infusion services	94.9%	97.4%	94.8%	94.6%	94.4%	0.7597	Chi-Square
Outpatient surgery	80.1%	74.0%	83.2%	75.7%	78.2%	0.1317	Chi-Square
Inpatient Services							
Inpatient surgery	59.7%	49.4%	61.5%	54.1%	60.5%	0.2068	Chi-Square
ICU	22.3%	3.9%	22.2%	8.1%	27.6%	**<0.0001**	Chi-Square
Labor and delivery	30.7%	19.5%	33.3%	27.0%	30.5%	0.1036	Chi-Square
Inpatient hospice	43.0%	42.9%	41.6%	43.2%	44.6%	0.8705	Chi-Square
Mental Health Services							
Adult psychiatric inpatient services	4.2%	2.6%	4.0%	2.7%	4.8%	0.7898	Chi-Square
Pediatric psychiatric inpatient services	0.7%	0.0%	0.5%	0.0%	1.1%	0.5896	Chi-Square
Substance use disorder services - inpatient/ residential	4.4%	5.2%	5.0%	0.0%	4.0%	0.2780	Chi-Square
Substance use disorder services - outpatient	20.7%	27.3%	21.3%	13.5%	19.4%	0.2970	Chi-Square
Psychiatric outpatient services - counseling	41.6%	41.6%	43.5%	35.1%	40.1%	0.6513	Chi-Square
Psychiatric outpatient services - psychiatric nurse practitioner	26.7%	35.1%	27.4%	10.8%	25.7%	0.0589	Chi-Square
Psychiatric outpatient services - psychiatrist	23.5%	33.8%	24.6%	13.5%	21.2%	0.0518	Chi-Square
Specialty Care							
Cardiology	60.7%	63.6%	62.6%	64.9%	57.6%	0.4270	Chi-Square
Dermatology	23.9%	27.3%	25.5%	21.6%	21.5%	0.4904	Chi-Square
ENT	33.3%	37.7%	38.8%	27.0%	26.8%	**0.0026**	Chi-Square
Gastroenterology	37.0%	48.1%	39.5%	35.1%	32.1%	**0.0280**	Chi-Square
Infectious disease	15.9%	15.6%	17.0%	16.2%	14.6%	0.8274	Chi-Square
Neurology	25.1%	27.3%	27.9%	24.3%	21.5%	0.2045	Chi-Square
Obstetrics/Gynecology	45.5%	39.0%	47.0%	45.9%	45.1%	0.6231	Chi-Square
Oncology/Cancer care	36.4%	40.3%	41.6%	24.3%	31.0%	**0.0060**	Chi-Square
Orthopedics	62.6%	59.7%	65.5%	48.6%	61.3%	0.1625	Chi-Square

	Total (n=914)	**High Finance, High Quality** (n=77)	**High Finance, Low Quality** (n=423)	**Low Finance, High Quality** (n=37)	**Low Finance, Low Quality** (n=377)	**P-value***	**Test**
Pediatrics	31.2%	36.4%	31.9%	18.9%	30.5%	0.2906	Chi-Square
Pulmonology	29.3%	28.6%	34.3%	18.9%	24.9%	**0.0150**	Chi-Square
Radiology	99.7%	98.7%	100.0%	100.0%	99.5%	0.2404	Chi-Square
Occupational therapy	88.5%	87.0%	89.8%	97.3%	86.5%	0.1544	Chi-Square
Physical therapy	98.5%	100.0%	97.9%	100.0%	98.7%	0.4113	Chi-Square
Speech therapy	83.2%	87.0%	83.0%	91.9%	81.7%	0.3320	Chi-Square
Cardiac rehabilitation	61.3%	57.1%	67.4%	62.2%	55.2%	**0.0044**	Chi-Square
Pulmonary rehabilitation	49.0%	48.1%	52.5%	48.6%	45.4%	0.2527	Chi-Square
Sleep medicine	46.1%	51.9%	49.2%	40.5%	41.9%	0.1100	Chi-Square
Other Services							
Ambulance services	34.1%	40.3%	35.0%	24.3%	32.9%	0.3525	Chi-Square
Home health	23.1%	18.2%	23.6%	21.6%	23.6%	0.7485	Chi-Square
In-home hospice care	14.4%	6.5%	13.9%	5.4%	17.5%	**0.0252**	Chi-Square
Palliative care	30.1%	35.1%	27.7%	35.1%	31.3%	0.4229	Chi-Square
Primary care clinic	28.1%	27.3%	26.0%	27.0%	30.8%	0.5135	Chi-Square
Respite care	44.4%	46.8%	46.6%	29.7%	43.0%	0.2107	Chi-Square
Rural health clinic	76.5%	72.7%	76.8%	75.7%	76.9%	0.8764	Chi-Square
Nursing home/skilled nursing facility	31.4%	31.2%	27.2%	29.7%	36.3%	0.0502	Chi-Square
Pain management	45.3%	51.9%	41.6%	40.5%	48.5%	0.1306	Chi-Square
Swing beds	96.8%	97.4%	96.5%	94.6%	97.3%	0.7512	Chi-Square
Wound care	78.0%	70.1%	81.1%	78.4%	76.1%	**0.0422**	Chi-Square

Bold p-values indicate statistical significance (p<0.05)