

The Quest to Measure and Compare Telehealth Utilization and Changes Across US Hospitals

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INTRODUCTION

Telehealth utilization measurement has received renewed attention as healthcare organizations rapidly adopted and deployed telehealth programs during the COVID-19 pandemic.^{1,2}

Despite the interaction between hospital-level financial measures and in-person utilization characteristics, few studies have examined relationships between COVID-19 public health emergency (PHE) funds, other financial indicators, and self-reported telehealth utilization among hospitals during the pandemic.

A major challenge in examining these relationships is that data on detailed hospital telehealth utilization has high rates of missingness, which may limit conclusions drawn by using such data. The American Hospital Association (AHA) Annual Survey, an annual survey of non-federal acute care hospitals in the US, recently expanded its telehealth survey. However, these items are subject to low response rates due to inattentive completion of high-consistency questions.

This study examines financial and utilization characteristics among respondent and non-respondent hospitals using 2017-2021 Medicare Cost Reports and the American Hospital Association Annual Survey (AHAAS).

METHODS

A panel of data was constructed at the hospital-level using Medicare Cost Reports (2017-2020) and AHAAS data (2020-2021). Telehealth measures were evaluated to assess a) whether a hospital reported providing any telehealth services, b) how many telehealth visits of any type a hospital reported, and c) a categorical variable for high and low telehealth visit utilization based on the number of telehealth visits reported when compared to the number of total inpatient discharges and outpatient visits reported.

Cost Report Health Information Technology (HIT) capital purchases and COVID-19 PHE funds were evaluated by hospital reported measures. To evaluate missingness, utilization measures were stratified by hospital characteristics. Separately, measures were stratified by reported telehealth service provision status (e.g., responding “no” to all AHAAS categorical telehealth questions or reporting zero telehealth visits/patients). Descriptive statistics were evaluated for various financial, operational, and general hospital-level characteristics to describe data missingness. We estimated logistic regressions to test the associations between missing telehealth responses and hospital characteristics.

RESULTS

- Fifty-three percent of hospitals did not report a number value for telehealth visits.
- Twenty percent reported zero as the number of telehealth visits. Hospitals that reported (yes/no) providing any telehealth visits increased from 43.6% in 2020 to 52.8% in 2021 (**Table 1**).
- Hospitals with unreported telehealth visit data had better margins (total and operating), received more COVID-19 PHE funding, and had greater capital asset balances compared to hospitals that reported these data (**Figures 1 and 2**).
- Across various AHAAS measures, hospitals were more likely to have missing telehealth responses if they maintained higher occupancy rates, were in the South and West regions, and were for-profit (**Figure 3**).

Figure 1

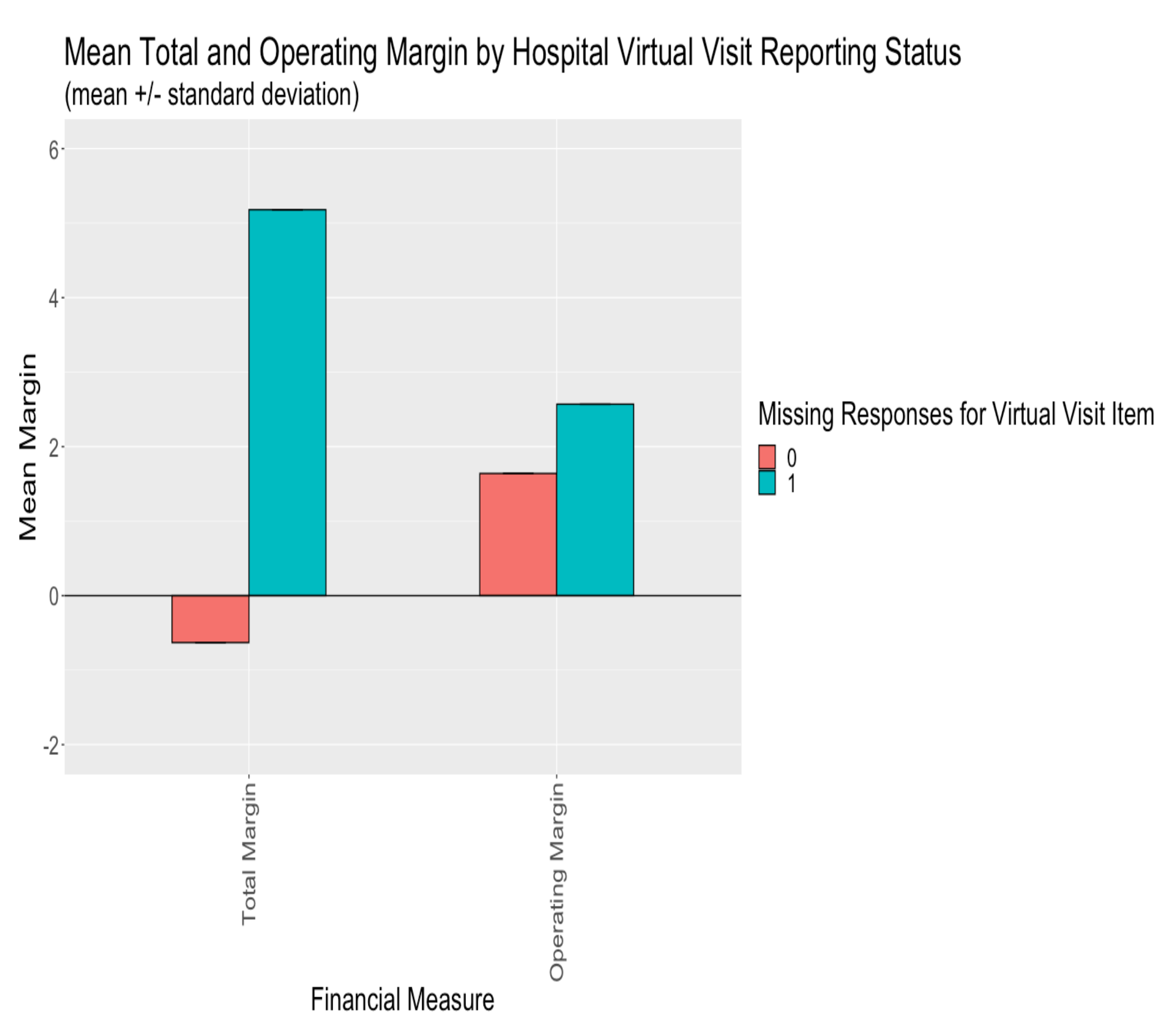


Figure 2

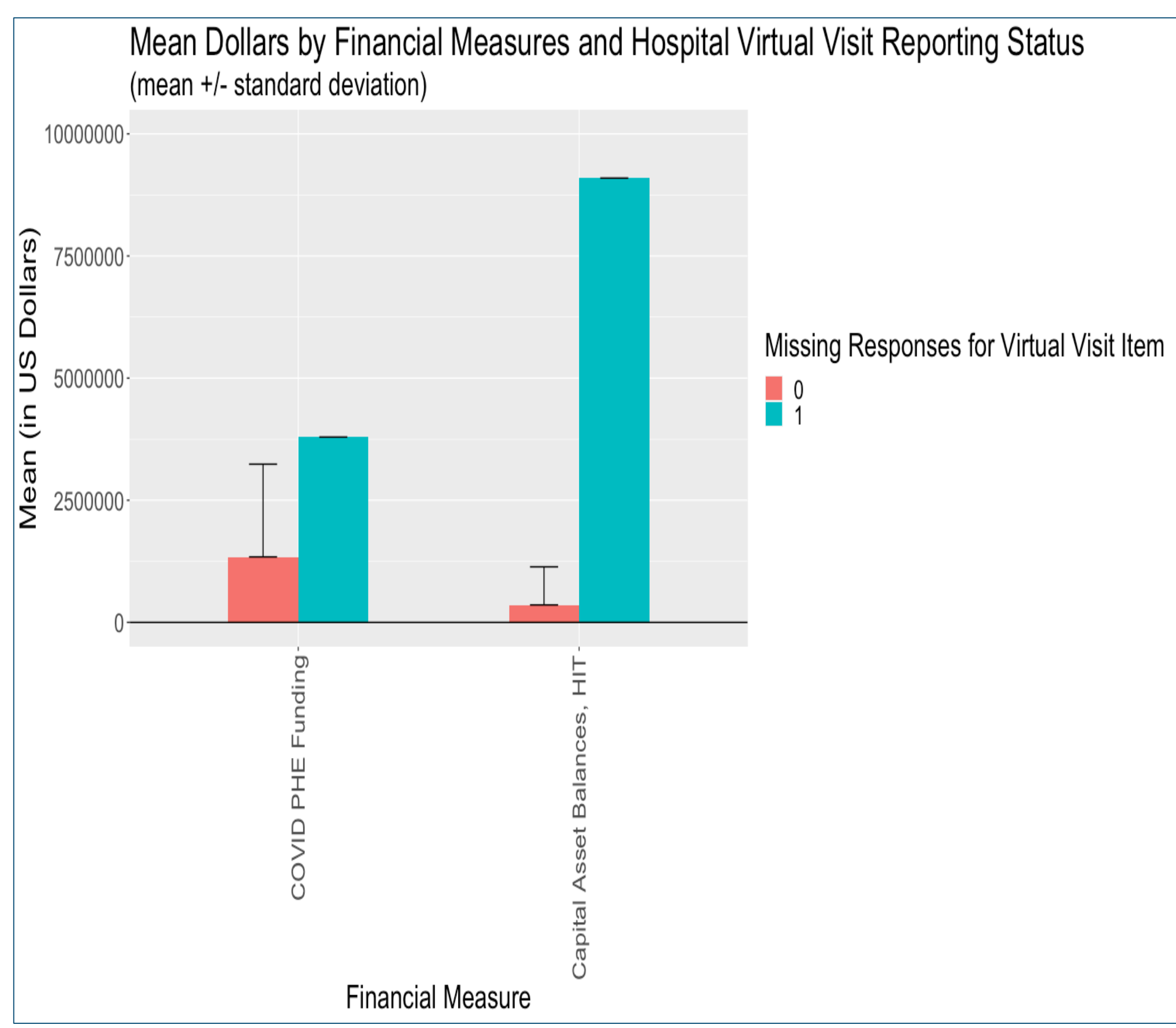
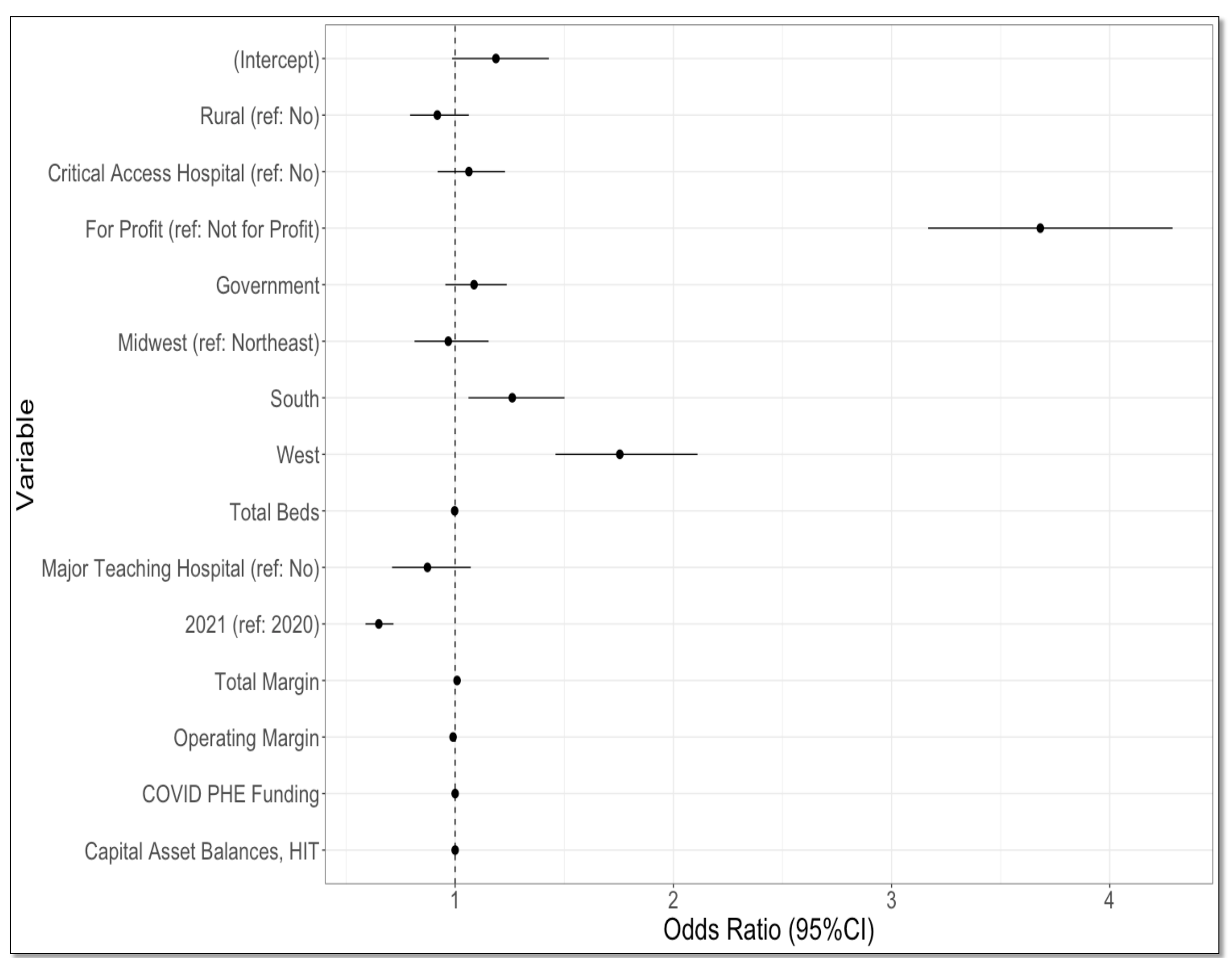


Table 1

Hospitals Reporting Any Countable Virtual Visits				
	Total	Not Missing	Missing	P value
Rural				<0.001
No	3,803 (50.71)	1,890 (53.05)	1,913 (48.59)	
Yes	3,697 (49.29)	1,673 (46.95)	2,024 (51.41)	
Ownership				<0.001
Not for Profit	4,524 (60.32)	2,482 (69.66)	2,042 (51.87)	
For profit	1,377 (18.36)	319 (8.95)	1,058 (26.87)	
Government	1,599 (21.32)	762 (21.39)	837 (21.26)	
Beds, Mean (SD)	145.38 (174.29)	177.28 (200.94)	117.44 (139.83)	<0.001
Major Teaching Hospital				<0.001
No	6,856 (91.41)	3,155 (88.55)	3,701 (94.01)	
Yes	644 (8.59)	408 (11.45)	236 (5.99)	
Year				<0.001
2020	4,356 (58.08)	1,902 (53.38)	2,454 (62.33)	
2021	3,144 (41.92)	1,661 (46.62)	1,483 (37.67)	
Total Margin, Mean (SD)	7.42 (12.59)	7.39 (11.03)	7.45 (13.86)	0.859
Operating Margin, Mean (SD)	5.76 (12.690)	5.49 (11.53)	6.02 (13.66)	0.071
COVID PHE Funding, Mean (SD)	\$4,439,437 (\$10,200,00)	\$5,479,424 (\$12,100,000)	\$3,498,245 (\$7,957,633)	<0.001
Capital Asset Balances, HIT Beginning, Mean (SD)	\$2,556,006 (\$25,300,000)	\$3,515,740 (\$35,600,000)	\$1,687,442 (8,828,010)	0.001

Figure 3. Odds Ratios: Relationship between Hospital Characteristics and Virtual Care Reporting Status



DISCUSSION

- Findings inform approaches to quantify and analyze telehealth cost and utilization measures using a nationally representative organizational-level dataset.
- Findings may support the growing need to coalesce telehealth survey items to avoid missed or inattentive responses for improved measurement.

Limitations:

- We used available telehealth visit items from the 2020-2021 AHAAS dataset and 2017-2021 cost report data which may not capture all telehealth use and financial metrics to date.
- The primary dataset relies on self-reported organizational responses.
- We cannot generalize results to other populations or settings.

SUMMARY

- While telehealth has grown exponentially, the ability to measure telehealth utilization, depth, and breadth at the hospital-level remains difficult. Measuring telehealth at the hospital-level is important for policymakers and hospital decision-makers discerning the variety and amount of telehealth services to provide.
- Future work should contextualize findings further through qualitative data collection and analysis. We are currently conducting key informant interviews to advance this work.

REFERENCES



SCAN ME

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