

## COST OVERHEAD IN COLORADO HOSPITALS: OPPORTUNITY OR THREAT?

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### INTRODUCTION

Health care spending continues to be higher in the United States compared to other developed nations. The total health care spending as a percentage of U.S. Gross Domestic Product (GDP) has steadily increased since 1970. In 2021, the U.S. spent more than 19% of its GDP. A recent analysis released by the American Hospital Association projects that hospitals and health systems in the U.S. could lose \$53 billion in revenue in 2021 due to the COVID-19 pandemic<sup>1</sup>. Given the unsustainable rise in health care costs and losses stemming from a pandemic, hospitals will continue to face various pressures to maximize efficiency<sup>2</sup>.

It stands to reason that a hospital (or any other business) should be able to adjust operating expenses as customer volumes vary. That variable cost structure indicates that operating expenses track the service volume. Thus, if the prices set for services are sufficiently above those expenses, the organization should be able to generate a profit. However, the challenge in operating a business is how operating expenses do not vary with the service volume and remain fixed even if volumes decline significantly. A fixed cost structure must also be considered when setting prices for a product or service. The price for service must be set high enough to cover not only the variable expenses for that service and then generate some additional surplus to be used in paying those fixed expenses. Once fixed expenses are paid, that excess of revenue over variable expenses results in profit for the enterprise. This is known as the contribution margin<sup>3</sup>.

Hospitals may have a particularly challenging position from a pricing and expense management perspective because of the nature of their operations. These organizations must always have patient care services available 24 hours a day, even if those services are used infrequently. The basic level of staffing needed for services represents a fixed cost to the hospital. Revenues from patient care services can defray such fixed clinical costs. Nevertheless, hospitals have other fixed costs that are not directly related to patient care. These administrative costs are funded by the contribution margin from services to patients. Such costs include administration,

facility maintenance, depreciation, and regulatory compliance. In some hospitals, the costs of facility maintenance and depreciation of high-cost facilities and equipment may significantly offset revenues constrained by market pressures.

This is not to say that expenses for overhead and support functions are unimportant to a hospital operation. The costs of capital items, maintenance, and billing/collection functions enable the provision of patient care services in hospitals. However, the extent of such fixed non-patient care expenses may threaten a hospital's financial health. This point is especially true because of recent challenges to hospital financial performance during the COVID-19 pandemic when high-paying elective services were supplanted by long-term, higher-cost stays associated with that illness<sup>1</sup>. Thus, a comparative evaluation of cost structure and associated contribution margins may yield opportunities to improve financial performance in hospitals with small or negative operating margins.

The contribution margin is a service's revenue minus all its associated variable costs - the amount available to cover all the fixed costs and overhead expenses. In practice, if a hospital department has a small contribution margin, this knowledge can be vital for the administrators' financial decision-making<sup>3</sup>.

In practice, if a hospital or even a department within a hospital has a small contribution margin, this knowledge can be vital for the administrators' financial decision-making<sup>3</sup>. Full-cost pricing requires the administrator to understand overhead costs and set prices to recover not only the direct costs of care but fully pay the fixed costs for running the business and then generate a profit from operations. Payment rates from government payers and large commercial payers may force hospitals into more of a marginal cost pricing strategy, which may not be financially sustainable if overhead costs are significant<sup>4</sup>.

Several studies have discussed the financial performance of varying types of hospitals. McCue and Thompson (2011) concluded that hospitals with low cash flow also tend to have higher operating losses and low financial performance. To the extent that a hospital must pay fixed expenses even in the face of declining service volumes (and thus declining cash

<sup>1</sup> American Hospital Association. (2021). *Financial Effects of COVID-19: Hospital Outlook for the Remainder of 2021*, <<https://www.aha.org/system/files/media/file/2021/09/AHA-KH-Ebook-Financial-Effects-of-COVID-Outlook-9-21-21.pdf>>, May 4, 2022

<sup>2</sup> Gliadkovskaya, A. (2022). *Rocky road ahead for hospitals in 2022 with rising labor costs, tougher negotiations with payers*,

<<https://www.fiercehealthcare.com/hospitals/respiratory-care-departments-high-labor-and-supply-costs>>, April 27, 2022.

<sup>3</sup> LaBrake, K. and Pokrandt, H. (2010). *Using the Medicare Cost Report to Improve Financial Performance*, Healthcare Financial Mgt. (10).

<sup>4</sup> Pink, G. & Song, P. (2021). *Understanding Health Care Financial Management (8th Ed.)* Chicago, IL.

inflows), a hospital would likely incur such losses<sup>5</sup>. Liu and colleagues (2012) analyzed data from 219 hospitals and concluded that cost structure is significantly associated with hospitals' financial performance<sup>6</sup>. Financially distressed hospitals tend toward higher-cost inpatient and lower-acuity services that limit contribution margins to pay administrative costs<sup>7</sup>. A 2021 study noted a significant positive association between the number of days cash on hand and the outpatient revenue of an academic/teaching hospital and found that administrators of academic hospitals can increase liquidity by offering diverse outpatient services and novel delivery of care options<sup>8</sup>. However, these studies did not examine the composition of operating expenses as a predictor of financial performance observations.

Profitability is perhaps as critical as other metrics used in these studies since it determines the hospital's ability to generate reserves for capital expenditures or absorb operating losses during low patient care volumes. This seems especially concerning during the recent COVID-19 pandemic when hospitals were forced to limit high-revenue elective services provided to patients with higher-paying commercial insurance plans. Hospitals generally earn profit margins on services to patients whose care is paid by commercial insurance plans while losing money on the same care provided to patients covered by government insurance plans<sup>9</sup>. Hence the ability of hospitals to generate profits could be constrained by "crowding out" higher-paying commercial insurance services. Declines in hospital profits observed during the pandemic seem to bear out this truism<sup>10</sup>.

The mix of commercial insurance versus government insurance funding of services – the "payer mix" is one element predictive of hospital profitability and that perspective seems well established in the literature<sup>11</sup>. What is less well known is the extent to which fixed costs may be a concern of equal or greater magnitude in understanding the risks to the ability of a hospital to continue operating as a going concern. As revenues for hospitals are subject to greater scrutiny and pressures to limit pricing differentials between commercial and government payers, the ability of a hospital to pay direct expenses for patient care is becoming a challenge even before considering fixed overhead costs. Recent increases in patient care costs associated with the

COVID-19 pandemic further amplify this concern<sup>10</sup>. Examination of contribution margin can illuminate the ability of a hospital to maintain profitability when absorbing the fixed overhead costs that are a necessary part of this business. The issue is understanding the magnitude of that overhead cost burden as a proportion of the hospital's total expense structure.

There appears limited guidance in the literature on contribution margin at the hospital level. A significant challenge in examining this question arises from a dearth of publicly available, audited data that establishes the fixed costs for an acute care hospital in the United States. While the CMS HCRIS cost report database details operating expenses at a departmental level, the breakdown by expense classification is limited only to salary and non-salary items. That dataset does not have different elements, such as a base staffing level required by regulation, executive salaries, or fixed rental costs. Other hospital datasets exhibit similar limitations in the financial data they present. In this brief, we would like to propose a variation on the traditional contribution margin analysis to understand contemporary hospital managers' financial constraints better.

Furthermore, we will examine the operating expenses for acute care hospitals in Colorado to identify the overhead costs in those organizations and, therefore, the contribution margins generated therein. Armed with such knowledge, managers, and policymakers can be better informed about the actual needs of hospitals in the state for revenues to fund quality patient care. Thus, we will seek an answer to the question, "Are fixed overhead costs harming the financial health of Colorado hospitals?" We will also aim to determine "What is the extent of overhead in the operating expense structure of Colorado's hospitals?" As a basis for comparison, we will use data from hospitals in the rest of the United States.

## DATA AND METHODS

There is limited publicly available data on all acute care hospitals in Colorado at a level of detail sufficient to identify total overhead costs for a hospital. However, acute care hospitals must file extensive financial reports as a part of their participation in the federal Medicare program

<sup>5</sup> McCue, M.; Thompson, J. *Analysis of cash flow in academic medical centers in the United States*. Acad. Med. 2011, 86, 1100–1107.

<sup>6</sup> Liu, L. L., Forgione, D. A., & Younis, M. Z. (2012). *A comparative analysis of the CVP structure of nonprofit teaching and for-profit non-teaching hospitals*, Journal of health care finance, 39(1), 12–38.

<sup>7</sup> Langabeer, J.R., II; Lalani, K.H.; Champagne-Langabeer, T.; Helton, J.R. (2018). *Predicting Financial Distress in Acute Care Hospitals*, Hospital Topics 96 (3).

<sup>8</sup> Lalani, K., Revere, L., Chan, W., Champagne-Langabeer, T., Tektiridis, J., & Langabeer, J. (2021). *Impact of External Environmental*

*Dimensions on Financial Performance of Major Teaching Hospitals in the U.S. Healthcare*, 9(8).

<sup>9</sup>American Hospital Association. (2019). *Rural Report*: <<https://www.aha.org/system/files/2019-02/rural-report-2019.pdf>> May 4, 2022.

<sup>10</sup> American Hospital Association. (2022). *Cost of Caring*, <<https://www.aha.org/system/files/media/file/2021/10/report-cost-caring-0621-V16.pdf>> May 4, 2022.

<sup>11</sup> Whaley, C., Briscoe, B., Kerber, R., O'Neill, B., & Kofner, A. (2022). *Prices Paid to Hospitals by Private Health Plans*. Santa Monica, CA: Rand Corporation, <[https://www.rand.org/pubs/research\\_reports/RRA1144-1.html](https://www.rand.org/pubs/research_reports/RRA1144-1.html)> May 15, 2022.

administered by the Centers for Medicare and Medicaid Services (“CMS”). These reports are referred to as the Medicare Cost Report and are filed annually by hospitals, using audited financial data from those organizations to substantiate the extent of federal payments to hospitals on behalf of Medicare beneficiaries. The dataset from which this data is extracted is known as the Healthcare Cost Report Information System or “HCRIS” (CMS, 2022).<sup>12</sup>

The cost report segregates salary and other operating expense classes by department in a hospital facility. Also, it compiles a balance sheet and income statement for a specified period – usually the facility fiscal year. In addition, data on utilization by broad payer classes such as Medicare, Medicaid, and all other sources are available there. Further detail on items available in this dataset can be found in the CMS Provider Reimbursement Manual (CMS, 2021).<sup>13</sup>

The HCRIS data can support an estimate of fixed administrative expenses for a hospital. The administration department on the cost report includes expenditures for all functions mentioned earlier, along with tax payments and information technology resources. Additionally, many organizations are part of multi-hospital systems. They may have fixed corporate office expenses charged to member facilities and captured as “home office” expenses on the cost report. Also, the cost of capital asset depreciation, interest on capital debt, and capital lease costs are captured in a capital expense department in the cost report. This analysis will assume that the cost report’s administration and capital expense departments are considered fixed overhead. Expenses in all other departments are then assumed to vary somewhat with patient volumes. This assumption ignores that some patient care areas, such as ancillary departments or nursing units, include a fixed element of cost that is not identifiable. However, this analysis assumes that any estimation error for fixed costs in patient care areas would be offset by variability in some parts of the administrative department, such as with flexing hourly administrative staff utilization during times of a low patient census.

This analysis uses cost report data from 4,222 acute care hospitals in the United States that had no change in ownership or control during 2017-2019. Hospitals facing a potential change in ownership or closure may have unusual transactional items such as write-offs or divisional consolidations that could skew analysis of ongoing operations and were excluded from the sample used in this analysis. This condition in data selection is expected to

provide a view of hospital expense structure in a steady state without any bias from merger/acquisition activity. Hospitals from Colorado were then segregated from the list of all other acute care hospitals in the other forty-nine US states to examine any differences between Colorado facilities and facilities across the rest of the country.

This distinction is of interest from two perspectives. First, the prices of hospitals in Colorado have been among the highest in the nation, according to 2021 data released by the Colorado Department of Health Care Policy and Financing (“HCPF”). Higher prices may be required to support a higher proportion of overhead expenses. Within that analysis, it was posited that hospital costs exceeded national averages for 2010-2018 (HCPF, 2021).<sup>14</sup> However, that analysis did not consider rural critical access hospitals, which Medicare pays based on actual costs incurred, which may temper incentives to limit costs in those facilities. So, the second area of interest examined here is the degree to which Colorado hospitals have differences in overhead cost proportions when segregated between urban and rural facilities and between critical access and non-critical hospitals.

This analysis considered data from the HCRIS database for fiscal years 2017-2019. These are the latest years available in the dataset at the time of this writing. Normally, there is a minimum 18-month lag between a hospital ending its fiscal year and data being available in the HCRIS data set. This time lag results from the need for hospitals to close their financial records for that year, audit those results, prepare the cost reports for submission to CMS, audit that data by CMS, and then post to the HCRIS data. This analysis used the following items obtained from the HCRIS dataset:

- Patient services margin: Worksheet G-3 of the CMS Cost Report Form 2552-10, row 3, column 1.
- Overhead expenses: comprised of capital expense and administrative departments obtained from Worksheet A of the CMS Cost Report Form 2552-10, rows 1, 2, 3, and 5, column 7.
- Estimated contribution margin: calculated as patient services margin plus overhead expenses as described above.
- Net income: obtained from Worksheet G-3 of the CMS Cost Report Form 2552-10, row 29, column 1.

<sup>12</sup> Centers for Medicare and Medicaid Services (“CMS”). (2022). *Cost reports*, <<https://www.cms.gov/research-statistics-data-and-systems/downloadable-public-use-files/cost-reports>>, April 25, 2022.

<sup>13</sup> Centers for Medicare and Medicaid Services. (2021). *Provider Reimbursement Manual-Part 2*, Retrieved from <<https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Paper-Based-Manuals-Items/CMS021935>>, April 15, 2022.

<sup>14</sup> Colorado Department of Health Care Policy and Financing (“HCPF”). (2021). *Colorado Hospital Prices Continue to be Among Nation’s Highest*, <<https://hcpf.colorado.gov/colorado-hospital-prices>>, December 17, 2021.



- Non-operating income/expense: calculated as the difference between net income and patient services margin described above.
- Administrative expenses: costs for facility administration are shown in Worksheet A of the CMS Cost Report Form 2552-10, rows 3 and 5, column 7.
- Capital expenses: recorded in the facility income statement as shown in Worksheet A of the CMS Cost Report Form 2552-10, rows 1 and 2, column 7.

The segregation of administrative and capital expenses was made to identify any extent to which the observed overhead burden was influenced by significant capital investments or specific management decisions to incur administrative cost items. Values for the items listed here were calculated on average for the three years in this analysis and expressed as a percentage of net revenues to control for organization size and control status. The records in the analysis were then segregated for 75 Colorado hospitals and 4,147 hospitals in the other forty-nine states across three broad categories of ownership and control for hospitals:

- Local governmental hospitals
- Investor-owned hospitals
- Voluntary, non-profit hospitals

These broad classifications of ownership/control were selected since that variable may influence a hospital's operation. Governmental facilities may rely on local tax subsidies to fund community indigent care services and may have a lesser incentive to reduce costs due to the subsidy. Similarly, non-profit hospitals have resources available through donor capital and investment of net assets that also may have a lesser incentive to control costs since there are resources above and beyond patient service collections. Investor-owned, for-profit entities have the most incentive to control overhead since these organizations rely heavily on patient service revenues to pay operating expenses and generate investor returns.

Hospitals in both Colorado and non-Colorado groups were then segregated into classifications based on urban location as identified on Worksheet S-2, row 26, column 1 of the cost report:

- Urban: within an urban area defined by the CMS Provider Reimbursement Manual.
- Rural: located in a non-urban area as defined by the MS Provider Reimbursement Manual and not designated as a rural Critical Access Hospital.
- Rural, Critical Access Hospital: a rural, limited-service facility as defined by the CMS Provider Reimbursement Manual.

The rural critical access hospital merits separate consideration in this analysis for two crucial reasons. First, these facilities are inherently limited in their patient service

offerings due to the requirement to maintain an average length of stay of fewer than 96 hours (four days) and have fewer than 25 licensed beds. Also, the critical access hospital must be located at least a 35-mile drive (or 15 miles in mountain territory) from any other hospital facility. Due to the limited size and acuity of care provided, the revenue base to absorb overhead expenses in a rural critical access hospital will be limited. This could skew the proportion of overhead costs as a percentage of revenue higher than in other hospital classifications examined in this work.

Further, the critical access hospital is paid 101% of the costs for treating Medicare patients, which is described explicitly in the CMS Provider Reimbursement Manual. This "allowable" expense reimbursement may not be the total cost of patient care and excludes many administrative costs such as marketing. The extent to which managers react to incentives of cost-based reimbursement may be informative in the broader context of this analysis.

Similarly, rural hospitals tend to have a higher proportion of services paid for by Medicare and Medicaid. In addition, those payment sources tend **not to** pay the total costs of care and may not likely cover the costs of operating a hospital facility, including administrative and capital costs<sup>9</sup>. Thus, the impacts of administrative expense on the financial viability of these facilities could be different from those rural facilities getting cost-based payments. Impacts would undoubtedly differ from urban facilities where a more significant proportion of commercially insured patients from which larger payments could be obtained<sup>11</sup>. Urban facilities with an enormous scope of services may exhibit different management behaviors. Given their proximity to larger patient populations with higher commercial insurance reimbursements, additional administrative costs could be sustained. Elements of the administrative expense classification in the CMS Provider Reimbursement Manual represent a wide array of items in the routine operation of a contemporary hospital facility. Examples of items classified as "administrative" for purposes of the CMS cost report include:

- Executive compensation
- Accounting, billing, and collections
- Legal services
- Taxes
- Information technology support
- Fundraising and community relations.
- Nursing administration – the expenses to oversee the nursing function in the hospital - is also separately classified in the CMS cost report. This department is combined with administrative and general expenses for this analysis since it is a generally fixed cost in the operation of a hospital facility.

**Figure 1 – Summary of Analysis**

	# <u>Hosp's</u>	Pt Service Margin % Net <u>Revenue</u>	Overhead % Net <u>Revenue</u>	Est. Cont Margin % Net <u>Revenue</u>	Non Operating Income % Net	Net <u>Income</u>	Admin % Net	Capital % <u>Net</u>
<b>Urban</b>								
<b>Non-Colorado</b>								
Governmental	243	-9.78%	23.96%	14.18%	15.18%	5.40%	19.54%	4.42%
Proprietary	548	10.76%	26.57%	37.33%	1.83%	12.59%	20.33%	6.24%
Non-Profit	1,220	-0.95%	25.27%	24.32%	8.35%	7.40%	19.88%	5.39%
<b>Colorado</b>								
Governmental	2	-11.28%	26.66%	15.38%	26.90%	15.62%	21.48%	5.18%
Proprietary	6	37.62%	10.18%	47.80%	0.00%	37.62%	3.77%	6.40%
Non-Profit	24	6.44%	25.71%	32.15%	4.55%	10.99%	19.30%	6.40%
<b>Rural Non-Critical Access</b>								
<b>Non-Colorado</b>								
Governmental	201	-15.32%	25.51%	10.19%	17.54%	2.22%	19.88%	5.63%
Proprietary	154	6.87%	26.25%	33.12%	3.42%	10.29%	19.79%	6.46%
Non-Profit	569	-1.95%	23.12%	21.17%	8.87%	6.92%	17.70%	5.42%
<b>Colorado</b>								
Governmental	2	1.71%	29.30%	31.01%	19.01%	20.72%	24.30%	4.99%
Proprietary	2	10.82%	28.59%	39.41%	1.10%	11.92%	21.94%	6.66%
Non-Profit	9	6.58%	23.10%	29.68%	4.87%	11.45%	17.66%	5.44%
<b>Rural Critical Access</b>								
<b>Non-Colorado</b>								
Governmental	493	-10.61%	23.10%	12.49%	13.86%	3.25%	16.76%	6.34%
Proprietary	51	-35.00%	28.96%	-6.04%	4.08%	-30.92%	22.76%	6.21%
Non-Profit	668	-2.31%	21.03%	18.72%	7.04%	4.73%	16.12%	4.90%
<b>Colorado</b>								
Governmental	21	-7.69%	27.05%	19.36%	11.64%	3.95%	18.36%	8.70%
Proprietary	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non-Profit	9	1.23%	23.24%	24.47%	3.46%	4.69%	18.04%	5.20%

The issue of taxes is vital in comparing Colorado hospitals with hospitals in other states. Colorado is one of forty-two states that imposes a provider tax on hospitals to increase state Medicaid spending and therefore increase the federal Medicaid funds paid to the states. This additional Medicaid spending benefits those hospitals that serve a higher proportion of Medicaid beneficiaries, such as urban safety net hospitals, while creating an additional expense to facilities that do not serve as much of the Medicaid population. Taxes are also a high fixed cost to investor-owned hospitals assessed by local property taxes and additional income tax levies. The cost burden of taxes can have an impact on the financial viability of a hospital organization.

## RESULTS

The results of this analysis are summarized in Table 1. An important observation from this analysis is that local government and non-profit voluntary hospitals outside of Colorado consistently incurred a loss from patient care operations ranging from 0.95% to 15.32% of net revenues.

Overhead costs in those same facilities ranged from 21.03% to 25.27% of net revenues. Colorado facilities fared better in that same time frame, with on-profit voluntary hospitals generating profits from patient care ranging from 1.23% to 6.58%. Significantly, non-profit voluntary facilities could offset losses or improve margins with substantial non-operating income derived from philanthropy, investments, or local tax subsidies, approximating 8% of net revenues.

Local government facilities varied with an average profit of 1.71% for rural facilities not designated as critical access, while critical access and urban facilities incurred losses of 7.69% and 11.28% of net revenues, respectively. Overhead costs averaged 27% of net revenue for Colorado facilities and 22% for those not in Colorado. However, those two groups of facilities – both in Colorado and nationwide – could offset those losses with non-operating income through non-operating subsidies paid by local tax levies to support safety net hospital costs.

Investor-owned proprietary facilities generally profit from patient care operations during the study period.

Colorado urban facilities generated an average 37.62% margin, while non-Colorado facilities earned a 10.76% margin in the same period. Rural, non-critical access hospitals earned a 10.82% margin in Colorado and 6.87% outside of Colorado. Overhead costs for these facilities also approximated 27% of net revenues other than the six urban investor-owned facilities in Colorado, where their overhead cost burden averaged 10.18% of net revenues. The variance between these specific hospitals and other hospitals is not readily discernible in the CMS cost report data and merits further investigation in subsequent research work.

The administrative cost element of hospital overhead appears to be the most significant component of a hospital's cost burden, approximating 20% of net revenues across the range of hospital facilities examined here. Interestingly, the proportion of expense for capital investments approximated 6% of net revenues in the same period. Thus, arguments about the need for higher revenues to defray hospital capital investment appears tempered by this observation. This is particularly true among proprietary facilities, where this cost showed slight variation among the facility classifications used in this study, ranging from 6.24% of net revenues for urban facilities outside of Colorado to 6.66%.

Overhead expense in facility administration appears to be an opportunity for executives and boards to address financial solvency through a critical view of these expenses since any reduction in administrative or capital costs goes straight to the bottom line. Voluntary hospitals generated a 22% contribution margin during this time when overhead costs were excluded from total operating expenses. Proprietary investor-owned facilities did even better with this contribution margin estimate approximating 37% of net revenues.

The differential impact of the Colorado provider fee on hospital overhead costs appeared limited. Since the majority of other states also had a similar levy limited by the Federal 6% cap on Medicaid matching generated by this source, this is not an unexpected finding. Instead, Colorado may have a slightly lesser burden with its current 5.5% levy. Also, the extent of other tax levies on Colorado proprietary hospitals appears limited, especially in urban organizations where the total proportion of the overhead cost is significantly lower.

Costs for managerial positions and IT resources may represent opportunities for further examination by hospital leaders. Our estimate of patient service margins shows that revenue streams are generally sufficient to cover patient care costs when combined with non-operating revenues and external patient care subsidies. Of concern from the financial sustainability, perspective is the extent to which patient care resources may be cannibalized to pay overhead expenditures. In a market where insurers and policymakers are targeting

hospital revenues for potential reductions, resources available to managers are limited. Yet unknown is also the effect of price transparency efforts on future revenue streams. This, too, could pose a challenge to managers in contemporary hospital organizations.

#### **ACKNOWLEDGMENT**

This research brief is a direct result of an ongoing research project in the Health Administration Research Consortium about hospital costs and business models. This ongoing research project is made possible by the work of faculty at the University of Colorado Business School and the participation of healthcare executives across the nation.

#### **CITE THIS RESEARCH BRIEF AS:**

Jeff Helton, Karima Lalani, Victoria Jennrich, and Rulon Stacey (2022). "Cost Overheads in Colorado Hospitals: Opportunity or Threat?" Health Administration Research Consortium Research Brief, University of Colorado Denver, Vol. 7, Issue 1, pp. 1-6.