

The Impact of Religious Hospitals as Safety Net Providers

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Abstract

Aim: This study evaluates the performance of religious hospitals using Data Envelopment Analysis (DEA). Religious hospitals are often part of church owned health systems and function as the safety net provider in many communities. The data show that in 2019 there were 488 religious' hospitals with an average of 195 beds. Results indicate overall efficiency for religious hospitals was 68%. Of these hospitals, 55 (11%) had an efficiency score of 1.0, maximum efficiency, and are judged to be on efficiency frontier. Based on the number of religious hospitals with an average size of 195 beds, these hospitals will have challenges related to efficiency. In addition, their mission to provide care to all results in a significant amount of charity care and a safety net hospital for the community. **Conclusion:** Low efficiency religious hospitals are at risk of closure or being acquired by for-profit health systems. This loss of charity care at a safety net provider could have a negative impact on the uninsured in local communities.

Key words: religious hospital performance, religious hospital efficiency, data envelopment analysis, DEA.

1. Introduction

Health expenditures in the United States in 2021 reached \$4.3 trillion representing 18.3% of Gross Domestic Product (GDP). Additionally, hospital inpatient services accounted for 19 % of total healthcare expenses (CMS 2022). Unfortunately, religious hospitals as a safety net provider face organizational and environmental challenges due to the volume of charity care provided. This forces religious hospitals to operate more efficiently and increases the need for coordination care between inpatient and outpatient facilities (Harrison 2021).

As state and federal governments face growing financial pressures, religious hospitals will experience lower payments from Medicare and Medicaid. Beginning in 2017, the CMS withhold rate for Value-Based Purchasing resulted in a 2% reduction from the hospitals' base payment. The amount withheld was \$1.8 billion and this money was redistributed to hospitals that had the best quality scores. As a result, religious hospitals need to improve operations to remain competitive in the changing healthcare market (Harrison et al, 2017).

2. Literature Review

As the population continues to age, religious hospitals face a changing environment with growing financial pressure. According to the Congressional Budget Office (U.S. CBO, 2019), 22 million Americans are insured under the ACA exchanges. For the remaining uninsured individuals, religious hospitals serve as safety net providers to ensure all patients have access to essential healthcare services. This turbulent environment led to increases in uncompensated care and have created declining operating margins.

By 2020, more than 559 Medicare Accountable Care Organizations (ACO's) have been established and have served more than 12.3 million Americans. It is estimated that they have produced a net savings of almost \$740 million (NAACOS, 2020). This increase in ACO's has been putting pressure on the healthcare system as a whole but hospitals in particular. These factors could reduce a religious hospital's ability to generate profit and cost shift to cover charity care (Harrison, 2021).

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3. Measuring Efficiency

As discussed by Cooper, Seiford & Tone (2003), efficiency refers to the sources of waste that can be eliminated without worsening any other input or output. This study utilizes technical efficiency analysis by measuring the inputs used to create outputs. Optimization is achieved when no other use of resources can improve efficiency.

Efficiency studies treat labor, capital, and technology as resource inputs used to create outputs of healthcare services. Measuring the level of efficiency involves comparing religious hospitals to identify the most efficient organizations. This “efficiency frontier” is reflected by a score of 1.0 and represents production at the highest levels.

3.1 Data Envelopment Analysis

Data Envelopment Analysis (DEA) is an analytic tool that redirects emphasis from financial assessment toward optimizing performance and decision-making. As a result, DEA is a decision-making tool that allows for measuring the efficiency of each organization relative to similar organizations.

In DEA, *Inputs* are any factor used as a resource to produce something of value. *Outputs* are the amount of goods or services produced as a result of the processing of resources. In this study DEA evaluates inputs (beds, labor, and operating expenses) in relation to outputs (inpatient days, outpatient visits and surgical procedures). Performance is indicated by a DEA Theta (θ) score between zero (lowest possible score) and one (highest possible score). A theta value less than one ($\theta < 1$) indicates inefficiency while a $\theta = 0.5$ indicates that the organizations should be able to reduce resource input by 50 percent to be efficient.

DEA has some advantages over previous statistical applications. These advantages include the ability to measure multiple input and output variables and provide a single measure of performance as well as provide a scalar ranking of organizations within the sample. Additionally, outstanding organizations in the sample are not viewed as outliers and efficient organizations can be used as benchmarks to identify slack in the production process. Finally, DEA can be used as a benchmarking tool to improve individual hospital performance. For these reasons, DEA has been used extensively in health services research to measure efficiency and provide benchmarks (Rollins et al., 2001; Harrison & Coppola, 2007).

4. Theoretical Foundation

Resource dependence theory (RDT) believes each organization is an open system and individual organizations do not control all the resources needed for their development and long-term survival. Therefore, every organization depends on the external environment to satisfy their resource needs. The foundation of RDT is the idea that all organizations are critically dependent on other organizations to provide them with vital resources they need for survival and future success. For example, religious hospitals may need to access bond financing for facility expansion and has greater leverage when part of a health system. For this study, RDT was employed to examine the relationship between the external environment and efficiency in religious hospitals.

From a RDT perspective, leadership’s primary purpose is to enhance a healthcare organization’s ability to deal with environmental constraints through its organizational structure, strategy and operational plan in order to maximize performance. Healthcare organizations frequently attempt to reduce the power external organizations have over them by grouping together in health systems (Hillman, Withers & Collins 2009).

Healthcare organizations often modify their structure through merger, acquisitions, joint ventures and affiliations to position themselves for future growth. Horizontal integration is where a hospital system purchases other hospitals in order to increase size. Conversely, vertical integration like the development of ACO’s allows the creation of integrated delivery systems designed to gain access to scarce resources by acquiring an organization that controls the resources across the continuum of care (Yaeger et al., 2015).

As discussed by Harrison (2021), healthcare organizations develop their strategic plan based on their mission, vision, and values. For religious hospitals, this implies a commitment to provide care for the uninsured and serve as a safety net provider. From an operational planning perspective, this requires religious hospitals to learn from those currently operating on the “efficiency frontier” as a way to improve the group as a whole.

5. Methodology

This study evaluates the efficiency of religious hospitals using a variable return to scale (VRS) input-oriented Data Envelopment Analysis (DEA) model. The study evaluated 488 religious hospitals owned and operated by religious organizations. Data for this research was obtained from the American Hospital Association’s (AHA) 2019 annual survey. AHA data for 2020 and 2021 was not used due to the sentinel event of the pandemic which impacted routine hospital operations such as the canceling of elective procedures.

5.1 Inputs:

Operating Expenses – Payroll expenses are not included because the number of full time employees (FTEs) is used as a separate measure of labor input.

Hospital Beds – The number of hospital beds is an accepted indicator of capital investment (Harrison & Meyer, 2014).

Full Time Employees (FTEs) – Labor is an important facet of an organization’s resource consumption.

5.2 Outputs:

Inpatient Days – Inpatient Days is a common measure of hospital productivity and is a widely accepted measure of inpatient workload (Harrison & Kirkpatrick, 2011).

Outpatient Visits –Outpatient workload is a widely accepted measure of hospital output (Harrison & Kirkpatrick, 2011).

Surgical Procedures - Surgical procedures is a widely accepted measure of hospital output (Harrison & Meyer, 2014).

6. Results

Descriptive statistics for religious hospitals in 2019 are shown in Table 1 below. **Table 1** shows that the average operating expenses of religious hospitals were \$229,299,765. The average number of hospital beds in religious hospitals was 195. The average number of FTEs in religious hospitals was 953. From an output perspective, the average inpatient days in religious hospitals was 44,370 and the average number of outpatient visits was 189,243. The average number of surgical procedures for religious hospitals was 6,863. A review of the descriptive statistics clearly documents that productivity in religious hospitals is significant.

Table 1: Descriptive Statistics for religious hospitals 2019

Variable N=488	Mean	Standard Deviation
Operating Expenses (\$)	229,299,765	223,895,328
FTEs	953	966
Beds	195	169
Inpatient Days	44,370	43,742
Surgical Procedures	6,863	6,654
Outpatient Visits	189,243	221,721

Data Source: 2019 American Hospital Association Survey

The results of the data envelopment analysis (DEA) for religious hospitals are presented in **Table 2**. DEA provides a clear yet sophisticated determination of efficiency and shows the average efficiency score of religious hospitals was 68 percent in 2019. The number of religious hospitals on the efficiency frontier with a Theta score of 1.00 was 55 for 11 percent of religious hospitals.

Those religious hospitals located on the efficiency frontier represent the optimal application of inputs to create outputs and serve as benchmarks for less efficient peer organizations. Most importantly, these organizations provide evidence to improve overall performance among less efficient religious hospitals.

Table 2: Summary of DEA Measures for religious hospitals

N = 488	
Average Efficiency Score	0.68 or 68%
Minimum Score	0.33 or 33%
Maximum Score	1.00 or 100%
Standard Deviation	0.17
Number of Efficient Hospitals	55 or 11%
Number of Inefficient Hospitals	433

Data Source: 2019 American Hospital Association Survey

Data for **Table 3** shows the average amount of slack among religious hospitals, compared to those on the efficiency frontier (DEA score of 1). These results represent the combined scores of slack for the respective group of religious hospitals. The combined scores were then divided by the number of hospitals to calculate the average level of slack within the group. This average level of slack provides a measure of overall inefficiency.

From an input perspective, the results show that based upon the level of output, the average slack in beds for religious hospitals was 2. The average slack in operating expenses for religious hospitals was \$9,493,953. The average slack in FTEs for religious hospitals was 113. DEA also measures the level of inefficiency in output. DEA showed the level of output in inpatient days for religious hospitals was underutilized by 26. Similarly, outpatient visits in religious hospitals were underutilized by 2,826. The slack in surgical procedures in religious hospitals was 139.

Table 3: Analysis of inefficiency or slack for religious hospitals

Input Inefficiency per Hospital	N = 488
Excess Beds	2
Excess Operating Expenses (\$)	\$9,493,953
Excess FTEs	113
Output Inefficiency	
Shortage – Inpatient Days	26
Shortage – Outpatient Visits	2,826
Shortage – Surgical Procedures	139

Data Source: 2019 American Hospital Association Survey

Table 4 is a case study for a religious hospital operating below the average efficiency of similar hospitals in 2019. Healthcare leaders of inefficient religious hospitals can improve efficiency by analyzing DEA results. For example, the DEA score for the case study hospital is 0.58 or 58 percent which is not on the efficiency frontier and is below the average efficiency score of 0.68 or 68 percent for religious hospitals in 2019. According to the analysis, in order to become efficient, the case study religious hospital should reduce operating expenses by \$96,391,650 and reduce FTEs by 376. It is interesting to note the case study hospital has no excess beds based on comparison to those religious hospitals which operate on the efficiency frontier. From an output perspective, the case study hospital does not need to improve its output in inpatient days or outpatient visits. However, it should increase surgical procedures by 564. If all the adjustments discussed previously are implemented, DEA suggests that this case study religious hospital could approach the efficiency frontier.

Table 4: Case Study of an Inefficient for religious hospital

Level of Efficiency	.58 or 58%
Input Inefficiency	
Excess Beds	0
Excess Operating Expenses	\$96,391,650
Excess FTEs	376
Output Inefficiency	
Shortage – Inpatient Days	0
Shortage – Outpatient Visits	0
Shortage – Surgical Procedures	564

Data Source: 2019 American Hospital Association Survey

7. Discussion

Our study shows religious hospitals are working to improve operating efficiency. This study clearly documents that the number of excess hospital beds is not a cause of religious hospital inefficiency. The data show that religious hospitals could reduce staffing by an average of 113 FTEs. At \$64,647 per FTE this represents a potential average savings in staff at religious hospitals of \$7,305,111 per hospital. Also, from an input perspective, this study shows the average excess operating expense per hospital is \$9,493,953 so there are opportunities for improvement. From an output perspective, the shortage in inpatient days is small and the volume of outpatient visits could be increased. This is consistent with changes in the healthcare industry to focus on shorter lengths of stays and increased ambulatory care.

As shown in Table 1, religious hospitals have significant inpatient workload with an average of 44,370 inpatient days per hospital and outpatient visits with an average of 189,243 per hospital. Based on a low rate of slack among these variables, this clearly documents productivity and efficiency. This would indicate that the greatest opportunity to reach the efficiency frontier is by managing operating expenses and FTE's.

Homan and White (2021) found that Catholic owned hospitals are under financial pressure and that there was a net decrease in Catholic owned hospitals but only a decrease of 17 staffed beds. Additionally, they found that the number of health systems operating Catholic hospitals decreased. These decreases are particularly significant in rural areas where religious hospitals are the sole source of healthcare and serve as the safety net provider. Hospital closures in rural America and changes in hospital ownership can affect the availability of rural healthcare.

8. Conclusion

8.1 Managerial Implications

From a management perspective, the results of this study show that 11% of religious hospitals currently operate on the efficiency frontier and that these organizations provide the foundation for future success. From a resource allocation perspective, this study found the continuing opportunity for reducing the level of operating expenses should be a major focus. Also, when reviewing the allocation of manpower, the DEA data showed an average excess of FTEs across the religious hospital industry.

Reducing operating expenses and labor will enhance improvements to the hospital's bottom line. They will also lead to increased efficiency which provides additional resources for charity care. Religious hospitals have been successful in increasing occupancy rates by expanding market presence through increased inpatient days, outpatient visits and surgical procedures. Such increases in productivity allow for greater economies of scale and future profitability. Benchmarking against the efficiency frontier will also help the organization enhance its competitive position in the market and continue its mission as a safety net provider.

Our analysis for the "efficiency frontier" of religious hospitals provides a roadmap for future success. This is supported by Homan and White (2021) who found that Catholic hospitals with strong efficiency and effectiveness often increase market share. Those organizations who are less successful may be forced to close or be acquired by for profit hospital systems. This would suggest it is important for religious hospitals to balance their mission focus with efficiency and effectiveness in order to be competitive in today's market.

8.2 Policy Implications

As policymakers seek increased efficiency in the healthcare delivery system, they will continue to monitor the provision of charity care provided by religious hospitals as well as access to critical health services they provide in local communities. Additionally, federal healthcare policy makers and state regulators have legitimate concerns about the social losses from converting religious hospitals to for-profit ownership. These dangers include the loss of community benefits, abandonment of charity care, and reductions in the range of clinical services available within geographic areas. Unfortunately, financially stressed religious hospitals that need capital to continue to provide care may be unable to raise funds and may be forced into bankruptcy and closure.

We concur with Homan and White (2021) that the mission of the religious hospitals to serve the poor and vulnerable population provides significant benefit to society. Should these organizations close or change ownership, their community support for the uninsured and under-insured may shift to local health departments and other safety net providers who lack the resources to meet the need. In summary, religious hospitals must align their mission with community needs in order to ensure the continuing support of the local community. They must also focus on quality and efficiency to ensure their long-term survival.

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