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## Article

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## Ownership Identity and Role of Nonprofit and For-Profit Hospitals

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### ABSTRACT

**Purpose:** This study examined whether nonprofit hospitals reflect social roles as well as values and satisfy their financial responsibilities compared with for-profit hospitals.

**Design/methodology/approach:** Using panel data from the Hospital Financial and Utilization Information Data System in Florida from 2011 to 2017, this study employed a cross-sectional time-series analysis to examine the effect of hospital ownership on uncompensated care, charity care, technical efficiency, and profit margin.

**Findings:** Compared to for-profit hospitals, nonprofit hospitals better fulfill a social role and provide more public value by providing more uncompensated care and charity care. For-profit hospitals, however, are financially more efficient than nonprofit hospitals in terms of maximizing profit margins. When comparing hospital technical efficiency, there is no statistically significant difference between nonprofit and for-profit hospitals. As expected, nonprofit hospitals better fulfill social roles but for-profit hospitals better perform financially.

**Research limitations/implications:** This study revealed differences in fulfilling social roles and satisfying financial responsibilities between nonprofit and for-profit hospitals. To have a longer sustainability, as the provision of health care services includes both social and financial aspects, hospitals should emphasize not just either social or financial aspect only but both aspects at the same time. Future studies should extend this research to examine the conditions of normative-oriented commitments and motivations to see how they affect various hospital identity and role in different contexts. Also, as this study employed only one state in the U.S., it is important to carefully generalize findings in this study.

**Originality/value:** This study proposes a theory surrounding the role and function of nonprofit organizations based on a dual bottom approach, reflecting the dimensions of nonprofits' characteristics and identity.

*Keywords: Ownership distinction, Dual bottom approach, Nonprofit hospitals, For-profit hospitals, Social roles, Financial responsibilities*

### I. Introduction

This research investigates whether nonprofit hospitals

reflect social values and satisfy their financial responsibilities compared with for-profit hospitals. There are two reasons why it is significant to consider the organizational ownership in the hospital industry. First, nonprofit and for-profit hospitals face a distinct competitive market environment (Poister et al., 2014; Tatan, 2016). Under the condition of an expanded

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competitive atmosphere, for-profit and nonprofit hospitals compete with each other in a way that maximizes their efficiency and effectiveness.

Second, nonprofit hospitals have more social burdens to undertake social responsibilities for those who are unable to pay for their medical expenses due to financial difficulties. In this context, note that U.S. nonprofit hospitals are exempt from various taxes. In exchange for tax exemptions, the government expects nonprofit hospitals to contribute to community demands. In addition, the government requires nonprofit hospitals to report community benefits, including charitable care. However, one fundamental question arises: Do nonprofit hospitals perform better than for-profit hospitals in contributing to community service, such as supporting those who are left behind in society?

Despite the importance of hospital ownership and its various influences, to the best of current knowledge, little is known about the systematic distinctive roles and functions of hospitals that activate organizational improvement from various perspectives (Min et al., 2020). While the scholarship has examined hospital ownership in relation to financial and public-oriented outcomes, further discussions highlight the numerous implications that ownership has on the fundamental organizational roles, functions, and identity of hospitals in nonprofit contexts. However, the crossover point between the types of hospital ownership, and a systematic and integrative interpretation of the roles and functions of nonprofits has been largely neglected. This is despite the potential significant roles of nonprofits in organizational improvement, public policy, community development, and hospital innovation.

To address this research gap, this research aims to answer three significant questions derived from the dual bottom approach: (1) Do nonprofit and for-profit hospitals have any sectoral difference in terms of their technical efficiency? (2) Are nonprofit hospitals more financially efficient than nonprofit hospitals? (3) Do nonprofit hospitals proactively take more actions to extend social responsibility than for-profit hospitals?

As noted, this paper borrows the perspective of a dual bottom approach from nonprofit theories to address these questions. Numerous organizational

studies consider ownership to be a significant factor affecting organizational performance (e.g., Boyer, 2016; Malatesta & Carboni, 2015). A dual bottom approach combines two distinct notions that nonprofit organizations seek more business-like operations and goals (e.g., Dart, 2004; Kearns, 2000; Maier et al., 2016; Sanders, 2015), and simultaneously, reflect public-oriented values (e.g., Moulton 2009) by exhibiting social roles (Galaskiewicz, 2016) and providing various community services (Schmid, 1995). The literature reveals some of the ways that ownership affects organizational outcomes, including the quality of the service provided (e.g., Moscelli et al., 2018; Luft et al., 1990), financial sustainability and business-like operations (e.g., Bai & Anderson, 2016; Kaissi & Begun, 2008), service to the public (e.g., Ferris & Graddy, 1999; Nicholson et al., 2000), and patient safety improvements (e.g., Encinosa & Bernard, 2005; Gardam et al., 2017).

This study develops and tests hypotheses suggesting that nonprofit hospitals reflect particular social roles and values, and simultaneously fulfill their financial responsibilities when compared with for-profit hospitals (e.g., Poister et al., 2014; Tatian, 2016). To do so, this research collected panel data from 2011 to 2017 from the Florida Hospital Financial and Utilization Information Data System. This research pays special attention to two variables: charity care and bad debt of uncompensated care cases. This research chose these variables because numerous hospital studies have widely acknowledged that these two variables capture the social role, the hospital's responsibility, and the community benefits that they create (Ferris & Graddy, 1999; Singh et al., 2018). This study also added profit margin and technical efficiency indicators to measure the financial bottom line. The profit margin represents the financial bottom line, which highlights the organization's financial stability. Technical efficiency affects program outcomes by reducing the overhead costs of administrative tasks and addressing other opportunity costs (Kim, 2017).

The results indicate that for-profit hospitals are more financially efficient than nonprofit hospitals in maximizing profit margins. However, both types

of hospitals exhibit no sectoral differences in terms of their technical efficiency. Ultimately, the theoretical novelty of this study is that this analysis uncovers the relationship between hospital ownership differences and their identities from the nonprofit-focused literature. This research seeks to provide further insights for policy makers, community advocates, and nonprofit and for-profit hospitals by determining the social implications and financial responsibilities of hospitals.

## II. Literature Review

### A. Significance of For-Profit and Nonprofit Hospitals in the U.S. Context

American healthcare organizations constitute one of the largest sectors in the U.S. economy. This includes hospitals, physicians' offices, and various care and special services. Hospitals constitute the largest portion of such organizations in the U.S. healthcare market. Hospitals have various forms, including nonprofit hospitals, state or local government-owned hospitals, for-profit organizations, and federal hospitals. Based on data from the National Center for Charitable Statistics, more than 1.5 million nonprofit organizations are registered in the U.S. Among these, the number of nonprofit hospitals is steadily increasing in the country. More than 14% are for-profit hospitals, while 80% are nonprofit hospitals (Nicholson et al., 2000). This provides room for investigating how a hospital's ownership affects its performance outcomes from various lenses.

### B. Lessons from the Nonprofit Context: Interpretation of Ownership Distinctions

To thoroughly understand the difference between the nonprofit and private sectors, this section uses the nonprofit literature to identify the roles and functions of hospitals under different ownership. Hospital ownership affects several aspects of nonprofit roles and functions,

which can be discussed in two ways: (1) the relational role with the government, and (2) the alternative role. First, studies reveal that in their collaborative relationship with the government, of nonprofit organizations play different relational roles in response to government engagement for ensuring the quality of services. Young (2006) specifically identify three dominant types of relationships between governments and nonprofits: 1) adversarial, 2) supplementary, and 3) complementary. Adversarial nonprofit organizations exist to maintain accountability to the public, while the government tries to regulate the behavior of nonprofit organizations (Young, 2006, p. 40). A supplementary nonprofit organization has a coalition with a coercive government (Bremner, 1988, p. 139). Finally, Complementary nonprofit organizations are involved with the government in different activities. In summary, this approach focuses more on various government-nonprofit relationships and the subsequent role of nonprofit organizations in the pursuit of quality services. Hospitals have a relational role with the government, specifically when governmental resources are provided and tax exemption requirements must be fulfilled.

Another approach focuses on the distinctions between the public and private sectors. Specifically, these studies examine ownership differences, and emphasize whether public and private organizations have different roles and functions (Boyer, 2016; Bozeman, 2007; Moulton, 2009; Malatesta & Carboni, 2015). Indeed, the literature suggests that there is little distinction between public and private organizations (e.g., Bel & Estevez, 2020). This approach agrees that the core ideas surrounding organizations in the public and private sectors, such as managerial functions, organizational processes, and managerial values, are analogous to each other in that both seek economic efficiency and monetary profit. However, some later scholars also assume that there are some fundamental differences between public and private organizational goods (Bel & Estevez, 2020; Wang & Christensen, 2017).

Government failure theory supports the notion that governments tend not to neglect support for public goods because of various needs, demands, and preferences (Winston, 2007; Grand, 1991). Bassett et al. (1999)

argue that marginalized individuals are left out of social benefits because the majority of groups maximize their utility through voting. Nonprofit organizations play an important role in filling the heterogeneous atmosphere with people from diverse backgrounds and populations (e.g., Matsunaga & Yamauchi, 2004). Nonprofit organizations have been noted as alternative organizations that substitute or remedy government and/or market failure (e.g., Denhardt & Denhardt, 2000; Winston, 2000). Based on this public-private distinction, this research sheds light on this perspective that nonprofit hospitals may also have an alternative function in replacing "public hospital failure" through social and public roles.

### C. Significance of the For-Profit versus Nonprofit Dimensions

Nonprofit hospitals comprise a large portion of the hospital industry. More than 62% of hospitals are nonprofit compared with for-profit (18%) and public hospitals (20%) (Meier & An, 2020). When compared with public hospitals, both for-profit and nonprofit hospitals operate in a market-oriented manner and compete with each other. Specifically, nonprofit hospitals face competition with for-profit hospitals with a reputation for quality services (e.g., Krishnan & Yetman, 2011), providing better service quality (e.g., Pai & Chary, 2013), paying their employees well or above average (e.g., King & Lewis, 2017), and maximizing profit margins (Moon & Shugan, 2020).

By understanding this competitive atmosphere between for-profit and nonprofit organizations, this study suggests that nonprofit and for-profit hospitals face a distinct competitive market environment. The nonprofit literature has also focused on the competitive relationship between for-profit and nonprofit organizations, specifically in obtaining government funds and other financial resources (e.g., Desai & Snively, 2012). Based on this connection, this study limited the data to the comparison between nonprofit and for-profit hospitals by excluding public hospitals. Today, the existence of public hospitals has been narrowed to the goals and functions surrounding

value and equity (e.g., veteran affairs or county hospitals), although their performance-oriented endeavors focus on the public sector (e.g., Heinrich, 2002).

### D. Extending Nonprofit Discussion into Hospital Studies: A Dual Bottom Approach

Based on previous research that characterized nonprofit hospitals' roles, this research can outline two points: (1) hospitals have a relational role with the government, specifically, when governmental resources are provided to them and tax exemption requirements need to be fulfilled; and (2) nonprofit hospitals have an alternative role that consists of replacing "public failure" by promoting social and public activities. This article suggests that nonprofit hospitals reflect more hybrid roles, and pursue social and public roles spontaneously. Hybrid roles describe a more interactive terminology that combines different ownership models, and a broader mix of structures, logic, principles, and values. The literature about publicness emphasizes the "new ideas of organizational hybridity" (Pollitt & Bouckaert, 2011). From this perspective, an organization is not a simple form; it may combine different organizational characteristics from various entities and arenas (Bozeman & Bretschneider, 1994). Thus, hybridity is more of a dimensional continuum, rather than a dichotomous distinction, which emphasizes more than two sectoral characteristics (Billis, 2010; Min, 2021; Skelcher, 2005). This research proposes that hospitals share or can be differentiated in terms of comparable characteristics. Hospitals are not the simplest form of an organization; rather, they combine more arenas from different sectors and hybrid entities.

Nonprofit organizations differ from business and government entities. These organizations exist to pursue social values and missions related to the public bottom line. Simultaneously, the financial bottom line is also important because nonprofit organizations are designed to survive and be well-maintained. The dual bottom line approach attempts to bridge these differences between business-like profits, maximizing and pursuing social purposes, and behaviors (Lee & Bourne, 2017;

Wilburn & Wilburn, 2014). Research on the dual bottom approach focuses on the multiple values linking business-like concepts (the financial bottom line) and mission-oriented values (the public bottom line). On the one hand, a portion of the nonprofit literature discussing ownership has expanded into the arena of nonprofit efficiency and effectiveness, emphasizing a third sector that is business-like in a nonprofit organizational context (e.g., Dart, 2004; King, 2017; Poster et al., 2014; Tatian, 2016). Scholarship on the third sector arena has pointed out that nonprofit organizations accept the private-sector notion of performance management, including commercial activities, market discipline, market-focused social innovations, efficiency, and reduced cost structures (Brinckerhoff, 2000; Dees et al., 2002). On the other hand, some researchers have focused more on the public bottom line. The "public bottom line" literature emphasizes pro-social behaviors, mutuality, voluntary labor, ethical attributes, and the production of collective goods (De Waele & Hustinx, 2019; Lohmann, 1992; Tidwell, 2005).

This study extends nonprofit theories by using the dual bottom approach to illustrate the roles and functions of nonprofit hospitals. This research discusses how the vast literature on ownership distinctions between the private and third sectors has contributed to an exchange of views surrounding hospitals' organizational roles. This article suggests that the expansion of hospital

ownership to the third sector not only promotes or enriches the theory of hospital management studies, but also enhances the nonprofit literature on public and social values by integrating theories and practices from hospital cases in the nonprofit arena.

### III. Hypothesis Development

#### A. Legal Ownership Distinction in Hospital Studies

Based on the literature review, this research can apply two different perspectives surrounding a dual bottom approach to hospital studies in the form of a financial bottom line and a public bottom line. This means that hospitals play crucial roles in protecting patients, making profits, and supporting community benefits. Health systems and organizations have attracted substantial attention because the notion of hybridity incorporates blended forms of public and private characteristics (e.g., Denis et al., 2015).

#### B. Ownership and the Public Bottom Line in Hospital Studies

Regardless of dichotomous ownership distinctions,



Figure 1. A Conceptual Model of the Dual Bottom Approach

hospitals have some degree of public exposure in their operations and tasks because their roles are grounded in government regulations (Rosenbaum et al., 2015). For instance, legally nonprofit hospitals are classified as charity organizations. In the U.S., the IRS expects nonprofit hospitals to provide community benefits in return for exemption status and tax deduction contributions under the 501 (c) (3) tax code. Social roles and responsibilities in healthcare have resonated in the way that hospitals fulfill ethical obligations regarding the delivery of medical services to patients (e.g., Goldstein & Naor, 2005). The different types of social activities that hospitals provide have been discussed in the literature. For example, Bakken and Kindig (2015) have suggested that subsidized health services, community health improvement services, health care professional education, and cash and in-kind contributions are examples of community benefits. Min et al. (2020) have also emphasized how community benefits of hospitals promote public value in the public sector.

Importantly, uncompensated care and bad debt are considered important indicators of community benefit for the fulfillment of social and public values (Bazzoli et al., 2010; Nicholson et al., 2000). Uncompensated care can be divided into two parts: charity care and bad debt. Bad debt occurs when bills go unpaid because patients are not willing or able to pay medical bills. Furthermore, bad debt can accumulate when patients do not request or fail to qualify for financial assistance from health insurance companies. In summary, when uninsured patients cannot or do not pay their medical bills, these responsibilities are expressed as bad debt. Charity care takes place when hospitals offer patients, who meet specific criteria, services at no cost (Davis, 2019; Morrissey et al., 1996). Hospitals usually determine whether patients are unable to pay by examining various factors, including their sources of income, assets, and types of insurance. These two types of uncompensated care provided by hospitals are viewed as socially responsible activities. The hospital is exempt from financial responsibility for those patients who are not economically competent, and thus, is responsible for patients' medical needs.

However, the fundamental question is whether

nonprofit hospitals have a substantially sufficient amount of uncompensated care and bad debt when compared with for-profit hospitals. Nonprofit hospitals receive tax benefits because the government expects that they fulfill a certain role in terms of social and public responsibility. Some hospitals demand more incentives in the form of tax exemptions. Morrissey et al. (1996) compare the uncompensated care levels of 189 nonprofit hospitals in California and found that all but 20% provided uncompensated care at an amount higher than, or equal to, what they received in tax exemption savings. Based on Kane and Wubbenhorst's (2000) study of the American Hospital Association and financial statement data from the mid-1990s, more than half of the 500 nonprofit hospitals provided care to the uninsured at a level below their tax benefits. Nicholson et al. (2000) expand the definition of charitable contributions using data from a 1995 American Hospital Association survey and measured diverse community benefits provided by nonprofit hospitals. Surprisingly, the authors' measurements for the amount of community benefits provided were millions of dollars lower than expected. The authors also note that nonprofit hospitals should provide as many community benefits as for-profit hospitals: specifically, the additional benefits should equate to the for-profit hospital's net income.

Here, this study compared the effect of ownership distinction between nonprofit and for-profit hospital activities. Studies on hospitals lack information on the diversity of social implications about these hospitals' spending on uncompensated care and charity cases. These studies do not offer a clear perspective regarding whether hospitals' activities emphasize the ways in which they improve their social role within the framework of publicness or normative social value perspectives. The discussion of nonprofit hospitals' social roles and responsibilities still raises important questions regarding whether nonprofit hospitals pursue normative social values and community commitment.

To capture the level of the public bottom line of nonprofit hospitals, this research specifically measures the total cost of uncompensated care and charity care that hospitals provide. These indicators are considered to be the most suitable indicator for assessing expenditures

regarding social and community benefits. Nonprofit hospitals are more likely to react to health signals from marginalized patients. Studies have used the total dollar value of charity care (Davis, 2019; Morrissey et al., 1996) and uncompensated care (Morrissey et al., 1996; Kane & Wubbenhorst, 2000; Nicholson et al., 2000) to measure hospitals' community commitment and social responsibility. The following two hypotheses are related to nonprofit hospitals' activities in pursuit of their public bottom line:

**H1-1:** Nonprofit hospitals tend to have higher uncompensated care costs than for-profit hospitals.

**H1-2:** Nonprofit hospitals tend to have higher charity care costs than for-profit hospitals.

### C. The Ownership and Financial Bottom Line in Hospital Studies

This study also tested hospital ownership's effect on the financial bottom line. Measuring the financial bottom line illustrates how ownership distinctions affect both economic and technical efficiency as well as productivity. Accountability in nonprofit organizations usually focuses on organizationally self-interested behavior. This instrumental behavior benefits the organization and its members in a way that focuses on the application of business thinking (in general) as well as specific business tools (e.g., strategic planning, market analysis, Boston Consulting Group matrices, Michael Porter's strategic analysis, etc.) to maximize stakeholders' benefits from the organization. This strategic behavior aims to generate revenue or profit (e.g., Brinckerhoff, 2000; Kearns, 2000). Specifically, technical efficiency has been used as a traditional method to measure efficiency (e.g., Majumdar, 1998). To capture the level of hospitals' financial bottom lines, this research adopted the measurements of financial stability and technical efficiency as crucial indicators.

The literature has demonstrated the importance of nonprofit revenue stability and vulnerability (Carroll & Stater, 2009; Greenlee & Trussel, 2000; Trussel, 2002). The financial vulnerability or stability of nonprofits has

been identified as a decline or increase in program spending, changes in net assets and sources of income, alterations in profit margins, capacity for program improvement, or insufficient equity balance. Prentice (2016) also recommends liquidity, solvency, margin, and profitability as examples of financial performance indicators. These indicators represent financial bottom lines that identify the organizational capacity to achieve an organization's mission by maximizing profits and ensuring financial stability.

Technical efficiency evaluates whether an organization reduces unnecessary spending, and develops an operating budget that reflects the organization's mission and programs (Frumkin & Kim, 2001; Kim, 2017; Trussel & Parsons, 2007). Efficiency affects program outcomes by reducing the overhead costs of administrative tasks and addressing other opportunity costs (Kim, 2017). In other words, if an organization lowers its unnecessary costs, it tends to adopt alternatives and strategies that promote better financial outcomes. This research continues to address this ongoing discussion regarding hospitals, and examines whether there are differences in technical efficiency and profit maximization behavior based on ownership distinction. In this context, revenue stability and technical efficiency are the most suitable indicators for measuring a hospital's financial bottom line. Therefore, this manuscript propose the following hypotheses:

**H2-1:** Nonprofit hospitals tend to pursue economic performance more than for-profit hospitals do.

**H2-2:** Nonprofit hospitals tend to pursue technical efficiency more than for-profit hospitals do.

## IV. Data and Method

### A. Data Collection

This article relied on data from the Florida Hospital Financial and Utilization Information Data System from 2011 to 2017, which were extracted from the American Hospital Association Annual Survey and the Medicare Cost Report. These data list a total of



**Table 1.** Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
<b><u>Dependent variables</u></b>					
The public bottom line					
<b>Uncompensated care (\$)</b>	1,103	15.81	1.156003	11.59548	20.43814
<b>Charity care (Log)</b>	1,103	13.72	4.37	0	18.60672
The financial bottom line					
<b>Profit margin</b>	1,103	0.05	0.16	-1.41	1.24
<b>Efficiency</b>	1,103	0.75	0.16	0	1
<b><u>Independent and control variables</u></b>					
Nonprofit	1,103	45%	0.50	0	1
System	1,103	81%	0.39	0	1
Network	1,103	32%	0.46	0	1
Number of beds	1,103	267.77	280.62	19	2877
Teaching	1,103	28%	0.45	0	1
Competition	1,103	0.02	0.06	0.01	0.67
Medicaid day	1,103	686.31	4993.70	0	56358
Medicare day	1,103	1195.02	7270.65	0	65915
# of admissions	1,103	13145.74	014877.23	21	151183
# of visits	1,103	123074.7	153625.7	0	1224548
Rural	1,103	81%	0.39	0	1

\*Efficiency: Development Envelopment Analysis: Input (# of Bed, FTE MDs, FTE RNs)/ Output (# of Admissions, # of outpatients' visits, # of FTE Residents)

1,103 observations in terms of ownership type, bed size, region, teaching status, uncompensated-care reports, community benefits, and audited financial statements. This research also obtained a reasonable representation of all hospitals' organizational characteristics, such as bed-size categories, teaching status, and region, as well as financial and published government and community benefit-related reports. The descriptive statistics of the explanatory variables are presented in Table 1.

## B. Variables

As shown in Table 2, this article has four dependent variables: total expenditure on uncompensated care, total expenditure on charity, economic performance, and occupational efficiency. Whereas uncompensated care and charity effects represent the characteristics of public bottom lines, occupational efficiency and

economic performance embody the attributes of the financial bottom line.

This study selected total expenditure on uncompensated care as the first dependent variable. This was calculated as the sum of the total expenditure on uncompensated care. The indicator represents hospitals' active involvement and willingness to provide treatment to patients, regardless of their ability to pay. The second dependent variable was total expenditure on charitable care. This was calculated as the squared sum of the total charity expenses. Both uncompensated care and charity care expenses are considered to be reliable indicators of the public bottom line because numerous hospital studies have widely acknowledged that these two variables capture the social role, the responsibility of the hospital, and the community benefits that they create (Ferris & Graddy, 1999; Kane & Wubbenhorst, 2000; Morrissey et al., 1996; Singh et al., 2018).

**Table 2.** Summary of Variable Descriptions

Construct	Variable	Measurement
Dependent	Uncompensated care	Total expenditure on uncompensated care (Dollar)
	Charity care (Log)	$\Sigma$ (sum of total expenses of charity) (Dollar)
	Profit margin	(Total Revenue-Total Expense)/Total Revenue
	Efficiency	Data Envelopment Analysis: Input (# of Bed, FTE MDs, FTE RNs)/ Output (# of Admissions, # of outpatients' visits, # of FTE Residents)
Independent	Nonprofit	Nonprofit = 1, otherwise = 0
Control	System	System member = 1, otherwise = 0
	Network	Hospital participates in a network = 1, otherwise = 0
	Number of Beds	Total number of patient beds
	Teaching status	Hospitals that are members of COTH are coded 0, 1 otherwise.
	Competition	HHI = Hospital competitiveness index
	Medicaid days	Total Medicaid inpatient days
	Medicare days	Total Medicare inpatient days
	# of admissions	Total number of inpatient admissions
	# of visits	Total number of outpatient visits
	Rural	Hospitals that are in the rural area = 1, otherwise = 0

To measure the financial bottom line, this article used profit margin and technical efficiency indicators as the third and fourth dependent variables, respectively. This study used profit margin as the primary variable to show the financial stability of the organization. Carroll and Stater (2009) suggest that financial stability influences a nonprofit's capability regarding promoting an organization's financial purpose and programs. The variable is calculated as the squared sum of net income minus total revenue. Hospitals' major revenue sources include earned revenue, individual contributions, corporation, foundation giving, grants, government aid or grants, and investments (Kim, 2017).

To measure relative technical efficiency, this study used Data Envelop Analysis (DEA) by assembling two different units including inputs (the number of beds, the full time medical doctors and registered nurses) and outputs (the number of admissions, number of outpatient visits, and number of FTE residents). DEA is a tool that uses linear programming to retrieve an optimal combination of input and output based on actual performance (Banker et al., 1984). DEA utilizes linear programming techniques to calculate the efficiency score of a data set. Furthermore, measuring

DEA does not require a common denominator. Technically, complete efficiency has a score of 1 (100%), while a score of less than 1 indicates an inefficient relative condition. In DEA, efficiency is measured in relation to the best-observed parameters. Furthermore, DEA accommodates multiple inputs and outputs relatively easily. Therefore, DEA is particularly suitable for analyzing hospital efficiency when generating multiple outputs using multiple inputs (Johannessen et al., 2017; Kohl et al., 2019). In this sense, it is easy to analyze the relative efficiency of hospitals. Thus, DEA can be used to compare the efficiency of a specific referral hospital; consequently, it was limited by the unknown absolute value of technical efficiency.

The key independent variable was the hospital ownership status. This is defined as for-profit and nonprofit hospitals. This article coded nonprofit and for-profit hospitals using binary variables in terms of whether the hospital receives tax benefits. Among a total of 1,103 hospitals, 612 were for-profit hospitals (investor-owned) and 491 were nonprofit organizations. Other variables at the organizational (hospital) level were also included as control variables. These are the system members, network, number of beds, teaching

status, competition (HHI), percentage of Medicaid discharges, percentage of Medicare discharges, number of admissions, number of visits, and location of hospitals. The literature indicates that these factors can affect social responsibility and ownership (e.g., Ferris & Graddy, 1999; Morrissey et al., 1996; Kane & Wubbenhorst, 2000). Here, this research selected variables based on the availability of data to control for the corresponding associations.

### C. Analytical Procedure and Modeling

The aim was to systematically investigate the extent to which hospitals have embraced public and financial bottom lines depending on their ownership. The hospital at the organizational level was the unit of analysis. A series of observations for this analysis were collected at regular intervals because this panel data is a set of observations collected at discrete and evenly spaced time intervals. Going beyond the previous literature, this research estimated models using panel analysis with a fixed effect model. Random effect models assume that the entity's error term is not correlated with the predictors, which allows time-invariant variables to play a role similar to the explanatory variables (Chamberlain,

1982). The random effects analysis needs to specify the individual characteristics that may or may not influence the predictor variables. However, by utilizing fixed effects, this research assumed and controlled which elements within an individual organization can affect or be biased by the other predictor or outcome variables. Fixed effects eliminate the effect of time-invariant properties; therefore, this analysis can evaluate the net effect of predictive variables on the outcome variables. Considering this assumption and the data characteristics, this study estimated the model with a fixed effect estimate to incorporate the cross-sectional variation in the model. The Hausman test also confirmed this estimation ( $\text{Prob} > \chi^2 = 0.0000$ ).

### V. Results

Table 3 shows the correlation matrix of the variables. The results show that the model is free from multicollinearity. Table 4 summarizes the estimated results of the fixed-panel ordinary least squares regression. Table 4 provides supporting evidence for Hypothesis 1-1 that nonprofit hospitals tend to have higher

**Table 3.** Correlation Table

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Uncompensated	1.00														
2 Charity care (Log)	0.28	1.00													
3 Profit margin	-0.01	0.13	1.00												
4 Efficiency	0.20	0.21	0.15	1.00											
5 Nonprofit	0.24	0.29	-0.19	0.12	1.00										
6 System	0.03	0.36	0.28	0.08	-0.16	1.00									
7 Network	0.02	0.17	0.05	0.08	0.35	0.16	1.00								
8 Number of beds	0.57	0.31	0.096	0.16	0.23	0.01	0.16	1.00							
9 Teaching	0.30	0.28	0.11	0.24	-0.01	0.05	0.01	0.40	1.00						
10 Competition	0.18	0.12	0.06	0.05	0.09	-0.10	-0.01	0.32	0.04	1.00					
11 Medicaid inpatient days	0.48	0.07	-0.09	0.15	0.13	-0.05	-0.02	0.13	0.16	0.02	1.00				
12 Medicare inpatient days	0.37	0.09	-0.03	0.13	0.16	-0.04	0.05	0.15	0.14	0.07	0.86	1.00			
13 # of admissions	0.56	0.32	0.13	0.20	0.22	0.05	0.14	0.97	0.41	0.30	0.10	0.11	1.00		
14 # of outpatient visits	0.62	0.27	0.05	0.25	0.33	-0.02	0.07	0.83	0.35	0.25	0.28	0.25	0.83	1.00	
15 Rural	0.17	0.39	0.21	0.11	0.03	0.35	0.16	0.29	0.30	0.10	0.04	0.06	0.29	0.18	1.00

**Table 4.** Estimation Result of Regression

Variable	Uncompensated Care (H1-1)	Charity Care (H1-2)	Technical Efficiency (H2-1)	Profit Margin (H2-2)
Nonprofits (Dummy)	<b>3.92e+07*** (9229239)</b>	<b>6222465*** (2064779)</b>	-0.01 (.02)	<b>-0.01 (0.04)</b>
System (Dummy)	1.27e+07 (7676766)	3177024*** (909966.5)	0.001 (0.02)	0.04** (0.02)
Network (Dummy)	-4336770 (5013491)	-1110322 (741977)	0.02 (0.02)	0.02 (0.02)
Number of beds	19886.48 (20958.17)	7261.76** (3690.39)	-0.00*** (0.00)	-0.000*** (0.000)
Teaching (Dummy)	1.14e+07*** (3852386)	3276212*** (674308)	0.0727*** (0.01437)	0.0195214 (0.0146796)
Competition	-1.20e+08 (1.44e+08)	3437121 (7120422)	0.0150 (0.1879)	0.19 (0.16)
% Medicaid discharge	-17230.71*** (1824.91)	477.99** (122.25)	1.56e-06 (2.99e-06)	-6.30e-06** (2.75e-06)
% Medicare discharge	4373.459*** (480.70)	-95.53 (63.27)	1.41e-06 (1.33e-06)	2.48e-06* (1.37e-06)
# of admissions	616.42 (481.2652)	489.18*** (74.01)	0.00*** (1.57e-06)	5.05e-06*** (1.60e-06)
# of visits	3.6376 (21.9629)	10.96*** (3.62778)	3.20e-07*** (7.83e-08)	5.64e-08 (7.93e-08)
Rural (Dummy)	9467330 (5118282)	126632.2 (822038.8)	-0.0278739 (0.02)	0.02 (0.0180198)
N (Observation)	1,103	1,103	1,103	1,103
Adjusted R2	0.5444	0.7727	0.5257	0.1573

Note: Standard errors are in parentheses.

a. The number of observations is different from the total number of observations in the sample because the number of social and historical performance gaps was reduced due to the calculation of lagged variables.

\* p < 0.1. \*\* p < 0.05. \*\*\* p < 0.01

uncompensated care costs (and thus, expenditures) than for-profit hospitals. Regarding Hypothesis 1-2, the findings also show that nonprofit hospitals tend to experience higher charity care costs when compared with for-profit hospitals. This analysis shows that when a hospital is nonprofit, they are more likely to spend more on charity-related situations, after controlling for other factors. Since nonprofit hospitals have greater expenditures on uncompensated care and charity cases, these results mean that nonprofit hospitals engage in more public bottom line-related activities than for-profit hospitals.

The second part of this analysis focuses on the relationship between legal ownership and the instrumental financial bottom line. The results do not support Hypothesis 2-1, indicating that there is an insignificant

and negative relationship between ownership difference and technical efficiency. This means that ownership is not associated with the comparative technical efficiency. This finding also does not support Hypothesis 2-2, suggesting a significant and negative relationship between hospital ownership and profit margin. The results indicate that for-profit hospitals tend to produce better economic performance than nonprofit hospitals: when hospitals are for-profit, they obtain a higher profit margin than nonprofit hospitals. This means that nonprofit hospitals do not support the association between legal ownership and the financial bottom line. Lastly, for-profit hospitals are less successful in terms of considerations surrounding financial bottom lines.

## VI. Discussion and Conclusion

The analysis reveals several key factors underlying the effects of hospital ownership. First, the analysis found strong support for the notion that nonprofit hospitals perform better in terms of the public bottom line. This suggests that nonprofit hospitals have a propensity to fulfill a social role, and provide public value better by responding to community needs and demands. However, this does not mean that nonprofit organizations fully pursue public bottom lines. Hence, this study is unable to provide irrefutable evidence regarding whether nonprofit hospitals provide a sufficient amount of social goods and services.

Second, for-profit hospitals are more financially efficient than nonprofit hospitals. However, there was no difference in the technical efficiency of for-profit and nonprofit hospitals. Numerous strategic and stakeholder management theories on nonprofit organizations imply that business-like operations create higher efficiency. This financial bottom line perspective is grounded in rational choice logic, which illustrates the importance of an instrumental perspective to maximize profits and margins. The finding of no difference in technical efficiency is contrary to Berman et al.'s (1999, p. 492) assertion which suggests that the "normative, moral commitments" of nonprofit organizations may create more financial gains and profits. The empirical results provide tentative evidence that nonprofit hospitals may not create normative-oriented motivations that promote efficiency. This invites an extension of the research to examine the conditions of normative-oriented commitments and motivations to see how they affect efficiency and effectiveness in different contexts.

Similar to other empirical research on the public and financial bottom lines of hospitals, this study has some limitations. The primary limitation is that it is difficult to measure proxy metrics in hospitals' social roles and efficiency. There are distinct features within the various dimensions of nonprofit organizations. Therefore, the results may differ from other studies which may use different perspectives. Here, the results suggest that varied measurements capturing community

benefit, quality service to the public, wellness education, donation to other charities, and investment in the community can quantify the full range of public values and services. This study acknowledges that many measurements and unique perspectives in hospital studies are needed to further develop aspects of public and financial bottom lines.

Nevertheless, this study offers several contributions. Theoretically, this study provides consistent evidence to add to the literature on hospitals' roles and functions based on the nonprofit perspective of a dual bottom approach. First, this research identified the importance of social roles and responsibilities as well as public value found in hospital studies (e.g., Anderson, 2012). Second, the results suggest that hospital management is still significant. This analysis identified how managerial practices under competitive market atmospheres create organizational improvements in nonprofit hospitals to handle technical efficiency and financial stability. Third, this study makes valuable contributions to the publicness theory (Bozeman, 2007; Moulton, 2009). This research shows that the pursuit of social value and community benefits diverges based on ownership. This analysis indicated that government benefits, including tax exemptions, government engagement, and community support, impact hospitals' prosocial activities. Future research should elaborate on the effects of government regulation and involvement with nonprofit hospitals. The analysis also suggests that it is important for researchers and practitioners to identify potential conflicts among actors in hospitals, associated organizations, the community, the government, and governing authorities within these hybrid structures that overlay the government-nonprofit hospital relationship (e.g., Stone et al., 2010, Min 2021). Government-hospital collaboration may positively affect organizational improvement, social contributions, and hospital public service. In summary, this research provides evidence in a practical context regarding how nonprofit hospitals attempt to perform a better job than for-profit hospitals with respect to spending uncompensated and charity expenses. This study calls for future research to continue this investigation to promote nonprofit community contributions, and to fulfill social needs and demands.

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