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Hospital Lobbying and Performance

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ABSTRACT: Lobbying is a primary avenue through which business organizations attempt to influence legislation, regulations, or policies. In this study, we examine the association between lobbying and hospital performance and find that the effects of lobbying activities on hospital performance vary according to the distinct types of hospital ownership. Specifically, we find that lobbying raises employee salaries in not-for-profit (NFP) hospitals, reduces uncompensated care costs in both for-profit and NFP hospitals, and increases return on assets (ROA) in for-profit hospitals. We also find that the effects of lobbying on employee salaries, uncompensated care costs, and ROA are not significant in government hospitals. Taken together, our findings suggest that NFP hospitals lobby to protect employees' interests, while for-profit hospitals lobby to maximize investors' interests. Our paper provides evidence to illustrate that the goals and effects of hospital lobbying vary according to hospital ownership types.

Keywords: hospital lobbying; hospital ownership; employee salaries; uncompensated care costs; performance.

I. INTRODUCTION

In an increasingly competitive environment, it is critical that business organizations know how to boost performance. Beyond conventional marketing and management strategies, lobbying is often used to shape the external environment by influencing legislation, regulations, or policies to gain advantages, such as increased market power (McWilliams, Van Fleet, and Cory 2002), tax reductions (Alexander, Mazza, and Scholz 2009), government bailouts (Faccio, Masulis, and McConnell 2006), government contracts (Hansen and Mitchell 2000), and federal funds (de Figueiredo and Silverman 2006). Prior research only focuses on one type of organization

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ownership, i.e., either not-for-profit (NFP), government, or for-profit, to study the effects of lobbying. For example, Child and Grønbjerg (2007) suggest that lobbying helps NFP organizations access government grants or contracts. de Figueiredo and Silverman (2006) find that lobbying by public universities increases the amount of federal funding they can receive for academic research. Lee and Baik (2010) find that lobbying can reduce tariffs in import/export businesses. The results of these studies are not warranted when the research generalizes the effects of lobbying across organization ownership types. In this study, we choose to examine the effects of lobbying in the hospital industry because of the co-existence of three types of hospital ownership; namely, NFP, for-profit, and government.

Hospitals have distinctive characteristics that depend on their ownership types. Government hospitals (e.g., Jackson Health System) are fully funded by a governmental entity (at the federal, state, or local level) in order to serve diverse constituents such as the military, people living in poverty, and the uninsured; for-profit hospitals (e.g., Tenet Healthcare Corporation) are owned by private investors that profit from providing services to paying patients; and NFP hospitals (e.g., University of Pittsburgh Medical Center [UPMC], Mayo Foundation for Medical Education and Research [Mayo Clinic], Ascension), managed by voluntary boards of trustees, are somewhere in the middle and provide care for paying patients and charitable services to people living in poverty (Baker et al. 2000). The type of hospital ownership determines their various stakeholders' interests, which could potentially impact the purposes of hospitals and their lobbying behaviors. Specifically, NFP and government hospitals protect the interests of their employees, who are their major stakeholders, while for-profit hospitals maximize their investors' interests (Fritz 2020). In order to protect stakeholders' interests, hospitals lobby legislators to influence policies such as compensation for goods and services, licensing, and oversight (Landers and Sehgal 2004; Pradhan 2020). Therefore, the hospital industry provides us a unique setting to study the different outcomes of lobbying activities among various types of ownership within one industry.

There are two ways lobbying hospitals could benefit more from policy changes than their nonlobbying peers. First, lobbying hospitals maintain a close relationship with legislators so that they can earlier obtain and better understand important information regarding regulatory agendas, policy changes, and other factors than nonlobbying hospitals. Therefore, lobbying hospitals can alter their business strategies earlier to better prepare for the changing environment (Marmor, Schlesinger, and Smithey 1987; Scott, Ruef, Mendel, and Caronna 2000). Second, lobbyists can actively communicate crucial information to government officials in order to influence or shape policies to fit hospital strategies and interests, and therefore help hospitals to maintain a competitive advantage (Chen, Parsley, and Yang 2015). Whereas some hospitals could benefit from lobbying due to a specific rule or legislation changes, others might be hurt. For example, in 1997, rural hospitals lobbied Capitol Hill to protect their interests by overturning a budget provision that funnels extra Medicare money to large urban hospitals with more than 100 beds (Weissenstein 1997).

According to the extant literature, one goal of hospital lobbying is to protect employees' incomes (Landers and Sehgal 2004; Pradhan 2020). While for-profit hospitals can make compensation decisions autonomously, employee salaries in government and NFP hospitals are strictly regulated (Becker, Townshend, Carnell, and Freerks 2013; Duggan 2000). NFP and government hospitals need to lobby for more funding or raising the standard of "reasonable compensation" to protect employees' incomes. Thus, we expect a positive relationship between hospital lobbying and employee salaries in NFP and government hospitals.

Another goal of lobbying is cost (excluding employee salaries) saving (Frankenfield 2020). Under the current prospective payment system, the reimbursement rate for a specific procedure/

treatment at the Centers for Medicare and Medicaid Services (CMS) or insurance companies is predetermined, which creates tremendous pressures on hospitals (K. Chang and G. Chang 2017). Thus, one way to improve hospital performance is to reduce costs. Besides salaries (49 percent), hospital costs include supplies (17 percent), uncompensated care (13 percent), and miscellaneous expenditures (21 percent) (Patrick 2014). Due to limitations of accessing other cost data, this study focuses on the effect of lobbying on uncompensated care costs reduction. We expect that lobbying hospitals could be more effective at cost reduction than their nonlobbying peers. Because they have readily available public funding for subsidizing uncompensated care costs, government hospitals typically do not become involved in lobbying activities that are related to uncompensated care costs (Bovbjerg, Cuellar, and Holahan 2000). Therefore, we expect this cost saving effect only exists in NFP and for-profit hospitals. Since we predict that lobbying has different effects on employee salaries and/or uncompensated care costs based on the different types of hospital ownership, we further expect that lobbying will have different impacts on return on assets (ROA) among the three types of hospital ownership.

To empirically test our expectations, we use hospital financial data from Definitive Healthcare and hospital lobbying expense data from OpenSecrets.org for the period from 2011 to 2018. Consistent with our expectations, we find that (1) lobbying is positively related to employee salaries in NFP hospitals, (2) lobbying is positively related to uncompensated care costs in NFP and for-profit hospitals, (3) lobbying is positively related to ROA in for-profit hospitals, and (4) lobbying has no significant effect on employee salaries, uncompensated care costs, and ROA in government hospitals. Our findings suggest that NFP hospitals lobby to protect employees' interests and for-profit hospitals lobby to maximize investors' interests, while government hospitals are inactive or less interested in the above lobbying activities. Because prior literature suggests that lobbying is an ongoing process (Chen et al. 2015), we further conduct robustness analyses to test the lagged lobbying effects. The results show that two-year-lagged lobbying has results similar to those in our main analyses, but three-year-lagged lobbying does not. We further conduct a supplementary "change" analysis to show that reverse causality does not drive the association between hospital lobbying expenses and uncompensated care costs.

Our study makes the following contributions. First, it extends lobbying research in the hospital industry by examining the relationship between lobbying and hospital performance. Second, to our best knowledge, this is the first study that empirically examines the differences among NFP, for-profit, and government hospitals regarding lobbying purposes and effects. Thus, this study sheds light on distinctions in lobbying among different types of ownership. Our paper provides evidence to understand that the effects of lobbying vary based on distinct hospital ownership types.

After the introduction, this study is arranged as follows. First, we provide a literature review that examines the effects of lobbying on organization performance along with hypotheses development in Section II. Then, in Section III, we detail our research design, including the sample-selection procedure and the empirical methods that we use to test the hypotheses. In Section IV we present and discuss the results of the empirical tests. In Section V we present supplementary analyses. Finally, in Section VI, we discuss the conclusions and implications of the current study.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Lobbying and Business Performance

Lobbying is one of the most dominant types of political involvement (Lin 2019; Cao, Fernando, Tripathy, and Upadhyay 2018). Compared to other political activities, lobbying has fewer

restrictions and greater efficiency (Hansen and Mitchell 2000; Eun and Lee 2019). Generally, the goal of lobbying activities is to change existing rules or policies by influencing legislators and government officials (F. Yu and X. Yu 2011; Chen et al. 2015). In the United States, lobbying is practiced primarily by business organizations using either external lobbyists or in-house professionals. According to Milyo, Primo, and Groseclose (2000), business organizations spend approximately ten times more on lobbying than on other political expenses. Business organizations use lobbying as a vehicle to promote and protect their interests.

Lobbying has both negative and positive connotations. Some feel that business organizations abuse lobbying for their selfish interests, which leads to corruption, while others think that lobbying is necessary because it prevents potentially harmful policies by providing important information to policymakers (Anderson, Martin, and Lee 2018). To regulate lobbying and increase its accountability, the Lobbying Disclosure Act of 1995 became effective on January 1, 1996. Under this regulation, business organizations that spend more than $10,000 on lobbying must register and file reports that disclose lobbying activities and the amount spent on lobbying. This regulation provides opportunities for scholars to study lobbying empirically.

Lobbying activities draw researchers' attention because lobbying expenses have grown immensely. According to the Center for Responsive Politics (2020), total annual lobbying spending has continually surpassed $3 billion since 2008. Why do business organizations spend so much money on lobbying? Prior studies find that business organizations that engage in lobbying activities can gain a variety of benefits. For example, Richter, Samphantharak, and Timmons (2009) find that a 1 percent increase in lobbying spending will lower effective tax rates by 0.5 to 1.6 percent. Alexander et al. (2009) find a similar tax reduction effect. Lee and Baik (2010) find that the more business organizations spend on lobbying, the larger the amount of tariff reduction they will receive from U.S. Customs and Border Protection. Thus, lobbying business organizations can take advantage of decreasing costs over nonlobbying business organizations in the same industry. Researchers also find that lobbying business organizations have a better potential of gaining direct help from the government, in the form of bailouts (Faccio et al. 2006) and government contracts (Hansen and Mitchell 2000). All the above benefits gained from lobbying contribute positively toward business profitability.

A crucial stream of research on lobbying studies the direct relationship between lobbying activities and financial performance as measured by accounting-based and market-based outcomes. Shaffer, Quasney, and Grimm (2000) find a positive relationship between lobbying and net income in the airline industry. Kim (2008) finds that a positive effect of lobbying on return on equity (ROE) exists in the S&P 500 Index's constituent firms. Similarly, by examining publicly traded firms, Chen et al. (2015) find that lobbying is positively associated with income before extraordinary items, net income, and cash from operations. More recently, Brown (2016) finds that lobbying activities are associated with a high ROA, return on invested capital (ROIC), and ROE in Fortune 500 firms. Regarding the association between lobbying and stock market returns, prior research finds different results when using distinct market-based measures. Plenty of studies find that firms' abnormal returns are positively associated with lobbying (see Lo 2003; Hochberg, Sapienza, and Vissing-Jørgensen 2009; Hill, Kelly, Lockhart, and Van Ness 2013; Mathur, Singh, Thompson, and Nejadmalayeri 2013; Borisov, Goldman, and Gupta 2016). Some studies find no relationship or a negative relationship between lobbying and *future* abnormal returns or Tobin's q (see Coates 2012; Igan, Mishra, and Tressel 2012; Skaife, Veenman, and Werner 2013; Hadani and Schuler 2013; Cao et al. 2018).

Lobbying in NFP Organizations

In the United States, NFP organizations, including those that are government owned, have complex and dynamic relationships with the government at federal, state, and local levels and across a broad array of policy arenas (Child and Grønbjerg 2007). Therefore, like for-profit organizations, NFP organizations also have incentives to engage in the formulation and implementation of public policies. For example, in order to protect their own interests, NFP organizations may lobby policymakers "when shifts in government spending affect nonprofit access to government grants or contracts, when changes in tax rates modify incentives for charitable contributions, or when regulations require nonprofits to disclose financial information or refrain from certain types of financial or political activities" (Child and Grønbjerg 2007, 259). However, unlike for-profit organizations, NFP organizations may have different purposes when they engage in lobbying activities (McFarland 1995). For-profit organizations lobby for policies that maximize their profitability, while NFP organizations are also responsive to social needs and public services beyond their own interests (McFarland 1995; Barragato 2002).

The major stream of NFP lobbying literature focuses on the characteristics of NFP organizations that engage in lobbying, such as the size, age, location, and charitable status of the organization, as well as factors influencing lobbying decisions and strategies, such as the amount of donations received, IRS status, information technology, cross-sector competition, restrictions on delivering core services, policy network, and the perception of the probability of lobbying success (Chavesc, Stephens, and Galaskiewicz 2004; Child and Grønbjerg 2007; Nicholson-Crotty 2007, 2009; Suárez and Hwang 2008; Mosley 2010; Fyall and McGuire 2015; Garrow and Hasenfeld 2014). Another stream of the literature examines the benefits of lobbying for NFP organizations. Many studies find that NFP organizations that engage in more lobbying receive more donations, grants, or federal funds (e.g., de Figueiredo and Silverman 2006; Nicholson-Crotty 2011; Petrovits, Shakespeare, and Shih 2011).

Given the fact that most of the studies focus only on one type of organization ownership when investigating the effects of lobbying (e.g., de Figueiredo and Silverman 2006; Lee and Baik 2010), generalizing the effects of lobbying across organization ownership types is not warranted. Therefore, a study that includes the different types of organization ownership within one industry might provide further insights on the effects of lobbying. We choose the hospital industry to examine the effects of lobbying because of the co-existence of the three distinct types of hospital ownership; namely, NFP, government, and for-profit.

Hypotheses Development

Hospitals and related healthcare institutions rank the 8th highest in lobbying with expenditures of over $1.79 billion over the past 22 years (Frankenfield 2020), but empirical research on lobbying in the hospital industry is relatively sparse, partially due to hospital data limitations.[1] Like other lobbying organizations, hospitals or hospital groups that engage in lobbying usually maintain a close relationship with lawmakers, so they often take advantage of that relationship and alter their business strategies earlier to better prepare for the changing environment (Marmor et al. 1987; Scott et al. 2000). In addition, lobbyists actively communicate with government officials so that lobbying hospitals or groups can influence or shape policies in order to protect their own interests

[1] Many recent publications use outdated hospital data. For example, both Collum, Menachemi, and Sen (2016) and Cho, Ke, Atems, and Chang (2018) use the 2010 American Hospital Association survey data.

and increase their competitive advantage (Chen et al. 2015). For example, like educational institution lobbying (de Figueiredo and Silverman 2006), hospital lobbying can also result in more federal funding. Shinkman (2020a) reports that American Hospital Association lobbyists are asking for a more expedited release of the Coronavirus Aid, Relief, and Economic Security (CARES) Act funds, but only for targeted members, such as hospitals with high numbers of Medicare Advantage and Medicaid patients and those in rural areas. Therefore, it is reasonable to assume that hospitals or hospital groups that engage in lobbying could gain substantial benefits.

Hospital characteristics vary widely due to different types of ownership (see Appendix B for a review), and these differences affect their lobbying goals and outcomes. First, patients are different. For-profit hospitals have often been accused of "cream skimming" by selectively admitting only those patients who can be treated at acceptably high price-cost ratios (Eskoz and Peddecord 1985). For-profit hospitals can lawfully release patients who lack the ability to pay for further treatment after establishing that the patients are out of danger, whereas NFP hospitals are obligated to treat all conditions, whether life-threatening or not, regardless of the patients' financial or health insurance status (Healthcare Management Degree Guide [HMDG] 2020). Second, stakeholders are different.[2] In NFP hospitals, the employees are one of the major stakeholders (Fritz 2020), an important constituency that can be satisfied with successful lobbying efforts, while investors are the core stakeholders in for-profit hospitals. Therefore, we expect that lobbying activities have different outcomes among the three types of ownership in the hospital industry.

The hospital industry has a broad spectrum of lobbying interests. Frankenfield (2020) suggests that lobbying efforts in the hospital industry are generally focused on cost management, prevention of salary reductions, insurance allocations, and spending on employee training. Hospital costs include salaries (49 percent), supplies (17 percent), uncompensated care (13 percent), and miscellaneous expenses (21 percent) (Patrick 2014). Because we are unable to access insurance allocations, spending on employee training, and supply cost data, we focus on investigating the effects of lobbying on employee salaries and uncompensated care costs.

Keeping quality employees and being fully staffed are critical for patient service (Stimpfel, Sloane, McHugh, and Aiken 2016; Aiken, Clarke, and Sloane 2002). However, employee salaries in government and NFP hospitals are strictly regulated (Becker et al. 2013; Duggan 2000). These hospitals cannot pay employees more than "reasonable compensation" for services rendered (Becker et al. 2013). Thus, if an NFP or government hospital plans to increase its employee salaries and protect their interests, the hospital has to lobby the legislators to raise the standard of "reasonable compensation." Pradhan (2020) reports that government and NFP hospitals have been lobbying to protect employees' incomes and interests for a long time. Most recently, in response to the global COVID-19 pandemic, the American Hospital Association (AHA) and the American Nurses Association (ANA) have joined forces to lobby congressional leaders for more funding to enhance healthcare workers' pay (Shinkman 2020b). Congress has responded by appropriating tens of billions of dollars for both hospitals and their employees (Muchmore 2020). Unlike government and NFP hospitals, for-profit hospitals can independently determine employee salaries based on profitability and thus are not involved in lobbying related to employee salaries (Barragato 2002). Therefore, we expect that lobbying is positively related to employee salaries in NFP and government hospitals, whereas this effect does not exist in for-profit hospitals. Therefore, we posit our first set of hypotheses as follows:

[2] Patients are the major stakeholders for all types of hospitals and are priorities of hospitals regardless of ownership types. In this sense, patients make no difference in hospital lobbying efforts.

H1a: Hospital lobbying increases employee salaries in NFP hospitals.

H1b: Hospital lobbying increases employee salaries in government hospitals.

H1c: Hospital lobbying does not increase employee salaries in for-profit hospitals.

In the U.S. health system, the uninsured often rely on hospitals to provide charity care or, more broadly defined, uncompensated care to meet healthcare needs (Davidoff, LoSasso, Bazzoli, and Zuckerman 2000). Uncompensated care, including charity care and bad debts, is an overall measure of hospital care provided for which no payment is received from patients or insurers (Davidoff et al. 2000). Charity care is never expected to be reimbursed, and it is different from bad debts that hospitals incur when they bill patients but do not receive payment (AHA 2010). Hospitals can sell bad debts to collection agencies for partial payment but need to absorb charity care costs by themselves. Hospitals follow regulations to determine whether patient care is classified as either charity care costs or bad debts. NFP and for-profit hospitals lobby to classify more healthcare services as normal services rather than charity care and lobby to expand reimbursement coverage and Medicaid under the Affordable Care Act to reduce uncompensated care costs (Nikpay, Buchmueller, and Levy 2015, 2016). In addition, through lobbying, NFP and for-profit hospitals can have uncompensated care costs paid, at least partially, by CMS. In the U.S., seven states have Medicaid-funded uncompensated care pools,[3] which help hospitals defray the costs of uncompensated care. These pools are time limited and created through Medicaid Section 1115 waivers. CMS reviews these waivers during the waiver renewal process (Mahan and Callow 2015). Under the pressure of CMS review, NFP and for-profit hospitals lobbied lawmakers during the waiver review process to keep uncompensated care pool funds (Hawryluk 2015). Unlike NFP and for-profit hospitals, government hospitals have other public funding on hand for subsidizing uncompensated care costs. Thus, government hospitals have less incentive to lobby for expanded reimbursement coverage and Medicaid to reduce uncompensated care costs (Bovbjerg et al. 2000). Therefore, we posit our second set of hypotheses as follows:

H2a: Hospital lobbying reduces uncompensated care costs in NFP hospitals.

H2b: Hospital lobbying does not reduce uncompensated care costs in government hospitals.

H2c: Hospital lobbying reduces uncompensated care costs in for-profit hospitals.

If hospital lobbying increases employee salaries and/or reduces uncompensated care costs, it is rational to assume that lobbying activities can influence hospitals' ROA, but the combined effects are unpredictable. Thus, we further posit our third hypothesis as follows:

H3: Hospital lobbying affects ROA.

III. RESEARCH DESIGN

Sample Selection

We use hospital financial data from Definitive Healthcare, LLC, a subscribed healthcare data provider. The Center for Responsive Politics (OpenSecrets.org) provides us with hospital lobbying data regarding total lobbying expenses at the federal level. After merging data from the two data

[3] Nine states had uncompensated care pools. Arizona's Safety Net Care Pool expired in December 2017, and Hawaii's uncompensated care pool expired in June 2016.

TABLE 1

Sample Selection

Hospital financial data from 2011 to 2018 (Definitive Healthcare)		25,996
Hospital lobbying data from 2011 to 2018 (OpenSecrets.org)		10,506
Merge the above two datasets		25,996
Less missing lobbying expense observations	(15,490)	
Less observations missing information for the control variables	(860)	
Hospital-year observations		9,646
Number of unique hospitals		1,684

sources, we exclude observations that lack valid data needed to calculate the variables in our analyses. Our final sample includes 9,646 observations from 1,684 unique U.S. hospitals between 2011 and 2018.[4] We present the sample selection process in Table 1.

Empirical Models

To test our first set of hypotheses, we develop Model (1) as follows:

$$Salary_{i,t} = \beta_0 + \beta_1 Lobby_{i,t-1} + \beta_2 MCI_{i,t} + \beta_3 MedicareMix_{i,t} + \beta_4 MedicaidMix_{i,t} + \beta_5 Size_{i,t} + \beta_6 Leverage_{i,t} + \beta_7 Teaching_{i,t} + \beta_8 Urban_{i,t} + \beta_9 Network_{i,t} + Year_t + State_i + \varepsilon_{i,t} \quad (1)$$

where *Salary* is defined as hospital total salaries scaled by total assets in year *t*. We use two measures for the variable of interest, *Lobby*. One is an indicator variable, $Lobby\_dum_{t-1}$, which is set equal to 1 if a hospital has lobbying expenses in year *t*–1, and 0 otherwise. The other is a continuous variable, $Lobby\_exp_{t-1}$, which is defined as hospital lobbying expenses divided by hospital net income in year *t*–1. Positive and significant coefficients β_1 will support our H1a and H1b. An insignificant coefficient β_1 will support our H1c.

We follow prior studies to select the control variables. Gapenski, Vogel, and Langland-Orban (1993) find several determinants of hospital performance including patient mix (i.e., Medicare/Medicaid mix) and organizational characters (i.e., size, teaching status, and network). Molinari, Alexander, Morlock, and Lyles (1995) find that size, location, and network are significantly associated with hospital performance. Some studies also use the market concentration index as a control variable for market competition (e.g., Goes and Zhan 1995; Alexander, Weiner, and Griffith 2006; Collum et al. 2016). In this paper, the control variables include the market concentration index (*MCI*), Medicare mix (*MedicareMix*), Medicaid mix (*MedicaidMix*), hospital size (*Size*), hospital leverage (*Leverage*),[5] medical school affiliation (*Teaching*), hospital location (*Urban*), and networked hospital designation (*Network*).

We predict the directions of the control variables in Model (1). A higher *MCI* indicates higher market competition, which may involve a higher human resource supply. Thus, we predict that *MCI*

[4] The most recent financial data from Definitive Healthcare (generated on 6/20/2020) are fiscal year 2018 data. The two datasets do not have matched observations before 2011. In addition, the healthcare industries had been lobbying the Affordable Care Act (ACA) since it was implemented in 2010. Therefore, it is reasonable to assume no significant change in lobbying expenses due to the ACA during the period between 2011 and 2018.

[5] We add *Leverage* as a control variable according to the comments from the 2018 AAA Annual Meeting. It is not included in prior healthcare studies. In untabulated analyses, we re-estimate the regression models *without* controlling *Leverage*. The results persist.

is negatively correlated with *Salary*. Both Medicare and Medicaid are government-sponsored health insurance plans. The beneficiaries of Medicare and Medicaid are less likely to pay their bills in full amounts. However, because Medicare and Medicaid are mainly reimbursed by CMS and state/local governments, those payments are more secure than patients' payments. Thus, the combined effects on hospital financial performance are unknown. Larger hospitals will pay higher salaries than their smaller counterparts. We predict that *Size* is positively correlated with *Salary*. Hospitals with higher leverage are more likely to be financially constrained, and thus cannot pay high salaries. We predict that *Leverage* is negatively correlated with *Salary*. In addition to rendering healthcare services, teaching hospitals have responsibilities for training medical/nursing students, which incurs additional human resource costs (i.e., employee salaries). We predict that *Teaching* is positively correlated with *Salary*. Wang, Wan, Falk, and Goodwin (2001) find that urban hospitals incur higher labor cost; we predict that *Urban* is positively correlated with *Salary*. Because networked hospitals have better financial performance (Nauenberg, Brewer, Basu, Bliss, and Osborne 1999), we predict that *Network* is positively correlated with *Salary*.

To test our second set of hypotheses, we develop Model (2) as follows:

$$Uncomp_{i,t} = \gamma_0 + \gamma_1 Lobby_{i,t-1} + \sum Controls + Year_t + State_i + \varepsilon_{i,t} \quad (2)$$

where *Uncomp* is defined as hospital uncompensated care costs scaled by net patient revenues in year *t*. Negative and significant coefficients γ_1 will support our H2a and H2c. An insignificant coefficient γ_1 will support our H2b.

We also predict the directions of the control variables in Model (2). *MCI* is a characteristic of the hospitals' market environment. The higher the *MCI,* the more competitive the hospital market. This competition will lead to better services, and patients are more willing to pay due to better services. We predict that *MCI* is negatively correlated with *Uncomp*. Similar to our predictions in Model (1), we predict that the directions of the coefficients on *MedicareMix* and *MedicaidMix* are unknown. Economies of scale also play a role in hospital financial performance. Larger hospitals have more resources to collect unpaid bills. We predict that *Size* is negatively correlated with *Uncomp*. Hospitals with higher leverage are more likely to be financially constrained and thus to have limited resources. We predict that *Leverage* is positively correlated with *Uncomp*. Teaching hospitals have to allocate some resources to teaching duties. We predict that *Teaching* is positively correlated with *Uncomp*. Hospitals in urban and networked hospitals have more access to all kinds of resources than their rural counterparts. We predict that *Urban* and *Network* are negatively correlated with *Uncomp*.

To test H3, we develop Model (3) as follows:

$$ROA_{i,t} = \delta_0 + \delta_1 Lobby_{i,t-1} + \sum Controls + Year_t + State_i + \varepsilon_{i,t} \quad (3)$$

where *ROA* is return on assets, which is defined as hospital net income scaled by total assets in year *t*. The predicted directions of the control variables in Model (3) will be opposite of those in Model (2).

In all models, we include year fixed effects, *Year,* to control for temporal variations. Each state has specific minimum mandates on uncompensated care and differs in the ACA's Medicaid expansion. Because these differences may impact hospital performance, we include state fixed effects, *State,* to control state variations. We winsorize all continuous variables at the 1st and 99th percentiles to solve the outlier issue. We use the *r* and *cluster* options of the regress function in Stata to ensure that standard errors are robust and clustered at the hospital level. We provide the definitions of all variables in Appendix A.

TABLE 2
Descriptive Statistics

Panel A: Full Sample

Variables	n	Mean	Std. Dev.	1st Quartile	Median	3rd Quartile
Salary	9,646	0.456	0.301	0.269	0.383	0.545
Uncomp	9,646	0.083	0.067	0.042	0.067	0.101
ROA	9,646	0.044	0.162	−0.007	0.037	0.087
Lobby_dum	9,646	0.774	0.418	1	1	1
Lobby_exp	9,646	0.012	0.179	0.000	0.002	0.017
MCI	9,646	0.398	0.332	0.096	0.347	0.586
MedicareMix	9,646	0.413	0.137	0.323	0.416	0.501
MedicaidMix	9,646	0.117	0.099	0.043	0.087	0.168
Size	9,646	4.786	1.376	3.883	4.828	5.778
Leverage	9,646	0.298	0.350	0.053	0.254	0.441
Teaching	9,646	0.161	0.368	0	0	0
Urban	9,646	0.604	0.489	0	1	1
Network	9,646	0.515	0.500	0	1	1

All continuous variables are winsorized at the 1st and 99th percentiles.

(continued on next page)

IV. RESULTS

Descriptive Statistics

Table 2 reports the descriptive statistics of the variables used in our empirical analyses. For the full sample (9,646 observations), the mean of *Lobby_dum* is 0.774, indicating that 77.4 percent of hospitals have lobbying spending, and the mean (median) of *Lobby_exp* is 0.012 (0.002). The mean (median) of *Uncomp* is 0.083 (0.067). The mean (median) of *ROA* is 0.044 (0.037), which is consistent with that in Collum et al. (2016). The mean (median) of *Salary* is 0.456 (0.383). The means of most control variables in our sample, including *Size, MedicareMix, MedicaidMix,* and *Network,* are comparable with those in Collum et al. (2016) and Cho et al. (2018). The means of *MCI, Teaching,* and *Urban* are slightly different from those in prior research because our sample includes more recent data.

Panel B of Table 2 presents the descriptive statistics of the variables under the different types of hospital ownership. Lobbying likelihoods are very close in all three groups, suggesting that hospitals in all three groups have similar interests in lobbying. Lobbying expenses, however, are the highest in for-profit hospitals, and the lowest in government hospitals, because governmental and charity money cannot be used for lobbying (Andrzejewski 2019; Leech 2006). It is not a surprise that *Uncomp* is higher on average in government hospitals compared to either for-profit or NFP hospitals, because Cram et al. (2010) find that government hospitals provide significantly more uncompensated care. The average *ROA* is the lowest (near zero) in government hospitals, slightly positive in NFP hospitals that must self-fund but do not need to reward shareholders, and the highest in for-profit hospitals where shareholders expect a positive return on their investments.

TABLE 2 (continued)

Panel B: Subsamples

Variables	Subsample	n	Mean	Std. Dev.	1st Quartile	Median	3rd Quartile
Salary	NFP	5,830	0.427	0.274	0.251	0.366	0.524
	Government	2,247	0.467	0.318	0.274	0.369	0.542
	For-Profit	1,569	0.548	0.349	0.339	0.453	0.623
Uncomp	NFP	5,830	0.072	0.048	0.041	0.062	0.091
	Government	2,247	0.120	0.094	0.057	0.091	0.147
	For-Profit	1,569	0.070	0.062	0.028	0.055	0.093
ROA	NFP	5,830	0.041	0.126	0.001	0.038	0.080
	Government	2,247	0.006	0.135	−0.025	0.020	0.057
	For-Profit	1,569	0.107	0.266	−0.002	0.092	0.213
Lobby_dum	NFP	5,830	0.775	0.417	1	1	1
	Government	2,247	0.763	0.425	1	1	1
	For-Profit	1,569	0.782	0.413	1	1	1
Lobby_exp	NFP	5,830	0.010	0.158	0.000	0.002	0.014
	Government	2,247	0.008	0.217	−0.006	0.000	0.021
	For-Profit	1,569	0.025	0.196	0.000	0.005	0.028
MCI	NFP	5,830	0.378	0.338	0.068	0.302	0.568
	Government	2,247	0.491	0.337	0.254	0.347	0.868
	For-Profit	1,569	0.341	0.273	0.110	0.314	0.505
MedicareMix	NFP	5,830	0.407	0.126	0.320	0.413	0.492
	Government	2,247	0.431	0.163	0.339	0.437	0.534
	For-Profit	1,569	0.411	0.130	0.320	0.405	0.487
MedicaidMix	NFP	5,830	0.113	0.094	0.044	0.084	0.160
	Government	2,247	0.139	0.110	0.054	0.112	0.199
	For-Profit	1,569	0.102	0.098	0.031	0.073	0.139
Size	NFP	5,830	5.156	1.250	4.356	5.199	6.012
	Government	2,247	4.363	1.484	3.211	4.349	5.478
	For-Profit	1,569	4.020	1.156	3.318	4.112	4.833
Leverage	NFP	5,830	0.326	0.306	0.124	0.297	0.455
	Government	2,247	0.282	0.298	0.052	0.210	0.405
	For-Profit	1,569	0.215	0.516	0.001	0.053	0.402
Teaching	NFP	5,830	0.189	0.392	0	0	0
	Government	2,247	0.133	0.339	0	0	0
	For-Profit	1,569	0.098	0.298	0	0	0
Urban	NFP	5,830	0.645	0.478	0	1	1
	Government	2,247	0.417	0.493	0	0	1
	For-Profit	1,569	0.718	0.450	0	1	1
Network	NFP	5,830	0.593	0.491	0	1	1
	Government	2,247	0.194	0.396	0	0	0
	For-Profit	1,569	0.682	0.466	0	1	1

All continuous variables are winsorized at the 1st and 99th percentiles.

TABLE 3

Regression of Hospital Total Salaries on Lobbying

Variables	Pred. Sign	Salary					
		NFP		Government		For-Profit	
Lobby_dum$_{t-1}$	+	0.0230***		0.0118		0.0069	
		(0.007)		(0.681)		(0.752)	
Lobby_exp$_{t-1}$	+		0.0570**		0.0185		0.0080
			(0.013)		(0.221)		(0.845)
MCI	−	−0.0572***	−0.0570***	−0.0041	−0.0045	−0.0447	−0.0459
		(0.005)	(0.005)	(0.910)	(0.900)	(0.514)	(0.503)
MedicareMix	?	−0.1353**	−0.1383**	−0.2179	−0.2162	0.2291	0.2295
		(0.020)	(0.018)	(0.123)	(0.124)	(0.133)	(0.132)
MedicaidMix	?	0.1309*	0.1269*	0.3404**	0.3408**	0.5364***	0.5361***
		(0.060)	(0.069)	(0.020)	(0.019)	(0.000)	(0.000)
Size	+	0.1561***	0.1560***	0.1827***	0.1820***	0.2272***	0.2271***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	−	−0.0221	−0.0224	−0.1400***	−0.1406***	−0.0128	−0.0125
		(0.422)	(0.418)	(0.000)	(0.000)	(0.523)	(0.532)
Teaching	+	0.1200***	0.1202***	0.2016***	0.2006***	0.1071**	0.1065**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.017)	(0.017)
Urban	+	0.0456***	0.0453***	0.1205***	0.1197***	0.0773	0.0768
		(0.004)	(0.004)	(0.001)	(0.001)	(0.106)	(0.105)
Network	+	0.0406***	0.0415***	0.0428	0.0434	0.0705	0.0709
		(0.001)	(0.001)	(0.175)	(0.168)	(0.156)	(0.156)
Constant		1.1342***	1.1597***	1.1715***	1.1793***	1.0865***	1.0938***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations		5,830	5,830	2,247	2,247	1,569	1,569
Adjusted R^2		0.481	0.481	0.473	0.473	0.488	0.488
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
State FE		Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.
Standard errors are robust and clustered by hospital. All continuous variables are winsorized at the 1st and 99th percentiles. All variables are defined in Appendix A.

Multivariate Regression Results

Table 3 presents the results from estimating Model (1). The estimated coefficients β_1 on *Lobby_dum* or *Lobby_exp* are positive in all six models. However, the estimated coefficients are significant ($p = 0.007$ and $p = 0.013$, respectively) only in the NFP subsample, suggesting that lobbying raises employee salaries in NFP hospitals. The results support our H1a, indicating that pay for employees is an important aim of lobbying in NFP hospitals. In the subsamples of government and for-profit hospitals, the coefficients on *Lobby_dum* or *Lobby_exp* are insignificant, suggesting that lobbying does not increase employee salaries in government and for-profit hospitals. The results support our H1c but do not support our H1b. This difference might be due to the regulatory constraints on revenues, costs (e.g., wages), and prices in government hospitals (Sloan 1981). Regulations on government hospitals, including salary regulations, are stricter than those on other types of hospitals (Becker et al. 2013; Bovbjerg et al. 2000; Duggan 2000) and therefore limit lobbying.

To interpret the economic magnitude of the results, it is necessary to understand the dependent variable, *Salary,* and the variable of interest, *Lobby_exp,* because they are scaled measures rather than raw salaries and lobbying expenses. In the NFP subsample, the mean of total assets is $431 million, and the mean of net incomes is $19.5 million. Therefore, a one unit increase in *Salary* means an increase of $431 million in raw salaries, and a one unit increase in *Lobby_exp* means an increase of $19.5 million in raw lobbying expenses. For NFP hospitals in Table 3, the coefficient on *Lobby_dum* is 0.0230, suggesting that when an NFP hospital lobbies, the hospital pays an additional $9.91 (i.e., $431 $\times$ 0.023) million in employee salaries compared to its nonlobbying counterparts. The coefficient on *Lobby_exp* is 0.0570, suggesting that each additional $1 spent on lobbying results in a $1.26 (i.e., $431 $\times$ 0.057/19.5) salary increase in an NFP hospital.

Table 4 presents the results from estimating Model (2). In the NFP and for-profit subsamples, the estimated coefficients γ_1 on *Lobby_dum* and *Lobby_exp* are negative and significant. The results suggest that hospital lobbying lowers uncompensated care costs in NFP and for-profit hospitals, supporting our H2a and H2c. In the government subsample, the estimated coefficients γ_1 are insignificant, suggesting that hospital lobbying does not reduce uncompensated care costs in government hospitals. This finding supports our H2b, which is not a surprise because government hospitals have public funding for subsidizing uncompensated care costs.

In the NFP (for-profit) subsample, the average net patient revenues and net incomes are $275 ($123) million and $19.5 ($10.3) million, respectively. The coefficient on *Lobby_dum* is -0.0114 (-0.0180) in the NFP (for-profit) subsample, suggesting that if an NFP (for-profit) hospital incurs lobbying expenses, the average saving in uncompensated care costs is $3.135 ($2.214) million. The coefficient on *Lobby_exp* is -0.0082 (-0.0110) in the NFP (for-profit) subsample, suggesting that a $1 increase in lobbying expenses results in a $0.12 ($0.13) saving in uncompensated care costs in NFP (for-profit) hospitals. At first glance, lobbying spending does not generate a positive return. As we discussed previously, however, uncompensated care costs are one part of hospital costs. Lobbying may reduce other costs. Furthermore, it is important to note that lobbying has complex outcomes, and cost saving is only one of its goals. Lobbying may have other substantial savings/benefits from the other items, such as employee training and insurance allocations. It is reasonable to expect that savings in uncompensated care costs are less than lobbying spending.

Table 5 presents the results from estimating Model (3). In the NFP and government subsamples, the estimated coefficients δ_1 on *Lobby_dum* or *Lobby_exp* are insignificant. In the for-profit subsample, the estimated coefficients are positive (0.0294 and 0.1138, respectively) and significant ($p = 0.078$, and $p = 0.016$, respectively), suggesting that lobbying increases *ROA* only in for-profit hospitals. Our findings demonstrate that for-profit ownership contributes to this result because for-profit hospitals are more likely to strive for higher profitability than the other two types of hospitals.

In the for-profit subsample, the mean of total assets is $99.9 million. The coefficient on *Lobby_dum* is 0.0294 in the for-profit subsample, suggesting that if a for-profit hospital incurs lobbying expenses, the average net income increases by $2.94 million. The coefficient on *Lobby_exp* is 0.1138 in the for-profit subsample, suggesting that $1 of additional lobbying spending increases net income by $1.10 in for-profit hospitals. Regardless of the other potential benefits, lobbying expenses generate a positive return in for-profit hospitals.

It is interesting to find that hospital lobbying increases ROA only in for-profit hospitals. To learn the reason for this finding, we conduct one additional test to study the association between hospital lobbying and revenue. We present the results in Table 6. The coefficients on *Lobby* are positive and significant in NFP and for-profit hospitals, suggesting that hospital lobbying increases hospital net patient revenue in NFP and for-profit hospitals. Recall our main results in Table 3, which reveal that lobbying increases employee salaries in NFP hospitals rather than in for-profit hospitals. The

TABLE 4

Regression of Hospital Uncompensated Care Costs on Lobbying

Variables	Pred. Sign	Uncompensated Care Cost					
		NFP		Government		For-Profit	
$Lobby\_dum_{t-1}$	−	−0.0114**		−0.0077		−0.0180***	
		(0.021)		(0.293)		(0.000)	
$Lobby\_exp_{t-1}$	−		−0.0082*		−0.0064		−0.0110**
			(0.064)		(0.366)		(0.037)
MCI	−	−0.0007	−0.0007	−0.0176*	−0.0177*	−0.0364***	−0.0344***
		(0.853)	(0.838)	(0.083)	(0.082)	(0.003)	(0.006)
MedicareMix	?	0.0126	0.0129	0.1761***	0.1752***	0.0062	0.0038
		(0.320)	(0.307)	(0.000)	(0.000)	(0.794)	(0.875)
MedicaidMix	?	0.0859***	0.0864***	0.1574***	0.1572***	0.1074***	0.1063***
		(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Size	−	−0.0113***	−0.0113***	−0.0164***	−0.0162***	−0.0121***	−0.0122***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	+	0.0023	0.0026	0.0259**	0.0262**	0.0117**	0.0124**
		(0.542)	(0.506)	(0.025)	(0.023)	(0.013)	(0.010)
Teaching	+	0.0016	0.0017	0.0539***	0.0538***	0.0004	0.0007
		(0.531)	(0.510)	(0.001)	(0.001)	(0.967)	(0.942)
Urban	−	−0.0004	−0.0004	−0.0094	−0.0096	−0.0245***	−0.0237***
		(0.881)	(0.874)	(0.270)	(0.259)	(0.001)	(0.003)
Network	−	−0.0047**	−0.0046**	−0.0160*	−0.0150*	−0.0171**	−0.0159**
		(0.036)	(0.039)	(0.076)	(0.095)	(0.012)	(0.020)
Constant		0.0994***	0.0986***	0.1794***	0.1707***	0.0921***	0.0745***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Observations		5,830	5,830	2,247	2,247	1,569	1,569
Adjusted R^2		0.212	0.212	0.407	0.407	0.223	0.211
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
State FE		Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.
Standard errors are robust and clustered by hospital. All continuous variables are winsorized at the 1st and 99th percentiles. All variables are defined in Appendix A.

increase in net patient revenue is offset by the increase in employee salaries in NFP hospitals. Therefore, ROA only increases in for-profit hospitals.

In all regression results, the directions of the coefficients on the control variables meet our predictions and/or match with prior research, suggesting that our models are robust.

V. SUPPLEMENTARY ANALYSES

The Lagged Effects of Hospital Lobbying

Prior research finds the lagged effect of corporate lobbying on financial performance (Chen et al. 2015). In addition, 935 hospitals do not continue to invest in lobbying during the period in our sample; i.e., about 55 percent of hospitals spent zero on lobbying in certain year(s). Those hospitals possibly hope that lobbying spending in one year could benefit them for a longer period of time. That possibility drives us to investigate if hospital lobbying has lagged effects.

TABLE 5

Regression of Hospital ROA on Lobbying

Variables	Pred. Sign	ROA					
		NFP		Government		For-Profit	
Lobby_dum$_{t-1}$	+	0.0047		0.0073		0.0294*	
		(0.798)		(0.676)		(0.078)	
Lobby_exp$_{t-1}$	+		0.0062		0.0004		0.1138**
			(0.215)		(0.981)		(0.016)
MCI	+	0.0188**	0.0186**	0.0133	0.0132	0.0786	0.0789
		(0.043)	(0.045)	(0.302)	(0.304)	(0.245)	(0.244)
MedicareMix	?	−0.0818***	−0.0799***	−0.0091	−0.0095	−0.2539**	−0.2456**
		(0.002)	(0.003)	(0.821)	(0.813)	(0.011)	(0.014)
MedicaidMix	?	−0.0939**	−0.0928**	−0.1407**	−0.1405**	−0.2515**	−0.2440**
		(0.011)	(0.012)	(0.035)	(0.035)	(0.018)	(0.022)
Size	+	0.0177***	0.0177***	0.0210***	0.0210***	0.0374**	0.0372**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.016)	(0.016)
Leverage	−	−0.0540***	−0.0538***	−0.0348*	−0.0351*	−0.1143***	−0.1151***
		(0.000)	(0.000)	(0.057)	(0.058)	(0.000)	(0.000)
Teaching	−	−0.0057	−0.0057	−0.0216	−0.0216	−0.0064	−0.0070
		(0.467)	(0.464)	(0.235)	(0.234)	(0.859)	(0.848)
Urban	+	0.0016	0.0017	0.0117	0.0117	0.0164	0.0167
		(0.825)	(0.808)	(0.370)	(0.369)	(0.651)	(0.645)
Network	+	0.0156***	0.0154***	−0.0385**	−0.0376**	0.0500	0.0477
		(0.003)	(0.003)	(0.017)	(0.018)	(0.131)	(0.150)
Constant		0.0493**	0.0388	0.0525	0.0450	0.3738***	0.3973***
		(0.048)	(0.111)	(0.187)	(0.233)	(0.001)	(0.000)
Observations		5,830	5,830	2,247	2,247	1,569	1,569
Adjusted R^2		0.148	0.149	0.093	0.092	0.270	0.270
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
State FE		Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.
Standard errors are robust and clustered by hospital. All continuous variables are winsorized at the 1st and 99th percentiles. All variables are defined in Appendix A.

To examine the lagged effects of hospital lobbying on performance, we create *Lobby*$_{t-2}$, and *Lobby*$_{t-3}$ as the independent variables; i.e., *Lobby_dum*$_{t-2}$ and *Lobby_dum*$_{t-3}$ are indicator variables that are set equal to 1 if a hospital has lobbying expenses in year *t*–2 and year *t*–3, respectively, and 0 otherwise. *Lobby_exp*$_{t-2}$ and *Lobby_exp*$_{t-3}$ are continuous variables of *Lobby_exp* in year *t*–2 and year *t*–3, respectively. We re-estimate all models with the four independent variables, respectively. We present the results in Table 7. When *Lobby_dum*$_{t-2}$ and *Lobby_exp*$_{t-2}$ are the variables of interest, the results are consistent with those in Tables 3–5, except that the magnitude and significance are smaller than those in our main analyses. When *Lobby_dum*$_{t-3}$ and *Lobby_exp*$_{t-3}$ are the variables of interest, the significance disappears. Our findings demonstrate that lobbying impacts hospital performance for up to two years, but the effects in the second year are not as strong as those in the first year, suggesting that the effects of lobbying diminish as time goes by. Therefore, hospitals need to continue spending on lobbying to maximize the benefits gained from lobbying.

TABLE 6

Regression of Hospital Net Patient Revenue on Lobbying

Variables	Pred. Sign	Net Patient Revenue (Scaled by Total Assets)					
		NFP		Government		For-Profit	
$Lobby\_dum_{t-1}$	+	0.2590**		0.0740		0.1683*	
		(0.042)		(0.352)		(0.084)	
$Lobby\_exp_{t-1}$	+		0.3080**		0.0014		0.2369**
			(0.049)		(0.301)		(0.030)
MCI	+	0.0755	0.0754	0.0678	0.0659	0.1885	0.1918
		(0.153)	(0.153)	(0.377)	(0.391)	(0.296)	(0.292)
MedicareMix	?	−0.3451**	−0.3480**	−0.0524	−0.0482	−0.2834	−0.2552
		(0.034)	(0.033)	(0.842)	(0.854)	(0.438)	(0.484)
MedicaidMix	?	−0.0539	−0.0484	−0.9095***	−0.9115***	−0.3589	−0.3855
		(0.752)	(0.776)	(0.005)	(0.004)	(0.310)	(0.278)
Size	+	0.3141***	0.3140***	0.3103***	0.3077***	0.4408***	0.4418***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	−	−0.3028***	−0.3035***	−0.0696	−0.0733	−0.0304	−0.0282
		(0.000)	(0.000)	(0.501)	(0.478)	(0.663)	(0.682)
Teaching	−	−0.2995***	−0.2999***	−0.3083***	−0.3044***	−0.0600	−0.0592
		(0.000)	(0.000)	(0.001)	(0.001)	(0.597)	(0.605)
Urban	+	0.0987**	0.0984**	0.2868***	0.2841***	0.2241**	0.2264**
		(0.014)	(0.014)	(0.001)	(0.001)	(0.035)	(0.035)
Network	+	0.2038***	0.2050***	0.1061	0.1116	0.1251	0.1179
		(0.000)	(0.000)	(0.126)	(0.106)	(0.250)	(0.283)
Constant		2.5581***	2.5888***	1.8155***	1.8754***	3.3605***	3.4277***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations		5,830	5,830	2,247	2,247	1,569	1,569
Adjusted R^2		0.372	0.372	0.335	0.336	0.351	0.353
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
State FE		Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.
Standard errors are robust and clustered by hospital. All continuous variables are winsorized at the 1st and 99th percentiles. All variables are defined in Appendix A.

The Effect of Changes in Hospital Lobbying Expenses on Changes in Uncompensated Care

Although our main analyses control for a variety of hospital characteristics that might account for the effects of hospital lobbying on hospital uncompensated care, reverse causality is always a concern. One may argue that when a tax-exempt hospital does not meet the uncompensated care requirements, hospital administrators may choose to spend more on lobbying to protect the hospital's tax-exempt status. One way to address the potential reverse causality concern is to conduct a "change" analysis (Allison 2009). We replace the continuous variables in Models (1)–(3) with the changes in these variables.[6] For example, Δ_Uncomp is the difference between *Uncomp* in year $t-1$ and year t, and Δ_Lobby_exp is the difference between *Lobby_exp* in year $t-2$ and year

[6] *MCI* is a continuous variable, but it does not change over the sample period. We keep using *MCI,* rather than Δ_*MCI,* in the models.

TABLE 7

Lagged Effects of Hospital Lobbying on Performance

Panel A: Regression of Hospital Total Salaries on Lagged Lobbying

	Salary											
Variables	**NFP**				**Government**				**For-Profit**			
$Lobby\_dum_{t-2}$	0.0222**				0.0112				0.0067			
	(0.021)				(0.700)				(0.793)			
$Lobby\_dum_{t-3}$		0.0019				0.0054				0.0051		
		(0.222)				(0.821)				(0.947)		
$Lobby\_exp_{t-2}$			0.0228*				0.0142				0.0071	
			(0.085)				(0.261)				(0.895)	
$Lobby\_exp_{t-3}$				0.0101				0.0093				0.0012
				(0.224)				(0.467)				(0.977)
Constant	1.1228***	1.1248***	1.1561***	1.1564***	1.1862***	1.2051***	1.1798***	1.1823***	1.0612***	1.0647***	1.0988***	1.0925***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,387	5,172	5,387	5,172	2,200	2,170	2,200	2,170	1,467	1,409	1,467	1,409
Adjusted R^2	0.486	0.486	0.480	0.480	0.478	0.474	0.474	0.473	0.492	0.489	0.488	0.488
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.
Standard errors are robust and clustered by hospital. All continuous variables are winsorized at the 1st and 99th percentiles.
All variables are defined in Appendix A.

(continued on next page)

TABLE 7 (continued)

Panel B: Regression of Hospital Uncompensated Care Costs on Lagged Lobbying

	Uncompensated Care Cost											
Variables	**NFP**				**Government**				**For-Profit**			
$Lobby\_dum_{t-2}$	−0.0089*				−0.0056				−0.0101**			
	(0.062)				(0.378)				(0.012)			
$Lobby\_dum_{t-3}$		−0.0011				−0.0021				−0.0019		
		(0.400)				(0.623)				(0.303)		
$Lobby\_exp_{t-2}$			−0.0077*				−0.0036				−0.0085*	
			(0.082)				(0.538)				(0.073)	
$Lobby\_exp_{t-3}$				−0.0018				−0.0024				−0.0005
				(0.470)				(0.764)				(0.329)
Constant	0.0963***	0.0904***	0.0981***	0.0980***	0.1660***	0.1627***	0.1711***	0.1716***	0.0929***	0.0944***	0.0735***	0.0739***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,387	5,172	5,387	5,172	2,200	2,170	2,200	2,170	1,467	1,409	1,467	1,409
Adj. R^2	0.207	0.207	0.212	0.212	0.416	0.417	0.407	0.407	0.223	0.226	0.212	0.212
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.
Standard errors are robust and clustered by hospital. All continuous variables are winsorized at the 1st and 99th percentiles.
All variables are defined in Appendix A.

(continued on next page)

TABLE 7 (continued)

Panel C: Regression of Hospital ROA on Lagged Lobbying

	ROA											
Variables	**NFP**				**Government**				**For-Profit**			
$Lobby\_dum_{t-2}$	0.0039				0.0051				0.0269*			
	(0.811)				(0.751)				(0.095)			
$Lobby\_dum_{t-3}$		0.0022				0.0032				0.0154		
		(0.930)				(0.899)				(0.242)		
$Lobby\_exp_{t-2}$			0.0050				0.0001				0.0417*	
			(0.353)				(0.997)				(0.065)	
$Lobby\_exp_{t-3}$				0.0024				0.0000				0.0040
				(0.827)				(0.999)				(0.769)
Constant	0.0472*	0.0529**	0.0417*	0.0424*	0.0468	0.0544	0.0462	0.0451	0.3393***	0.3224***	0.3997***	0.4004***
	(0.067)	(0.036)	(0.087)	(0.083)	(0.269)	(0.182)	(0.221)	(0.230)	(0.005)	(0.008)	(0.000)	(0.000)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,387	5,172	5,387	5,172	2,200	2,170	2,200	2,170	1,467	1,409	1,467	1,409
Adjusted R^2	0.153	0.158	0.148	0.148	0.091	0.092	0.093	0.092	0.284	0.288	0.268	0.269
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.
Standard errors are robust and clustered by hospital. All continuous variables are winsorized at the 1st and 99th percentiles.
All variables are defined in Appendix A.

TABLE 8

Regression Analysis of Changes in Hospital Uncompensated Care Costs on Changes in Lobbying Expenses

Variables	Pred. Sign	Δ_*Uncomp* NFP	Government	For-Profit
Δ_*Lobby_exp*	−	−0.0067*	−0.0018	−0.0097**
		(0.061)	(0.732)	(0.022)
MCI	−	−0.0011	−0.0037	−0.0042
		(0.419)	(0.237)	(0.291)
Δ_*MedicareMix*	?	0.0702***	0.0150	0.0168
		(0.006)	(0.776)	(0.729)
Δ_*MedicaidMix*	?	0.0251	0.0036	0.0744
		(0.291)	(0.953)	(0.124)
Δ_*Size*	−	−0.0045	−0.0407***	−0.0014
		(0.299)	(0.006)	(0.894)
Δ_*Leverage*	+	0.0006	0.0096	0.0061
		(0.915)	(0.503)	(0.476)
Teaching	+	0.0002	0.0047	0.0019
		(0.821)	(0.245)	(0.444)
Urban	−	−0.0004	−0.0003	−0.0029
		(0.662)	(0.918)	(0.251)
Network	−	−0.0007	−0.0024	−0.0039*
		(0.419)	(0.403)	(0.060)
Constant		0.0001	0.0102**	0.0020
		(0.990)	(0.045)	(0.692)
Observations		4,106	1,471	1,066
Adjusted R^2		0.009	0.002	0.001
Year FE		Yes	Yes	Yes
State FE		Yes	Yes	Yes

*, **, *** Indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.
Standard errors are robust and clustered by hospital. All continuous variables are winsorized at the 1st and 99th percentiles. All variables are defined in Appendix A.

t−1. Table 8 presents the results, which are consistent with those in our main analyses in Table 4. Thus, reverse causality does not drive the association between hospital lobbying expenses and uncompensated care costs.

VI. CONCLUSIONS

Lobbying is an important avenue for business organizations to influence legislation, regulations, or policies in order to gain competitive advantage. The extant research only focuses on one type of organization ownership to study the effects of lobbying. The results of these studies are not warranted when they are generalized across organization ownership. Our study explores lobbying's effects in different types of hospital ownership; we choose the hospital industry due to the co-existence of three different types of hospital ownership. Although hospitals are active participants in lobbying activities, relevant studies about the effects of lobbying in the hospital

industry are sparse, largely because of the unavailability of hospital data. In this study, we use the most recent hospital financial and lobbying expense data to examine the effects of hospital lobbying on employee salaries, uncompensated care costs, and ROA. We find that hospital lobbying increases employee salaries in NFP hospitals, reduces uncompensated care costs in NFP and for-profit hospitals, and increases ROA in for-profit hospitals; however, all these effects of lobbying are insignificant in government hospitals. These distinct effects of hospital lobbying provide evidence that NFP hospitals lobby to protect employees' interests, while for-profit hospitals lobby to maximize investors' interests. The insignificant effects of lobbying in government hospitals are probably attributable to stricter regulations on government hospital lobbying activities and the subsidies for uncompensated care services that these hospitals receive. This study contributes to lobbying literature by empirically examining the effects of lobbying in the hospital industry and sheds light on distinctions in lobbying effects across the different types of organization ownership. Our study suggests that lobbying hospitals gain more benefits than their nonlobbying peers and provides insights into how lobbying can affect hospital performance, which could be helpful for hospital administrators' decision making.

Our study has several limitations that provide openings for future research. First, in cost management, we only study the effects of hospital lobbying on employee salaries and uncompensated care costs. Insurance allocations and spending on employee training are the other two hospital lobbying foci (Frankenfield 2020). Future research could examine the effects of hospital lobbying on these two areas if relevant data are available. Second, although we find that the lobbying effects diminish in the second year after lobbying and disappear in the third year, the underlying factors behind this trend remain unclear. Further studies could explore this issue. Last, the Lobbying Disclosure Act of 1995 only requires that organizations that spend more than $10,000 on lobbying must register and file reports to disclose the lobbying issues and the amount spent. Therefore, in this study, we can only study the hospitals that spend over $10,000 on lobbying at the federal level. Future studies can utilize different techniques, such as surveys or interviews (i.e., self-reported data) or other available data to explore the effects of lobbying activities that are not regulated by the Lobbying Disclosure Act of 1995 as well as those that are conducted at the state and local level.

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APPENDIX A

Variable Definitions

Variable	Definition
Dependent Variables	
Salary	Hospital total salaries divided by total assets in year *t*.
Uncomp	Hospital uncompensated care costs divided by net patient revenues in year *t*.
ROA	Hospital net income divided by total assets in year *t*.
Independent Variables	
$Lobby\_dum_{t-1}$	An indicator variable that is set equal to 1 if this hospital has lobby expense, 0 otherwise, in year $t-1$.
$Lobby\_exp_{t-1}$	Hospital lobby expense divided by hospital net income in year $t-1$.
Control Variables	
MCI	Hospital market concentration index in year *t*.
MedicareMix	Hospital Medicare mix in year *t*.
MedicaidMix	Hospital Medicaid mix in year *t*.
Size	The natural logarithm of hospital total assets.
Leverage	Hospital total liabilities minus total current liabilities divided by beginning of year total assets.
Teaching	An indicator variable that is set equal to 1 if medical school affiliation is "Graduate" or "Major," and 0 otherwise.
Urban	An indicator variable that is set equal to 1 if geographic classification is "Urban," and 0 otherwise.
Network	An indicator variable that is set equal to 1 if network is non-missing, and 0 otherwise.
Year	An indicator variable that is set equal to 1 if the observation's year is equal to one unique year, and 0 otherwise.
State	An indicator variable that is set equal to 1 if the observation's year is equal to one unique state, and 0 otherwise.

APPENDIX B

Distinctive Characteristics of Hospital Ownership Types

	Ownership Type		
	For-Profit	**NFP**	**Government**
Key Stakeholders	Investors, employees, paying patients	Employees, paying patients, charitable service to the people living in poverty	Government, employees, the military, the people living in poverty, the uninsured
Missions/Objectives	Profit	A more humane society	Public health and security
Financing	Patient fees and charges	Fees, charges, donations, allocations	Government appropriations, allocations, fees
Incentives	Financial	Professionalization, autonomy, flexibility	Job security, power, recognition

Appendix B is compiled from Baker et al. (2000) and McFarland (1995).