

State-Level Community Benefit Regulation and Nonprofit Hospitals' Provision of Community Benefits

Simone R. Singh

University of Michigan

Gary J. Young

Northeastern University

Lacey Loomer

Brown University

Kristin Madison

Northeastern University

Abstract Do nonprofit hospitals provide enough community benefits to justify their tax exemptions? States have sought to enhance nonprofit hospitals' accountability and oversight through regulation, including requirements to report community benefits, conduct community health needs assessments, provide minimum levels of community benefits, and adhere to minimum income eligibility standards for charity care. However, little research has assessed these regulations' impact on community benefits. Using 2009–11 Internal Revenue Service data on community benefit spending for more than eighteen hundred hospitals and the Hilltop Institute's data on community benefit regulation, we investigated the relationship between these four types of regulation and the level and types of hospital-provided community benefits. Our multivariate regression analyses showed that only community health needs assessments were consistently associated with greater community benefit spending. The results for reporting and minimum spending requirements were mixed, while minimum income eligibility standards for charity care were unrelated to community benefit spending. State adoption of multiple types of regulation was consistently associated with higher levels of hospital-provided community benefits, possibly because regulatory intensity conveys a strong signal to the hospital community that more spending is expected. This study can inform efforts to design regulations that will encourage hospitals to provide community benefits consistent with policy makers' goals.

Keywords community benefit, state-level regulation, nonprofit hospitals

Nearly 60 percent of the approximately five thousand hospitals in the United States are nonprofit (American Hospital Association 2014), most of which are exempt from paying federal, state, and local taxes because of their status as charitable entities. The value of the tax exemption for these

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hospitals was estimated to total \$24 billion in 2011 and has likely grown since (Rosenbaum et al. 2015). About half of this amount represents exemptions from federal income taxes, while the remainder is from state and local tax exemptions, including income, property, and sales taxes (US Government Accountability Office 2005; Rosenbaum et al. 2015). Hospitals typically fulfill their charitable obligations through the provision of community benefits, which consist of services and activities provided on a fully or partially subsidized basis (Young et al. 2013).

A long-standing controversy concerns whether nonprofit hospitals provide sufficient community benefits to justify their tax exemptions (Rosenbaum and Margulies 2012). Many states have responded to this controversy through regulatory initiatives designed to enhance accountability and oversight of nonprofit hospitals regarding their provision of community benefits. Currently, more than half of all states require nonprofit hospitals to make some sort of disclosure of their community benefit activities (Nelson et al. 2013). These states typically require hospitals to file annual reports that provide detailed information about their community benefit activities, including the costs incurred in providing them. Some of these states also impose additional requirements that nonprofit hospitals must meet to remain tax exempt. Additional requirements are typically more directive in terms of how much or what types of benefits must be provided in return for tax exemptions. One state (Oklahoma) is an exception in this respect because it did not have a community benefit reporting requirement during the study period but did impose additional requirements for hospitals in return for a tax exemption.

Despite the proliferation of state-level regulatory initiatives, only a small number of studies have assessed their impact on nonprofit hospitals' provision of community benefits. Ginn and Moseley (2006) reported that hospitals in states that have passed some type of community benefit regulation engaged in more community-oriented activities (e.g., having a long-term plan for improving the health of the community) than did hospitals in other states, but they did not examine how much hospitals actually spent on community benefits. Young et al. (2013) did examine hospital community benefit spending and found that such spending was greater among hospitals located in states that had adopted community benefit reporting requirements. Their study, however, did not consider any other forms of community benefit regulations. Kennedy et al. (2010) specifically examined the impact of one type of community benefit requirement, Texas's adoption of a minimum spending requirement for charity care. They concluded that the requirement did not lead to an overall increase in

hospitals' provision of charity care because some hospitals that had previously spent above the required minimum level decreased their spending following the adoption of the requirement. More recently, Tahk (2014) examined the relationship between state requirements for a minimum level of hospital community benefit spending and actual levels of such spending. Study results did not point to any association between the minimum spending requirements and hospital spending.

In this study, we examined the relationship between four common types of state community benefit regulations and hospital spending on community benefits: (1) community benefit reporting, (2) community health needs assessments (CHNAs), (3) minimum levels of community benefits, and (4) minimum income eligibility standards for charity care. Understanding the effectiveness of these four types of state regulatory initiatives is particularly important in light of efforts at the federal level to exact greater accountability from nonprofit hospitals regarding their provision of community benefits. Since 2009, all nonprofit hospitals with a federal tax exemption have been required to report their community benefit spending on the revised Schedule H of the Internal Revenue Service (IRS) Form 990. Moreover, under the Affordable Care Act, Congress imposed additional requirements for nonprofit hospitals to maintain their tax-exempt status. Among these is the requirement that hospitals complete a CHNA every three years and develop an implementation strategy to address identified needs (Rosenbaum and Margulies 2012).

This study extends previous research on this topic in several ways. First, we estimated the individual and cumulative relationships between the four types of state community benefit regulations and nonprofit hospitals' spending on community benefits. Previous research largely focused on the relationship between reporting requirements and spending on community benefits. The variation among states in the adoption of the four types of community benefit regulations offers an opportunity to study the relationship between different combinations of community benefit regulations and hospitals' community benefit spending.

Second, we estimated the impact of state regulations on both the level and the pattern of hospitals' community benefit spending as reported on IRS Form 990 Schedule H. To our knowledge, our study is the first study to use community benefit spending data from Schedule H to analyze the link between state regulations and spending patterns. Community benefits as defined by the IRS take many different forms, most of which can be categorized either as spending on direct patient care services (including charity care, Medicaid shortfalls, and other subsidized health services) or

as spending on broader community health initiatives. Although we know from previous research that over 80 percent of what hospitals spend on community benefits goes to direct patient care activities (Young et al. 2013; Tahk 2014), policy makers have been keenly interested in seeing hospitals devote more resources to community health initiatives that promote prevention and wellness (Rosenbaum et al. 2015). However, even when community benefit regulations are aimed specifically at direct patient care activities, spillover effects might occur for other types of community benefits if hospitals view such regulations as a broader call to expand the community benefits they provide.

Third, our research sought to address concerns about potential endogeneity bias in our ordinary least squares (OLS) regression analysis with an instrumental variables (IV) approach. All states that adopted one or more of the community benefit regulations examined in this study adopted them before 2009. Uniform national data on hospital community benefit spending, however, were not available until 2009 when the IRS first required non-profit hospitals to complete the revised IRS Form 990 Schedule H (Young et al. 2013). This lack of historical spending data hinders study designs based on a comparison of hospital spending before and after regulatory adoption. While cross-sectional variation in state adoption of community benefit regulations allows for the estimation of the relationship between regulation and spending, it is possible that unobservable factors contributed both to a state's decision to adopt and retain such regulations and to hospitals' decisions regarding their community benefit spending.

Background

States differ in their standards for granting tax-exempt status to nonprofit hospitals. Some states grant tax-exempt status to any nonprofit hospital that has been deemed by the IRS to be in compliance with the federal standard. The federal standard generally requires that nonprofit hospitals engage in activities that benefit their communities in return for exemption from federal income tax (Colombo, Griffith, and King 2011). Other states have created their own standards that nonprofit hospitals must meet to remain exempt from state and local taxes. States with community benefit regulations generally fall into one of two groups (Rubin, Singh, and Young 2015). The first group includes states that have adopted only a community benefit reporting requirement. The second group includes states that require nonprofit hospitals to fulfill one or more additional requirements beyond reporting their community benefit activities, including, for instance, the

requirement to conduct periodic CHNAs or to provide minimum levels of community benefits in return for tax exemption. Only one state included in our study deviated from this rule: during the study period, Oklahoma did not have a community benefit reporting requirement but did impose additional requirements for hospitals in return for a tax exemption.

The primary purpose of a community benefit reporting requirement is to increase accountability and transparency regarding hospitals' provision of benefits to their communities. States with a community benefit reporting requirement typically require nonprofit hospitals to submit annual reports to government agencies that detail their community benefit activities, including their expenditures on these activities. Some states make the reports available to the public, either via a publicly accessible website or upon request. Public availability of hospitals' reports, in particular, can help increase transparency and inform public debate regarding the role that nonprofit hospitals should and do play in their communities (Rubin, Singh, and Young 2015). Increased transparency can also promote ongoing scrutiny of the adequacy of nonprofit hospitals' community benefit activities and, as a result, provide incentives for hospitals to provide higher levels of community benefits.

While reporting requirements promote transparency and potentially create incentives for hospitals to provide higher levels of community benefits than they otherwise would, they do not require that hospitals provide a specific level or type of community benefit. Some states have thus chosen to go beyond reporting requirements by adopting additional regulatory requirements. Three common types of additional state-level regulations are the requirement to conduct periodic CHNAs, the requirement to spend a minimum level on community benefits, and the requirement to adhere to minimum income eligibility standards for charity care. Conceptually, each of these regulations has the potential to influence hospital community benefit spending.

CHNAs provide hospitals with detailed information about community needs that hospitals may seek to address through community benefit spending. For example, if a needs assessment points to obesity as an important problem for the community served, the hospital may decide to invest in educational initiatives for the community focusing on principles of good nutrition and exercise. Hospitals may do so either by redirecting some of their current community benefit dollars toward these activities (i.e., by changing the pattern of their community benefit spending) or by spending additional funds (i.e., by changing the level of their community

benefit spending). However, CHNA requirements alone do not require hospitals to make any changes to their community benefit spending.

Minimum community benefit spending requirements aim to ensure that nonprofit hospitals provide a certain minimum level of community benefit in return for tax exemption. Depending on the state, this requirement may be formulated as a percentage of a hospital's operating budget or may be based on the value of its state and/or local tax exemptions. Minimum spending requirements typically aim to increase overall spending by hospitals on a defined set of community benefits. However, such requirements can also result in a "race to the bottom" in which some hospitals that have historically provided relatively high levels of community benefits reduce their contributions to the level required to maintain tax exemption. The previously noted study by Kennedy et al. (2010) suggests such a result in Texas following its adoption of a minimum spending requirement for charity care. Furthermore, minimum spending requirements may result in spending trade-offs whereby some hospitals respond by increasing their spending on the community benefits that are the explicit focus of the regulation while decreasing their spending on other benefits.

Minimum income eligibility standards for charity care require hospitals to adhere to minimum financial criteria in determining whether patients are eligible for charity care. For example, a state may mandate that charity care be made available to all individuals with incomes below 150 percent of the federal poverty level. This type of regulation has the potential to raise hospital spending on charity care by expanding the number of patients that are eligible for such care. Similar to minimum community benefit spending requirements, however, minimum income eligibility standards for charity care may result in a "race to the bottom" if hospitals with more generous charity care policies lower their eligibility threshold to the statewide minimum.

Methods

To examine the relationship between state-level community benefit regulation and nonprofit hospitals' provision of community benefits, we estimated pooled cross-sectional regression models that accounted for institutional, market, and community characteristics that potentially influence hospitals' community benefit expenditures (Young et al. 2013; Tahk 2014). We first estimated OLS regressions with hospital community benefit spending as the dependent variable and each of the four types of regulatory

requirements for community benefits as separate independent variables. The regression analysis had the following general form:

$$\text{CBspend}_{it} = \alpha + \beta_1 * \text{stateCBlaws}_{it} + \beta_2 * \mathbf{X}_{it} + \beta_3 * \mathbf{T}_t + \varepsilon_{it}$$

where CBspend_{it} represents hospital i 's spending in year t on one of three categories of community benefits discussed in more detail below; stateCBlaws_{it} represents a vector of indicators characterizing the community benefit regulations applicable to nonprofit hospitals in hospital i 's state in year t ; \mathbf{X}_{it} represents a vector of institutional, community, and market-level control variables for hospital i in year t ; \mathbf{T}_t represents a vector of year dummy variables; and ε_{it} represents the error term for hospital i in year t .

In addition, we estimated OLS regressions with hospital community benefit spending as the dependent variable and a summary index of the comprehensiveness of a state's community benefit laws as the key independent variable. This allowed us to test the cumulative relationship between state community benefit regulations and hospitals' community benefit spending. As a sensitivity analysis, we reestimated all regressions using a random effects model to account for the nesting of hospitals within states.

Moreover, we conducted robustness tests of our OLS results using an instrumental variables (IV) approach to account for potential endogeneity bias. For an IV approach to be valid, the selected IV needs to be correlated with the independent variable of primary interest but not with the error term in the regression equation. The IV cannot directly impact the dependent variable. For the purpose of this study, an appropriate instrument must be correlated with state adoption of community benefit regulations but not with the error term in the community benefit spending equation. The instruments chosen for our robustness tests were based on the number of state health insurance mandates adopted by each state. A health insurance mandate is a requirement that an insurance company or health plan cover specific services, providers, or patient populations. The number of health insurance mandates reflects a state's propensity for government involvement in the health arena. The propensity for government involvement also tends to influence the number of community benefit regulations, so these two variables were hypothesized to be correlated.

One might be concerned, however, about whether an instrument based on the number of state health insurance mandates meets the second criterion. In theory, health insurance mandates could have two (potentially offsetting) effects on hospitals' community benefit spending. On the one

hand, requiring private insurers to cover a greater array of services may reduce the need for hospitals to provide these services as part of their community benefits. On the other hand, requiring private insurers to cover more services may make health insurance less affordable and thus contribute to an increase in the number of uninsured. Higher levels of uninsured individuals in a community may lead to greater demand for charity care and other types of community benefits.

Despite these concerns, an instrument based on the number of state health insurance mandates may nevertheless satisfy the second criterion. First, many health insurance mandates have little connection to the types of community benefits hospitals typically provide. There is little reason to believe that many types of mandates on private insurers, such as mandates to cover autism treatment, *in vitro* fertilizations, or prescription drugs, would directly influence hospitals' provision of community benefits. Second, the potential impact of a greater number of state health insurance mandates on the likelihood that individuals within a community are uninsured can be accounted for in a regression equation by including a control variable for the percentage of uninsured individuals in the community the hospital serves. Because all of our regressions included as a control variable the percentage of uninsured persons in the local community, our instrument should be uncorrelated with the error term.

Data and Sample

Data for this study came from several sources. Data on hospital community benefit spending were obtained from hospitals' IRS Form 990 Schedule H, which contains detailed spending information for the following expenditure categories: financial assistance to indigent patients (i.e., charity care), payment shortfalls (i.e., reimbursement below costs) for patients enrolled in Medicaid and other means-tested public insurance programs, subsidized health services, research, health professions training, community health improvement activities, and cash and in-kind contributions to community groups for community benefit activities. Data on state community benefit legislation were obtained from the Community Benefit State Law Profiles compiled and published by the Hilltop Institute (www.hilltopinstitute.org/hcbp_cbl.cfm). For each state, the Hilltop Institute's profiles provide information about whether a state has adopted specific community benefit laws, regulations, and tax exemptions for hospitals. Data on the number of state health insurance benefit mandates were obtained from the Council for Affordable Health Insurance (Bunce and Wieske 2009). The council compiles and publishes detailed information on the number and types of

health insurance mandates by state and year. Additional data on hospital-level institutional and market characteristics came from the American Hospital Association's Annual Survey and the Center for Medicare and Medicaid Services. Data on community characteristics came from the Area Health Resource File from the Health Resources and Services Administration.

The study sample comprised general nonprofit hospitals that were in operation at some point between 2009 and 2011 and reported community benefits on Schedule H at the individual hospital level. The unit of analysis was the hospital year. The final study sample comprised 5,384 hospital-year observations for which we had complete data. Specifically, we had complete data for 1,825 hospitals in year 2009, 1,790 hospitals in year 2010, and 1,769 hospitals in year 2011. We used American Hospital Association survey data to compare the study sample to the general population of nonprofit hospitals on several institutional characteristics (e.g., number of beds, system membership, urban/rural location). We found the two groups of hospitals to be largely comparable on these characteristics, including system membership, for which the study sample only slightly underrepresented the general population of nonprofits. This is because some hospitals belong to hospital systems that have received IRS approval to submit a consolidated Form 990 for all hospitals in the system and thus do not report their own Schedule H data to the IRS. However, many hospital systems do not submit consolidated reports, so their member hospitals report hospital-level data for Schedule H, and these hospitals are included in our study sample.

Measures

Dependent Variables. Using data from IRS 990 Schedule H, we constructed three distinct measures of hospital community benefit spending: spending on total community benefits, spending on direct patient care services, and spending on community health initiatives. Spending on total community benefits was specified as a hospital's net cost of providing all community benefits as defined by the IRS in Form 990 Schedule H, divided by the hospital's total operating expenditures. Spending on total community benefits is the sum of spending on direct patient care services, community health initiatives, and research and health professional education. Spending on direct patient care services was specified as the sum of a hospital's net cost of financial assistance to indigent patients (charity care), the unreimbursed costs of services provided to patients covered under

Medicaid and other means-tested government programs (hereafter “Medicaid payment shortfalls”), and the net cost of subsidized health services, divided by the hospital’s total operating expenditures. Spending on community health initiatives included the net expenditures for programs and services that benefit the community more broadly, including community health improvement programs and cash and in-kind contributions to community groups, divided by the hospital’s total operating expenditures. Spending on research and health professional education is the sum of research spending and health professional education spending.

Independent Variables. The independent variables of interest were four state-level community benefit regulations. Using the Hilltop Institute’s Community Benefit State Law Profiles, we determined whether or not, for each year included in our study, a state required hospitals to (1) report community benefits, (2) conduct community health needs assessments, (3) provide minimum levels of community benefits, or (4) adhere to minimum income eligibility standards for charity care. For the purpose of this study we defined each type of community benefit regulation as follows: (1) A state was considered to have a community benefit reporting requirement if the Hilltop Institute’s profiles indicated that the state required hospitals to report the community benefits they provide. This included both regular (generally annual) reporting requirements (irrespective of whether the requirement exempted certain hospitals such as small hospitals based on number of beds) and reporting requirements for the purpose of securing a certificate of need. (2) A state was considered to have a CHNA requirement if the Hilltop Institute’s profiles indicated that the state required hospitals to conduct regular CHNAs. (3) A state was considered to have a minimum community benefit expenditure requirement if the Hilltop Institute’s profiles indicated that the state specified a minimum level of community benefits that a nonprofit hospital must provide to remain tax exempt. (4) A state was considered to have a minimum income eligibility level for charity care if the Hilltop Institute’s profiles listed a defined minimum income eligibility level for charity care as part of the state’s regulations for financial assistance policies.

For the first set of regression models, each of the four community benefit regulations was accounted for by an indicator variable. The indicator variable took on a value of 1 if the regulation had been adopted in a given year by the state in which a hospital was located and 0 otherwise. For the second set of regression models, we constructed a summary index, defined as the number of regulations present in a given year in the state in which a hospital was located. The summary index ranged from 0 (no regulations

present in a state in a given year) to 4 (all four types of regulations present in a state in a given year).

Instrumental Variables. The IVs employed in this study were based on the number of health insurance mandates that each state had adopted in each year of the study period. Most state-mandated health insurance benefits are for specific services, such as for colorectal cancer screening or in vitro fertilization. Some are for services provided by a particular kind of provider, such as a nurse midwife or podiatrist. A few benefit mandates require coverage for particular individuals, such as adopted children or domestic partners. We specified two separate IVs: one based on the total number of health insurance mandates adopted, and the other based on a subset of mandates that related specifically to services that would ordinarily occur in ambulatory, nonemergency settings and so were potentially less likely to be provided at reduced or no cost to the uninsured or as part of community benefit initiatives (see appendix table A1). Such mandates typically comprised approximately 20 percent of a state's total health insurance mandates.

Control Variables. We included a number of institutional, community, and market characteristics as control variables in all regression models. Institutional control variables included the number of beds, system affiliation, network affiliation, case mix index, wage index, teaching status, whether or not the hospital was contract managed, church affiliation, whether or not the hospital was a sole community provider, and indicators of hospital profitability. Data for all of these variables came from the American Hospital Association's annual survey with the exception of case mix index and wage index, for which we obtained data from the Center for Medicare and Medicaid Services, and indicators of hospital profitability, for which we obtained data from IRS Form 990. Community and market characteristics included per capita income in the local community, market competition (measured in terms of the Herfindahl-Hirschman Index), the percentage of residents without health insurance, the percentage of hospital beds in the local community controlled by for-profit and public hospitals, urban/rural location, and geographic region (defined as Northeast, Midwest, South, or West). Consistent with previous studies, all community and market characteristics (with the exception of geographic region) were defined at the level of the county in which a hospital was located (Young et al. 2013; Singh et al. 2015). Data for community and market characteristics came from the American Hospital Association's annual survey with the exception of per capita income in the local community and the percentage of

residents without health insurance, for which we obtained data from the Health Resources and Services Administration's Area Health Resource File.

Results

Descriptive Results

As presented in table 1, states varied considerably regarding which, if any, community benefit regulatory requirements they had adopted. In 2011, the most recent year included in this study, twenty-nine states and the District of Columbia had a community benefit reporting requirement, ten states had a CHNA requirement, four states had a minimum community benefit spending requirement, and nine states and the District of Columbia had a minimum income eligibility standard for charity care. Fifteen states and the District of Columbia had more than one type of community benefit regulation, while twenty states had no state-level community benefit requirements for nonprofit hospitals. Of the 1,769 hospitals in our study sample for fiscal year 2011, 536 (30.3 percent) were located in states with no community benefit regulations, 566 (32 percent) were located in states with one type of community benefit regulation, and 667 (37.7 percent) were located in states with more than one type of community benefit regulation.

Hospitals' community benefit spending was largely consistent over the three-year study period (table 2). In the most recent year (2011), hospitals spent an average of 7.6 percent of total operating expenses on community benefit activities. Of these expenditures, approximately 86 percent (6.5 percent of total operating expenses) went toward direct patient care services. Another 6 percent (0.47 percent of total operating expenses) was spent on community health initiatives. The remainder went toward spending on research and health professional education.

Community benefit spending varied widely among hospitals (table 2). In 2011, hospitals in the bottom quartile spent ≤ 4.2 percent of total operating expenditures, while hospitals in the top quartile spent ≥ 9.9 percent of total operating expenditures on all community benefit activities combined. Likewise, spending on direct patient care services ranged from ≤ 3.6 percent of total operating expenditures for hospitals in the bottom quartile to ≥ 8.4 percent in the top quartile. Community health initiatives spending ranged from ≤ 0.05 percent of total operating expenditures in the bottom quartile to ≥ 0.54 percent in the top quartile.

In all three years, hospitals in states with no community benefit regulations spent less, on average, on both total community benefits and direct

Table 1 Overview of State-Level Community Benefit Regulation, 2011

State	Requirements beyond reporting			
	Community benefit reporting requirement	Community health needs assessment	Minimum levels of community benefit	Minimum income eligibility standards for charity care
Alabama	No	No	No	No
Alaska	No	No	No	No
Arizona	No	No	No	No
Arkansas	No	No	No	No
California	Yes	Yes	No	Yes
Colorado	No	No	No	No
Connecticut	No	No	No	No
Delaware	No	No	No	No
District of Columbia	Yes	No	No	Yes
Florida	No	No	No	No
Georgia	Yes	No	No	No
Hawaii	No	No	No	No
Idaho	Yes	Yes	No	No
Illinois	Yes	Yes	No	No
Indiana	Yes	Yes	No	No
Iowa	No	No	No	No
Kansas	No	No	No	No
Kentucky	No	No	No	No
Louisiana	No	No	No	No
Maine	Yes	No	No	Yes
Maryland	Yes	Yes	No	Yes
Massachusetts	No	No	No	No
Michigan	No	No	No	No
Minnesota	Yes	No	No	No
Mississippi	Yes	No	No	No
Missouri	Yes	No	No	No
Montana	Yes	No	No	No
Nebraska	No	No	No	No
Nevada	Yes	No	Yes	No
New Hampshire	Yes	Yes	No	Yes
New Jersey	Yes	No	No	No
New Mexico	Yes	No	No	No
New York	Yes	Yes	No	No
North Carolina	No	No	No	No
North Dakota	No	No	No	No

(continued)

Table 1 Overview of State-Level Community Benefit Regulation, 2011 (*continued*)

State	Community benefit reporting requirement	Requirements beyond reporting		
		Community health needs assessment	Minimum levels of community benefit	Minimum income eligibility standards for charity care
Ohio	Yes	No	No	No
Oklahoma	No	No	No	Yes
Oregon	Yes	No	No	No
Pennsylvania	Yes	No	Yes	No
Rhode Island	Yes	Yes	No	Yes
South Carolina	Yes	No	No	No
South Dakota	No	No	No	No
Tennessee	Yes	No	No	No
Texas	Yes	Yes	Yes	Yes
Utah	Yes	No	Yes	Yes
Vermont	Yes	Yes	No	No
Virginia	Yes	No	No	No
Washington	Yes	No	No	Yes
West Virginia	Yes	No	No	No
Wisconsin	Yes	No	No	No
Wyoming	No	No	No	No
Number of states (including DC) with regulation	30	10	4	10

Source: Adapted from the Hilltop Institute's Community Benefit State Law Profiles (www.hilltopinstitute.org/hcbp_cbl.cfm).

patient care services (table 2). In 2011, average total spending by hospitals in states with no community benefit regulation amounted to 6.7 percent of total operating expenses. In comparison, hospitals in states with a community benefit reporting requirement spent 7.6 percent, and hospitals in states with a community benefit reporting requirement and at least one additional regulation spent 8.2 percent. Similarly, average spending on direct patient care services in 2011 was lowest among hospitals in states with no community benefit regulation and highest among hospitals in states with a community benefit reporting requirement and at least one additional regulatory requirement. Hospitals' spending on community health initiatives, on the other hand, did not follow the same pattern. Mean spending on community health initiatives did not differ significantly

Table 2 Descriptive Statistics for Hospital Community Benefit Spending as a Percentage of Operating Expenses by Extent of State-Level Community Benefit Regulation, 2009–11 [Mean (Interquartile Range)]

Variable	2009	2010	2011
Number of hospitals	1,825	1,790	1,769
Total community benefits			
All hospitals	7.4% (4.0–9.3%)	7.3% (4.0–9.4%)	7.6% (4.2–9.9%)
Hospitals in states with			
No community benefit regulation	6.7% (3.5–8.8%)	6.5% (3.4–8.5%)	6.7% (3.5–8.8%)
Community benefit reporting only	7.4% (4.4–9.1%)	7.3% (4.1–9.4%)	7.6% (4.7–10.2%)
Community benefit reporting and at least one requirement beyond reporting ^a	8.0% (4.2–10.0%)	8.0% (4.4–10.0%)	8.2% (4.7–10.3%)
Direct patient care services			
All hospitals	6.4% (3.3–8.1%)	6.3% (3.2–8.1%)	6.5% (3.6–8.4%)
Hospitals in states with			
No community benefit regulation	5.8% (2.9–7.7%)	5.6% (2.8–7.5%)	5.8% (2.8–7.4%)
Community benefit reporting only	6.6% (3.8–8.2%)	6.5% (3.5–8.3%)	6.8% (4.0–9.1%)
Community benefit reporting and at least one requirement beyond reporting ^a	6.8% (3.3–8.3%)	6.7% (3.4–8.3%)	6.9% (3.8–8.6%)
Community health initiatives			
All hospitals	0.48% (0.05–0.53%)	0.48% (0.04–0.53%)	0.47% (0.05–0.54%)
Hospitals in states with			
No community benefit regulation	0.47% (0.03–0.51%)	0.46% (0.03–0.51%)	0.46% (0.04–0.53%)
Community benefit reporting only	0.40% (0.07–0.51%)	0.39% (0.04–0.48%)	0.39% (0.06–0.49%)

(continued)

Table 2 Descriptive Statistics for Hospital Community Benefit Spending as a Percentage of Operating Expenses by Extent of State-Level Community Benefit Regulation, 2009–11 [Mean (Interquartile Range)] (*continued*)

Variable	2009	2010	2011
Community benefit reporting and at least one requirement beyond reporting ^a	0.55% (0.05–0.55%)	0.55% (0.04–0.58%)	0.53% (0.06–0.60%)

Source: Authors' calculations

Notes: Kruskal-Wallis tests showed that the means across the three subgroups of hospitals (hospitals in states with no community benefit regulation, hospitals in states with a community benefit reporting requirement only, and hospitals in states with a community benefit reporting requirement and at least one requirement beyond reporting) were statistically different at $p < 0.01$ for hospital spending on both total community benefit and direct patient care services for all three years, but not for hospital spending on community health initiatives.

^aThis group also includes Oklahoma, which does not have a community benefit reporting requirement but does specify a minimum income eligibility standard for charity care.

across hospitals in states with no community benefit regulation, with a reporting requirement only, and with more than one type of community benefit requirement.

Ordinary Least Squares Regression Results

Table 3 presents results from the OLS regressions. In model 1, only one of the four state-level regulatory requirements examined—the requirement to conduct periodic CHNAs—was significantly associated with greater hospital spending for all three categories of community benefit. For state-level reporting requirements, the results were more mixed. Reporting requirements were associated with greater spending on total community benefits and direct patient care services. Additional analysis (data not shown) showed that this relationship was positive and significant for charity care and subsidized health services, whereas reporting was not significantly associated with Medicaid payment shortfalls. However, reporting requirements were negatively associated with hospital spending on community health initiatives.

We also observed mixed results for state-level minimum community benefit spending requirements, which were associated with greater hospital spending on community health initiatives but lower spending on direct patient care services and total community benefits. Additional analysis of this finding (data not shown) revealed that hospital spending on charity care and subsidized health services was significantly lower in states with minimum community spending requirements, while Medicaid payment

Table 3 Ordinary Least Squares Regression Results for the Relationship between State-Level Community Benefit Regulation and Hospital Community Benefit Spending [Coefficient (Robust Standard Error)]

Variable	Model 1			Model 2		
	Total community benefits	Direct patient care services	Community health initiatives	Total community benefits	Direct patient care services	Community health initiatives
State-level community benefit legislation						
Community benefit reporting requirement	0.75** (0.18)	0.95** (0.17)	-0.099** (0.036)	—	—	—
Community health needs assessment	1.00** (0.23)	0.57** (0.22)	0.21** (0.035)	—	—	—
Minimum levels of community benefit	-1.06** (0.25)	-1.10** (0.23)	0.19** (0.050)	—	—	—
Minimum income eligibility standards for charity care	-0.28 (0.31)	-0.22 (0.30)	0.077 (0.041)	—	—	—
Comprehensiveness of state-level community benefit legislation	—	—	—	0.40** (0.091)	0.34** (0.086)	0.068** (0.018)
Institutional characteristics						
Size ^a	0.0020** (0.00056)	0.00084 (0.00047)	0.00017 (0.00016)	0.0024** (0.00056)	0.0012* (0.00047)	0.00015 (0.00016)
System affiliation ^b	-0.25 (0.19)	-0.29 (0.18)	0.030 (0.032)	-0.29 (0.19)	-0.32 (0.18)	0.028 (0.032)
Network affiliation ^c	-0.052 (0.14)	-0.0044 (0.13)	0.064* (0.026)	-0.050 (0.14)	0.0028 (0.13)	0.061* (0.026)

(continued)

Table 3 Ordinary Least Squares Regression Results for the Relationship between State-Level Community Benefit Regulation and Hospital Community Benefit Spending [Coefficient (Robust Standard Error)] (continued)

Variable	Model 1			Model 2		
	Total community benefits	Direct patient care services	Community health initiatives	Total community benefits	Direct patient care services	Community health initiatives
Case mix index ^d	-1.06 (0.61)	-1.82** (0.58)	0.069 (0.11)	-1.38* (0.62)	-2.06** (0.59)	0.060 (0.11)
Wage index ^e	0.046 (0.026)	0.025 (0.023)	-0.00027 (0.0055)	0.064** (0.025)	0.039 (0.021)	0.00054 (0.0054)
Teaching hospital ^f	2.42** (0.33)	-0.081 (0.27)	-0.027 (0.053)	2.39** (0.33)	-0.12 (0.27)	-0.021 (0.054)
Contract managed ^g	0.29 (0.41)	0.32 (0.39)	-0.029 (0.069)	0.26 (0.41)	0.28 (0.39)	-0.028 (0.069)
Church affiliation ^h	-0.54** (0.17)	-0.41* (0.16)	0.019 (0.037)	-0.48** (0.18)	-0.37* (0.16)	0.028 (0.036)
Sole community provider ⁱ	0.63 (0.37)	0.44 (0.35)	0.075 (0.064)	0.62 (0.37)	0.41 (0.35)	0.086 (0.064)
Profit margin ^j	0.21 (0.21)	0.15 (0.20)	0.12** (0.031)	0.23 (0.21)	0.17 (0.20)	0.12** (0.031)
Negative	0.28 (0.22)	0.36 (0.21)	-0.0038 (0.033)	0.30 (0.22)	0.37 (0.21)	-0.0045 (0.033)

Table 3 (continued)

Variable	Model 1		Model 2			
	Total community benefits	Direct patient care services	Community health initiatives	Total community benefits	Direct patient care services	Community health initiatives
Community and market characteristics						
Per capita income in the local community	-0.000024** (0.0000083)	-0.000024** (0.0000074)	0.0000026 (0.0000018)	-0.000024** (0.0000084)	-0.000025** (0.0000075)	0.0000031 (0.0000018)
Market competition ^k	-0.34 (0.36)	0.071 (0.35)	-0.012 (0.057)	-0.39 (0.36)	0.043 (0.35)	-0.018 (0.057)
Percentage of uninsured persons in the local community	0.11** (0.024)	0.12** (0.023)	-0.0052 (0.0037)	0.11** (0.024)	0.11** (0.023)	-0.0024 (0.0037)
Percentage of hospital beds controlled by for-profit hospitals in the local community	-0.55 (0.67)	-0.23 (0.64)	0.050 (0.11)	-1.33* (0.66)	-0.97 (0.62)	0.11 (0.11)
Percentage of hospital beds controlled by state or local government in the local community	-0.26 (0.50)	0.11 (0.50)	-0.22** (0.047)	-0.13 (0.49)	0.17 (0.49)	-0.20** (0.045)
Urban setting ^l	0.15 (0.21)	0.19 (0.20)	-0.012 (0.032)	0.21 (0.21)	0.24 (0.20)	-0.018 (0.032)
Geographic region ^m						
Northeast	-0.80 (0.40)	-0.75 (0.38)	-0.27** (0.072)	-0.95* (0.39)	-0.96** (0.37)	-0.23** (0.072)
Midwest	-0.35 (0.40)	-0.29 (0.37)	-0.12 (0.085)	-0.14 (0.41)	-0.16 (0.38)	-0.095 (0.084)
South	-1.12** (0.41)	-1.04** (0.37)	-0.19 (0.098)	-1.21** (0.40)	-1.19** (0.36)	-0.15 (0.096)

(continued)

Table 3 Ordinary Least Squares Regression Results for the Relationship between State-Level Community Benefit Regulation and Hospital Community Benefit Spending [Coefficient (Robust Standard Error)] (continued)

Variable	Model 1			Model 2		
	Total community benefits	Direct patient care services	Community health initiatives	Total community benefits	Direct patient care services	Community health initiatives
Year						
2009	-0.18 (0.19)	-0.14 (0.18)	0.019 (0.031)	-0.19 (0.19)	-0.16 (0.18)	0.025 (0.032)
2010	-0.28 (0.19)	-0.24 (0.18)	0.013 (0.031)	-0.28 (0.19)	-0.25 (0.18)	0.015 (0.031)
Constant	6.29** (1.31)	6.73** (1.17)	0.40 (0.29)	6.32** (1.26)	7.07** (1.13)	0.24 (0.28)

Source: Authors' calculations

Notes:

^aSize refers to the number of beds.

^bSystem affiliation refers to hospitals that were members of a corporate entity that owns two or more hospitals (i.e., multihospital system). The omitted reference group comprised independent hospitals.

^cNetwork affiliation refers to hospitals that participated in a strategic alliance or joint venture with one or more hospitals. Unlike system affiliation, these arrangements do not entail common ownership of the participating hospitals. The omitted reference group comprised hospitals that did not participate in networks.

^dA hospital's case mix index is the average diagnosis-related group weight for all of a hospital's Medicare patients. Medicare uses diagnosis-related groups to compute case mix index values. Hospitals with case mix values >1 versus <1 have patients whose diagnoses are relatively more versus less resource intensive than the national average.

^eThe Medicare wage index reflects geographic differences in hospital wage levels. A hospital's index value reflects the wage level for its geographic area compared to the national average hospital wage level.

^fHospitals were classified as teaching if they were members of the Council of Teaching Hospitals. The omitted reference group comprised nonteaching hospitals.

^gContract managed refers to a hospital that had in place a contractual relationship with an outside company to manage its operations. The omitted reference group comprised hospitals that did not have such a contract.

Table 3 (continued)

^bChurch affiliation refers to hospitals that were owned and operated by a religious organization. The omitted reference group comprised secular hospitals. Sole community provider is a designation under the Medicare program for hospitals that meet at least one of several criteria (e.g., located at least thirty-five miles from other like hospitals). The omitted reference group comprised hospitals without this designation.

^jProfit margin was computed by subtracting a hospital's operating costs from its operating revenue and dividing the result by the operating revenue. High-margin hospitals were defined as those that had margins above 3 percent, negative-margin hospitals were those that had margins at or below zero, and the omitted reference group comprised hospitals that had margins of greater than zero and not greater than 3 percent.

^kMarket competition was measured in accordance with the Hirschman-Herfindahl Index (HHI), which for purposes of the study was computed by summing the squared values of each hospital's proportion of total hospital patients admitted to general, acute-care hospitals within its market (defined as county). The theoretical range for the HHI is 0 to 1, where 1 indicates a monopoly (i.e., one firm in the market). For example, if there are two hospitals in a market—one with 0.25 share of total admissions and the other with 0.75 share of the admissions—the HHI would be $0.625 (0.25^2 + 0.75^2)$.

^lHospitals classified as urban were those located within a metropolitan statistical area. The omitted reference group comprised rural hospitals.

^mFor geographic region, the omitted reference group comprised hospitals that were located in the western region of the United States.

* $p < 0.05$; ** $p < 0.01$

shortfalls were unrelated to minimum spending requirements. Finally, state-level minimum income eligibility standards for charity care were not significantly associated with hospital spending on any of the three community benefit categories.

Table 3 also presents the results for model 2, which analyzed whether the comprehensiveness of states' community benefit regulation was associated with hospital community benefit spending. Our summary index was positively and significantly associated with hospital spending for community benefits in all three categories, indicating that hospitals located in states with more regulation spent more on community benefits.

In both models, several control variables were associated with hospital spending for one or more categories of community benefits. Larger hospitals spent more on total community benefits and direct patient care services, as did teaching hospitals and hospitals located in communities with high rates of uninsurance. Higher case mix scores, indicating a hospital treats more severely ill patients, were associated with lower spending on total community benefits and direct patient care services. Hospitals located in communities with higher per capita income spent less on total community benefits and direct patient care services. With respect to hospital spending on community health initiatives, our results showed that hospitals that participated in a network and hospitals with higher profit margins spent more on such initiatives while hospitals with a religious affiliation spent less. Geographic patterns were also observed: hospitals located in the West generally had higher levels of spending on community benefits compared to hospitals located in other parts of the country.

Instrumental Variables Regression Results

Table 4 presents results for the IV regressions. Specifically, we used the IV procedure to test the robustness of the results presented in the second set of OLS regressions shown in table 3. Irrespective of the instrument used, the IV regression results were consistent with our OLS findings. More comprehensive community benefit regulation was associated with greater hospital spending for all three categories of community benefits. Compared to the OLS results, the magnitude of the coefficients in the IV regressions was somewhat larger. Since Hausman tests indicated that our OLS estimates might be subject to endogeneity bias, the results from the IV analysis suggest that OLS may understate the strength of the relationship between state-level community benefit requirements and hospital spending on community benefits.

With respect to the validity of the instruments, both IVs—number of health insurance mandates and the subset of mandates that pertain to

Table 4 Instrumental Variable Regression Results for the Relationship between State-Level Community Benefit Regulation and Hospital Community Benefit Spending [Coefficient (Standard Error)]

Variable	Total community benefits		Direct patient care services		Community health initiatives	
	Total mandates	Selected mandates	Total mandates	Selected mandates	Total mandates	Selected mandates
State-level community benefit regulation						
Comprehensiveness of state-level community benefit regulation	0.96** (0.21)	1.46** (0.28)	0.75** (0.19)	0.99** (0.26)	0.17** (0.035)	0.28** (0.049)
Institutional characteristics						
Size ^a	0.0024** (0.00063)	0.0024** (0.00063)	0.0012 (0.00059)	0.0011 (0.00059)	0.00015 (0.00011)	0.00014 (0.00011)
System affiliation ^b	-0.38* (0.18)	-0.46* (0.19)	-0.39* (0.17)	-0.43* (0.17)	0.012 (0.031)	-0.0056 (0.032)
Network affiliation ^c	0.027 (0.18)	0.096 (0.18)	0.058 (0.16)	0.091 (0.17)	0.075* (0.030)	0.090** (0.031)
Case-mix index ^d	-1.00 (0.54)	-0.66 (0.56)	-1.79** (0.51)	-1.63** (0.52)	0.13 (0.092)	0.20* (0.096)
Wage index ^e	0.052* (0.024)	0.041 (0.024)	0.030 (0.022)	0.025 (0.023)	-0.0016 (0.0041)	-0.0040 (0.0042)
Teaching hospital ^f	2.39** (0.40)	2.39** (0.41)	-0.12 (0.38)	-0.12 (0.38)	-0.021 (0.068)	-0.020 (0.069)

(continued)

Table 4 Instrumental Variable Regression Results for the Relationship between State-Level Community Benefit Regulation and Hospital Community Benefit Spending [Coefficient (Standard Error)] (continued)

Variable	Total community benefits		Direct patient care services		Community health initiatives	
	Total mandates	Selected mandates	Total mandates	Selected mandates	Total mandates	Selected mandates
Contract managed ^g	0.35 (0.28)	0.44 (0.28)	0.35 (0.26)	0.39 (0.26)	-0.011 (0.047)	0.0076 (0.048)
Church affiliation ^h	-0.44 (0.24)	-0.40 (0.24)	-0.34 (0.23)	-0.32 (0.23)	0.036 (0.041)	0.044 (0.042)
Sole community provider ⁱ	0.66* (0.30)	0.71* (0.30)	0.45 (0.28)	0.47 (0.28)	0.094 (0.051)	0.10* (0.052)
Profit margin ^j						
High	0.22 (0.20)	0.22 (0.20)	0.16 (0.19)	0.16 (0.19)	0.12** (0.034)	0.12** (0.035)
Negative	0.37 (0.23)	0.44 (0.23)	0.42* (0.21)	0.46* (0.22)	0.0087 (0.039)	0.023 (0.040)
Community and market characteristics						
Per capita income in the local community	-0.000024* (0.0000093)	-0.000023* (0.0000094)	-0.000024** (0.0000088)	-0.000024** (0.0000088)	0.0000032* (0.0000016)	0.0000033* (0.0000016)
Market competition ^k	-0.16 (0.34)	0.040 (0.35)	0.20 (0.32)	0.30 (0.33)	0.022 (0.058)	0.066 (0.060)

Table 4 (continued)

Variable	Total community benefits		Direct patient care services		Community health initiatives	
	Total mandates	Selected mandates	Total mandates	Selected mandates	Total mandates	Selected mandates
Percentage of uninsured persons in the local community	0.080** (0.023)	0.056* (0.025)	0.092** (0.022)	0.081** (0.024)	-0.0072 (0.0040)	-0.012** (0.0044)
Percentage of hospital beds controlled by for-profit hospitals in the local community	-1.42* (0.65)	-1.49* (0.66)	-1.04 (0.61)	-1.07 (0.61)	0.090 (0.11)	0.073 (0.11)
Percentage of hospital beds controlled by state or local government in the local community	0.051 (0.51)	0.22 (0.52)	0.30 (0.48)	0.38 (0.48)	-0.17 (0.087)	-0.13 (0.089)
Urban setting ^l	0.11 (0.22)	0.020 (0.23)	0.17 (0.21)	0.13 (0.21)	-0.035 (0.038)	-0.054 (0.039)
Geographic region ^m						
Northeast	-1.14** (0.34)	-1.32** (0.35)	-1.10** (0.32)	-1.19** (0.33)	-0.26** (0.058)	-0.30** (0.060)
Midwest	0.091 (0.31)	0.30 (0.32)	-0.0051 (0.29)	0.11 (0.30)	-0.054 (0.053)	-0.0082 (0.055)
South	-0.92** (0.32)	-0.66 (0.34)	-0.98** (0.30)	-0.86** (0.31)	-0.10 (0.054)	-0.044 (0.058)

(continued)

Table 4 Instrumental Variable Regression Results for the Relationship between State-Level Community Benefit Regulation and Hospital Community Benefit Spending [Coefficient (Standard Error)] (continued)

Variable	Total community benefits		Direct patient care services		Community health initiatives	
	Total mandates	Selected mandates	Total mandates	Selected mandates	Total mandates	Selected mandates
Year						
2009	-0.18 (0.19)	-0.17 (0.19)	-0.15 (0.18)	-0.14 (0.18)	0.027 (0.033)	0.030 (0.033)
2010	-0.28 (0.19)	-0.27 (0.20)	-0.24 (0.18)	-0.24 (0.18)	0.016 (0.033)	0.018 (0.033)
Constant	5.70** (1.12)	5.15** (1.16)	6.63** (1.06)	6.36** (1.08)	0.13 (0.19)	0.0067 (0.20)
First-stage regression summary statistics						
Adjusted R^2	0.34	0.28	0.34	0.28	0.34	0.28
First-stage F	1028	511	1028	511	1028	511
Hausman test ^a	8.90 (0.0029)	15.92 (0.0001)	5.15 (0.023)	6.56 (0.010)	9.66 (0.0019)	20.86 (<0.0001)

Source: Authors' calculations

Notes:

^aSize refers to the number of beds.

^bSystem affiliation refers to hospitals that were members of a corporate entity that owns two or more hospitals (i.e., multihospital system). The omitted reference group comprised independent hospitals.

Table 4 (continued)

^cNetwork affiliation refers to hospitals that participated in a strategic alliance or joint venture with one or more hospitals. Unlike system affiliation, these arrangements do not entail common ownership of the participating hospitals. The omitted reference group comprised hospitals that did not participate in networks.

^dA hospital's case mix index is the average diagnosis-related group weight for all of a hospital's Medicare patients. Medicare uses diagnosis-related groups to compute case mix index values. Hospitals with case mix values >1 versus <1 have patients whose diagnoses are relatively more versus less resource intensive than the national average.

^eThe Medicare wage index reflects geographic differences in hospital wage levels. A hospital's index value reflects the wage level for its geographic area compared to the national average hospital wage level.

^fHospitals are classified as teaching if they were members of the Council of Teaching Hospitals. The omitted reference group comprised nonteaching hospitals.

^gContract managed refers to a hospital that had in place a contractual relationship with an outside company to manage its operations. The omitted reference group comprised hospitals that did not have such a contract.

^hChurch affiliation refers to hospitals that were owned and operated by a religious organization. The omitted reference group comprised secular hospitals.

ⁱSole community provider is a designation under the Medicare program for hospitals that meet at least one of several criteria (e.g., located at least thirty-five miles from other like hospitals). The omitted reference group comprised hospitals without this designation.

^jProfit margin was computed by subtracting a hospital's operating costs from its operating revenue and dividing the result by the operating revenue. High margin hospitals were defined as those that had margins above 3%; negative margin hospitals were those that had margins at or below zero; the omitted reference group comprised hospitals that had margins of greater than zero and not greater than 3%.

^kMarket competition was measured in accordance with the Hirschman-Herfindahl Index (HHI), which for purposes of the study was computed by summing the squared values of each hospital's proportion of total hospital patients admitted to general, acute care hospitals within its market (defined as county). The theoretical range for the HHI is 0 to 1, where 1 indicates a monopoly (i.e., one firm in the market). For example, if there are two hospitals in a market, one with 0.25 share of total admissions and the other with 0.75 share of the admissions, the HHI would be $0.625 (0.25^2 + 0.75^2)$.

^lHospitals classified as urban were those located within a metropolitan statistical area. The omitted reference group comprised rural hospitals.

^mFor geographic region, the omitted reference group comprised hospitals that were located in the western region of the United States.

ⁿValues in parentheses are *p*-values.

* $p < 0.05$; ** $p < 0.01$

services less likely to be provided by hospitals as community benefits—were strongly positively correlated with the number of community benefit regulations in each state (0.48, $p < 0.01$, and 0.37, $p < 0.01$, respectively). Our first-stage regression results (appendix table A2) showed that the two IVs captured a statistically significant part of the variation in hospital community benefit spending. The F -statistics for the first-stage models (as reported in table 4) indicated that each of the instruments was individually statistically significant and that the correlations ran in the predicted directions. The magnitudes of the first-stage F -statistics, as well as the R^2 (as reported in table 4), indicated that our instruments were good predictors of the endogenous regressors. Moreover, appendix table A3 shows that many of institutional, community, and market characteristics included as control variables in our analyses did not differ significantly between hospitals located in states with below the median number of mandates and hospitals located in states with above the median number of health insurance mandates.

Discussion

Our investigation of state-level community benefit regulations suggests that three of the four regulations examined are associated with the level and pattern of hospital community benefit spending. However, the nature of these associations appears to depend on both the type of regulation and the type of community benefit examined. Of the four types of regulation studied, only CHNA requirements were consistently associated with greater spending on community benefits. By conducting these assessments, hospitals are in a position to learn more about the needs of the community they serve, thereby gaining valuable information for planning future community benefit expenditures.

Study results also point to the possibility that some regulations lead hospitals to make trade-offs in their community benefit spending such that spending increases for some types of benefits are offset at least in part by spending decreases for other types of benefits. This appeared true for both community benefit reporting and minimum community benefit spending requirements. Hospitals may respond to these types of regulation by altering the composition of their community benefit spending to favor spending on patient care services, such as charity care, over community health initiatives. Such results should give policy makers pause, particularly given the emphasis that both state and federal policy makers are placing on hospital initiatives to promote the health status of communities (Hanlon and Giles 2012; Stoto 2013).

We did not find a relationship between minimum income eligibility standards for charity care and hospitals' spending on community benefits. This finding may reflect that the adoption of such a minimum standard by a state results in hospitals that were previously above the standard lowering their spending while hospitals that were previously below the standard increase their spending. At least in states without a minimum standard, hospitals vary markedly in terms of their financial assistance policies; some hospitals have income eligibility thresholds for charity care that are more generous than the minimum standards that some states have adopted (Fuse Brown 2015; Dranove, Garthwaite, and Ody 2015). Of course, lax enforcement of minimum standards by the relevant states may also explain in part why we did not observe a relationship between these standards and hospital community benefit spending. In general, little is known about whether and how states enforce community benefit regulations.

Our study results also point to a relationship between community benefit spending and state adoption of multiple types of community benefit regulations. Hospitals located in states with multiple regulations had higher levels of spending for all three community benefit categories. Given the mixed findings for the individual types of community benefit regulation that we observed in this study, the pathway by which more comprehensive regulation influences community benefit spending is not clear. It may be that the individual positive effects from some types of regulations are sufficient to produce an overall positive effect for a combined set of regulations. Also, the adoption of multiple regulations may have a symbolic effect by sending a strong message to the hospital community that community benefits are taken seriously by the state for the purpose of granting tax exemptions. More comprehensive regulation might also encourage hospitals to critically evaluate their community benefit activities on a regular basis and make adjustments as needed. Thus, combining multiple types of regulation might have certain synergistic effects.

To our knowledge, our study is one of the first to demonstrate a relationship between state-level community benefit regulation and hospital community benefit spending. The possible impact of such regulations on hospital spending is not inconsequential. For example, based on the results of our OLS model, the adoption of a CHNA requirement potentially increases hospital community spending on average by 1 percent of a hospital's operating budget. For a hospital at the mean operating budget of approximately \$200 million, this translates into an increase of \$2 million in community benefit spending.

At the same time, the results of our study should be considered with several caveats. First, as noted, we lacked the data necessary to determine

whether there were any baseline differences in community benefit spending between states that eventually adopted regulations and states that did not. Most community benefit regulations were adopted before 2009, when the IRS began to require federally tax-exempt hospitals to report community benefit spending. Although the similarities between the results of the OLS regression analysis and the IV analysis are reassuring, the absence of baseline data is a methodological limitation for any national study of the relationship between state-level community benefit regulation and hospital spending on community benefits.

Second, the number of states that have adopted regulatory requirements other than reporting is small. Further, the pattern of state adoption of these regulations has been such that a small number of states have the same combination of regulations. As a result, some study results may have been driven by the experience of only a few states, so the generalizability of the results is not clear.

Third, the community benefit information used in this study was limited to expenditure data reported by hospitals on IRS Form 990 Schedule H. The expenditures reported for community health initiatives, in particular, are comparatively small. In addition, for many hospitals, collecting data on such activities is a new activity. The community health initiative spending reported for the first years of the new reporting requirements likely contains errors, which may have affected our results. Moreover, the IRS does not currently require hospitals to provide more detailed information on the actual types of community benefit services and programs provided. As a result, the nature of the specific activities undertaken, the magnitude of their impact, and the identity of those who benefited from them all are unknown.

Fourth, while our study examined the differential effects of four types of community benefit regulations, for each individual type of regulation some variation exists among states in the scope of the regulation, the level of enforcement, and the sanctions for noncompliance. Moreover, some hospitals operate in states in which government agencies and hospital associations have established community benefit guidelines concerning hospital community benefit spending; such guidelines may influence hospital behavior, even if they do not carry the force of law (Ginn and Moseley 2006). Because such interstate differences may be relevant to hospital spending on community benefits, future research should consider extending our study by refining the indicators of state-level requirements used here.

Finally, the relationship between state-level community benefit regulations and hospital community benefit spending may have been influenced by recent federal requirements for nonprofit hospitals, specifically the new federal-level reporting requirement of IRS Form 990 Schedule H. This

new requirement was in effect for all tax-exempt hospitals during this study's time frame, which may have affected the results. During the first few years of the new IRS requirement, however, Schedule H data were not well publicized or easy to obtain by community groups or other interested parties, so the schedule's transparency effects were likely still muted during our study period (Rubin, Singh, and Young 2015). Also, since 2012, the Affordable Care Act has required all federally tax-exempt hospitals to conduct a CHNA every three years. However, because our study focuses on the years 2009 to 2011, this provision likely did not have much of an impact on our results. It remains to be seen how the federal CHNA requirement will impact hospitals' longer-term community benefit spending.

Our study does raise important questions about the value of some forms of community benefit regulation that states have adopted. Of course, the regulations examined in this study are not the only policy options available to states interested in increasing hospitals' spending on community benefits. Several states have taken the aggressive step of revoking the property tax exemption of hospitals for failing to function as a charitable institution within general criteria for defining such institutions (e.g., *Provena Covenant Med. Ctr. v. Dep't of Revenue*, 925 N.E.2d 1131 [Ill. 2010]; *AHS Hosp. Corp. v. Town of Morristown*, 28 N.J. Tax 456 [2015]). In addition, more innovative approaches might also come under consideration. One approach proposed by Dranove, Garthwaite, and Ody (2015) addresses geographic mismatches between the supply and demand for charity care through state-level adoption of a community benefit cap-and-trade policy, which would allow hospitals to buy and sell credits to meet state-imposed standards for the provision of community benefits.

Conclusion

State-level community benefit regulation appears to have some role in influencing hospital spending on community benefits, but it may not always yield the effects policy makers and community leaders intend. Requirements to ensure hospitals regularly assess the need for community benefits may be more effective to meet policy goals than requirements that stipulate the provision of specific levels or types of benefits. At the same time, state adoption of multiple types of community benefit regulation may have the largest impact on hospital community benefit spending possibly because such intensive regulatory initiatives convey a strong signal to the hospital community that more spending is expected.

■ ■ ■

Simone R. Singh is assistant professor of health management and policy at the University of Michigan School of Public Health. Her research focuses on tax-exempt hospitals' provision of community benefits, hospital-public health partnerships, and the role of such partnerships in improving population health outcomes. She has authored more than thirty articles, which have appeared in *American Journal of Public Health*, *American Journal of Preventive Medicine*, *Health Services Research*, and *Public Health Reports*, among other venues.

singhsim@umich.edu

Gary J. Young is director of the Northeastern University Center for Health Policy and Healthcare Research and professor of Strategic Management and Health Systems at Northeastern University. His research focuses on organizational, managerial, and legal issues associated with the delivery of health care services. He has received funding for his research from a number of private and public organizations, including the National Science Foundation, the Robert Wood Johnson Foundation, and the Agency for Healthcare Research and Quality. His articles have appeared in the following journals: *New England Journal of Medicine*; *Journal of the American Medical Association*; *Journal of Health Politics, Policy and Law*; *Health Affairs*; *Medical Care*; and *Academy of Management Journal*.

Lacey Loomer is a doctoral student in the Department of Health Services, Policy and Practice at the Brown University School of Public Health, in Providence, Rhode Island.

Kristin Madison is professor of law and health sciences at Northeastern University. Her research activities are in the areas of health law, health policy, and health economics. Much of her work evaluates the implications of health care quality reporting and related trends for patients, providers, and regulators. She has also examined law and policy related to employers' use of health incentives. Her articles have appeared in *Journal of Health Politics, Policy and Law*, *North Carolina Law Review*, *Journal of Law, Medicine and Ethics*, *JAMA*, and *Health Affairs*, among other venues.

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Appendix

Table A1 State Health Insurance Mandates Used to Construct Instrumental Variables

Mandate	Instrumental variable based on	
	Total number of mandates adopted	Subset of mandates
AIDS/HIV testing	X	
Alcoholism/substance abuse	X	
Alzheimer's	X	X
Ambulatory surgery	X	X
Ambulance/transportation service	X	
Ambulatory cancer treatment	X	X
Antipsychotic drugs	X	X
Asthma education	X	
Attention deficit disorder	X	X
Autism	X	X
Bilateral cochlear implants	X	
Blood lead poison screening	X	
Blood products	X	
Bone marrow transplant	X	
Bone mass measurement	X	
Brain injury	X	
Breast reduction	X	
Breast reconstruction	X	
Cancer pain medication	X	
Cervical cancer/HPV screening	X	
Chemotherapy	X	
Circumcision	X	
Chlamydia	X	
Cleft palate	X	
Clinical trial (cancer)	X	
Colorectal cancer screening	X	
Congenital bleeding disorder	X	X
Congenital defect	X	X
Contraceptive	X	X
Dental anesthesia	X	X
Developmental disability	X	X
Diabetes self-management	X	X
Diabetic supplies	X	X

Table A1 (continued)

Mandate	Instrumental variable based on	
	Total number of mandates adopted	Subset of mandates
Drug abuse treatment	X	
Early intervention service	X	X
Emergency service	X	
Habilitative service	X	X
Hair prosthesis	X	X
Hearing aids for minor	X	X
Heart transplant	X	
Home health care	X	X
Hospice care	X	X
HPV vaccine	X	
Hormone replacement therapy	X	X
In vitro fertilization	X	X
Kidney disease	X	
Long-term care	X	X
Lyme disease	X	X
Lymph edema	X	X
Mammography	X	
Mastectomy	X	
Mastectomy minimum stay	X	
Maternity	X	
Maternity minimum stay	X	
Mental health general	X	
Mental health parity	X	
Minimum hysterectomy stay	X	
Minimum testicular cancer stay	X	
Morbid obesity treatment	X	
Neurodevelopment therapy	X	X
Newborn hearing screening	X	
Newborn sickle-cell testing	X	
Off-label drug use	X	
Oriental medicine	X	
Orthotic and/or prosthetic	X	X
Ostomy-related supplies	X	X
Other infertility services	X	X
Ovarian cancer screening	X	
Pediatric asthma education/self-management	X	X
PKU/metabolic disorder	X	X

(continued)

Table A1 State Health Insurance Mandates Used to Construct Instrumental Variables (*continued*)

Mandate	Instrumental variable based on	
	Total number of mandates adopted	Subset of mandates
Port wine stain elimination	X	X
Prescription drugs	X	X
Prescription inhalant	X	X
Prostate cancer screening	X	
Protein screening	X	
Psychotropic drug	X	X
Reconstructive surgery	X	
Rehabilitation service	X	X
Residential crisis service	X	X
Second surgical opinion	X	
Shingles vaccine	X	
Smoking cessation	X	
Special footwear	X	X
Telemedicine	X	
Testicular cancer	X	
TMJ disorder	X	X
Varicose veins	X	X
Vision care service	X	X
Well child care	X	X
Wilms tumor	X	

Source: Adapted from a report published by the Council for Affordable Health Insurance, Bunce and Wieske 2009. The authors obtained the report directly from the Council for Affordable Health Insurance.

Table A2 First-Stage Regression Results for the Instrumental Variables Regressions Presented in Table 4 [Coefficient (Standard Error)]

	Comprehensiveness of state-level community benefit regulation	
	Total mandates	Selected mandates
Instrumental variables		
Total mandates	0.037** (0.0012)	—
Selected mandates	—	0.079** (0.0035)
Institutional characteristics		
Size ^a	0.000049 (0.000094)	0.00012 (0.000099)
System affiliation ^b	0.14** (0.027)	0.18** (0.028)
Network affiliation ^c	-0.048 (0.026)	-0.066* (0.028)
Case mix index ^d	-0.49** (0.079)	-0.57** (0.083)
Wage index ^e	0.0071* (0.0036)	0.0066 (0.0038)
Teaching hospital ^f	-0.0091 (0.061)	-0.015 (0.063)
Contract managed ^g	-0.20** (0.042)	-0.21** (0.044)
Church affiliation ^h	-0.091* (0.036)	-0.13** (0.038)
Sole community provider ⁱ	-0.15** (0.045)	-0.15** (0.047)
Profit margin ^j		
High	0.00081 (0.030)	-0.00013 (0.032)
Negative	-0.10** (0.034)	-0.097** (0.036)
Community and market characteristics		
Per capita income in the local community	-0.0000019 (0.0000014)	-0.0000026* (0.0000015)
Market competition ^k	-0.30** (0.050)	-0.31** (0.052)

(continued)

Table A2 First-Stage Regression Results for the Instrumental Variables Regressions Presented in Table 4 [Coefficient (Standard Error)] (*continued*)

	Comprehensiveness of state-level community benefit regulation	
	Total mandates	Selected mandates
Percentage of uninsured persons in the local community	0.049** (0.0032)	0.055** (0.0034)
Percentage of hospital beds controlled by for-profit hospitals in the local community	0.20* (0.098)	0.25* (0.10)
Percentage of hospital beds controlled by state or local government in the local community	-0.26** (0.076)	-0.28** (0.080)
Urban setting ^l	0.13** (0.033)	0.17** (0.034)
Geographic region ^m		
Northeast	0.14** (0.051)	0.14** (0.053)
Midwest	-0.17** (0.046)	-0.34** (0.047)
South	-0.65** (0.045)	-0.70** (0.048)
Year		
2009	0.093** (0.029)	0.0057 (0.030)
2010	0.084** (0.029)	-0.014 (0.031)
Constant	-0.50** (0.17)	0.61** (0.18)

Source: Authors' calculations

Notes:

^aSize refers to the number of beds.

^bSystem affiliation refers to hospitals that were members of a corporate entity that owns two or more hospitals (i.e., multihospital system). The omitted reference group comprised independent hospitals.

^cNetwork affiliation refers to hospitals that participated in a strategic alliance or joint venture with one or more hospitals. Unlike system affiliation, these arrangements do not entail common ownership of the participating hospitals. The omitted reference group comprised hospitals that did not participate in networks.

^dA hospital's case mix index is the average diagnosis-related group weight for all of a hospital's Medicare patients. Medicare uses diagnostic related groups to compute case mix index values. Hospitals with case mix values >1 versus <1 have patients whose diagnoses are relatively more versus less resource intensive than the national average.

Table A2 (continued)

^eThe Medicare wage index reflects geographic differences in hospital wage levels. A hospital's index value reflects the wage level for its geographic area compared to the national average hospital wage level.

^fHospitals classified as teaching are those institutions that were members of the Council of Teaching Hospitals. The omitted reference group comprised nonteaching hospitals.

^gContract managed refers to a hospital that had in place a contractual relationship with an outside company to manage its operations. The omitted reference group comprised hospitals that did not have such a contract.

^hChurch affiliation refers to hospitals that were owned and operated by a religious organization. The omitted reference group comprised secular hospitals.

ⁱSole community provider is a designation under the Medicare program for hospitals that meet at least one of several criteria (e.g., located at least thirty-five miles from other like hospitals). The omitted reference group comprised hospitals without this designation.

^jProfit margin was computed by subtracting a hospital's operating costs from its operating revenue and dividing the result by the operating revenue. High margin hospitals were defined as those that had margins above 3%; negative margin hospitals were those that had margins at or below zero; the omitted reference group comprised hospitals that had margins of greater than zero and not greater than 3%.

^kMarket competition was measured in accordance with the Hirschman-Herfindahl Index (HHI), which for purposes of the study was computed by summing the squared values of each hospital's proportion of total hospital patients admitted to general, acute care hospitals within its market (defined as county). The theoretical range for the HHI is 0 to 1 where 1 indicates a monopoly (i.e., one firm in the market). For example, if there are two hospitals in a market, one with 0.25 share of total admissions and the other with 0.75 share of the admissions, the HHI would be 0.625 ($0.25^2 + 0.75^2$).

^lHospitals classified as urban were those located within a metropolitan statistical area. The omitted reference group comprised rural hospitals.

^mFor geographic region, the omitted reference group comprised hospitals that were located in the western region of the United States.

* $p < 0.05$; ** $p < 0.01$

Table A3 Descriptive Statistics for Hospital Control Variables, by Number of State Health Insurance Mandates, 2011 [Mean (Standard Deviation)]

Institutional characteristic	All mandates			Select mandates		
	Below median number of mandates	Above median number of mandates	<i>t</i> -Test of differences in means	Below median number of mandates	Above median number of mandates	<i>t</i> -Test of differences in means
Size	136 (156)	210 (205)	$p < 0.01$	165 (171)	195 (208)	$p < 0.01$
System affiliation	0.488 (0.500)	0.546 (0.498)	$p = 0.016$	0.521 (0.500)	0.519 (0.500)	$p = 0.92$
Network affiliation	0.382 (0.486)	0.331 (0.471)	$p = 0.027$	0.355 (0.479)	0.351 (0.478)	$p = 0.87$
Case mix index	1.36 (0.20)	1.36 (0.20)	$p = 0.67$	1.36 (0.20)	1.36 (0.20)	$p = 0.82$
Wage index	29.4 (2.95)	31.3 (5.29)	$p < 0.01$	29.9 (4.20)	31.2 (4.80)	$p < 0.01$
Teaching hospital	0.035 (0.183)	0.086 (0.281)	$p < 0.01$	0.050 (0.218)	0.081 (0.273)	$p < 0.01$
Contract managed	0.105 (0.307)	0.099 (0.299)	$p = 0.69$	0.102 (0.303)	0.101 (0.302)	$p = 0.93$
Church affiliation	0.146 (0.353)	0.144 (0.351)	$p = 0.89$	0.151 (0.359)	0.136 (0.343)	$p = 0.35$
Sole community provider	0.072 (0.258)	0.064 (0.244)	$p = 0.51$	0.064 (0.246)	0.070 (0.256)	$p = 0.64$
Profit margin						
High	0.553 (0.497)	0.526 (0.500)	$p = 0.26$	0.553 (0.497)	0.519 (0.500)	$p = 0.16$
Negative	0.250 (0.433)	0.243 (0.429)	$p = 0.74$	0.254 (0.435)	0.235 (0.425)	$p = 0.38$
Community and market characteristics						
Per capita income in the local community	31,947 (6,475)	37,476 (13,486)	$p < 0.01$	33,514 (8,013)	37,093 (14,356)	$p < 0.01$
Market competition	0.691 (0.313)	0.499 (0.347)	$p < 0.01$	0.602 (0.349)	0.560 (0.341)	$p = 0.011$
Percentage of uninsured persons in the local community	0.164 (0.047)	0.157 (0.057)	$p = 0.012$	0.168 (0.048)	0.150 (0.057)	$p < 0.01$

Table A3 (continued)

	All mandates			Select mandates		
	Below median number of mandates	Above median number of mandates	<i>t</i> -Test of differences in means	Below median number of mandates	Above median number of mandates	<i>t</i> -Test of differences in means
Institutional characteristic						
Percentage of hospital beds controlled by for-profit hospitals in the local community	0.051 (0.141)	0.063 (0.136)	$p=0.065$	0.065 (0.147)	0.047 (0.126)	$p<0.01$
Percentage of hospital beds controlled by state or local government in the local community	0.052 (0.181)	0.067 (0.144)	$p=0.043$	0.062 (0.173)	0.058 (0.144)	$p=0.57$
Urban setting	0.431 (0.496)	0.659 (0.474)	$p<0.01$	0.517 (0.500)	0.614 (0.487)	$p<0.01$
Geographic region						
Northeast	0.044 (0.204)	0.389 (0.488)	$p<0.01$	0.127 (0.333)	0.384 (0.487)	$p<0.01$
Midwest	0.558 (0.497)	0.230 (0.421)	$p<0.01$	0.470 (0.499)	0.246 (0.431)	$p<0.01$
South	0.260 (0.439)	0.256 (0.437)	$p=0.85$	0.215 (0.411)	0.315 (0.465)	$p<0.01$

Source: Authors' calculations