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# Holding Hospitals Accountable? Evidence on the Effectiveness of Minimum Charity Care Provision Laws

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## **Abstract**

What can governments do to encourage nonprofit hospitals to provide greater benefits to their communities? Recent efforts by the federal and state governments seek to hold hospitals accountable for community health, in part by incentivizing charity care provision. Laws that set benchmarks for charity care spending are increasingly used, but their efficacy is uncertain. In this study, we examine the extent to which Illinois' minimum charity care provision (MCCP) law increases nonprofit hospital charity care. Importantly, we differentiate between responses for hospitals required to provide minimal charitable spending (nonprofits) and those that are not (for-profit and public). We use detailed panel (2009-2015) data from Illinois' Annual Hospital Questionnaire and county-level data from the American Community Survey. We exploit a discrete change in charitable care requirements for nonprofit hospitals to identify the effect of the MCCP law on charity care, controlling for hospital characteristics, county demographics, and year and county (or hospital) fixed effects. Employing a differences-in-differences model, we find no evidence that the MCCP law increases charity care on average. Instead, we find some evidence that the law's effects vary by how much charity care hospitals provided previously - charity care increases for those providing lower levels at baseline, narrowing the gap in charity care provision with those that provide high levels at baseline. The results suggest that setting low benchmarks does not create sufficient incentives for nonprofit hospitals to provide greater charity care on average, but instead may narrow the gap between high and low charity care hospitals.

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**Keywords:** Minimum Charity Provision Laws, Nonprofit Hospitals, Charity Care

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*“Hospitals were built—mostly by churches—to be a safe haven for people regardless of one’s race, creed or ability to pay. Hospitals have a nonprofit status—most of them—for a reason. They’re supposed to be community institutions.”*

- Martin A. Makary, Professor of Surgery at Johns Hopkins Medicine, as quoted in McCambridge (2019).

*“You should get close to the value of tax exemption in community benefit. I think you’ll find most hospitals aren’t providing that.”*

- Paula Song, Associate Professor of Health Policy and Management at the University of North Carolina Gillings School of Global Public Health as quoted in Rosenthal (2013).

## **Introduction**

What can governments do to hold nonprofit hospitals accountable for providing sufficient community benefits? While for-profit and government hospitals are large players in the U.S. healthcare market, approximately two-thirds of all hospitals are tax-exempt charitable organizations (American Hospital Association Survey 2019) with privileged tax status - they do not pay property taxes, and in some cases, sales taxes.<sup>1</sup> This expensive tax expenditure is potentially justified by community health benefits offered by nonprofit hospitals, including charity care. Tax exemptions may help nonprofit hospitals support the hospitals’ missions through the provision of charity care (Sutton and Stensland 2004; Thorpe and Phelps 1991). Governments and the public, therefore, increasingly seek to hold nonprofit hospitals accountable for their communities’ health to justify their tax-exemption benefits.

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<sup>1</sup> Previous work estimates tax exemptions for charitable hospitals were \$24.6 billion in 2011 (Rosenbaum et al. 2015).

Recent policies, including the Affordable Care Act (ACA), attempt to provide nonprofit hospitals with incentives to increase community benefits and to address broader community needs.<sup>2</sup> Tax expenditures are an indirect government intervention intended to achieve public policy aspirations, but they only circuitously hold nonprofit organizations accountable for provision of services such as community health (see, for example, Musgrave and Musgrave 1980; Benjamin and Posner 2018; Howard 2002; Kettl 2002). Others have argued that providing tax benefits serves as an “implicit subsidy” (Sanders 1995) to nonprofit hospitals to support their public service missions, including charity care - but the incentive is often just an implicit and not an explicit requirement.

Despite increasing attention to the theories of ownership and widespread use of federal and state legislation to address broader community health needs, research on the extent to which governments can encourage nonprofit hospitals to provide greater charity care is thin and mixed (Noble et al. 1998; Sutton and Stensland 2004; Kennedy et al. 2010). To fill this gap, we evaluate Illinois’ minimum charity care provision (MCCP) law to examine the conditions under which government policies can incentivize nonprofit hospitals’ provision of charity care.

In 2012, Illinois “set the bar” for charity care spending at a level at least equal to the foregone property tax levy for a nonprofit hospital. By “setting the bar,” the government codified a target that nonprofit hospitals must meet or face consequences. The Illinois’ MCCP law raises fundamental questions for researchers and policymakers about policy effectiveness. An adequate evaluation of this type of policy will provide insights into whether a series of shifts in policies aimed at expanding nonprofit hospitals’ community obligations will have their intended positive effect on community health. The

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<sup>2</sup> Tax-exempt hospitals spent an average of 7.5% of their expenditures on community benefits during the fiscal year 2009, of which, more than 85% was spent on charity care, government payer payment shortfalls, and subsidized health services (Young et al. 2013).

effects may also have considerable consequences for equity, depending on which patients benefit from these policies.

In this paper, we assess the extent to which Illinois' MCCP law increases the provision of charity care in nonprofit hospitals, comparing the effects of the law in nonprofit hospitals to hospitals not subject to the requirements (for-profits and government). We provide evidence on the extent to which and conditions under which government policies increase charity care provided in nonprofit hospitals. We explore which hospitals increase charity care, presumably because they receive sufficient incentives to further fulfill their missions. We use difference-in-differences models and longitudinal, hospital-level data on general hospitals in Illinois (nonprofit, for-profit, and public) from 2009-2015 to estimate the impact of Illinois' MCCP law on charity care provided. Our sample is comprised of hospital data from Illinois' Annual Hospital Questionnaire and county-level data from the American Community Survey, including demographic, fiscal, and geographic information on 105 general hospitals with audited financial statements. We focus on impacts for two key outcomes: (1) percentage of patients receiving charity care, and (2) percentage of health services spent on charity care.

In brief, we find nonprofit and government hospitals provide more charity care than for-profit hospitals before the MCCP policy. Impact estimates on the effects of the policy, however, show little evidence that the MCCP law increases charity care provision. Instead, we find some evidence that the law's effects vary by how much charity care hospitals previously provided - charity care increases for those providing lower levels at baseline, narrowing the gap in charity care provision with those that provide high levels at baseline. These findings, taken together, provide new insights for the ongoing debate on the effectiveness of government policies designed to incentivize hospitals' provision of charity care, and what makes for effective accountability policy for nonprofits more broadly.

The rest of this paper is organized as follows. In the next section, we outline the policy context, including recent government activity intended to increase hospitals' provision of charity care. In the third section, we review relevant literature on the link between hospital ownership and charity care, and government policies intended to encourage hospitals to be accountable for community health. In the fourth section, we discuss our data and measures followed by a section outlining our empirical strategy. Finally, we show results followed by comments and conclusions.

### **Policy Context: Regulatory Approaches to Hold Nonprofit Hospitals Accountable for Charity Care**

In the hospital sector, nonprofit hospitals play an outsize role and governments have begun to explore a variety of policies intended to hold them accountable (Sanders 1993; Sutton and Stensland 2004; Noble et al., 1998). Recent policy approaches, in the era of the Affordable Care Act (ACA), attempt to hold nonprofit hospitals accountable for increased provision of community benefits and address broader community needs. Although there is a wide range of activities that could be considered beneficial to a community, previous studies have typically used “uncompensated care” and “charity care.” For instance, “uncompensated care” includes charity care, bad debt, and shortfalls in government-sponsored care (such as Medicare and Medicaid), while “charity care” refers to the unbilled expenditures for disadvantaged patients when the determination to provide care free of charge is made before the medical services are provided (see, for example, Thorpe and Phelps 1991; Herzlinger and Krasker 1987; Nicholson et al. 2000).

Although myriad potential laws may increase and enforce community benefit standards, we focus on the two most common policies - (1) reporting requirements, and (2) minimum charity care

provision (MCCP) laws. Together, these two policy efforts are aimed at increasing accountability for tax-exempt hospitals with respect to community benefit activities.

Laws with reporting requirements may compel hospitals to report the levels and types of community benefits and charity care provided.<sup>3</sup> These policies provide positive signals for generous hospitals that provide high levels of charity care or, alternatively, publicly shame those that do not.<sup>4</sup> We call laws with reporting requirements “gold starring” policies. The Patient Protection and Affordable Care Act of 2009 (ACA) has a few features consistent with gold starring policies. The ACA mandated public reporting of community benefit activities to improve standardization and transparency.<sup>5</sup> One key feature of these reporting requirements was the new Schedule H, which was added for hospitals in 2009 to supplement financial data collected from all tax-exempt organizations on the IRS Form 990.<sup>6</sup> In addition to information on hospital activities, policies, and bad debt, the ACA also requires all nonprofit hospitals in the U.S. (with over \$50,000 in revenues) to report on community benefits, including charity care, on the Schedule H each year. Failure to meet federal requirements may yield significant disadvantages, ranging from an annual \$50,000 excise tax to revocation of the hospital’s 501(c)(3) tax-exempt status (IRS instructions 2015). The major categories of federal community benefit requirements found in the ACA and the IRS, however, do not specify a minimum level of charity care that a hospital

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<sup>3</sup> Currently, 31 states require nonprofit hospitals to comply with community benefit reporting laws (<https://hilltopinstitute.org/our-work/hospital-community-benefit/hcbp-state-comparison/>).

<sup>4</sup> Similar policies that aim to encourage behavior through sharing information are common in other areas of regulation, including food safety compliance (Jin and Leslie 2003, 2009; Rothbart et al. 2019) and education (Figlio and Lucas 2004; Rockoff and Turner 2010).

<sup>5</sup> Section 9007 of the ACA established “additional requirements for charitable hospitals” in the new I.R.C. §501(r), which standardizes community benefit reporting for 501(c)(3) tax-exempt hospitals and establishes specific requirements that these hospitals must meet as a condition of preserving their federal tax exemption. Further, the ACA established new standards for community health needs assessment, financial assistance policies, and hospital charges, billing, and collection practices.

<sup>6</sup> IRS Schedule H data in tax year 2013 suggests that 11.7% of total spending in nonprofit hospitals goes to community benefits including “free or discounted care, Medicaid underpayments, health research, education, bad debt expense attributable to patients eligible for financial assistance, Medicare shortfalls, and other community benefits and building activities” (AHA report, 2017).

must provide in return for tax-exempt status. Ambiguity in federal standards for charity care may partially explain limited and mixed research on the extent to which governments can influence the level of the community benefits provided by nonprofit hospitals (Morrisey et al. 1996; Kennedy et al. 2010).

Conversely, Minimum Charity Care Provision (MCCP) laws<sup>7</sup> further regulate nonprofit hospitals by imposing compliance criteria with a threat of eliminating tax exemption status. These policies “set the bar,” requiring nonprofit hospitals to provide charity care at or above a set threshold (typically determined by the size of foregone tax burden) in order to retain their tax exemptions. As of 2019, five states have MCCP laws<sup>8</sup> (Illinois, Texas, Utah, Pennsylvania, Nevada), which are typically enforced by threat of removal of tax exemptions. Illinois passed its MCCP law in 2012. There, hospitals can lose both property tax and sales tax exemptions if they fail to comply with the MCCP requirements, providing a very strong financial incentive. While privileged tax status can be thought of as a carrot for provision of services that serve the public interest, removal of tax exemptions through a MCCP law might be a powerful stick to incentivize behavior.<sup>9</sup> This study offers an empirical investigation of the impact of the Illinois’ MCCP law on hospitals’ charity care provision.

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<sup>7</sup> Illinois Property Tax Code, S.B. 2194, codified at 35 ILCS 200/15-86(c)(2012).

<sup>8</sup> The legal requirements for vary by state (<https://hilltopinstitute.org/our-work/hospital-community-benefit/hcbp-state-comparison/>).

<sup>9</sup> Prior to the implementation of Illinois’ MCCP law, two hospitals, Riverside Medical Center and Provena Covenant Medical Center, were threatened with loss of tax exemptions due to allegedly failing to offer sufficient benefit to the public interest. The Illinois Department of Revenue revoked Provena Covenant Medical Center’s property tax-exemption status in 2004 because of alleged inadequacy of its charitable activity (Barniv et al. 2005; Provena Covenant Med. Cent. v. Dep. Rev. 236 Ill. 2d 368 (2010)). The lawsuits signaled to hospitals that they should take Illinois’ community benefits requirements seriously and that the Department of Revenue might aggressively enforce future requirements. The MCCP law was a response to Illinois Supreme Court’s decision in the Provena Covenant Medical Center case, setting a standardized and transparent benchmark.

## **Literature Review**

In this paper, we build on previous research that examines the extent to which governments can hold nonprofit hospitals accountable for provision of community benefits, focusing on the extent to which MCCP policies increase charity care spending and exploring potential mechanisms. We investigate two issues, including sectoral differences in the provision of hospital charity care and the role of government policies to increase charity care, especially focusing on MCCP laws.

First, theories of sectoral difference are widely used to understand the relationship between ownership and organizational performance in public administration research (Heinrich 2009; Herzlinger and Krasker 1987; Bozeman and Bretschneider 1994; Rainey and Bozeman 2000; Perry and Rainey 1988). Although evidence suggests that sectoral difference is related to health service provisions in markets where public, nonprofit, and for-profit organizations compete (Amirkhanyan et al. 2008; Amirkhanyan et al. 2017; Weisbrod and Schlesinger 1986; Johansen and Zhu 2013; Hansmann 1987; Ben-Ner and Van Hoomissen 1991), work is inconclusive on the relationship between hospital ownership type and the level of charity care provided (or community benefits, more broadly) in the absence of government incentives. For instance, some studies find that nonprofit hospitals provide greater levels of community benefit and charity care than for-profit hospitals (Arrington and Haddock 1990; Clement et al. 2002). Others, however, find little evidence that nonprofit hospitals provide community benefits and charity care at higher rates than for-profits (Schneider 2007; Schneider and Yilmaz 2013; Bazzoli et al. 2010).

Second, public administration researchers have long tried to understand the role government policy can play in shaping the accountability of the third-party actors in the nonprofit sector (Romzek and Johnston 2005; Salamon 1995; Posner 2002; Bardach and Lesser 1996). There are a variety of tools

available to public administrators to hold third parties accountable for the delivery of services that are in the public interest (Dicke and Ott 1999; Johnston and Romzek 1999; Dubnick and Frederickson 2009; Van Slyke 2006).

One such policy, charity care reporting policies, require hospitals to report levels of charitable activities provided to the community. Research on the extent to which charity care reporting policies can influence the size of the community benefits provided by nonprofit hospitals is thin and mixed. For example, some studies find that nonprofit hospitals increase community benefits in response to the reporting policy requirements (Young et al. 2013; Hellinger 2009; Gray and Schlesinger 2009; Ginn and Moseley 2006), while other studies find that the policies do not significantly affect the provision of community benefits (Schneider 2007; Bazzoli et al. 2010).

More relevant to our paper, other policies such as MCCP laws, set a target benchmark for the provision of one particular community benefit, charity care. Two previous studies examine the effectiveness of MCCP laws per se, both of which assess the law in Texas and neither of which find that minimum thresholds increase charity care spending (Kennedy et al. 2010; Sutton and Stensland 2004). Note, however, that these studies are limited because they do not have a counterfactual group to follow over time. The samples in previous MCCP research include only nonprofit hospitals, which are all required to comply with MCCP laws. A key limitation, therefore, is that their findings may merely indicate sector changes over time. The pre-post designs might be biased by alternative contemporaneous changes in policy that affect charity care provision.

The underlying assumption of Kennedy et al. (2010), for example, is that nonprofits that already provide sufficient charity care are not subject to the MCCP law and keep charity care the same. This is, however, an empirical question. Nonprofit hospitals may respond differently to the treatment if they provide high levels of charity care prior to policy implementation, but they may well still be treated in

some way. Further complicating matters, it is unclear, a priori, which direction the bias may go. Previous research on MCCP laws may under or overestimate the impacts of MCCP depending on whether nonprofits already “above the bar” respond to the law by increasing, decreasing, or keeping charity care the same. Including other, untreated hospitals, such as government and for-profits, would improve the analysis by offering a counterfactual for comparison. Our study fills this gap by including hospitals with all ownership types (nonprofit, for-profit, government) and comparing charity care provided by all three ownership types over time.

## **Data and measures**

To examine the effectiveness of Illinois’ MCCP laws, we merge hospital financial, size, and demographic data from Illinois’ Annual Hospital Questionnaire (AHQ) with county data from the Census Bureau’s American Community Survey (ACS). AHQ is collected by Illinois Health Facilities and Services Review Board from 2009 to 2015. The AHQ provides data on all hospitals operating in Illinois, including hospital characteristics, financial information, ownership, specialty, and financial audit status. Our analytic sample includes all general hospitals with audited financial statements for years 2009-2015. To address concerns about hospital closures during this period, we initially restrict the sample to continuously operating (in every year) hospitals for 2009-2015. Our sample includes 733 observations of 105 hospitals over the 7-year period.<sup>10</sup>

Our main outcome of interest is levels of charity care provided. While there are many potential measures of charity care provision, we rely on the two measures discussed most frequently in the existing literature: (1) percentage of patients receiving charity care, and (2) percentage of health services spent on charity care. Our main independent variable is a binary interaction variable that takes a value of 1 for

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<sup>10</sup> 2 observations are excluded out of 735 total hospital-year observations due to missing outcome data.

nonprofit hospitals in the post-policy period (2012-2015) and 0 otherwise. “Hospital and financial characteristics” is a vector of variables that reflect the number of patients, number of beds, and natural logarithm of revenue (in 2015 dollars using the consumer price index, CPI). Number of patients includes total number of people receiving inpatient and outpatient care from the hospital. Number of beds measures the authorized bed capacity of each hospital as licensed by Illinois’ Department of Public Health. We use total revenues earned from inpatient and outpatient care to capture hospital size and financial productivity, taking the natural logarithm to address skewness of earnings data.

The ACS includes information on county socio-demographic characteristics, which are important considerations for hospitals deciding on the provision of charity care (Hsieh et al. 2010). “County characteristics” is a vector of variables including population, income, gender, age group, race and ethnicity, foreign-born population, English-speaking ability, education, poverty, and unemployment. Population is the number of residents in the county. Income captures county per capita income. Gender captures share female. Age group captures share of population that are children (under 18) and senior citizens (over 65). Race is a vector of variables that reflect the share who are white, black, and other races. Ethnicity includes the share of the county population that is Hispanic. Foreign-born population reflects the share of county residents born outside the U.S. English-speaking ability is the share of the population who speak English “less than very well”. Education is a vector of variables that reflect population educational attainment (share less than high school, high school, some college, bachelors, and graduate). We measure poverty as the county poverty rate and unemployment as the unemployment rate.

## **Descriptive statistics**

Table 1 shows descriptive statistics for hospital characteristics and the county characteristics faced by general hospitals in 2009. Nonprofit hospitals are larger than the for-profit and government hospitals, earning more revenue and serving more patients. Nonprofits are also the most common ownership type among general hospitals (80 out of 105 in the sample). There are more general government hospitals than for-profits, but the government hospitals in Illinois are smaller, on average. Nonprofit hospitals provide greater levels of charity care, on average, spending a higher share on charity care and serving a higher share of charity care patients.

### **[Table 1]**

Hospitals in our analytic sample locate in 58 counties, which comprises over half of all Illinois counties (102 total). For-profit hospitals operate in the largest counties, followed by nonprofit and then government hospitals. For-profit hospitals operate in counties with greater black and Hispanic populations, higher shares who speak English less than very well, and high levels of educational attainment and per capita income.

We exclude hospitals with specializations (i.e. children's specialty, psychiatric, and rehabilitation) and those with unaudited financial statements. These hospitals are generally, large and provide high levels of charity care. The hospitals in our analytic sample locate in counties with smaller populations and lower per capita income, as compared to excluded hospitals. Our sample's counties are whiter and less Hispanic.

## **Empirical strategy**

We use a variety of panel data methods to estimate the effect of Illinois' MCCP law on charity care provided. First, we estimate differences across sectors before the MCCP law and then compare the

difference in those differences over time.<sup>11</sup> That is, we compare the effects of the MCCP law on hospitals subject to its requirements (nonprofits) and not subject to requirements (public and for-profits), exploiting the discrete change in charitable care requirements for nonprofit hospitals (“setting the bar”). We control for hospital characteristics, county demographics, and year and county (or hospital) fixed effects. As an important contribution, we differentiate between responses for hospitals required to maintain minimal charitable spending (nonprofits) and those that are not (for-profit and government).

Further, we bring in a rich set of county control covariates to characterize the demographic, fiscal, and geographic environment of hospitals. County controls are preferred to hospital demographic controls, because the characteristics of patients a hospital serves may be endogenous - a hospital that provides charity care may lead to the hospital serving more poor patients or patients with certain racial backgrounds (see, for example, Norton and Staiger 1994).

Our empirical strategy relies on a key identifying assumption: that the MCCP law targeting nonprofit hospitals does not affect government or for-profit hospitals’ charity care. While previous research finds a link between hospital ownership type and the level of charity care provided (Schneider 2007; Ferris and Graddy 1999), this could be confounded by other differences across the hospitals. Instead, we focus on the changes in charity care that occur contemporaneously with the MCCP law, holding other hospital and county characteristics constant.<sup>12</sup> We leverage that identifying assumption to better test the effectiveness of these laws.

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<sup>11</sup> Existing studies that examined the charity care are limited because they cannot adequately control for other differences between nonprofit, for-profit, and government hospitals. For example, ownership of hospitals vary by specialty, location, size, history of incorporation and expansion, debt holdings, annual profitability, among many others. That is, previous work on the extent to which nonprofit hospitals “earn” their tax exemption is largely descriptive research and potentially confounded by omitted variables. In particular, previous research suffers from “admiring the problem”, instead of proposing ways in which to increase the provision of charity care in hospitals. We address this issue by including all types of hospital ownership in this paper.

<sup>12</sup> For-profit hospitals are eligible for an income tax credit equal to the lesser of real property taxes paid during the tax year or the cost of free and discounted services provided [Section 35 ILCS 5/223(a), Illinois Income Tax Act, 2012].

First, we begin with a model of the relationship between hospital ownership and charity care provision prior to the MCCP law (2009-2011), controlling for a variety of hospital, county, patient, and period characteristics:

$$(1) Y_{hct} = \beta_1 NP_{hct} + \beta_2 FP_{hct} + X'_{hct}\beta_3 + C'_{hct}\beta_4 + \xi_t + \varepsilon_{hct}$$

where  $h$  indexes hospital,  $c$  indexes county, and  $t$  indexes year;  $Y_{hct}$  is a vector of two outcomes that capture the rate of charity care provided by hospital  $h$  in year  $t$ , measured as either: (1) charity care patients as share of all patients, or (2) charity care spending as a share of revenue plus charity care spending;  $NP_{hct}$  takes a value of 1 for a nonprofit hospital and 0 otherwise;  $FP_{hct}$  takes a value of 1 for a for-profit hospital and 0 otherwise; government hospitals serve as the reference category;  $X'_{hct}$  is a vector of hospital and financial characteristics including number of patients, number of beds, and natural the logarithm of revenue (in 2015 dollars using the consumer price index, CPI);  $C'_{hct}$  is a vector of county characteristics including population, per capita income, and share by age group (under 18 and over 65), gender, race and ethnicity, foreign-born population, English-speaking ability, educational attainment, poverty status, and unemployed;<sup>13</sup>  $\xi_t$  is a year fixed effect; and  $\varepsilon_{hct}$  is an error term. In alternative models, we add county fixed effects to control for unobserved differences across counties. Standard errors are clustered at the hospital level.  $\beta_1$  ( $\beta_2$ ) capture the pre-policy difference in the provision of charity care between government hospitals and nonprofit (for-profit) hospitals, holding other factors of the hospital including size, location, demographics, and revenues constant.

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<sup>13</sup> In alternative specifications, we include the demographic characteristics of patients, including race and ethnicity, in lieu of county demographic characteristics. Results are consistent, which suggests our findings are robust to alternative measures of the populations served. Results available upon request of authors.

We examine the effect of MCCP, estimating the extent to which MCCP increases (or decreases) nonprofit hospitals' charity care provision. Our preferred models include controls for hospital and county characteristics in addition to county fixed effects.

$$(2) Y_{hct} = \beta_1 NP_{hct} + \beta_2 NP_{hct} * Post_t + \beta_3 FP_{hct} + X'_{hct}\beta_4 + C'_{hct}\beta_5 + \xi_t + \delta_c + \varepsilon_{hct}$$

where all variables are as previously defined, and  $NP_{hct} * Post_t$  is a binary interaction variable that captures nonprofit hospitals in the post-policy period (2012-2015).<sup>14</sup> The coefficient of interest,  $\beta_2$  on  $NP_{hct} * Post_t$ , captures the MCCP effect on nonprofit hospitals' charity care provision. Preferred models include year fixed-effects and county fixed-effects,  $\delta_c$ , to control for unobserved differences across counties. We also test robustness to pooled analyses and include hospital fixed effects in lieu of county fixed effects.<sup>15</sup> Again, standard errors clustered at hospital level. Our key coefficient is  $\beta_2$ , which captures the effect of the MCCP law on hospitals' charity care provision. These are our core analyses, which rely on more plausible identifying assumptions than previous studies. We estimate the first difference as differences in charity care provided across hospital ownership type (nonprofit, for-profit, government), but focus our interpretation on the difference in those differences that follow the MCCP law. That is, our key assumption is that the difference between ownership sectors would have remained consistent over time if not for the policy.

We then test our identifying assumptions in three ways. First, we estimate the linear trend between nonprofit hospitals and charity care in the three years prior to the MCCP law as a test of the parallel trends assumption. That is, we test whether the relationship between ownership and charity care is constant prior to the policy change. Second, we run a placebo test, setting a fake post-policy variable

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<sup>14</sup> We exclude the variable  $Post_t$ , because it is collinear with year fixed effects.

<sup>15</sup> County fixed effects are collinear with hospital fixed effects and are excluded in hospital fixed effects models. Hospitals rarely change ownership type, so coefficients on nonprofit and for-profit are nearly, but not perfectly, collinear with hospital fixed effects in these models.

equal to 1 in the year prior to MCCC adoption. For both the first and the second test, null results suggest that the identifying assumptions are valid. Third, we conduct an event study analysis. We test the relationship between ownership type and charity care in every year to determine whether changes in that relationship coincide with the MCCC law. Our non-parametric event study specifications also assess the parallel trends assumption. We add annual interactions between nonprofit and year, centered on the year of MCCC adoption.

$$(3) Y_{hct} = \beta_1 NP_{hct} + MCCCPr_t' * NP_{hct} \beta_2 + \beta_3 FP_{hct} + X'_{hct} \beta_4 + C'_{hct} \beta_5 + \xi_t + \varepsilon_{hct}$$

where all variables are as previously defined, and  $MCCCPr_t$  is a vector of indicators reflecting the number of years before and after MCCC adoption.<sup>16</sup>  $\beta_2$  captures differences in the relationship between nonprofit hospitals' charity care over time, where the secular trend is estimated using for-profit and government hospitals. Coefficients that are indistinguishable from 0 before the policy provide evidence that the parallel trends assumption is credible. Estimates that are statically significant post-policy indicate that the MCCC law changes charity care provided by nonprofit hospitals. The year before the policy - 2011 - serves as the reference year. Again, standard errors are clustered at the hospital level.

Finally, we explore potential heterogeneity based on levels of charity care provided before the MCCC law. We split nonprofit hospitals into three terciles - the top, middle, and bottom third of nonprofit hospitals- based on average share of revenues spent on charity care in the pre-study period (from 2006 to 2008).<sup>17</sup> We fix nonprofit hospitals to their tercile group and estimate charity care over time to assess whether the impact of MCCC varies by the levels of charity care provided before Illinois

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<sup>16</sup> That is, for example,  $MCCCPr_1 = 1$  in 2013 and 0 in any other year,  $MCCCPr_{-1} = 1$  in 2011 and 0 in any other year, etc.

<sup>17</sup> We think that using the average charity care during the pre-study period (from 2006 to 2008) best reflects hospitals' "propensity" to provide charity care in the absence of MCCC. Using observations in sample to construct terciles may suffer from regression to the mean, such that differences across hospitals narrow simply due to mechanical statistical artifacts rather than changing underlying behavior. Alternatively, we use data in the first year of the panel (2009) to assign nonprofit hospitals to the three terciles based on charity care provided in the first observation year - the results are similar, but, again, may reflect regression to the means rather than effects of MCCC.

“set the bar.” The “top tercile” includes nonprofit hospitals in the top third of charity care provision (above 1.82% of health services spent on charity care) and the “bottom tercile” are those at the bottom (below 1.29%). “Middle tercile” are nonprofit hospitals providing charity care in any amount between the top and bottom (above 1.29% and below 1.82% of health services spent on charity care).

Why do we suspect responses may vary? In particular, nonprofit hospitals at the bottom of the charity care distribution may need to increase charity care just to meet the new benchmark levels. Alternatively, hospitals at the top of the charity care distribution may not need to increase their charity care. Instead, perhaps a formalized “bar” may enable these hospitals to decrease charity care provision without fear of penalty. Grouping by charity care terciles in the estimation model allows us to expand upon results from models 2 and 3, differentiating between nonprofit hospitals that provide high and low levels of charity care relative to their peers in the years before M CCP.

## **Analysis and results**

Our OLS results are shown in Table 2, showing the relationship between ownership type and charity care before M CCP. Descriptively, nonprofit hospitals provide more charity care than government hospitals, on average. Column 3 of Table 2, which includes controls for county demographic and hospital characteristics, suggests that nonprofit hospitals serve 1.578 percentage points greater share of patients with charity care than do government hospitals. Column 7 suggests that nonprofits spend 1.014 percentage points more of their revenues on charity care than do government hospitals.<sup>18</sup> This relationship is, however, entirely driven by differences in the locations of nonprofit and government hospitals. Nonprofit hospitals that are located in the same counties as government hospitals serve about

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<sup>18</sup> Results from columns 1, 2, 5, and 6, which control for substantially fewer potential confounders, are consistent in direction and magnitudes.

the same share of charity care patients (0.005 percentage points less) and actually spend somewhat less (0.980 percentage points) of their hospital revenues on charity care patients, as shown in columns 4 and 8, respectively. For example, nonprofit has positive and significant coefficients in columns 5 to 7, showing results from models that do not include county fixed effects. Conversely, nonprofit has a negative, significant coefficient in column 8 (a model that includes county fixed effects). That is, nonprofit hospitals that operate in the same county as government hospitals provide less charity care than their counterpart, on average.

### **[Table 2]**

For-profit hospitals provide less charity care than nonprofits to an even greater degree. Column 3 of Table 2, shows that nonprofit hospitals serve 3.064 percentage points greater share of patients with charity care than do for-profit hospitals. Column 7 suggests that nonprofits spend 2.162 percentage points more of their revenues on charity care than do for-profit hospitals.<sup>19</sup> Unlike the relationship with government hospitals, however, this relationship does not appear to be driven by differences in the locations of hospitals. Nonprofit hospitals that are located in the same counties as for-profit hospitals serve a greater share of charity care patients (3.719 percentage points; though this is imprecisely estimated) and spend more of their hospital revenues on charity care patients (2.519 percentage points), as shown in columns 4 and 8, respectively.

Table 3 shows results of our difference-in-differences models, which all indicate that the policy had little or no effect on average charity care provision in nonprofit hospitals. All results show that the interaction between nonprofit hospital and treatment (*Post*) is small and insignificant. Columns 1 through 5 indicate that there is no relationship between the MCCP policy and the share of patients

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<sup>19</sup> Results from columns 1, 2, 5, and 6, which control for substantially fewer potential confounders, are consistent in direction and largely consistent in magnitudes (though perhaps becoming a little stronger in preferred models).

receiving charity care in nonprofit hospitals. Columns 6 through 10 indicate that there is no relationship between the MCCP policy and the ratio of revenues spent on charity care in nonprofit hospitals. The result is robust to inclusion of additional controls, county fixed effects and hospital fixed effects. Taken together, these results indicate that the policy was unsuccessful, on average, because the MCCP law did not increase charity care provided in nonprofits.

### **[Table 3]**

We test the key model assumptions in Table 4. Columns 1, 2, 6, and 7 show results of tests of the parallel trends assumptions, finding no significant trend prior to policy implementation in 2012 (point estimates, if they are to be believed, despite insignificance, suggest a small increase in charity care over time). Columns 3 to 5 and Columns 8 to 10 show tests of the assumption that there are no effects prior to treatment, showing statistically insignificant positive coefficients if we assign “treatment” to the year before MCCP.

### **[Table 4]**

We then turn to event study results to further test the parallel trends assumption and assess the extent to which impacts change over time. The results are shown graphically in Figure 1 panels A and B, with point estimates displayed as dots and 95% confidence intervals shown as lines (coefficients shown in tabular form are displayed in Appendix 2). The results provide little evidence of changes in the relationship between nonprofit and charity care prior to the MCCP law. The only statistically significant point estimate indicates that nonprofit hospitals spent relatively less on charity care in 2009 than they do in the year just prior to the policy change (panel B, year 2009). Moreover, the results provide no evidence that charity care increases in nonprofits concurrently with or after adoption of the MCCP law. That is, there is no evidence that the MCCP law worked, on average. In fact, the trends for both charity

care outcomes are negative (but statistically insignificant) after 2013. Like the difference-in-differences estimates, these results suggest that, if anything, the MCCC law *decreased* average charity care provided by nonprofits. This finding is somewhat stronger, but still only suggestive, in the event studies.

**[Figure 1 Panel A and B]**

Next, we break apart the nonprofit effect by how much charity care the hospitals provided before the sample period. Here, we calculate charity care spending as a share of revenues for nonprofit hospitals between years 2006 and 2008. Then, we rank nonprofit hospitals by charity care provided, breaking them into terciles based on whether they rank in the top third, middle third, or bottom third of charity care spending. By construction, those in the top third provide more charity care prior to the policy, but the persistence of this effect across model specifications (and outcome variables) is notable. If charity care provision each year were “random” then these estimates would be statistically indistinguishable because the terciles are constructed out of the sample. Instead, the ordinal nature of the coefficients for NP\_top, NP\_middle, and NP\_bottom suggest that some nonprofit hospitals have a greater “innate” proclivity for charity care than others, even among general hospitals and holding revenues, size, and county characteristics constant.

In terms of the impact of MCCC, we observe substantial heterogeneity (especially for the spending outcome). The point estimates indicate that hospitals in the top tercile prior to 2009 actually decrease charity care spending in response to MCCC (though all estimates are statistically insignificant). Conversely, nonprofit hospitals in the bottom tercile increase charity care, and the result is statistically significant for charity care spending (for share of patients receiving charity care, the result is consistent, but statistically insignificant). As a result of these two trends, the gap between the top and bottom nonprofit hospitals narrows substantially after adoption of the MCCC policy. In 2009, there is a 2.9

percentage point gap in share of patients receiving charity care between the top and bottom terciles of nonprofit hospitals. By 2015 that gap is less than 1.3 percentage points. Similarly, the gap in the share of revenues spent on charity care falls from over 2.2 percentage points to 1.2. Narrowing differences between nonprofit hospitals that provide charity care well above the bar and nonprofit hospitals that provide charity care well below the bar is one of our most persistent results. Nonprofit hospitals in the middle of the distribution do not change charity care spending very much in either direction. We further calculate the impact of MCCC on the gaps between the terciles. For all comparisons, estimates indicate that MCCC decreased the gap between hospitals predisposed to provide more charity care and those predisposed to provide less.

#### **[Table 5]**

Finally, we return to an event study framework to better understand timing. Results, shown graphically in Figure 2 panels A and B (in tabular form in Appendix 3), suggest that the gap between high and low charity care non-profits does not narrow in the period before MCCC, but does substantially after.

#### **[Figure 2 Panel A and B]**

Beginning with Panel A, in 2009, the gap between the top tercile and the bottom tercile is 2.9 percentage points and remains about the same until 2011 (2.6 percentage points). Following the MCCC law, however, the gap narrows, both by the intended effect of those at the bottom increasing charity care and by those at the top decreasing. By 2015, the gap between top and bottom is only 1.3 percentage points<sup>20</sup>. Hospitals in the middle tercile respond like an average of the two, perhaps more closely resembling the top tercile.

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<sup>20</sup> The event studies also suggests that hospitals in the bottom tercile respond quickly to the policy, increasing charity care in the first two years following implementation (2012 and 2013) and keeping charity care near the new levels thereafter. Conversely, the top tercile initially remains the same or even increases charity care in 2012 and 2013, but then begins a steep decline, perhaps once the hospitals notice that the bar set is not binding for them.

Panel B of Figure 2 shows a similar pattern. All nonprofit hospitals slowly increase charity care relative to government and for-profit hospitals in the pre-period (though this trend is very similar across the nonprofit sector and statistically insignificant for all three terciles). Then, nonprofit hospitals in the bottom tercile increase charity care further in 2012 and 2013, followed by leveling off of the policy impact. Conversely, the top and middle terciles of nonprofits increase charity care spending at a more moderate pace in 2012 and 2013, followed by steep declines in 2014 and 2015. Taken together, the charity care spending gap in nonprofit hospitals falls from 2.2 percentage points in 2009 to just 1.2 percentage points in 2015.

## **Discussion and Conclusion**

In this paper, we explore the effectiveness of MCCP laws to shed light on the effectiveness of policies that set standards for minimal service delivery to hold nonprofit hospitals accountable for provision of health services to communities. We find no evidence that the MCCP law increased the average charity care provided by nonprofit hospitals. Instead, we find substantial evidence that the MCCP law closed gaps in charity care provision within the nonprofit sector: it increased charity care provided among nonprofit hospitals offering low levels prior to the policy, and decreased it in nonprofit hospitals who offer high levels of charity care at baseline. In ancillary analyses, we reaffirm previous research, finding nonprofit (and public) hospitals provide more charity care than for-profit hospitals in the absence of MCCP (consistent with Arrington and Haddock 1990 and Clement et al. 2002). Results are robust to alternative specifications and samples, including models with and without county (or hospital) fixed effects, a panel with all Illinois hospitals (not just general hospitals with audited financial statements), and a longer panel (2006-2015, using hospital demographic controls in lieu of county characteristics),

among many others. Tests of the parallel trends assumption and a placebo test using a false policy start date suggest the inferences we draw from the difference-in-differences models are warranted.

There are important limitations to our analysis. We were not able to take into account other factors such as Medicaid and Medicare that might affect charity care provision. Increases in Medicare and Medicaid coverage and fees for service payments may alleviate the burden of charity care required from the hospitals. For example, there is evidence to suggest that recent policy efforts to increase access to Medicaid coverage could result in reducing levels of uncompensated care (Hsieh et al. 2010). As another example, research shows that hospitals experiencing price pressures from Medicare and Medicaid (Mann et al. 1995) or managed care firms (Gruber 1994) decrease their provision of charity care relative to other hospitals. Given increased competitive pressures leads to profit-seeking behaviors and reduced charity care among hospitals, we cannot speak to whether hospitals in the state or individual counties are providing sufficient charity care in later years (Gruber 1994; Keeler, Melnick and Zwanziger 1999; Sloan 2000).

Furthermore, we use charity care data reported through the AHQ and not MCCC forms returned by hospitals to the State each year. On the one hand, this serves as a disadvantage, because our charity care metric might miss important community benefit activities. On the other hand, this enables us to establish a secular charity care trend using data on all types of hospitals (government, for-profit, nonprofit), which is not available on MCCC forms or in earlier studies.

Despite these limitations, this paper provides important empirical evidence on the efficacy of recent accountability policies that set target benchmarks for nonprofit hospitals. One thing for policymakers to consider is why the MCCC law does not appear to work. Here, policy context is quite relevant. Prior to the MCCC law in Illinois, the charity care requirements for nonprofit hospitals were aspirational and ambiguous. Nonprofit hospitals were expected to provide charity care and other

community benefits to the best of their ability (*Provena Covenant Med. Cent. v. Dep. Rev.* 236 Ill. 2d 368 (2010)). The precise way the State decided to hold nonprofit hospitals accountable for their “best” or their “ability” was unclear. Moreover, threats of removal of tax exemption status for hospitals (such as Provena and others) served as a warning to hospitals to take actions demonstrating their commitment to meet this aspiration, even if the standards were not clearly or uniformly applied.

In contrast, the MCCP law set a low accountability benchmark that was transparent. While nonprofit hospitals were required to provide a certain level of charity care relative to their earnings and foregone property tax burden, most of the hospitals were already providing greater levels of charity care than required. In fact, a handful provided substantially more. By defining the accountability benchmark and clarifying expectations, the policy may have unintentionally undermined the incentives for hospitals already exceeding the (previously tacit) expectations for nonprofits.

We find that explicit quantitative standards can result in unintended consequences when an accountability policy sets low benchmarks. While hospitals in the bottom tercile of charity care prior to the sample period increase charity care provided, those at the top seem to decrease it (though the results are statistically insignificant). As a result of these two trends, the gap between the top and bottom nonprofit hospitals narrows substantially after adoption of the MCCP policy. In 2009, there is a 2.9 percentage point gap in share of patients receiving charity care between the top and bottom terciles of nonprofit hospitals. By 2015 that gap is less than 1.3 percentage points. Similarly, the gap in the share of revenues spent on charity care falls from over 2.2 percentage points to 1.2. Narrowing of the differences between “generous” and “ungenerous” nonprofit hospitals with respect to charity care provided was one of our most persistent results.

Our results contribute to previous work that also finds that MCCP laws do not create sufficient incentives for most nonprofit hospitals to provide greater community benefits (Kennedy et al. 2010). In

part, it seems this is because most nonprofits are already clearing the accountability benchmarks. Our results, in fact, suggest that Kennedy and colleagues (2010) may actually overestimate the intended effects of MCCP laws in Texas, because the comparison group included hospitals that provide high levels of charity care prior to MCCP provisions - a group we find decreasing charity care over time relative to other hospitals unaffected by the law (government and for-profits). The fact that Kennedy and colleagues (2010) still find null effects provides further evidence that MCCP laws may not have the consequences policymakers intend. These findings, taken together, help address a gap in the literature by providing insights on the ongoing debate on effectiveness of charity care requirements. Our results provide insights on the potential consequences - both intended and unintended - of expanding the community benefit obligations of tax-exempt hospitals. Our results also offer useful insight into the effectiveness of similar legislation.

Importantly then, while the MCCP law does not affect average charity care provision in nonprofit hospitals, the heterogeneity in effects may have substantial distributional consequences. For example, MCCP laws may affect equity because only a few nonprofit hospitals ramp up charity care (while others seem to decrease it), and poor people living near those hospitals may benefit. Nonprofit hospitals that provide low levels of charity care before MCCP disproportionately locate in smaller counties with higher proportions of older, native-born, white, non-Hispanic residents. The poor residents of these counties may benefit from the MCCP policy. Conversely, nonprofit hospitals that provide high levels of charity care at baseline are disproportionately located in large counties, especially Cook County (Chicago). These hospitals, as a result, serve a more racially and ethnically diverse population (evidenced by county and patient characteristics). A higher share of their county residents have very little education (less than high school) or very high levels of education (bachelor or graduate). The poor residents of these counties seem to be harmed by the MCCP law due to reductions in charity care provided by their nonprofit

hospitals. Which geographic areas have greater unmet need and/or demand for charity care is an important efficiency and equity concern that is beyond the scope of this current work. Future research should further unpack the differences in the populations served by various nonprofit hospitals to shed light on the consequences of MCCP laws for hospital finances and viability as well as quality of patient care and their health outcomes.

This paper provides useful insight into the potential consequences - both intended and unintended - of further expansions of community benefit requirements for tax-exempt hospitals and holding nonprofit hospitals accountable for them. In the era of the ACA, states and the federal government seek to hold hospitals accountable for their provision of community health benefits and, specifically, charity care. Laws aimed at increasing charity care provided by hospitals are increasingly common in an attempt to hold nonprofit hospitals more accountable for fulfilling their social mission and addressing broader community health needs. Our findings, taken together, show that Illinois' MCCP law was ineffective if the goal was increasing charity care overall, suggesting that setting low accountability benchmarks will not increase community benefits. Our results, thus, pour cold water on further expansion of MCCP policies to serve this purpose. Still, we also find that certain hospitals that otherwise provide particularly low levels of charity care respond positively to the MCCP accountability policy.

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## Tables

**Table 1. Hospital and County Characteristics, Hospitals Continuously Operating 2009-2015, Characteristics in 2009**

	(1)			(2)	
	Analytic Sample			Excluded Sample	
	Full Sample	NP	FP	GOV	
<b>Hospital</b>					
Mean Hospital Revenue (\$)	168,581,705	201,427,089	98,741,867	34,800,385	191,570,807
Mean Patients	134,330	158,802	58,087	43,195	114,341
Mean Bed Number	181	214	107	50	222
Share Spent on Charity Care (%)	1.92	2.14	1.23	1.10	1.87
Share Patients receiving Charity Care (%)	2.13	2.43	1.61	0.87	3.88
Number of Hospitals	105	82	6	17	40
<b>County</b>					
Population	1,314,695	1,475,299	2,766,476	27,624	2,797,202
Per capita Income (\$)	28,156	28,667	31,246	24,601	30,957
Female (%)	50.67	50.78	50.55	50.15	50.80
Age under 18 (%)	23.76	24.02	24.52	22.28	24.35
Age over 65(%)	14.07	13.67	11.63	16.85	12.54
White (%)	80.99	78.93	70.60	94.61	69.61
Black (%)	10.35	11.71	14.83	2.21	16.19
Other (%)	8.65	9.35	14.53	3.18	14.19
Hispanic (%)	9.03	9.79	16.07	2.88	14.70
Born Abroad (%)	0.81	0.86	1.15	0.46	1.16
Speak English Less than "very well" (%)	5.70	6.25	10.47	1.36	9.88

**Table 1. Hospital and County Characteristics, Hospitals Continuously Operating 2009-2015, Characteristics in 2009  
(Continued)**

	(1) Analytic Sample				(2) Excluded Sample
	Full Sample	NP	FP	GOV	
<i>Less High School (%)</i>	14.25	14.00	15.27	15.07	15.14
<i>High School (%)</i>	32.26	31.35	28.23	38.07	27.93
<i>Some College (%)</i>	29.44	29.37	26.60	30.82	27.45
<i>Bachelor (%)</i>	15.21	15.96	18.08	10.56	18.16
<i>Graduate (%)</i>	8.84	9.32	11.82	5.47	11.33
<i>Below 100 percent Poverty Level (%)</i>	13.56	13.62	14.15	13.09	13.50
<i>100 to 149 percent Poverty Level (%)</i>	8.62	8.51	8.47	9.18	8.39
<i>At or above 149 percent Poverty Level (%)</i>	77.83	77.88	77.38	77.73	78.11
<i>Unemployment (%)</i>	7.84	7.95	8.43	7.11	8.10
<i>Number of Counties</i>	58	42	4	15	17

Note: Analytic sample includes observations of general hospitals in years with audited financial statements and information on charity care provisions. All dollars are reported in 2015 dollars using urban CPI. There are 4 counties (Cook, Bureau, Lake, Randolph) with two types of hospital ownership type, and hospitals only in Cook counties consistently exist across the years. Three hospitals changed ownership type (one changed FP to NP, one from GOV to NP, one from GOV to NP and back) within our analytic sample. We have three hospitals (four observations) with missing ownership type information within our analytic sample. For each of the hospital with missing ownership type, we used other years' ownership information to assign ownership type. We remove 1 hospital with implausibly large charity care provisions. Results are not sensitive to excluding those observations all together.

**Table 2. Regression Results, Relationship Between Ownership Type and Charity Care Provision, Pre-Policy, 2009-2011**

Variables	Percentage of Patients Receiving Charity Care				Percentage of Health Services Spent on Charity Care			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NP	2.066*** (0.407)	1.294*** (0.384)	1.578*** (0.487)	-0.005 (0.370)	1.354*** (0.236)	0.947*** (0.224)	1.014*** (0.247)	-0.980*** (0.129)
FP	0.354 (0.746)	-0.954 (1.022)	-1.486 (1.339)	-3.724 (2.572)	-0.446 (0.462)	-0.964* (0.550)	-1.148* (0.614)	-3.499*** (1.085)
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
County Controls	NO	YES	YES	YES	NO	YES	YES	YES
Hospital Controls	NO	NO	YES	YES	NO	NO	YES	YES
County FE	NO	NO	NO	YES	NO	NO	NO	YES
NP - FP	1.712**	2.248**	3.064**	3.719	1.800***	1.911***	2.162***	2.519**
Counties	58	58	58	58	58	58	58	58
Hospitals	105	105	105	105	105	105	105	105
Observations	315	315	315	315	315	315	315	315
R-squared	0.067	0.155	0.183	0.286	0.156	0.233	0.244	0.380

Notes: Robust standard errors are clustered by hospitals in parentheses. Continuously operating general hospitals (from 2009-2015). Sample includes observations in years with audited financial statements and information on charity care provided. County controls in all models include population, share of population age under 18 & age over 65, share of population born abroad, gender (male is omitted category), race (White is omitted category), Hispanic, foreign-born population, English-speaking ability, educational attainment (less than high school is omitted category), poverty status (below 100 percent of the poverty level is omitted category), unemployment rate, per capita income (all reported in 2015 dollars using urban CPI). Hospital controls in all models include authorized bed number and natural log of revenue (all reported in 2015 dollars using urban CPI). NP-FP indicates point estimates using a post-estimation F-statistic. Reference group = government hospitals. \* p<0.1 \*\* p<0.05 \*\*\* p<0.01

**Table 3. Regression Results, Impact of Minimum Charity Care Law, Difference-in-Differences Model, 2009-2015**

Variables	Percentage of Patients Receiving Charity Care					Percentage of Health Services Spent on Charity Care				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
NPPost	0.187 (0.311)	0.087 (0.320)	0.062 (0.319)	0.0532 (0.342)	-0.081 (0.316)	0.167 (0.160)	0.090 (0.174)	0.087 (0.173)	0.287 (0.191)	0.167 (0.163)
NP	1.976*** (0.405)	1.006*** (0.353)	1.213*** (0.402)	-0.212 (0.270)	0.321 (0.280)	1.326*** (0.232)	0.938*** (0.229)	0.981*** (0.239)	-0.439 (0.454)	1.015 (1.295)
FP	-0.024 (0.664)	-1.422 (1.009)	-1.860 (1.225)	-4.600** (2.016)	-0.973* (0.525)	-0.565 (0.343)	-1.137** (0.459)	-1.288** (0.527)	-2.943*** (0.896)	0.363 (1.312)
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
County Controls	NO	YES	YES	YES	YES	NO	YES	YES	YES	YES
Hospital Controls	NO	NO	YES	YES	YES	NO	NO	YES	YES	YES
County FE	NO	NO	NO	YES	NO	NO	NO	NO	YES	NO
Hospital FE	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES
Counties	58	58	58	58	58	58	58	58	58	58
Hospitals	105	105	105	105	105	105	105	105	105	105
Observations	733	733	733	733	733	733	733	733	733	733
R-squared	0.083	0.195	0.219	0.311	0.798	0.191	0.251	0.261	0.376	0.792

Note: Robust standard errors are clustered by hospitals in parentheses. Continuously operating general hospitals (from 2009-2015). Sample includes observations in years with audited financial statements and information on charity care provided. County controls in all models include population, share of population age under 18 & age over 65, share of population born abroad, gender (male is omitted category), race (White is omitted category), Hispanic, foreign-born population, English-speaking ability, educational attainment (less than high school is omitted category), poverty status (below 100 percent of the poverty level is omitted category), unemployment rate, per capita income (all reported in 2015 dollars using urban CPI). Hospital controls in all models include authorized bed number and natural log of revenue (all reported in 2015 dollars using urban CPI). Reference group = government hospitals. \* p<0.1 \*\* p<0.05 \*\*\* p<0.01

**Table 4. Test of Parallel Trend Assumption (Pre-Policy, 2009-2011) and Placebo Test (Impact Year Before Policy), 2009-2015**

Variables	Percentage of Patients Receiving Charity Care					Percentage of Health Services Spent on Charity Care				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
NPPretrend	0.394 (0.259)	0.347 (0.334)				0.296* (0.154)	0.307 (0.195)			
NPfakePost			0.423 (0.393)	0.501 (0.430)	0.324 (0.352)			0.351 (0.233)	0.426* (0.247)	0.294 (0.227)
NPPost			-0.220 (0.322)	-0.271 (0.346)	-0.288 (0.363)			-0.147 (0.230)	0.012 (0.230)	-0.020 (0.233)
NP	2.367*** (0.696)	0.689 (0.800)	1.074** (0.456)	-0.385 (0.332)	0.207 (0.304)	1.608*** (0.405)	-0.365 (0.443)	0.866*** (0.256)	-0.586 (0.473)	0.911 (1.305)
FP	-1.497 (1.338)	-3.759 (2.564)	-1.860 (1.226)	-4.607** (2.016)	-1.076** (0.528)	-1.156* (0.610)	-3.529*** (1.060)	-1.288** (0.528)	-2.949*** (0.895)	0.270 (1.319)
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
County Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Hospital Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
County FE	NO	YES	NO	YES	NO	NO	YES	NO	YES	NO
Hospital FE	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES
Counties	58	58	58	58	58	58	58	58	58	58
Hospitals	105	105	105	105	105	105	105	105	105	105
Observations	315	315	733	733	733	315	315	733	733	733
R-squared	0.185	0.287	0.219	0.311	0.799	0.247	0.383	0.262	0.377	0.792

Note: Robust standard errors are clustered by hospitals in parentheses. Continuously operating general hospitals (from 2009-2015). Sample includes observations in years with audited financial statements and information on charity care provided. County controls in all models include population, share of population age under 18 & age over 65, share of population born abroad, gender (male is omitted category), race (White is omitted category), Hispanic, foreign-born population, English-speaking ability, educational attainment (less than high school is omitted category), poverty status (below 100 percent of the poverty level is omitted category), unemployment rate, per capita income (all reported in 2015 dollars using urban CPI). Hospital controls in all models include authorized bed number and natural log of revenue (all reported in 2015 dollars using urban CPI). Reference group = government hospitals. \* p<0.1 \*\* p<0.05 \*\*\* p<0.01

**Table 5. Heterogeneity of Impacts by Baseline Charity Care Provisions**

Variables	Percentage of Patients Receiving Charity Care					Percentage of Health Services Spent on Charity Care				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post: NP*Top	-0.186	-0.130	-0.162	-0.257	-0.228	-0.131	-0.106	-0.092	-0.015	-0.012
	(0.430)	(0.424)	(0.421)	(0.434)	(0.449)	(0.186)	(0.200)	(0.203)	(0.204)	(0.208)
NP*Middle	0.093	0.094	0.092	-0.104	-0.068	-0.002	-0.022	-0.023	0.048	0.067
	(0.399)	(0.439)	(0.440)	(0.455)	(0.458)	(0.198)	(0.226)	(0.226)	(0.234)	(0.242)
NP*Bottom	0.390	0.392	0.391	0.197	0.201	0.455***	0.476***	0.471***	0.483***	0.488***
	(0.355)	(0.386)	(0.388)	(0.369)	(0.380)	(0.139)	(0.168)	(0.169)	(0.160)	(0.162)
NP*Top	3.355***	2.413***	2.711***	3.134**		2.392***	2.142***	2.238***	1.393***	
	(0.720)	(0.680)	(0.691)	(1.251)		(0.346)	(0.341)	(0.344)	(0.527)	
NP*Middle	1.673**	1.011	1.215	0.527		1.186***	0.940***	0.942***	-0.744**	
	(0.711)	(0.675)	(0.758)	(1.344)		(0.231)	(0.278)	(0.287)	(0.349)	
NP*Bottom	0.802**	0.042	0.156	-0.459		0.283	0.014	0.022	-1.387***	
	(0.367)	(0.541)	(0.540)	(0.289)		(0.243)	(0.259)	(0.262)	(0.0988)	
FP	1.299	0.036	-0.429	-0.930		0.271	-0.129	-0.307	-1.149	
	(1.520)	(1.554)	(1.656)	(2.832)		(0.970)	(0.991)	(1.003)	(1.684)	
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
County Controls	NO	YES	YES	YES	YES	NO	YES	YES	YES	YES
Hospital Controls	NO	NO	YES	YES	YES	NO	NO	YES	YES	YES
County FE	NO	NO	NO	YES	NO	NO	NO	NO	YES	NO
Hospital FE	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES
Post: NP*Top - NP*Middle	-0.279	-0.224	-0.254	-0.153	-0.16	-0.129	-0.084	-0.069	-0.063	-0.079
NP*Top - NP*Bottom	-0.576	-0.522	-0.553	-0.454	-0.429	-0.586***	-0.582***	-0.563***	-0.498**	-0.500**

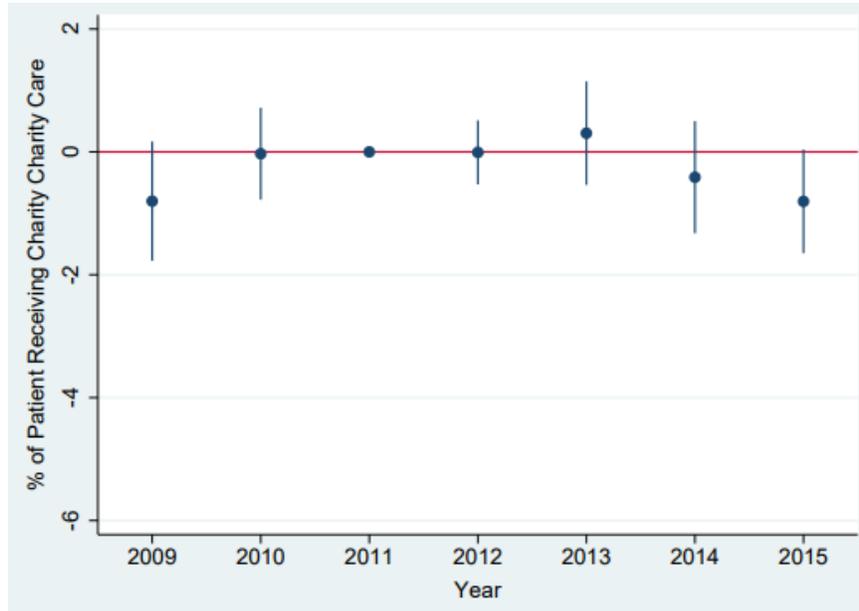
**Table 5. Heterogeneity of Impacts by Baseline Charity Care Provisions (Continued)**

Variables	Percentage of Patients Receiving Charity Care					Percentage of Health Services Spent on Charity Care				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
NP*Middle - NP*Bottom	-0.297	-0.298	-0.299	-0.301	-0.269	-0.457**	-0.498**	-0.494**	-0.435*	-0.421*
Counties	58	58	58	58	58	58	58	58	58	58
Hospitals	105	105	105	105	105	105	105	105	105	105
Observations	733	733	733	733	733	733	733	733	733	733
R-squared	0.133	0.223	0.248	0.349	0.799	0.300	0.337	0.356	0.484	0.794

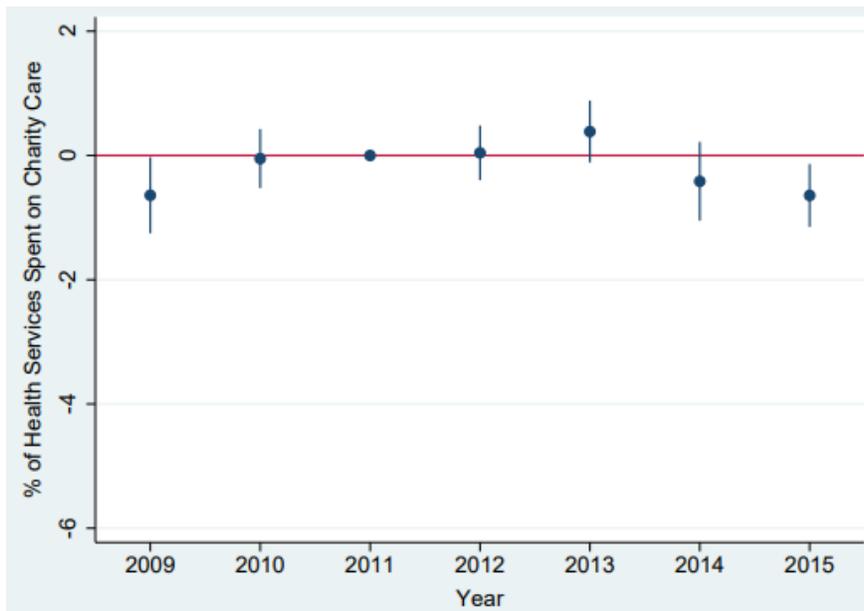
Note: Robust standard errors are clustered by hospitals in parentheses. Continuously operating general hospitals (from 2009-2015). Sample includes observations in years with audited financial statements and information on charity care provided. County controls in all models include population, share of population age under 18 & age over 65, share of population born abroad, gender (male is omitted category), race (White is omitted category), Hispanic, foreign-born population, English-speaking ability, educational attainment (less than high school is omitted category), poverty status (below 100 percent of the poverty level is omitted category), unemployment rate, per capita income (all reported in 2015 dollars using urban CPI). Hospital controls in all models include authorized bed number and natural log of revenue (all reported in 2015 dollars using urban CPI). “NP\*Top” indicates top tercile > 1.82% of health services, “NP\*Middle” indicates middle tercile 1.29% - 1.82% of health services, “NP\*Bottom” indicates bottom tercile < 1.29% of health services spent on charity care. Reference group = government hospitals. \* p<0.1 \*\* p<0.05 \*\*\* p<0.01

## Figures

**Figure 1. Panel A. Event Study, Percentage of Patients Receiving Charity Care, 2009-2015**

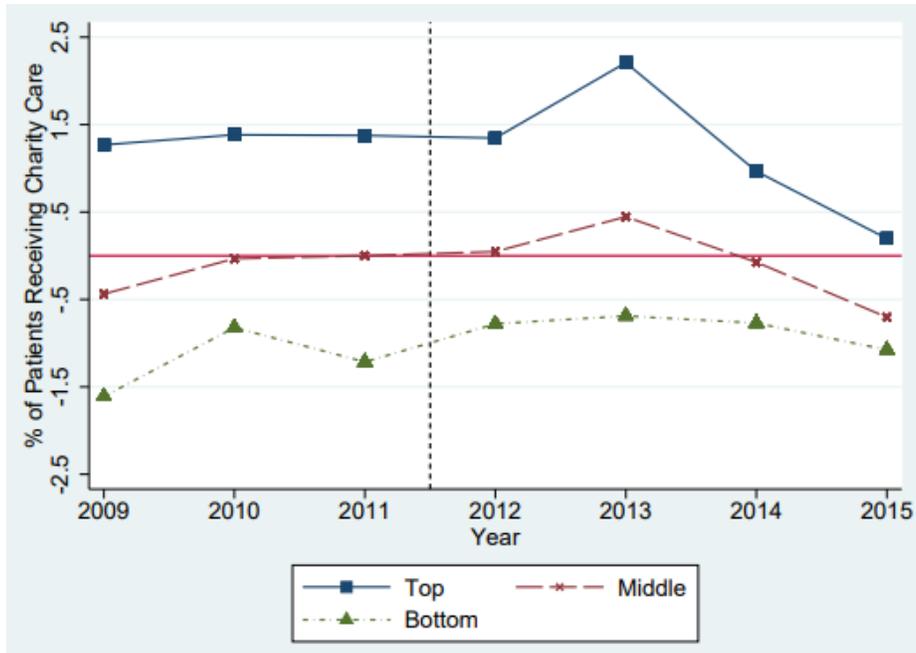


**Figure 1. Panel B. Event Study, Percentage of Health Services Spent on Charity Care, 2009-2015**

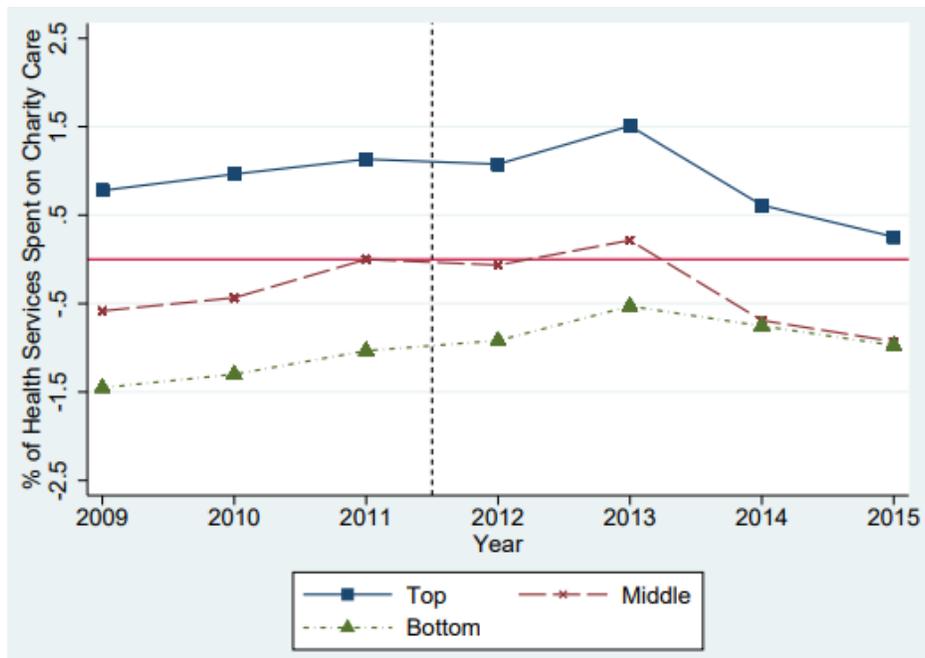


Note: Continuously operating general hospitals (from 2009-2015). Sample includes observations in years with audited financial statements and information on charity care provided.

**Figure 2. Panel A. Event Study Results, Heterogeneity of Impacts by Baseline Charity Care Provisions, Percentage of Patients Receiving Charity Care, 2009-2015**



**Figure 2. Panel B. Event Study Results, Heterogeneity of Impacts by Baseline Charity Care Provisions, Percentage of Health Services Spent on Charity Care, 2009-2015**



Note: “NP\*Top” indicates top tercile > 1.82% of health services, “NP\*Middle” indicates middle tercile 1.29% - 1.82% of health services, “NP\*Bottom” indicates bottom tercile < 1.29% of health services spent on charity care.

## Appendices

### Appendix 1. Share of Hospital Ownership, Analytic Sample, 2009-2015

Ownership	Ownership sub-type	Share (%)						
		2009	2010	2011	2012	2013	2014	2015
NP	Church-Related	20.95	23.81	23.81	22.86	22.12	20.19	18.10
	Not For Profit Corporation	55.24	51.43	53.33	53.33	52.88	51.92	54.29
	Other Not For Profit	1.90	3.81	1.90	2.86	4.81	8.65	7.62
	(NP total)	78.09	79.05	79.04	79.05	79.81	80.76	80.01
FP	For Profit Corporation	5.71	4.76	4.76	4.76	4.81	4.81	4.76
GOV	City	2.86	2.86	2.86	2.86	2.88	1.92	1.90
	County	0.95	0.95	0.95	0.95	0.96	0.96	0.95
	Township	0.95	0.95	0.95	0.95	0.96	0.96	0.95
	Hospital District	11.43	10.48	10.48	11.43	10.58	10.58	10.48
	Other Governmental	0	0	0	0	0	0	0.95
	(GOV total)	16.19	15.24	15.24	16.19	15.38	14.42	15.23
Total		Number of count: 733						

Note: We assigned hospital ownership type based on the information from the AHQ survey. The ownership type is mutually exclusive. Three hospitals changed ownership type (one hospital changed from FP to NP, one hospital changed from GOV to NP, one hospital changed from GOV to NP, then from NP to GOV) within our analytic sample.

## Appendix 2. Event Study, 2009-2015

VARIABLES	Percentage of Patients Receiving Charity Care (1)	Percentage of Health Services Spent on Charity Care (2)
NP		
2009	-0.802 (0.489)	-0.641** (0.309)
2010	-0.030 (0.377)	-0.050 (0.240)
2012	-0.008 (0.263)	0.043 (0.222)
2013	0.304 (0.425)	0.385 (0.251)
2014	-0.413 (0.460)	-0.416 (0.320)
2015	-0.805* (0.425)	-0.644** (0.255)
Year		
2009	0.072 (0.426)	0.036 (0.297)
2010	0.013 (0.269)	-0.144 (0.220)
2012	0.205 (0.213)	0.005 (0.193)
2013	0.406 (0.397)	-0.249 (0.248)
2014	0.396 (0.454)	-0.030 (0.330)
2015	0.170 (0.478)	-0.447 (0.292)
NP	1.500*** (0.413)	1.219*** (0.278)
FP	-1.874 (1.228)	-1.300** (0.526)
Year FE	YES	YES
County Controls	YES	YES
Hospital Controls	YES	YES
County FE	NO	NO
Hospital FE	NO	NO
Counties	58	58
Hospitals	105	105
Observations	733	733
R-squared	0.221	0.269

Note: Robust standard errors are clustered by hospitals in parentheses. Continuously operating general hospitals (from 2009-2015). Sample includes observations in years with audited financial statements and information on charity care provided. County controls in all models include population, share of population age under 18 & age over 65, share of population born abroad, gender (male is omitted category), race (White is omitted category), Hispanic, foreign-born population, English-speaking ability, educational attainment (less than high school is omitted category), poverty status (below 100 percent of the poverty level is omitted category), unemployment rate, per capita income (all reported in 2015 dollars using urban CPI). Hospital controls in all models include authorized bed number and natural log of revenue (all reported in 2015 dollars using urban CPI). Omitted category is nonprofit hospitals in 2011. Reference group = government hospitals. \* p<0.1 \*\* p<0.05 \*\*\* p<0.01

### Appendix 3. Heterogeneity in Treatment by Baseline Charity Care Provisions

VARIABLES	Percentage of Patients Receiving Charity Care (1)	Percentage of Health Services Spent on Charity Care (2)
NP_Top		
2009	1.269 (1.139)	0.779* (0.414)
2010	1.384 (1.101)	0.964* (0.528)
2011	1.376 (1.072)	1.132** (0.482)
2012	1.346 (1.108)	1.077** (0.517)
2013	2.209* (1.319)	1.509*** (0.553)
2014	0.966 (1.113)	0.613 (0.524)
2015	0.197 (1.162)	0.255 (0.473)
NP_Middle		
2009	-0.438 (0.428)	-0.583** (0.250)
2010	-0.033 (0.426)	-0.434 (0.318)
2012	0.048 (0.458)	-0.064 (0.312)
2013	0.446 (0.577)	0.215 (0.330)
2014	-0.074 (0.617)	-0.690* (0.393)
2015	-0.703 (0.570)	-0.928** (0.388)
NP_Bottom		
2009	-1.610* (0.890)	-1.452*** (0.361)
2010	-0.822 (1.108)	-1.299*** (0.434)
2011	-1.215 (0.871)	-1.033*** (0.372)
2012	-0.779 (0.923)	-0.918** (0.415)
2013	-0.689 (0.954)	-0.530 (0.453)
2014	-0.770 (0.960)	-0.753 (0.462)
2015	-1.076 (0.915)	-0.973** (0.407)
Year		
2009	-0.251 (0.373)	-0.053 (0.193)

### Appendix 3. Heterogeneity in Treatment by Baseline Charity Care Provisions (Continued)

VARIABLES	Percentage of Patients Receiving Charity Care (1)	Percentage of Health Services Spent of Charity Care (2)
2010	-0.043 (0.299)	0.103 (0.269)
2012	0.034 (0.281)	0.003 (0.191)
2013	0.121 (0.438)	-0.273 (0.226)
2014	-0.004 (0.501)	-0.186 (0.307)
2015	-0.117 (0.483)	-0.589* (0.314)
FP	-0.430 (1.673)	-0.309 (1.015)
NP	1.372* (0.790)	1.285*** (0.377)
Year FE	YES	YES
County Controls	YES	YES
Hospital Controls	YES	YES
County FE	NO	NO
Hospital FE	NO	NO
Counties	58	58
Hospitals	105	105
Observations	733	733
R-squared	0.253	0.366

Note: Robust standard errors are clustered by hospitals in parentheses. Continuously operating general hospitals (from 2009-2015). Sample includes observations in years with audited financial statements and information on charity care provided. County controls in all models include population, share of population age under 18 & age over 65, share of population born abroad, gender (male is omitted category), race (White is omitted category), Hispanic, foreign-born population, English-speaking ability, educational attainment (less than high school is omitted category), poverty status (below 100 percent of the poverty level is omitted category), unemployment rate, per capita income (all reported in 2015 dollars using urban CPI). Hospital controls in all models include authorized bed number and natural log of revenue (all reported in 2015 dollars using urban CPI). “NP\*Top” indicates top tercile > 1.82% of health services, “NP\*Middle” indicates middle tercile 1.29% - 1.82% of health services, “NP\*Bottom” indicates bottom tercile < 1.29% of health services spent on charity care. Reference group = government hospitals. \* p<0.1 \*\* p<0.05 \*\*\* p<0.01