Executive Compensation and Agency Problem in Nonprofit Business: Evidence from the Hospital Industry

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ABSTRACT

If Richard Posner was right by saying that "nonprofit managers are not an entirely unmotivated lot of ne'er-do-wells",[2] what explains the rapid ascent of executive compensation in nonprofit firms, including hospitals, universities and museums, over the last twenty years? We use a sample of U.S. not-for-profit hospitals to examine three economic theories potentially explaining this phenomenon: (1) agency problem, (2) altruistic incentive, or (3) non-competitive managerial labor market. Inconsistent with altruistic incentive, we find no empirical link between executive compensation and social performance including medical service quality and uncompensated charity care in a firm fixed-effects model. Consistent with the use of incentive contract as a solution to the agency problem, we find that nonprofit hospitals with fewer independent trustees pay a higher level of compensation. Also consistent with non-competitive labor market, executive pay is greater for larger hospitals with more beds, revenues, and profits in our cross-sectional analysis. Overall, our evidence suggests the existence of agency problem and a non-competitive managerial labor market in this special sector of the economy.

Keywords: nonprofit executive compensation, not-for-profit business, nonprofit hospital

JEL Codes: G30, J24, J31, L31, M12

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[2] Excerpt from Shepsle (1979).

INTRODUCTION

Compensation of senior executives in the not-for-profit sector has soared over the last twenty years. For example, in nonprofit hospitals and universities, the dramatically increasing level of CEO pay has caught the attention of the media and policymakers (The New York Times 2014; The Washington Post 2018). While the assertion that the proliferation of highly-paid senior managers in nonprofit hospitals and universities contributes to the rising trend in medical and tuition costs and adds to the United States trillion-dollar health care bill and student loan is controversial to some, excess compensation is certainly one of the important and intricate issues concerning nonprofit business, drawing attention of legislators, regulators, the media and even the general public. The purpose of this paper is to examine what drive up the level of executive compensation in nonprofit firms that have no shareholders to hold managers accountable.

There are three economic theories that can potentially explain the rising level of executive pay in a nonprofit business: (1) to mitigate the agency problem, (2) to encourage altruistic contribution to the society, or (3) to attract capable managers in a non-competitive labor market to manage complex organizations. The first one is similar to the economic theory of incentive design in for-profit companies. Executive compensation is designed to minimize the agency problem and incentivize managers to maximize shareholder value (Demsetz 1983; Myers and Majluf 1984; Holmstrom and Milgrom 1987; Murphy 198; Jensen and Murphy 1990; Sloan 1993; Barro and Barro 1990). Not-for-profit firms face similar agency problems except that they do not have shareholders and hence do not have to maximize shareholders' wealth. Rather they have donors who delegate the monitoring responsibility to the board of trustees to maximize the impact of their social services. However, the objective of donors and definition of impact maximization are often vague in nature, not tied to measurable outcomes, and lack enforceable accountability mechanisms for seeking redress. This is a fundamental problem in nonprofit corporate governance.[3] If the agency theory is to rationalize large increases in nonprofit executive compensation, we must expect the level of pay that is used to improve stakeholders' monitoring of managers to be higher in firms with severe agency problems.

The second theory is related to the altruistic theory where nonprofit managers are motivated by a desire to improve social well-being rather than to maximize profits (Drucker,

[3] More generally, when the stated objective of a firm, regardless of its ownership structure, is vaguely defined, for example, whether it is focused on shareholders or stakeholders, this could cause severe agency problems (Mauboussin and Rappaport, 2015).

1995). For example, altruistic boards and managers truly value achieving high levels of service quality or providing charitable services. It is also possible that nonprofit managers are not fundamentally altruistic but act as if they were. They do so because their incentive to maximize profits is softened by their inability to distribute profits to themselves (Hansmann, 1996). They can only benefit from cost-cutting, quality-reducing activities by increasing their perquisites, not by increasing their cash transfers. Nonprofit executives can commit to higher quality services than for-profit counterparts as long as receiving greater compensation regardless whether they can generate sufficient profits to finance the charitable services, at least as long as potential, temporary negative earning pressures do not seriously heighten the risk of a financial failure (Glaeser and Shleifer, 2001). If this mechanism can explain the higher level of nonprofit executive compensation, the amount and quality of charitable services would be higher for nonprofit firms paying higher wage to their senior managers and the pay level would be unrelated to their profitability.

The third theory is based on labor economics' hedonic wage model that all CEOs would be paid the same compensation in perfectly competitive markets with homogenous CEOs and organizations (Brickley, Van Horn, and Wedig 2010). Under these conditions, compensation would be determined in the marketplace by the supply and demand for CEOs. If this is the case, firms that pay excessive compensation that is more than the market price are eventually competed out of the competitive market. However, in the actual marketplace, both firms and managers are not homogeneous and firms with more complex structure and/or business risk will have to pay compensating differentials to attract and retain qualified managers in a competitive labor market. Furthermore, nonprofit executive compensation should rise with the ability and productivity of the manager. In other words, a nonprofit business pays excessive compensation when it pays the existing manager more than is necessary to attract and retain a replacement manager of equal ability. Therefore, if a nonprofit firm is not competed out of existence when it pays excessive compensation, it must be the case that the manager is more suitable to the position and capable of effectively managing the complex organization and delivering results.

This study using a sample of not-for-profit hospitals test these theories has three purposes. The first is to show how senior executives in nonprofit hospitals are compensated, what are the determinants of compensation level, and how much social services are provided to

the customers and communities. This provides a general measure of managerial incentives and social contribution in the nonprofit hospital industry and can serve as a benchmark to compare with the case in for-profit companies. Second, we estimate the "excessive" portion of the compensation to capture the severity of the governance problems within nonprofit hospitals. This cross-sectional analysis assesses the role of agency costs on hospitals' social performance, in terms of health service quality and free medical care. Third, this study offers an insightful test of three economic theories to understand the design of executive compensation in the not-for-profit sector. Inconsistent with theory of altruistic incentives, we find no empirical link between executive compensation and social performance including medical service quality and uncompensated charity care in a firm fixed-effects model. Consistent with the theory that the use of incentive contracts serves as a solution to the agency problem, we find that nonprofit hospitals with fewer independent trustees pay a higher level of compensation. Also consistent with the theory of non-competitive labor market, executive pay is greater for larger hospitals with more beds, revenues, and profits in our cross-sectional analysis. Overall, our evidence suggests the existence of agency problems and a non-competitive managerial labor market in this special sector of the economy.

Our focus on the hospital industry is in large part motivated by the intrinsic importance of this industry as the largest nonprofit industry in the economy. It is also motivated by two more practical issues. First, measures of not-for-profit performance can more easily be computed in this sector. For example, the number of nurses per patient day or dollars spent on program services per patient day capture, admittedly imperfectly, some aspects of the quality of care. It is more difficult to think of reasonable nonprofit objective proxies for many of the other nonprofit sectors. Moreover, even if one can find such good proxies, data limitation issues are often binding. Second, the growing commercialization of hospitals and the involvement of for-profit vendors and suppliers such as pharmaceutical, medical device and diagnostic companies in the hospital industry offers a rather unique and clean experiment to study the managerial incentive design and its effect on nonprofits' objective functions.

Little work has been done to date on executive compensation among nonprofit hospitals, in part because of the lack of data comparable to the Compustat Executive Compensation database. The classic public and private distinction (i.e., government vs. for-profit sectors) fails to account for the sizeable number of people who provide services but are not employed in

either sector. Yet, the nonprofit businesses employs approximately 10% of the U.S. workforce plus the equivalent of several million full-time volunteer workers (Brewer 2011). In this research, we present the results of our analysis of data on executive compensation among nonprofit hospitals, one of the largest sub-industries in the nonprofit sector, in terms of either total revenues or total work force (U.S. Bureau of Labor Statistics 2016; Clotfelter 1992). Our findings suggest that the nonprofit hospitals, in setting executive compensation, behave like a somewhat constrained version of the for-profit corporations, where the strength of the constraints reflects the multiple-constituency nature of nonprofit organizations. This so-called "social governance" is an institutional arrangement that structures the management under social control. The key to effective social governance is to have democratic management systems that effectuate not just transparency, but accountability to abroad array of stakeholders, including clients (i.e., patients and families), donors, employees, volunteers, partner agencies, and neighborhood residents (Guo 2007). This is in contrast to the "shareholder value" notion that requires the firm to be accountable to shareholders only, as in the for-profit sector. In recent year, the government has been exerting much more significant control to promote social goals such as financing green investments, infrastructure schemes, cooperative firms for employment generation. During the financial crisis of 2007–2010, governments in the United States, Europe, and elsewhere have invested billions of dollars in financial institutions to prevent them from going bankrupt and from further disrupting the global economy. One response to this massive public bail-outs has been the call for a socially oriented banks that such banks should provide lending to businesses and local governments that are trying to maintain employment and services and expand production (Epstein 2010). Thus, the present work can be viewed as an extension of the work done on stakeholder value maximization (e.g., Deng et al. 2013), which should increase our understanding of the incentives and effects of corporate social responsibility in for-profit corporations.

The remainder of the paper is organized as follows. It first introduces the institutional background of the nonprofit sector in general and the not-for-profit hospital industry in specific. It then presents the sample data and empirical design. Following that, it analyzes the data and reports empirical results. Finally, it discusses the findings and implications, and provides summary and concluding remarks.

INSTITUTIONAL BACKGROUND AND RELATED STUDIES

While most empirical work on executive compensation provides ample support for the proposition that top executives are compensated in ways that align their interests with firm performance which is the main interest of profit-seeking shareholders, the examination of executive compensation in nonprofit organizations poses additional complications. There are no shareholders, no earnings distributions, and of course, no simple profit-maximization goals. Instead, nonprofit businesses generally follow the model of trying to fulfill their missions in response to demands from a variety of stakeholders by providing high quality services, and sometimes charitable services, to all customers. The nonprofit sector is quite diverse, ranging from large, well-endowed foundations and prestigious private universities, to commercial enterprises like hospitals, down to local schools, small social services organizations like art museums, and religious institutions such as churches. Although the Internal Revenue Service (IRS) collects data on the sector including the financial and compensation data that we use in this study, most religious institutions are not required to report to the IRS. The fact that most of these organizations are tax-exempt suggests that the data quality is not as high as it is in the Compustat Executive Compensation. For these reasons, we will focus on businesses in a special sub-sector that is closer to a for-profit-in-disguise that behave more or less like for-profit companies: hospitals. It is often claimed that these profit-motivated health services providers obtain nonprofit status in order to exploit the perceived trustworthiness of the nonprofit sector (Hirth 1999). In addition, most of hospitals are required to report detailed, audited financial statements to the Centers for Medicare & Medicaid Services (CMS), a federal agency within the United States Department of Health and Human Services (HHS), in each tax year.

The nonprofit sector exhibits two prominent characteristics that have unique implications for understanding corporate governance and performance in nonprofit organizations. The first one is the commitment of nonprofit hospitals to both social mission and financial sustainability. Economic theory suggests a direct parallel between for-profit companies providing public goods and voluntary contribution of public goods (Besley and Ghatak 2007), and corporate social initiatives may be a form of delegated pro-social behavior, which can provide direct value to firm stakeholders even if it is costly (Benabou and Tirole 2010). If this is the case, Baron (2008) further suggests that managerial compensation contracts should be designed to provide both profit incentives and social incentives. This is similar to the objective

of nonprofit organizations. For example in a study of the compensation and productivity of ministers in Methodist churches, Hartzell, Parsons and Yermack (2010) suggest that ministers are rewarded for attracting new parishioners who switch from other congregations within their denomination; however, the effects become weaker in churches where ministers have less control over their measured performance.

Hospitals in the U.S. are different, especially in terms of ownership, from for-profit corporations and other types of nonprofit organizations. Two-thirds of all urban hospitals are nonprofit, with the remainder split between for-profit and government ownership. While for-profit hospitals function just like other corporations distributing profits to shareholders, government and nonprofit hospitals do not pay corporate income tax and can retain all profits (Horwitz 2005). The underlying policy rationale and intent for granting tax-exempt status is to encourage nonprofit hospitals, as non-government business, to deliver social services on behalf of government through indirect tax subsidy (Zimmerman 1991; Seay 1992; Schneider 2007). However, having nonprofit status does not necessarily means hospitals are charitable agencies. In fact, only in health care and education are many profit-generating firms such as hospitals and universities organized as nonprofit, tax-exempt entities. (Hyman and Sage 2006). Therefore, the boundaries between for-profit corporations and nonprofit hospitals are blurring. For example, we calculate the five accounting ratios to measure liquidity, profitability, efficiency and leverage for all nonprofit hospitals from 2011 to 2016 and report them in Table 0. The average current ratio, total asset turnover, ROA, operating margin and debt to total assets are comparable to the ratios of a sample of publicly traded companies in various industries (categorization based on the Fama-French 48 industries). On the one side, corporate social responsibility is increasingly recognized as central to core business activities, and on the other, seeking sustainable profit is a requisite component of successful nonprofit mission fulfillment (Bryce 1992; Moore 2000).

[Insert Table 0 Here]

A second unique feature of the industry is that the board size of a typical nonprofit hospital is much larger than that of a for-profit business. Larger boards can consist of more outsiders who foster more careful decision-making policy and better governance. Therefore, the size and composition of hospital boards reflects not only the owner's preferences, for example,

for more social services to residents and communities (Eisenberg et al. 1998), but also the benefits of monitoring (Harris and Raviv 2008; Boone et al. 2007). This does not necessarily mean that the agency problem inside a nonprofit hospital can be effectively mitigated; rather, it simply suggests that the board has a clear vision for its role and the organization and the willingness to fulfill it. An analogy in the case of for-profit boards would be the case when corporate social responsibility has become an integral part of the shareholders' objective, more board directors have to devote their effort to CSR strategy, planning and implementation.

Compensation of hospital executives in the United States has caught attention of legislators and regulators. In 2005, Senator Charles Grassley, then the ranking member of the Senate Finance Committee, among others, has expressed a keen interest in executive compensation practices at tax-exempt, non-profit hospitals, including their salaries, benefits, travel, gifts and entertainment expenses paid by hospital systems. A subsequent report by the Government Accountability Office (GAO) highlighted the widespread practice of hospitals providing generous cash compensation and supplemental retirement plans to their top executives. It is also reported by the Internal Revenue Service (IRS) that tax-exempt hospitals are paying their executives excessive compensation relative to other nonprofit organizations and for-profit businesses while laying off employees and reducing budget expenditures. Across the country, legislatures and governors have targeted nonprofit hospitals by proposing regulations to limit executive compensation at state-funded health care providers (Shay and White 2013). Such regulatory efforts at the federal, state, and local levels illustrate the critical attention being paid to hospital executive compensation practices. As a response, the IRS redesigned Form 990 requesting information that is directly relevant to determining whether the tax-exempt organization is providing reasonable compensation. At the same time, the IRS has once again started enforcing the provisions of Section 4958 that imposes excise tax on the excess executive compensation, the benefits above the "reasonable" amount measured by fair market value standards. In addition to penalties in Section 4958, the tax-exempt status can be revoked. This is the case when a nonprofit hospital is not operating primarily for charitable purposes, either because of too much compensation to its executives or private benefit to third parties, as compared to other similar hospitals, the entire organization and all of its donors and potential beneficiaries would be punished, rather than the disqualified individual executives.

Facing mounting criticism and political pressure, nonprofit hospitals often argue that

generous compensation packages are reasonable and necessary to attract and motivate senior managers who have the expertise and experience to cope with the complex structure of large health care organizations and American health care market where hospitals undertake hundreds of negotiations to set prices. However, the high level of pay stands in stark contrast with other developed countries, where top-ranked hospitals have much smaller administrative staffs and where administrative costs are only half as much as in the United States (Schoen et al. 2013). Still, it remains challenging, if not impossible, to define what reasonable executive compensation is because it can be based on the facts and the circumstances of each hospital. Economists have applied the perspectives of agency theory to explain the observed differentials of executive pay levels in any organizations. Agency theory describes the "principals-agent" relationship between the hospital (or "principal") and the manager (or "agent"). The situation that the principal delegates work to be performed by the agent creates an "agency problem" in which the manager who is responsible for the daily operations of the hospital may engage in self-serving defiant actions that may not be in the best interest of the hospital (Eisenhardt 1989; Jensen and Meckling 1976).

The solution to this governance problem is to have the hospital board of trustees monitor the manager's propensity to behave with self-interest (Davis 2005; Denis 2001; Daily et al. 2003). When monitoring is not feasible the board can provide appropriate incentives through tie the manager's compensation to the performance of the organization to align the manager's interest with those of the hospital (Holmstrom 1979; Baker et al. 1988; Jensen and Murphy 1990; Murphy 1999; Rosen 1992; Preyra & Pink, 2001). However, both board oversight and incentive design in nonprofit hospitals, as in many nonprofit organizations, can be very difficult because the sector lacks a commonly accepted indicator of performance (Miller 2002). In for-profit firms, as long as the objective of the organization (or the principal) is to maximize the wealth of its owners (i.e., equity value), establishing incentive systems linked to the organization's financial performance (or the pursuit of profits) is likely to be efficient and effective in alleviating the agency problems and, at the same time, encouraging optimal risk-taking desired by the principal. The situation remains largely unchanged in the not-for-profit health service sector. To expand health care services to meet growing needs with limited resources, nonprofit hospitals have to rely on donors' contributions, retained earnings and borrowing as their main sources of capital because they can neither issue equity nor distribute dividends to reward equity-holders.

This "non-distribution" constraint will not matter if donations, earnings and borrowings are sufficient to finance the hospital's capital investment (Gentry 2002). Unfortunately, nonprofit hospitals' access to capital markets can be very limited (mainly municipal bonds), and in recent years, benevolent contributions to nonprofit hospitals have declined; therefore, the ability to generate positive income and free cash flows became vital for hospitals to survive in an increasingly challenging environment (Sloan et al., 1990). The uncertainties and fluctuations in the availability and level of reimbursement from public (Medicare/Medicaid) and private (health insurance) sources also increased the financial risk of nonprofit hospitals and hence created incentives for the pursuit of higher profits (Chang and Tuckman 1988). However, the emphasis on the need for higher profit levels is inconsistent with their original not-for-profit mission because nonprofit hospitals are already granted tax-exemption from most income and property taxes and the ability to offer tax-deductions to their donors to help relieve nonprofit hospitals' burden of providing indigent care to the poor and needy. It is hence not surprising to realize that there are both social and commercial goals, and ambiguities and difficulties in achieving them.

The complexities and challenges of managing these two bottom lines, along with a lack of appropriate board oversight to balance the tensions arising from the pursuit of both mission and profits, can ultimately contribute to agency problems in nonprofit organizations (Bromley and Meyer 2014). When it comes to setting the level of executive pay in a nonprofit hospital, its board of trustees has responsibilities on behalf of all stakeholders to determine a reasonable (but not excessive) amount of compensation. Historically, the average level of nonprofit executive pay reported in the literature is lower than that of their for-profit counterparts (Preston 1989; Steinberg 1990; Handy and Katz 1998). The non-distribution constraint that prevents nonprofit managers from diverting profits (away from charitable or social services) to their own benefits often does not allow nonprofit hospitals to pay salaries that are comparable to those in the for-profit sector (Easley and O'Hara 1983). Yet they need to attract executives with better leadership and management skills and capabilities and encourage them to stay in the not-for-profit sector by offering competitive compensation packages (Pappas 1995; Drucker 1992). Even paying salaried compensation with incentive built in for social and economic performance that exceeds target expectations is appropriate and possible in nonprofit hospitals, the complex nature of health care services make it so difficult, if not impossible, to define, quantify, and measure the

social benefits (relatively to the financial outcomes). It is often the case that nonprofit boards do not recognize and use compensation design as a tool to motivate managers to balance the trade-off between social and financial benefits that hospitals produce. They rely on organizational size to make compensation decisions because larger hospitals are often associated with more free cash flows, and hence can afford to pay their executives higher salaries and wages. On the other hand, this complexity can create opportunities for managers to benefit indirectly from the excess profits they generated and, at worst, they can pay themselves excessively, work inefficiently, or divert resources from fulfilling their organizations' missions rather than capital investment for future service provision. While donors and communities do not have the legal standing to sue nonprofit hospitals for misuse of funds, they must rely on government regulators, for example, the IRS to deny a nonprofit organization's tax-exempt status or the state attorney generals' offices to prosecute; however, they have not historically had the inclination and resources to do so (Keating and Frumkin 2003).

What makes understanding the difference between the managerial incentives (embedded in the compensation contracts) and the deliberate misappropriation of money (for their own use) difficult is the lack of valid, reliable measures of hospital performance that can be observed and tied to hospital executive compensation contracts. The literature has employed a variety of proxy variables to measure both altruistic and economic outcomes of hospital management to understand the relationship between CEO pay and hospital performance. The findings are sill mixed and inconclusive. For examples, positive relations are found in Aggarwal et al. (2012), Preyra and Pink (2001), and Cardinaels (2009), marginal relations in Bertrand et al. (2005), Kramer and Santerre (2010), and Pink and Leatt (1991), and finally, no-relation in Oster (1998) and Reiter et al. (2009). In addition to financial returns, altruistic efforts and the quality of services provided to patients may also serve as a measure of hospital performance. Again, the literature has not identified a statistically significant association between executive compensations and measures of organizational altruistic performance, for example, HMO's medical loss ratio in Stahl (2000), the number nurses on duty per patient in Brickley and VanHorn (2002), and the fraction of Medicaid patients in Bertrand et al. (2005). However, there are some positive effects reported in Bertrand et al. (2005) when using three indirect measures of hospital quality of care: program services expenditures per patient day, nurses per patient day, and doctors per patient day. In contrast, using the hospital-level length-of-say (LOS) to

proxy for health service quality, Eldenburg and Krishnan (2003) does not find a consistent, statistically significant relationship between executive pay and average length of patient stay in the hospital.

Many of the aforementioned inconsistencies and conflicting results can also be attributed to the subjectivity in determining a reasonable level of pay. Previous studies have attempted to identify factors associated with the amount and the structure of executive compensation in nonprofit hospitals. The determination of reasonable compensation depends on several factors of the organization–its overall budget, patient service activities, geographic location, external market forces, and the number of employees and their compensation. What is still missing is a quantitative assessment on the level of "excessiveness" in executive compensation. In addition, nonprofit hospitals often have a team of executives rather one chief executive; hence, the focus of research should be on the managerial incentives of all senior managers including CEO, president, vice president, CFO, and executive directors. Furthermore, existing studies do not consider the degree of sensitivity between changes in executive benefits and changes in hospital performance. The availability of empirical data about hospital executive benefit packages is the main reason for the lack of rigorous analysis of the excessive pay, incentives to all executives, and pay-performance sensitivity (PPS). For example, Joynt et al. (2014) collect only one-year data in 2009 and Kramer and Santerre (2010) use a small sample of hospitals in the state of Connecticut from 1998 to 2006. The recent development in the IRS' efforts to publish Form 990 of all nonprofit organizations, as a result a Freedom of Information Act (FOIA) request filed in 2013 by Public.Resource.Org, allows us to examine executive compensation of nonprofit hospitals in a much more comprehensive way than had been previously possible. By linking detailed compensation of all top executives compensation in Form 990 with service quality data in Medicare Hospital Compare and charity care data in Cost Reports from the CMS, we are able to test two related hypotheses. The first is that whether an increase in executive compensation (both CEOs and non-CEOs) is related to an increase in hospital performance in terms of service quality and uncompensated care provided to patients. The second is which component of executive compensation–salary, bonus or pension–provides the incentive to deliver the performance.

DATA AND METHOD

Compensation Data

The primary source of executive compensation is the Part VII (Compensation of Officers, Directors, Trustees, Key Employees, Highest Compensated Employees, and Independent Contractors) and Schedule J (Compensation Information) of Form 990 that nonprofit hospitals file with the Internal Revenue Service. Tax-exempt hospitals with annual gross receipts of $200,000 or more or assets of $500,000 or more must file Form 990. We exclude small health care organizations that make less than $200,000 in revenue and have less than $500,000 in assets, in which case they file Form 990-EZ, and those making less than $50,000, in which case they file Form 990N. Our final sample contains all Form 990 filings (excluding 990-EZ and Form 990N) for the 2011-2016 fiscal years. We create four variables to measure the level of hospital executive compensation: base pay, bonus, pension (nontaxable and other deferred benefits), and total compensation which is the sum of the three pay levels. More specifically, for each hospital in a year, we identify all executive managers who are not trustees or board members and whose compensation information are reported in the organization's Form 990. Then, we calculate the average level of pay (base pay, bonus, pension, and total) by taking the sum of compensation components of all executive managers and dividing it by the total number of managers. For example, if a hospital reported compensation for four of its top executives in its annual Form 990 filing: $400 thousand for the CEO, $300 thousand for the CFO, $200 thousand for an EVP and $100 thousand for a SVP, the average level of total pay will be $250 thousands in that hospital-year. It should be noted that no all hospitals report the detailed breakdown of the income components and there are other income components that are entered as "other income" which does not fall into either of the categories described above (i.e., base, bonus and pension). In this situation, the sum of base pay, bonus and pension is small than the value of total pay.

Quality of Service

The primary measure of service quality of hospitals is based on the clinical process measures from the Hospital Compare data from the CMS. Clinical process-of-care measures are commonly used to assess the quality of health care not only for internal quality control purpose but also for external accountability, pay-for-performance, value-based purchasing, and regulatory purposes. In this study, we collect the scores of the following 15 process measures and calculate the percentile for each measure for each hospital in a given year. The aggregate

index of hospital service quality is the average percentile of the 15 measures of service process quality in each hospital-year.

[Insert Table 1 Here]

Hospital Financial Performance and Charity Care

We obtain detailed information for nonprofit hospitals that filed cost reports with the CMS. To measure a hospital's financial performance, we use the operating margin variable which is the operating income scaled by the net patient revenue from the Statement of Revenues and Expenses (Worksheet G-3). Worksheet S-10 also provides both the reimbursed and unreimbursed amounts of uncompensated and the amount of bad debt incurred from the provision of charity care in a fiscal year. In most of the charity care cases, hospitals receive reimbursement from Medicare, CHIPS, and state, and local government programs for treating uninsured individuals; therefore, the "actual" financial assistances provided by hospitals are much smaller. To be consistent with the definition of uncompensated care by the AHA, we use the sum of unreimbursed financial assistance and bad debt charges to construct the variable of charity care. In the following regression analysis, we will use the natural logarithm of charity care because the relationship between the provision of charity care and other hospital characteristics is not likely to be linear.

Empirical Research Design

We conduct descriptive analyses of the level and structure of executive compensation, hospital financial performance, the amount of charity care provided by nonprofit hospitals, and the pay-performance sensitivity, which reflects the incentive benefit of tying managerial compensation to hospital performance. We next perform a multivariate OLS regression model with the natural logarithm of average executive compensation in a hospital as our dependent variable and a set of measures capturing hospital characteristic as our independent variables to study the determinants of executive pay, such as organization size (total number of employees), revenue per patient-day ratio, operating margin, Medicare patient payer mix, donation to revenue ratio, financial leverage, salary expenses to revenue ratio, asset turnover, fixed asset age, and whether the hospital is located in an urban area. Table 2 contains brief definitions of all variables used in

this study.

[Insert Table 2 Here]

Finally, we build a similar model to examine the relationship between social performance (quality of service and charity care) and the level of executive pay. Our models include year-state fixed effects and robust standard error clustered at the hospital level.

RESULTS

Hospital Executive Compensation

There are 1,176 hospitals that report executive compensation and have detailed hospital and quality information in the Cost Reports and Hospital Compare in the fiscal years from 2011 to 2016. The average total executive compensation of all nonprofit hospitals is about $382 thousand and a small proportion is in the form of bonus (11%) and deferred and nontaxable benefits (12%). The average total pay to CEOs ($630 thousand) is much higher than that of non-CEO executives and the percentage of bonus relative to total benefits is also higher (14%).

[Insert Table 3 Here]

All measures of executive compensation including base pay, bonus, pension and total pay in the sample are very skewed, and have fat tails. This reflects the generous benefit packages of a small number of large nonprofit hospitals. For example, there are 18 hospitals in 2016 reporting total compensation at and above one million dollars, and there are only five hospitals in 2011 paying more than one million dollars to their executives. We need to emphasize that our measure of executive pay is an average of all senior managers in a hospital; therefore, there are more than five individual individuals (mainly presidents and CEOs) earning more than one million dollars in 2011.

[Insert Figure 1 Here]

The fact that the number of top-paying hospitals increases from five in 2011 to 18 in 2016 clearly

indicates a rising trend in the level of hospital executive pay over time. We plot the annual average level of executive compensation in all nonprofit hospitals between 2011 and 2016. More than two-third of the total compensation change is attributable to an increase in base pay, which increased from $238 thousand in 2011 to $298 thousand in 2016, and the growth in executive pay appears to have leveled off in recent years.

[Insert Figure 2 Here]

As a comparison, the following figure shows the composition and trend of executive compensation in eleven for-profit healthcare providers whose stocks are publicly traded: Acadia Healthcare, Community Health Systems, HCA, Health Management Associates, HealthSouth, LifePoint Health, Medcath, Quorum Health, Select Medical, Tenet Healthcare, and UHS. The sample is based on five senior managers who received the highest compensation in each company. While the change in the level of base pay of for-profit executives is very similar to that of nonprofit hospitals, most of the change come from stock and options that increase and decrease in value with the company's stock price.

[Insert Figure 3 Here]

Across the states, the hospitals paying their executives at the top quartile are mainly located in coastal areas. For example, the average level of total executive compensation in the states of Washington, Rhode Island and Connecticut is $605 thousand, $594 thousand and $503 thousand respectively, whereas the three states have the lowest executive pay are Utah ($182 thousand), South Dakota ($224 thousand) and West Virginia ($230 thousand).

[Insert Figures 4 and 5 Here]

In terms of hospital characteristics, we include a list of variables to measure hospital size (total number of beds, number full-time of employees, total assets, and total revenues), financial performance (revenue per patient-day, revenue patient discharges, return on assets, operating margin), patient revenue mix (outpatient revenue to total revenues, Medicare patient payer mix,

donation revenue, investment return to revenue), and other hospital conditions (financial leverage, salary expenses to revenue, asset turnover, days cash on hand, days account receivable outstanding, fixed asset age, and whether it is located in urban areas). The summary statistics of these variables are shown in Table 4.

[Insert Table 4 Here]

The average hospital in the sample has 190 beds, 1202 full-time employees, $268 billion total assets, and $621 billion revenues in a year. There is a lot of heterogeneity in both level and sources of revenues. For example, while the maximum revenues per patient-day and discharge are $26.4 thousand and $212.5 thousand, the lowest levels are only $1.3 thousand and 10.9 thousand respectively. On the other hand, the ratio of Medicare patient revenue to total hospital revenues varies from 1% to 87% and the ratio of outpatient revenue to total revenues shows similar variation. Moreover, employee salary expenses are the largest share of total costs, ranging from 24% to 76% of total hospital revenues. In our sample, approximately half of the hospitals are located in urban areas.

Hospital Characteristics and Average Hospital-level Executive Pay

To examine how hospitals differ in their executive pay packages, we rank hospitals into terciles according to average level of executive compensation reported in each year and calculate the mean values of various measures of hospital characteristics for each of the three groups. Consistent with findings reported in the literature, executives with higher pay (in the upper tercile) are in hospitals of larger size, in terms of total assets, total revenue, the number of hospital beds and employees, and total inpatient-days and discharges in a year. For example, the average level of total compensation for executives in a hospital in the high-pay group is $629,574 in a year and it is 188,257 in the low-pay group, and the difference in the total number of discharges between hospitals in these two groups is 63,023, which is statistically significant at the 0.01 level. In addition to the "size" effect, high-pay hospitals are associated with treating more inpatients and fewer Medicare patients, having more financial liabilities but lower level of labor costs, better managing accounts receivable, and being more likely located in an urban area.

[Insert Table 5 Here]

Relationship between Executive Compensation and Financial Performance

Generally, hospitals compensate their senior executives more generously have significantly better financial performance. Hospitals in the upper tercile of total pay have an average operating margin (-0.27%) that is 2.22% higher than that of hospitals in the lower tercile. To provide a better estimate of the relative importance of the pay components, we further break down the total amount into base pay, bonus and pension (i.e., deferred and nontaxable benefits). The positive relationship between executive compensation and hospital financial performance remain significant for all three pay components with the largest effect in bonus, a 2.52% difference in operating margin between the high- and low-pay groups in terms of bonus payment to senior executives.

[Insert Table 6 Here]

Relationship between Executive Compensation and Service Quality

Hospitals with higher executive compensation packages also are more likely to provide better quality of health cares. Hospitals in the upper-tercile of total pay distribution have an average percentile of service process quality of 47.6, much higher than the average quality percentile of 38.1 for hospitals in the lower-tercile. The difference in each components of executive compensation including base pay, bonus and pension is statistically significant at the 0.01 level.

[Insert Table 7 Here]

Relationship between Pay Level and Charity Care

The level of executive compensation is associated with hospital social performance measured by the amount of charity care provided to uninsured patients that is not reimbursed by any sources. Hospitals in the high-pay group, regardless whether it is measured by the total pay, base pay, bonus or pension, report a much higher level of uncompensated care (about $21 million in the upper tercile of total pay distribution) whereas those in the low-pay group reported (about $4 million in the lower tercile). The difference is more than $17 million on average and statistically significant at the 0.01 level.

[Insert Table 8 Here]

Pay-Performance Sensitivity

While the aforementioned results suggest that hospitals compensate their top executives more generously often provide better quality of service and more uncompensated care to communities, we are more interested in the incentives embedded in executive pay. Pay-performance sensitivity (PPS) reflects the degree of sensitivity between changes in executive benefits and changes in hospital performance. It is often viewed as a measure of incentive alignment. We group hospitals into terciles based on the change in total compensation from the previous year to the current year, and calculate the average changes in financial performance, quality of service, and charity care. Unfortunately, changes in total pay is not sensitive to changes in hospital operating margin, the percentile of service process quality, and the amount of uncompensated care. We repeat the analysis to use each component of executive compensation and the only statistically significant PPS is found in the relationship between bonus and service quality. However, the observed difference is only 1.07 percentile in the ranking of quality between the average hospital in the high-pay group and the one in the low-pay group, which is not economically significant.

[Insert Table 9 Here]

Cross-Sectional Analysis

Before we conduct regression analysis that relates executive compensation to hospital financial performance, quality of service and uncompensated care, we present the correlation matrix of all variables used in the analysis in Table 10. The Pearson's correlation coefficients are shown in the lower triangle, and the Spearman's rank correlations are shown above the diagonal. It is not surprising to find high correlation among hospital size variables (total number of beds, number full-time of employees, total assets, and total revenues), from 0.48 to 0.95. To avoid potential multicollinearity problems, we will include only one measure of hospital size in each regression specification.

[Insert Table 10 Here]

In the first set of pooled OLS regressions to test the relationship between executive compensation and hospital profitability with year, state and hospital type fixed-effects, the dependent variable is the natural logarithm of the average executive pay in the hospital (Table 11), and the independent variables of interest are operating margin and ROA. While the positive coefficient on total assets (specification 1), total revenues (specification 2), total number of beds (specification 3), and the number of employees (specifications 4 to 6) confirms the size effect of hospital on pay level, the coefficient of neither profitability measure is statistically significant in determining pay level. Among other control variables, revenue per patient-day (and discharge), donation income, investment return, asset turnover, and being an urban hospital remain as important factors affecting executive compensation.

[Insert Table 11 Here]

Fixed-Effects Analysis

We repeat the regression with hospital-fixed effects (Table 12), and the coefficient estimates of operating margin become significantly negative in specifications (1) and (2) while the other measure of profitability (ROA) remains insignificant in specification (6). There are two possible explanations of the apparently negative relationship between compensation level and profitability: either compensation is so high that dramatically increases the overhead costs or compensation level is increased to provide incentives to improve performance.

[Insert Table 12 Here]

We favor the second interpretation because the largest part of hospital costs is the employee salary expenses (42.5%), and 42.5% of the average hospital revenues ($621 million) implies $264 million of total labor costs, compared to the average executive compensation of $382 thousand in a year. As a robustness, we scale the level of executive compensation by employee salary and repeat the regression using this ratio as the dependent variable The significance of coefficient estimates vanishes in specifications (1) and (2) but not in specifications

(4) and (5). Therefore, we still can not eliminate this possibility, but this makes us realize that we should focus on the "excessive" portion of executive compensation because a higher level of compensation may simply reflect the size or financial condition of the organization, and in turn, a larger or wealthier hospital can afford to invest in measures that will improve hospital performance. To address this issue, we generate a new variable *Excessive Compensation* by using a 2-stage estimation method. In the first-stage, we run a regression as those shown in Table 11, and in the second-stage, we obtain the residuals of the predicted regression values as the excessive compensation.

[Insert Table 13 Here]

After obtaining this measure of excessive compensation, we can relate excessive compensation to hospital service quality. In the second set of regression specifications, the dependent variable is the average percentile of service quality of the hospital, and the main variable of interest on the right hand side is the excessive compensation. While the coefficient estimate of excessive compensation is not significant in pooled regressions (specifications 1 to 3), it becomes positive and statistically significant in fixed-effect regressions (specifications 4 to 6) after controlling for hospital size, profitability, and other characteristics including cost structure (e.g., salary to expenses ratio) and financial management performance (e.g., days accounts receivable outstanding). This may suggest that when a hospital increases managerial incentives in compensation contracts, the quality of service improves as well. Surprisingly, hospital location is no longer an important predictor of service quality.

[Insert Table 14 Here]

The third specification uses the amount of uncompensated care scaled by total hospital revenue as the dependent variable and regress it on excessive compensation and the same set of control variables as in the first and second specifications. Slightly different to the previous findings, charity care is positively associated with executive compensation in pooled regression results but not in fixed-effect regression results.

[Insert Table 15 Here]

Finally, we estimate the pay-for-performance sensitivity in a regression setting, and the result of no correlation between the changes in excessive compensation and the changes in hospital performance measures (profitability, service quality, and charity care) rejects the previous findings using the difference tests.

[Insert Table 16 Here]

DISCUSSION

Consistent with the use of incentive contracts as a solution to the agency problem, we find that nonprofit hospitals with fewer independent trustees pay a higher level of compensation. Also consistent with non-competitive labor market, executive pay is greater for larger hospitals with more beds, revenues, and profits in our cross-sectional analysis. Not-for-profit business operates to provide public benefits and most of them rely upon government subsidies—ranging from property and income tax exemption to access to low-interest borrowing—to carry out their work. In the nonprofit sector, businesses often issue tax-exempt municipal bond markets to fund capital investments. As part of their social mission, they make their services and facilities accessible to the community and provide uncompensated care to the uninsured. However, the rapid rise in nonprofit executive compensation in recent years and the growing trend of benchmarking nonprofit executives' pay against the pay of counterparts at for-profit "peer" organizations not only place a financial burden on the organization itself over time but also contributes to concerns that some nonprofit firms are really "for-profits in disguise". For example, more than three percent nonprofit hospitals in our sample paid more than one million dollars in total per executive officials in 2016. While nonprofit firms are allowed to pay reasonable compensation to their executive officers for their services, the challenge lies in defining and interpreting the reasonableness of compensation. In a competitive market for managerial talent, nonprofit hospitals frequently find themselves under pressure to find ways to offer compensation packages that are comparable to similar nonprofit organizations, or even for-profit companies. More than ten years ago, the IRS proposed and implemented new rules in 2002 that require nonprofit organizations benchmark executive compensation against their

peers, and nonprofit organizations that pay their executive officials excessive compensation relative to comparable peers can be penalized (via excise tax). The additional conditions and requirements for nonprofit hospitals to maintain its tax-exempt status through the new Internal Revenue Code §501(r) can be viewed as a "re-emphasis" by the ACA and related regulations (Horwitz and Cutler 2015).

Many view the high level of nonprofit executive compensation as the result of powerful nonprofit managers setting their own pay. Others interpret high pay as the result of optimal contracting in a competitive health service market for qualified and experienced personnel because compensation is a critical component of organizational strategy to attract and retain high ability managers and motivate management effort. In much of the current academic literature, there is a rising interest in identifying factors associated with the amount and the structure of executive compensation in nonprofit business. One area of particular recent interest is the value and quality of the services provided by nonprofit firms. The main concern is whether the value to nonprofit business of the exemptions from federal, state, and local taxes is equivalent to the amount of the organization's contribution to society in terms of the quality of services and the provision of charitable services. Generally, our findings are in line with previous reports suggest that larger nonprofit business (measured by total assets, patient revenue, the number of beds and employees, and the total impatient-days and discharges) and those located in urban areas offer more generous pay to their executives. The additional evidence of an association between executive compensation and financial performance (profitability as in operating margin and efficiency as in asset turnover) might not be surprising either because containing costs and improving productivity is often the most important concern of nonprofit managers.

More importantly, there is some evidence of an association, although cross-sectional, between nonprofit executive compensation and public benefits that are provided in the form of charity services and high quality of services. Unfortunately, the pay-performance sensitivity, which measures the degree to which changes in pay level account for changes in social performance measured by both the ranking of service quality and the amount of uncompensated services, is too low to have an incentive effect. The only exception is the positive pay-performance between bonus and quality. Given that only 25 percent of hospitals in our sample reported that they paid bonus to their executive managers in 2016, this might serve

as perhaps the only comforting factor that deserves attention: What is the best way to encourage the systemic use of compensation practices that tie managerial rewards to altruistic contribution to the society?

CONCLUSION

Executive compensation in a nonprofit business can be structured in ways that provide an incentive mechanism that encourages managers to improve organizational performance. Using the nonprofit hospital industry data in this study, we find that senior executives in larger nonprofit businesses with higher profits, service quality and charity care are paid more generously than their counterparts in the smaller ones. This is consistent with the theory of non-competitive labor market that the manager is hired because he or she is the most suitable for the leadership position and capable of effectively managing the complex organization and delivering results. However, there is no pay-performance sensitivity that links the level of pay to financial performance, the quality of health care services and the amount of uncompensated care provided by the hospital. This suggests that hospital executives are not motivated by their benefit packages to focus on altruistic activities that benefit their patients and communities.

Overall, our evidence suggests the existence of agency problems and a non-competitive managerial labor market in this special sector of the economy. It would be reasonable to infer from our findings in the not-for-profit hospital industry that there exists a selection mechanism in the nonprofit sector that attracts experienced managers with the right functional capabilities and leadership potential to the nonprofit businesses that are already performing well. It is hardly surprising because the regulations that allowed for cross-sector comparisons, and set standards and procedures for justifying compensation levels in nonprofit organizations were aimed at attracting and promoting the talented managers that can focus on both financial measures and mission fulfillment of the nonprofits' performance. The unfortunate truth is that the incentive component of executive compensation in the form of bonus pay does not provide much incentives as one might suppose, and this represents a tempting target for intervention.

While this paper focuses on a very specific sector within the nonprofit world, the question of how executive compensation is designed to affect nonprofit managers' behavior and organizations' objectives is of much wider relevance. Many nonprofit industries besides hospitals have become more and more commercialized. Universities, art museums, and public

television broadcasting are often cited as examples. Going beyond the anecdotal evidence and understanding the role that excess manager pay has played in this apparent change of mission is crucial for assessing the future of the nonprofit form.

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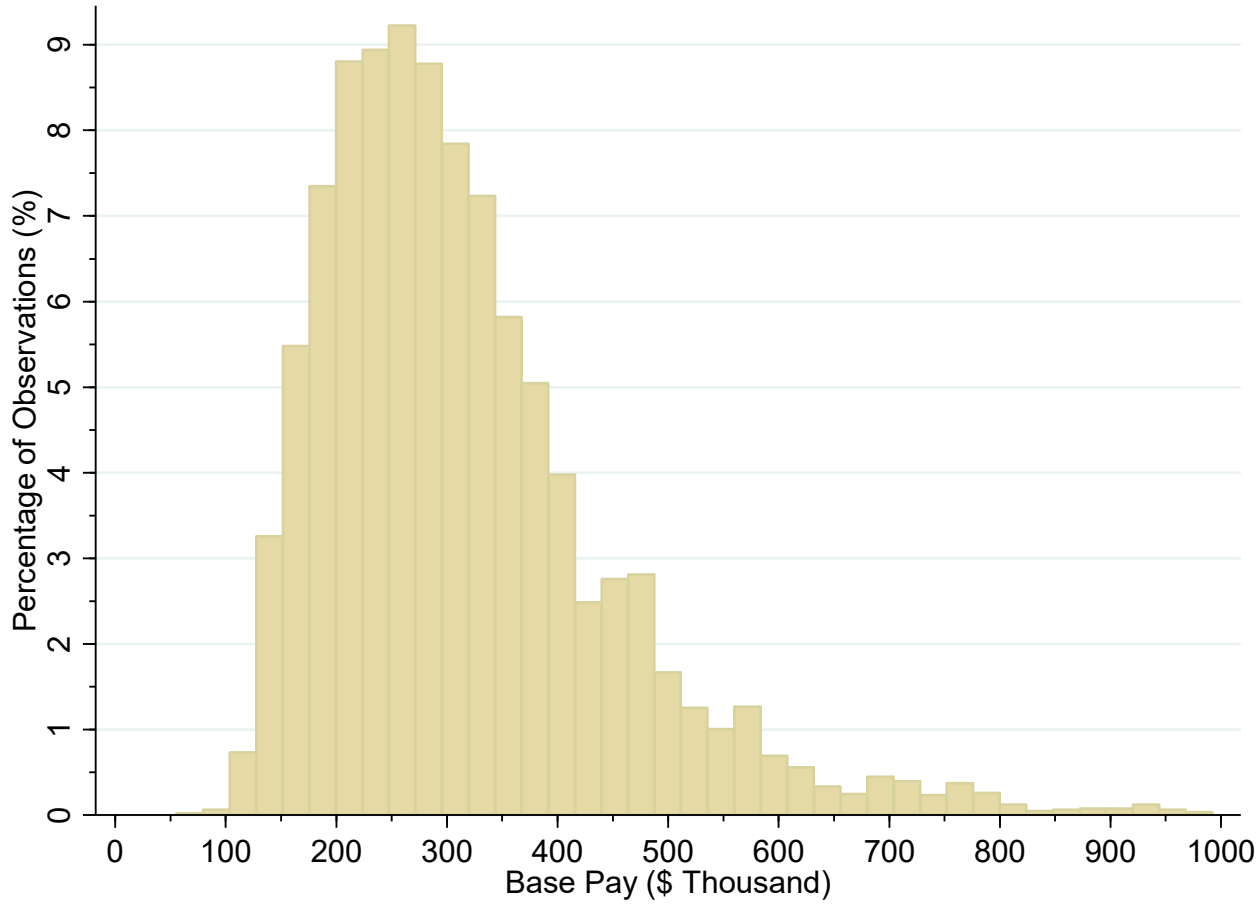
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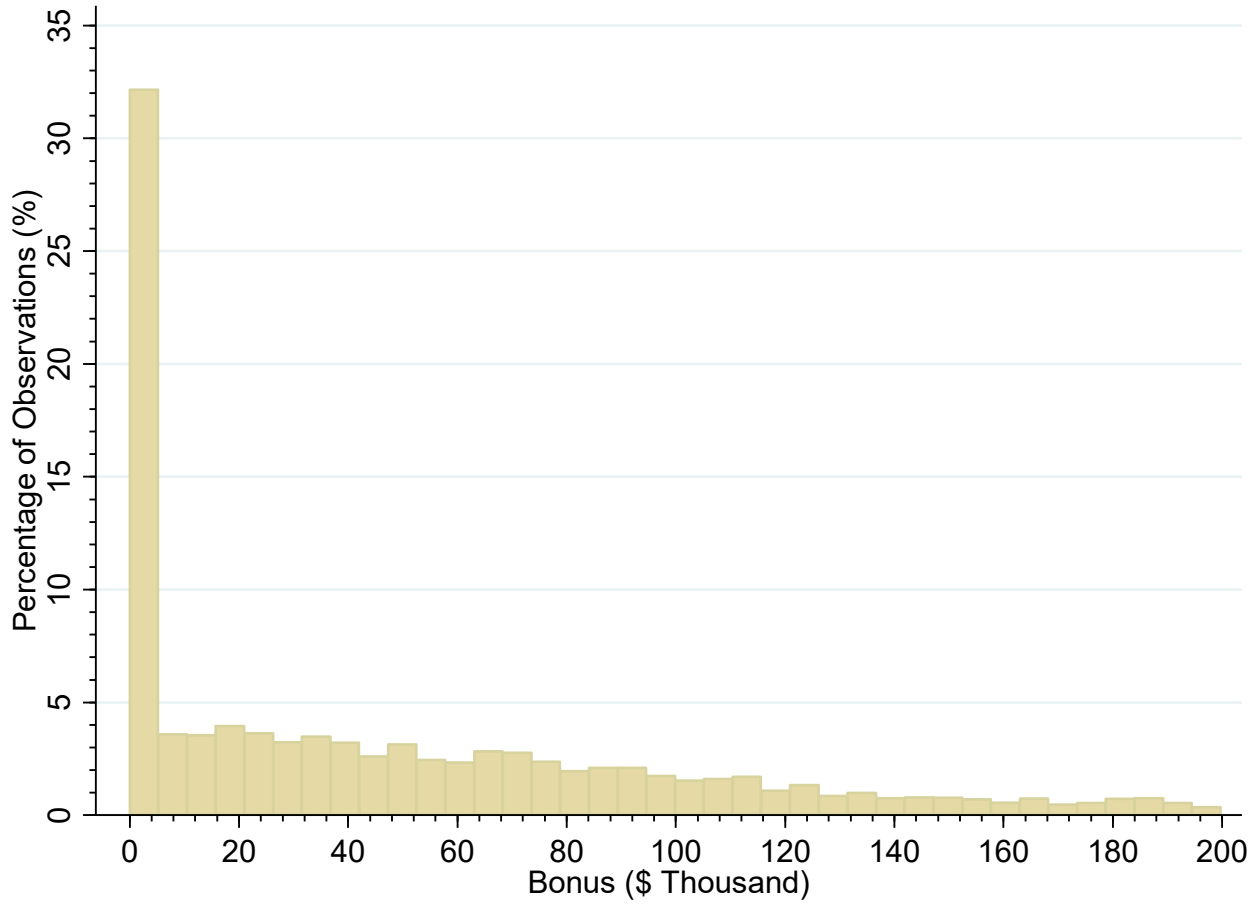
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Figure 1. Distribution of Hospital Executive Compensation

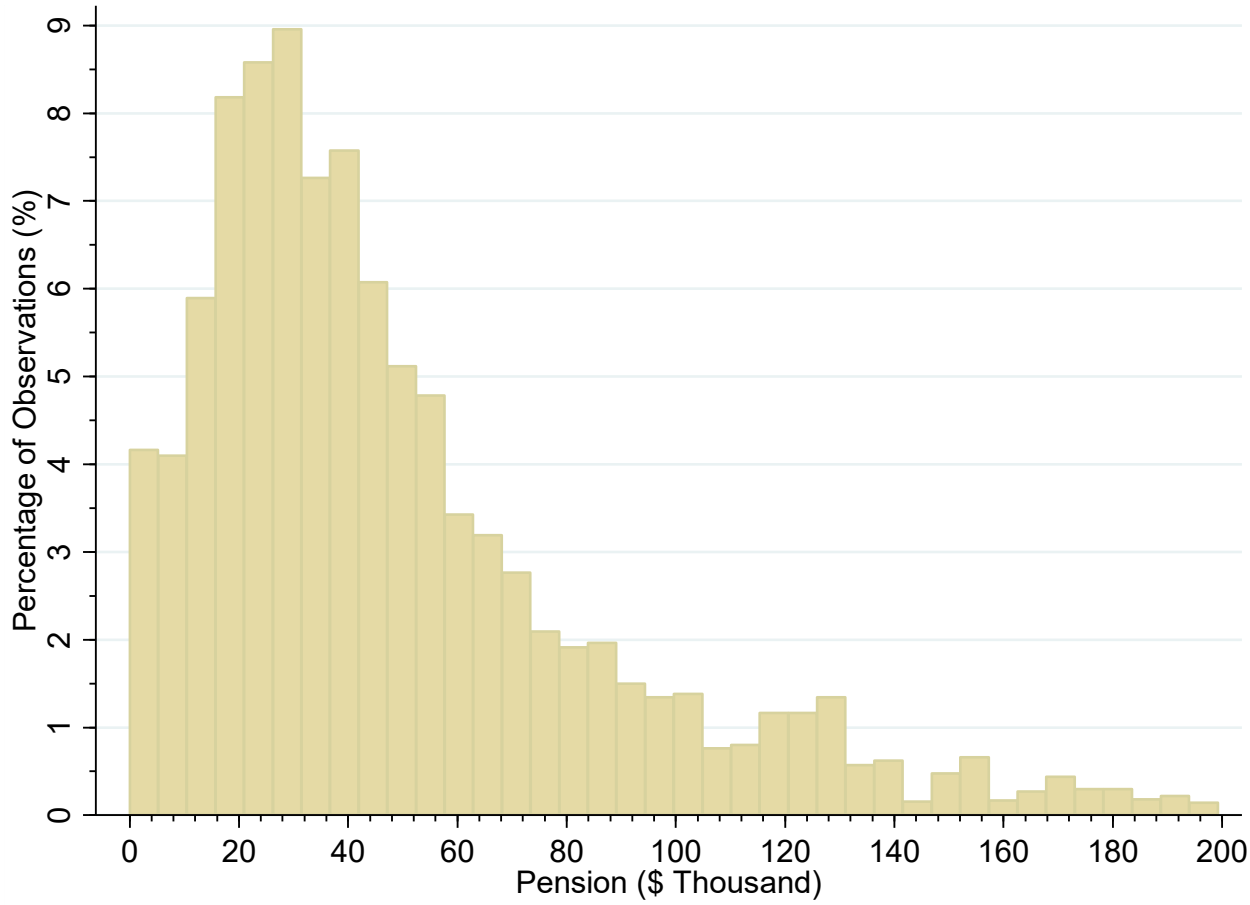
Section A. Base pay



Section B. Bonus



Section C. Pension



Section D. Total compensation

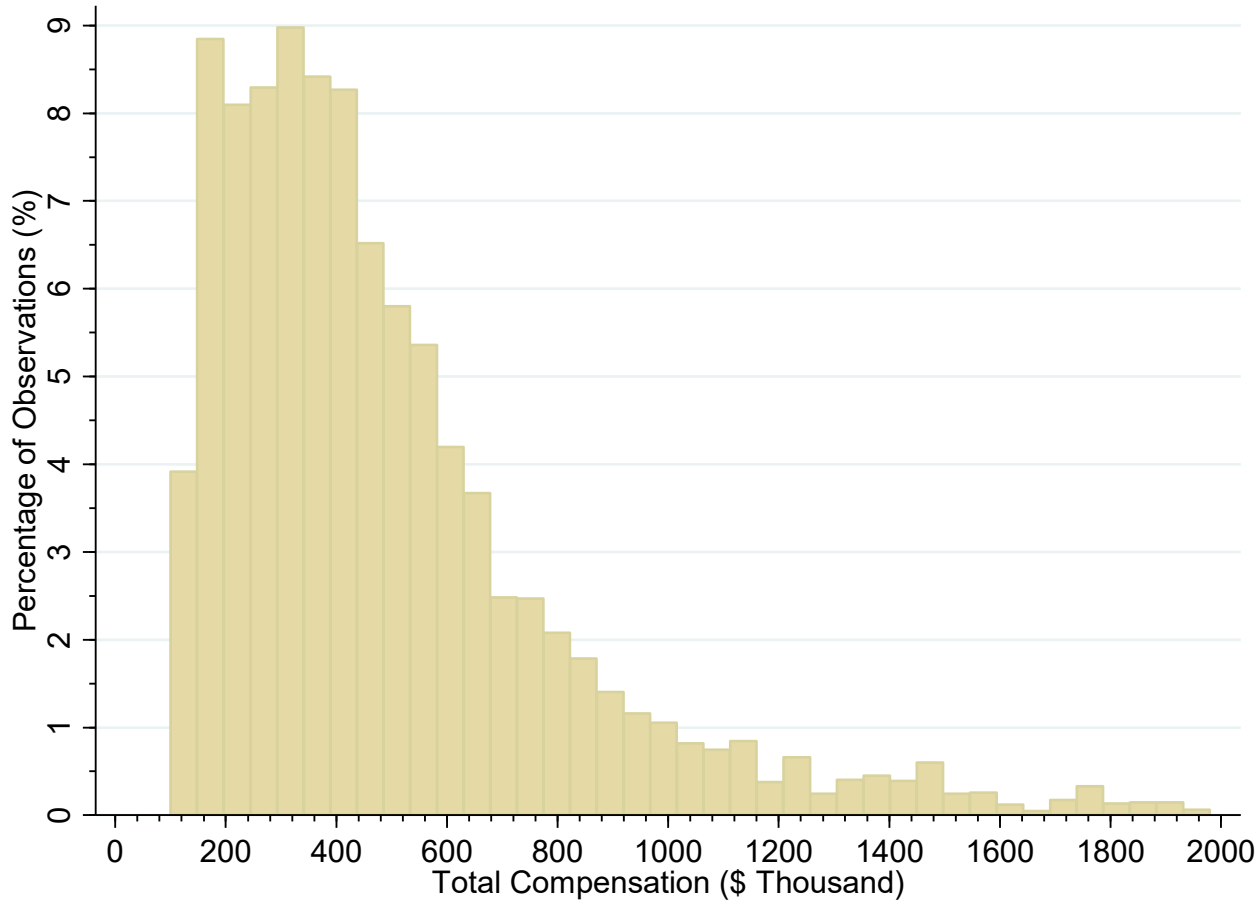
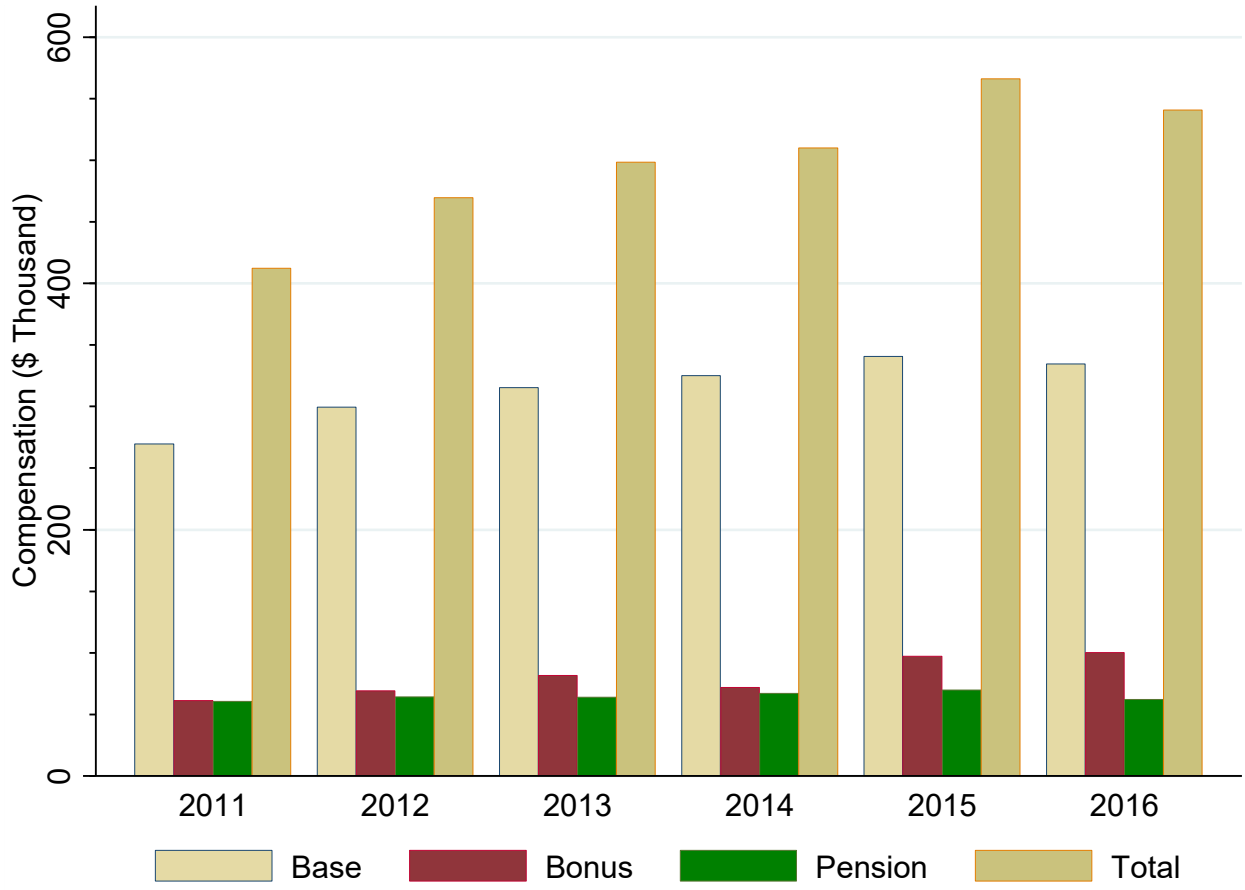


Figure 2. Hospital Executive Compensation over time

Section A. Mean values of base pay, bonus and pension



Section B. Median, 75th percentile, and upper adjacent value

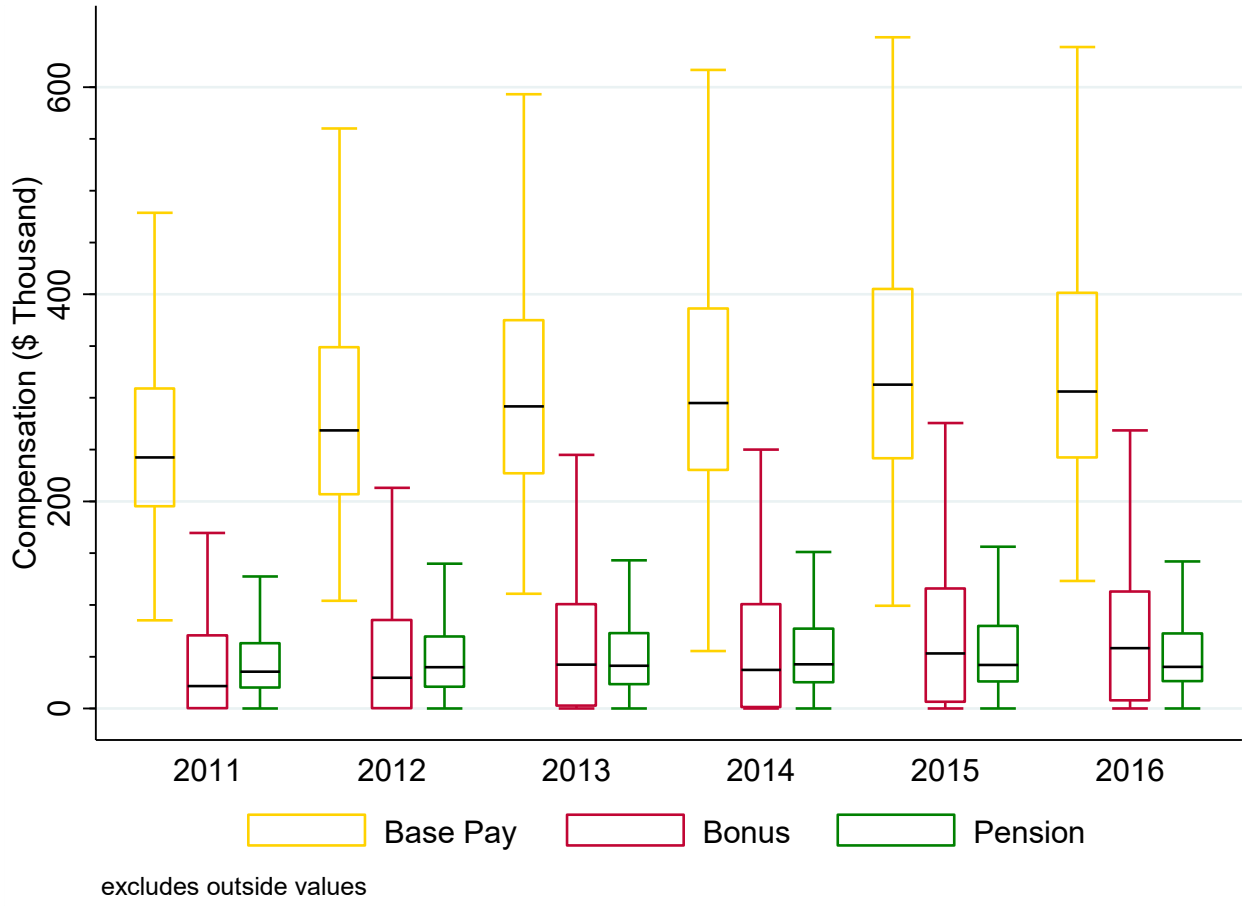
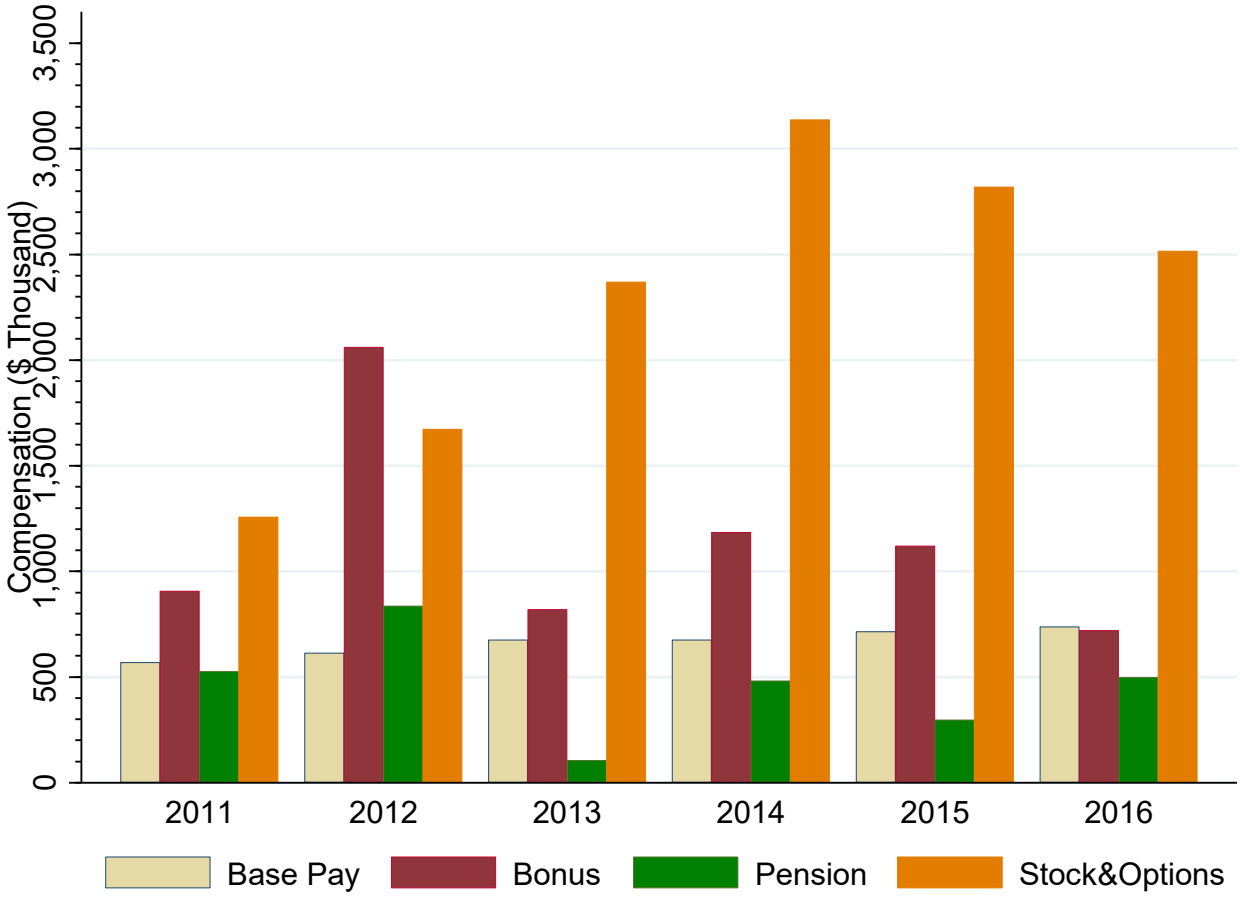


Figure 3. For-profit Hospital Executive Compensation over time

Section A. Mean values of base pay, bonus and pension

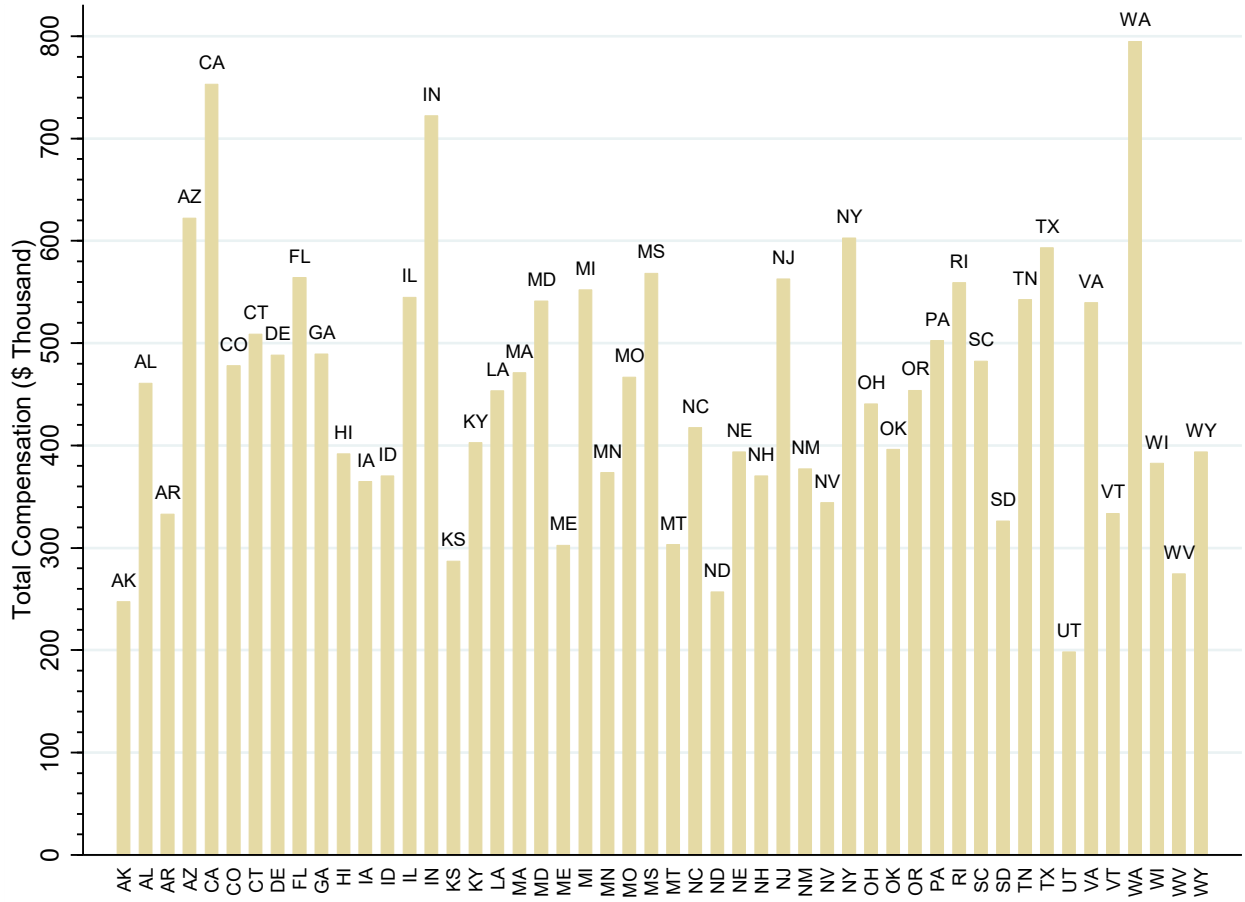


Section B. Median, 75th percentile, and upper adjacent value

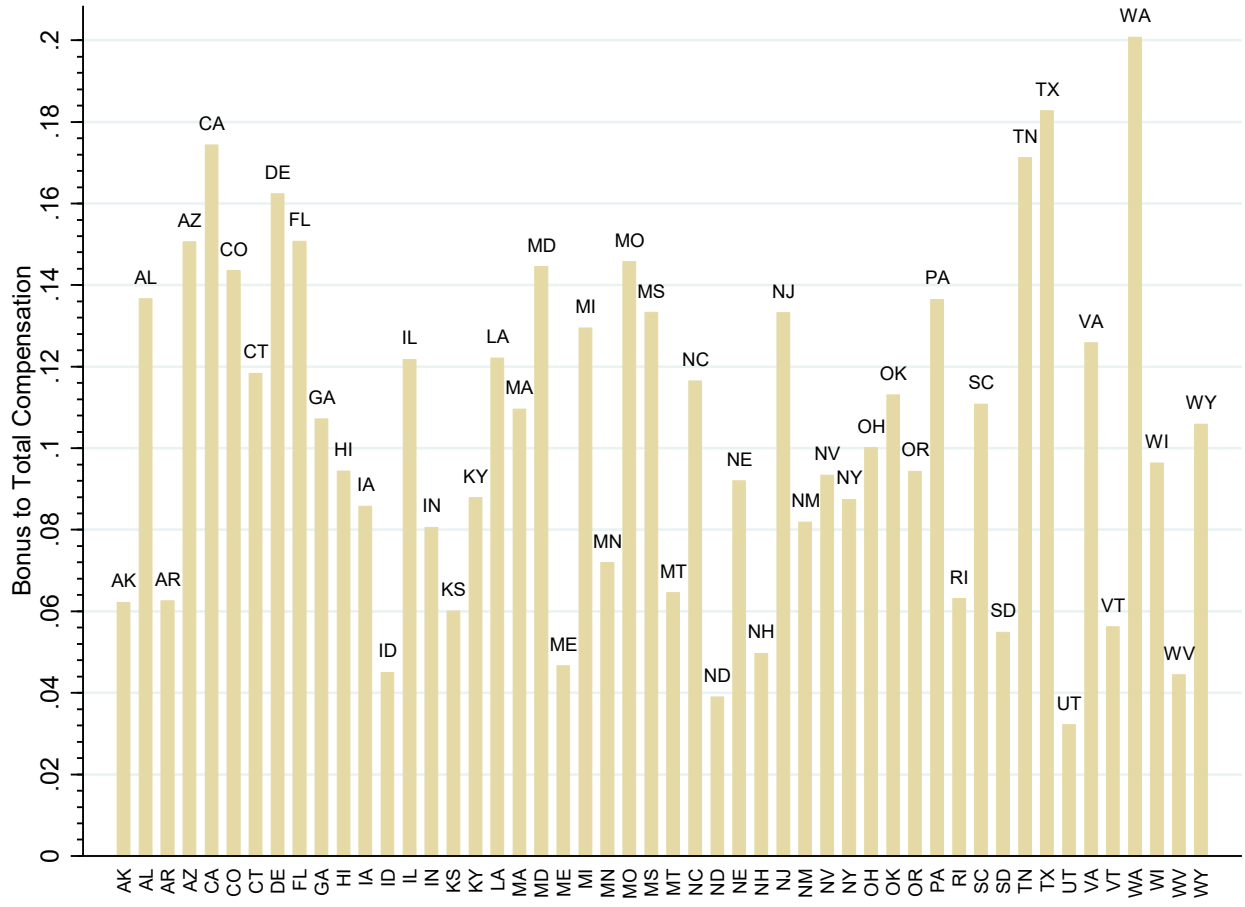


Figure 4. Hospital Executive Compensation in 50 States

Section A. Mean values of total compensation



Section B. Ratio of bonus to total compensation



Section C. Ratio of pension to total compensation

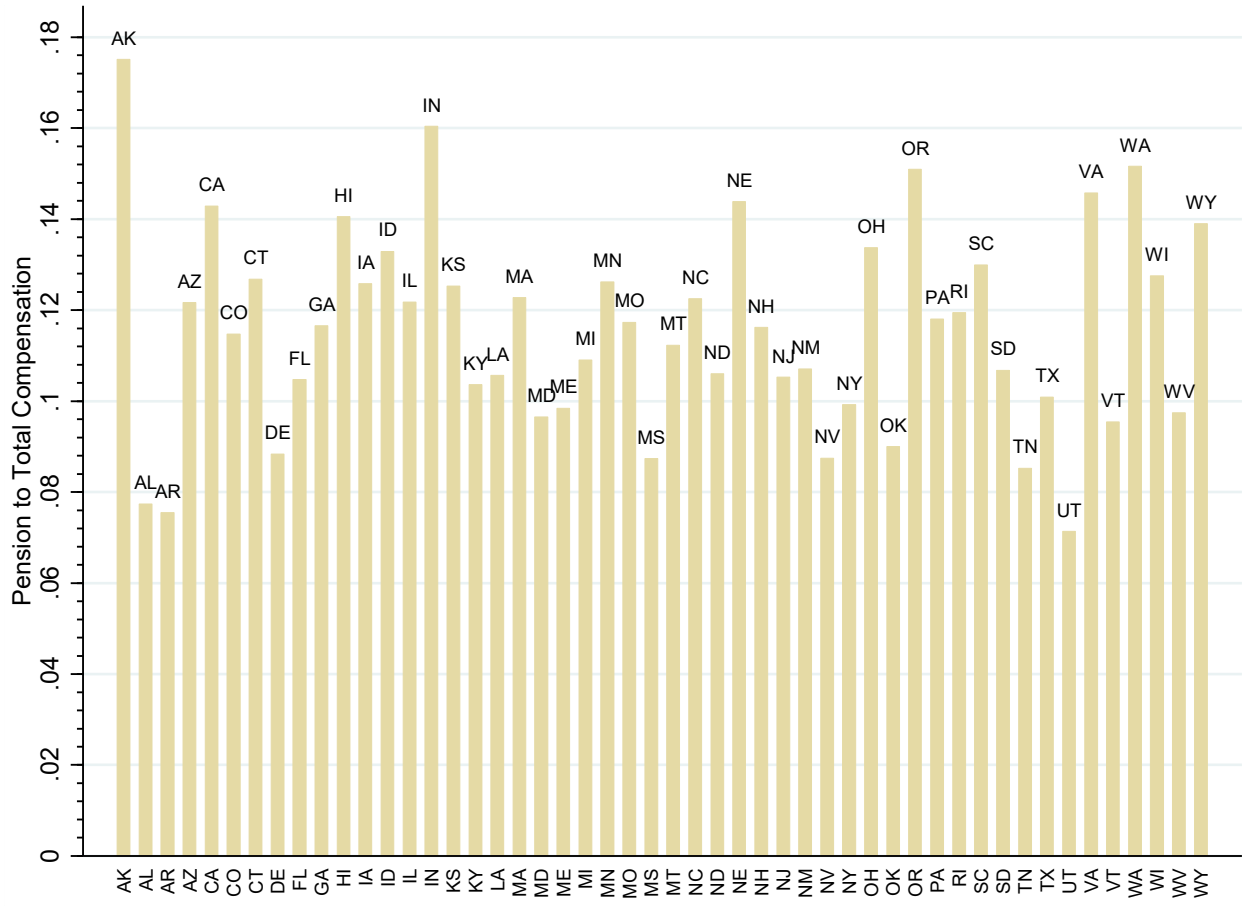
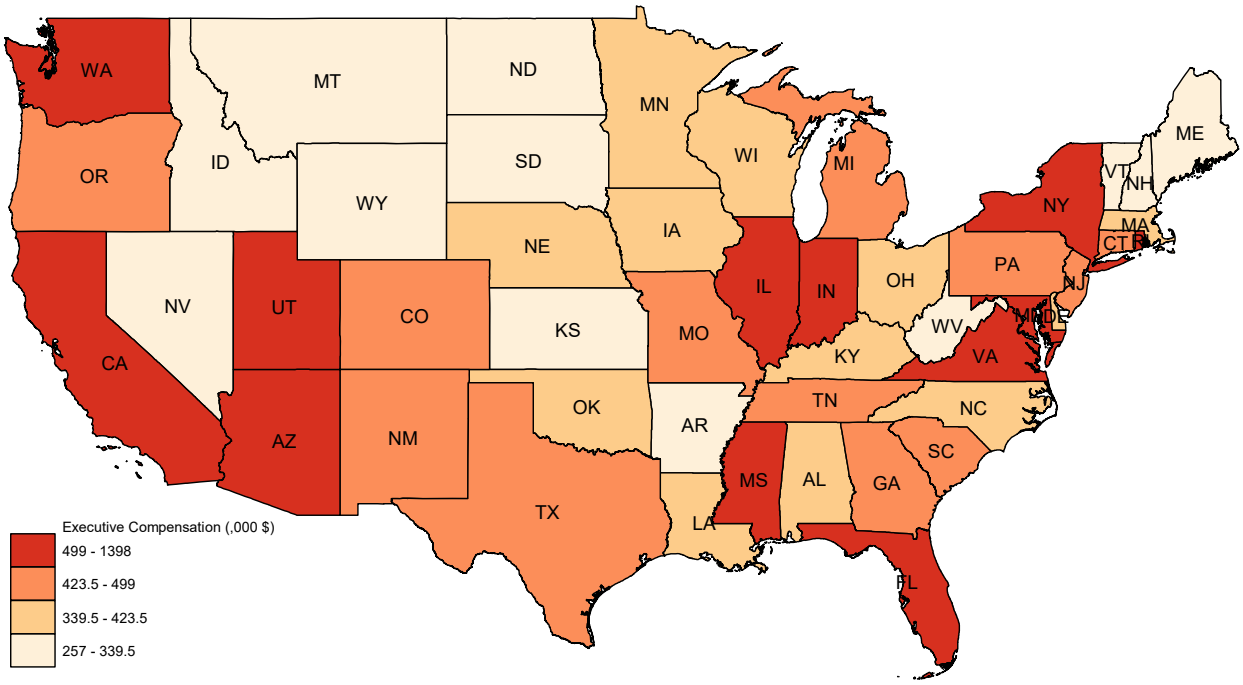


Figure 5. Map of Average Hospital Executive Compensation

Section A. State-level average of total compensation



Section B. Ratio of executive compensation to employee salary

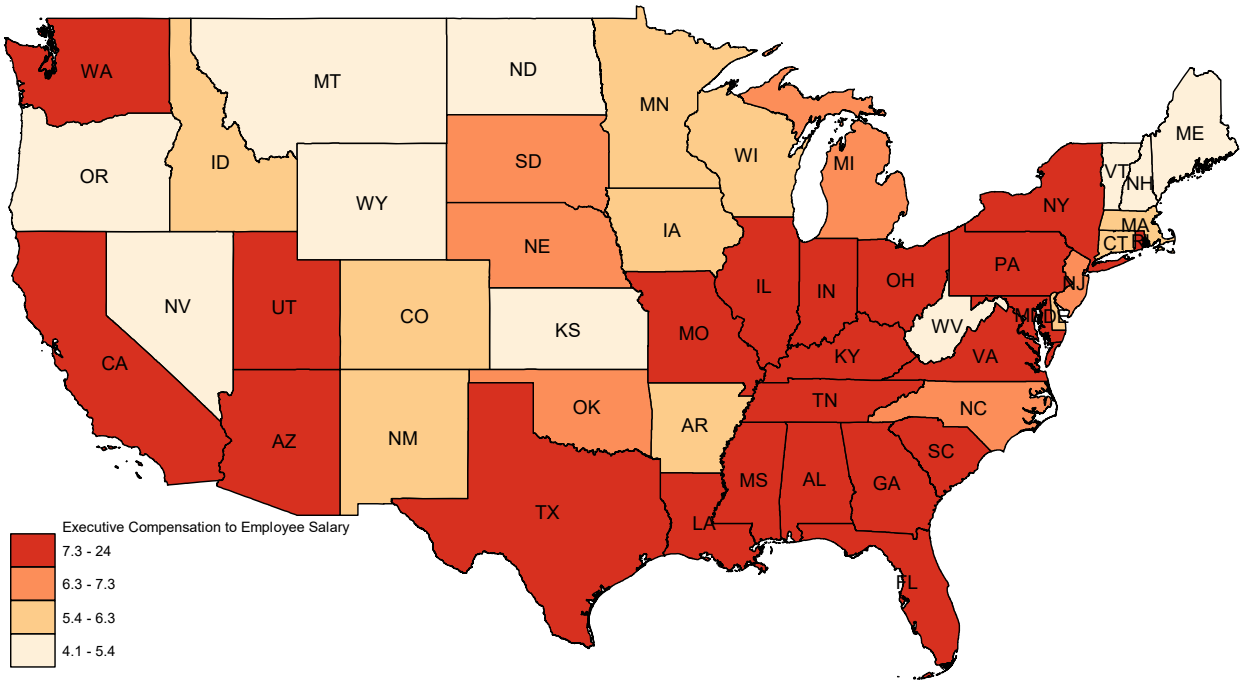
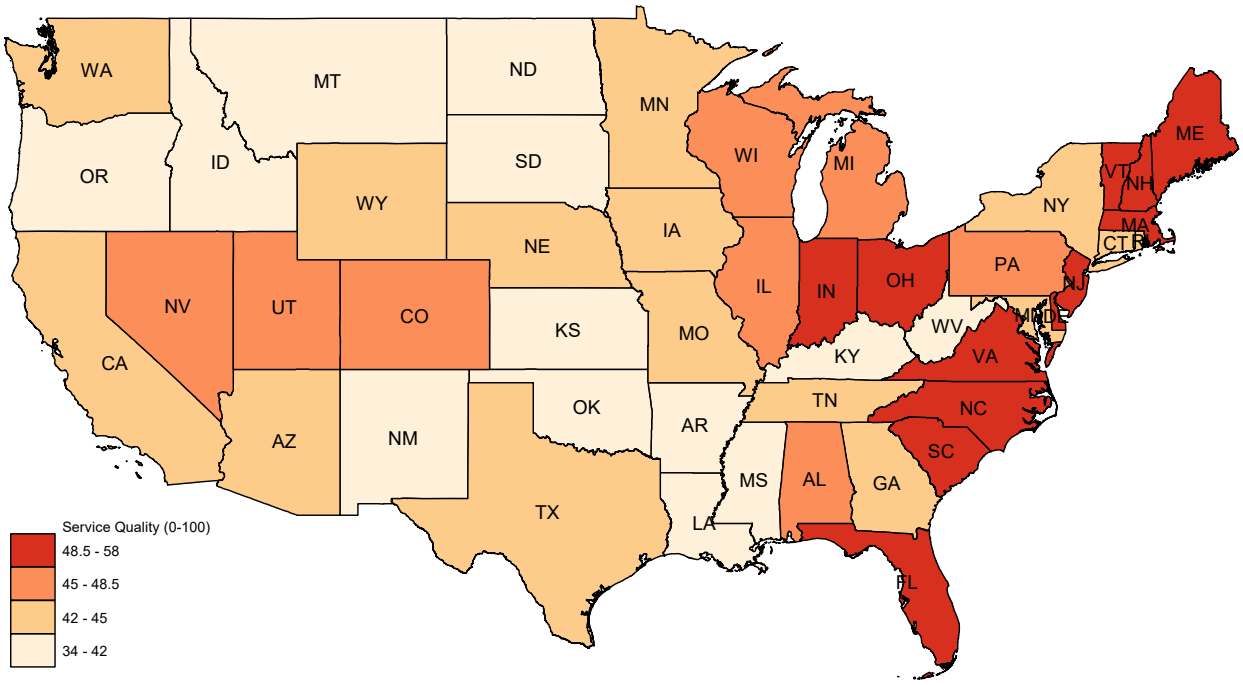


Figure 6. Map of Average Service Quality and Charity Care

Section A. State-level average of service quality



Section B. State-level average of charity care to revenue ratio

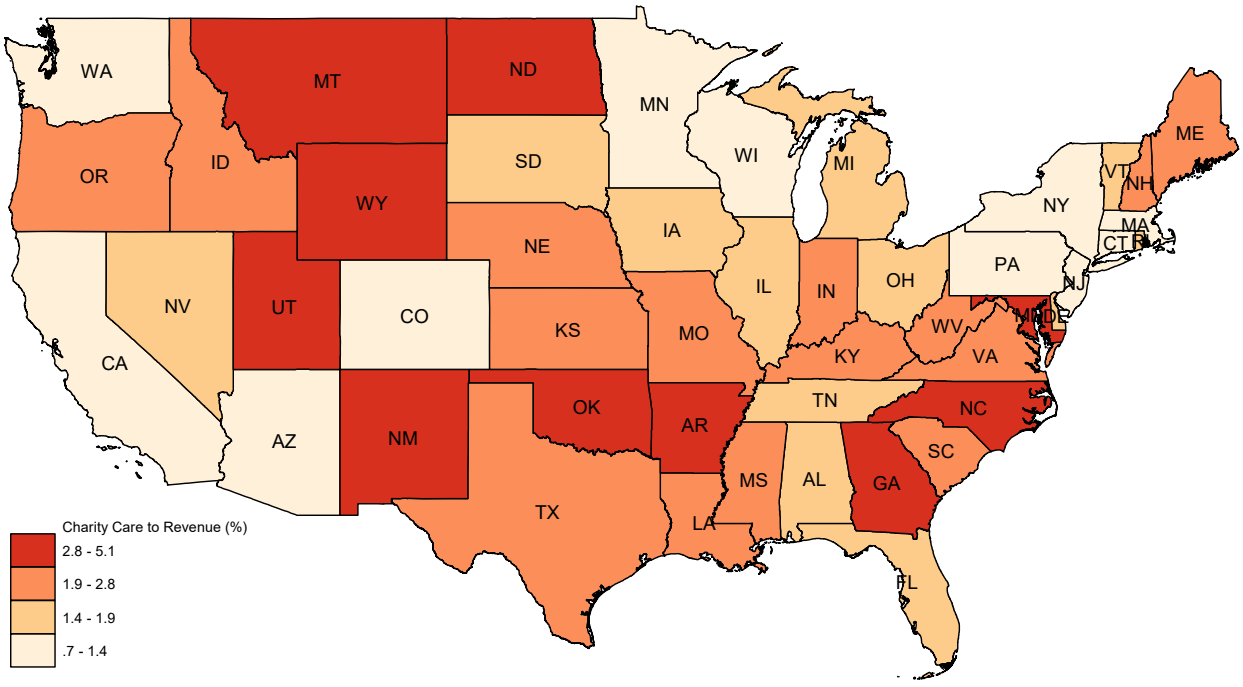


Table 0. Comparison of ratios between nonprofit hospitals and publicly traded companies

SIC Range		Industry	N	Current Ratio	Asset Turnover	ROA	Operating Margin	Debt Ratio
		Nonprofit Hospitals	4,659	6.40	9.96	5.71%	-1.74%	27%
1382	1382	Oil-gas field exploration	143	2.32	0.78	-5.86%	-1.84%	28%
2050	2059	Bakery products	24	1.93	1.15	2.25%	-3.13%	37%
2450	2459	Wood buildings-mobile homes	29	4.01	1.76	-1.21%	2.11%	19%
2900	2912	Petroleum refining	252	1.58	1.65	2.97%	-3.60%	47%
3440	3441	Fabricated structure metal products	36	1.67	1.50	-7.08%	0.89%	66%
3448	3448	Pre-fabricated metal buildings	8	3.64	1.48	-2.27%	3.00%	34%
4730	4739	Arrange trans - freight and cargo	65	1.80	2.83	0.03%	2.71%	44%
4840	4841	Cable and other pay TV services	160	1.03	0.58	0.89%	-2.16%	59%
5047	5047	Wholesale - medical, dental equip	36	1.82	1.97	-9.82%	-0.72%	58%
5065	5065	Wholesale - electronic parts	55	4.27	1.70	1.83%	2.98%	28%
5190	5199	Wholesale - non-durable goods	32	2.14	3.72	-9.65%	-3.51%	53%
5735	5735	Retail - record and tape stores	9	2.55	1.63	-0.06%	2.71%	45%
5800	5819	Retail - eating places	480	1.33	1.35	-1.44%	-0.41%	41%
5900	5900	Retail - miscellaneous	78	2.34	1.31	-6.01%	-1.63%	53%

Table 1. Quality measures of hospital service processes

Measure	Detailed Description of Quality Measure
OP2/AMI7a	Heart attack patients given drugs to break up blood clots within 30 minutes of arrival
OP4	Heart attack patients given aspirin within 24 hours of arrival
AMI8a	Heart attack patients given PCI within 90 minutes of arrival
HF2	Heart failure patients given an evaluation of Left Ventricular Systolic (LVS) function
OP1	Median time from ED arrival to administration of fibrinolytic therapy in patients
OP3b	Median time to transfer to another facility for acute coronary intervention
OP5	Average number of minutes before outpatients with chest pain or possible heart attack got an ECG
PN6	Pneumonia patients given the most appropriate initial antibiotics
SCIPCARD	Surgery patients who were taking heart drugs called beta blockers before coming to the hospital
SCIPINF1	Surgery patients given an antibiotic within one hour before surgery
SCIPINF2	Surgery patients given the right kind of antibiotic to help prevent infection
SCIPINF3	Surgery patients whose preventive antibiotics were stopped within 24 hours after surgery end time
SCIPINF9	Surgery patients whose urinary catheters were removed on the first or second day after surgery
SCIPVTE2	Surgery patients received thromboembolism prophylaxis within 24 hours before or after surgery
CAC3	Children and their caregivers received a home management plan of care document while hospitalize

Table 2. Variable definitions

Variable	Definition
Executive Level Variables	
Main Compensation	Reportable compensation from the organization (W-2/1099-MISC)
Related Compensation	Reportable compensation from related organizations (W-2/1099-MISC)
Total Compensation	Total reportable amount from the organization, related organizations and other compensation
Hospital Level Variables	
Number of Beds	Number of all available beds
Total Assets	Total assets reported on the hospital's balance sheet
Natural log of Total Assets	Natural logarithm of the hospital's total assets
Total Revenues	Total sales revenue reported on the balance sheet
Natural log of Total Revenues	Natural logarithm of the hospital's total revenues
Net Income to Assets	The hospital's net income divided by its total assets
Operating Margin	The hospital's operating income divided by its patient revenue
Outpatient Revenue to Total Revenues	Total outpatient revenue divided by its patient revenue
Medicare Patient Payer Mix	Medicare patient charges divided by total patient charges
Financial Leverage	Total debt divided by total assets
Asset Turnover (Sales to Assets)	Total sales revenue divided by total assets
Current Ratio	Current assets divided by current liabilities
Days Cash On Hand	(Cash + Cash equivalents) × 365 ÷ Operating expenses
Days Patients Accounts Receivable Outstanding	(Accounts receivable – Allowances for uncollectible) × 365 ÷ Revenue
Fixed Asset Age (Years)	Accumulated depreciation ÷ Annual depreciation expense
Total Salary to Revenue	Total salary expense divided by total sales revenue
Urban Hospital	The value is one is if the hospital is located in an urban area and zero otherwise

Table 3. Summary statistics of hospital executive compensation (in thousand dollars)

Variable	N	Mean	Median	Std. Dev.	Minimum	Maximum
All Executive						
Base Pay	8,238	316,618	287,501	136,607	55,494	1,078,287
Bonus	8,238	80,510	40,124	121,976	0	834,975
Nontaxable and Retirement Benefits	8,238	65,074	40,793	77,172	0	528,018
Total Compensation	8,238	503,904	409,629	350,569	100,125	2,422,542
Presidents or CEOs						
Base Pay	8,238	480,983	414,174	286,365	53,896	1,667,934
Bonus	8,238	190,649	61,943	372,050	0	2,130,271
Nontaxable and Retirement Benefits	8,238	128,249	48,258	224,562	0	1,396,670
Total Compensation	8,238	925,999	616,765	987,057	100,212	5,706,426

Table 4. Summary statistics of hospital characteristics

Variable	N	Mean	Median	Standard Deviation	Minimum	Maximum
Total Compensation (thousand dollars)	8,238	504	410	351	100	2,423
Total Compensation to Average Employee Salary	8,238	7.9	6.5	4.8	2.1	27.1
Number of Beds	8,238	200	137	197	12	945
Number of Full-time Employees	8,238	1,210	711	1,418	53	7,702
Percentage of Independent Trustees on Board	8,238	77.6%	81.3%	19.8%	0.0%	100%
Total Assets (million dollars)	8,238	284	119	438	3	2,611
Total Revenues (million dollars)	8,238	707	348	909	8	4,739
Revenue per Patient-Day (dollar)	8,238	7,541	5,987	5,708	1,933	57,113
Revenue per Patient Discharge (dollar)	8,238	33,819	26,262	26,432	11,017	279,133
Return on Assets	8,238	4.08%	3.82%	13.2%	-50.4%	64.5%
Operating Margin	8,238	-0.63%	-0.34%	4.91%	-23.2%	15.0%
Outpatient Revenue to Total Revenues	8,238	58.9%	59.4%	16.5%	20.0%	93.4%
Medicare Patient Payer Mix	8,238	48.5%	48.2%	15.8%	0.52%	100%
Donation to Revenue	8,238	0.12%	0.00%	0.37%	0.00%	3.01%
Investment Return to Revenue	8,238	0.33%	0.03%	0.70%	0.00%	4.26%
Financial Leverage	8,238	53.7%	45.5%	42.2%	2.36%	283%
Total Salary Expenses to Revenue	8,238	39.7%	39.1%	9.29%	16.0%	67.8%
Asset Turnover (Sales to Assets)	8,238	3.3	2.6	2.6	0.4	16
Days Cash On Hand	8,238	56	26	83	0	540
Days Patients Accounts Receivable Outstanding	8,238	52	48	23	0	185
Fixed Asset Age (year)	8,238	31	12	102	1	808
Urban Hospital	8,238	59%	100%	49%	0%	100%

Table 5. Difference-tests in hospital characteristics between hospitals with high and low levels of executive compensation

Total Compensation in Terciles	Upper Tercile	Middle Tercile	Lower Tercile	Difference between Upper and Lower Terciles	t-statistic
Total Comepnsation ($)	629,574	328,091	188,257		
Total Assets (in $000,000's)	521	232	67	454***	31.44
Total Revenue (in $000,000's)	1,214	581	145	1069***	36.25
Number of Beds	319	195	80	239***	37.52
Number of Employees	2,162	1,124	405	1,757***	36.03
Total Inpatient-days	72,574	35,062	9,551	63,023***	35.95
Total Number of Discharges	14,887	7,703	2,255	12,632***	35.91
Outpatient to Total Revenue Ratio	53%	59%	71%	–17.6%***	–33.82
Medicare to Total Revenue Ratio	43%	49%	57%	–14.5%***	–26.66
Total Liabilities to Assets Ratio	54%	51%	49%	4.7%***	3.93
Total Salary to Expenses Ratio	40%	41%	44%	–4.6%***	–14.9
Days Cash On Hand	55.7	51.4	56.1	–0.4	–0.17
Days Accounts Receivable Outstanding	49.2	49.8	54.9	–5.7***	–8.55
Fixed Asset Age (Years)	27.9	20.8	23.3	4.6*	1.64
Percentage of Urban Hospital	80%	58%	23%	57%***	37.85

Table 6. Difference-test in profitability between hospitals with high and low levels of executive compensation

Compensation in Terciles	Upper Tercile	Middle Tercile	Lower Tercile	Difference between Upper and Lower Terciles	t-statistic
Total Pay ($)	629,574	328,091	188,257		
Operating Margin	–0.27%	–0.82%	–2.49%	2.22%***	12.49
Base Pay ($)	402,620	254,112	177,365		
Operating Margin	–0.54%	–0.82%	–1.71%	1.17%***	6.63
Bonus ($)	104889	22613	214		
Operating Margin	–0.12%	–0.78%	–2.64%	2.52%***	14.79
Pension ($)	87,679	32,088	13,317		
Operating Margin	–0.17%	–0.77%	–2.64%	2.47%***	14.09

Table 7. Difference-test in service quality between hospitals with high and low levels of executive compensation

Compensation in Terciles	Upper Tercile	Middle Tercile	Lower Tercile	Difference between Upper and Lower Terciles	t-statistic
Total Pay ($)	629,574	328,091	188,257		
Service Quality	47.6	46.9	38.1	9.48***	16.36
Base Pay ($)	402,620	254,112	177,365		
Service Quality	47	46.4	41	5.91***	9.99
Bonus ($)	104,889	22,613	214		
Service Quality	48.2	45.2	39.3	8.83***	15.06
Pension ($)	87,679	32,088	13,317		
Service Quality	47.8	45.3	39.5	8.27***	14.15

*p<0.10, **p<0.05, and ***p<0.01

Table 8. Difference-test in charity care between hospitals with high and low levels of executive compensation

Compensation in Terciles	Upper Tercile	Middle Tercile	Lower Tercile	Difference between Upper and Lower Terciles	t-statistic
Total Pay ($)	629,574	328,091	188,257		
Charity Care (in $000's)	20,811	12,095	3,777	17,034***	31.29
Base Pay ($)	402,620	254,112	177,365		
Charity Care (in $000's)	19,664	12,687	5,727	13,937***	23.94
Bonus ($)	104,889	22,613	214		
Charity Care (in $000's)	19834	10902	6045	13,789***	23.98
Pension ($)	87,679	32,088	13,317		
Charity Care (in $000's)	18,595	11,902	6,285	12,309***	21.25

*p<0.10, **p<0.05, and ***p<0.01

Table 9. Difference-test in pay-for-performance sensitivity between hospitals with high and low levels of executive compensation

Total Pay Change in Terciles	Upper Tercile	Middle Tercile	Lower Tercile	Difference between Upper and Lower Terciles	t-statistic
Change in Total Pay ($)	135,625	15864	-72,793		
Change in Operating Margin	–0.12%	–0.12%	-0.05%	–0.07%	–0.61
Change in Service Quality	0.52	0.32	0.02	0.495	1.25
Change in Charity Care(in $000's)	787	273	372	415	1.52
Change in Bonus ($)	39,020	2,013	-14,358		
Change in Operating Margin	-0.02%	0.06%	-0.21%	0.183%*	1.81
Change in Service Quality	0.88	0.47	-0.19	1.07***	2.89
Change in Charity Care (in $000's)	736	274	375	361	1.48

*p<0.10, **p<0.05, and ***p<0.01

Table 10. Correlation matrix

The Pearson's correlation coefficients are shown in the lower triangle, and the Spearman's rank correlations are shown above the diagonal.

	Natural Log Total Compensation	Number of Beds	Natural log of Employee Number	Natural log of Total Assets	Natural log of Total Revenues	Revenue per Patient-Day	Revenue per Patient Discharge	Return on Assets	Operating Margin	Outpatient Revenue to Total Revenues	Medicare patient Payer Mix	Donation to Revenue	Investment Return to Revenue	Financial Leverage	Total Salary to Revenue	Asset Turnover (Sales to Assets)	Days Cash On Hand	Days of Receivable Outstanding	Fixed Asset Age	Urban Hospital
Natural Logarithm of Total Compensation		0.50	0.55	0.55	0.58	-0.13	-0.10	0.16	0.18	-0.36	-0.35	-0.16	-0.03	0.06	-0.19	0.17	-0.09	-0.10	0.06	0.42
Number of Beds	0.48		0.90	0.82	0.88	-0.44	-0.41	0.09	0.15	-0.75	-0.44	-0.12	0.02	0.14	-0.19	0.23	-0.11	-0.07	0.14	0.61
Natural log of Employee Number	0.53	0.82		0.91	0.95	-0.29	-0.33	0.13	0.19	-0.63	-0.48	-0.12	0.05	0.11	-0.20	0.17	-0.06	-0.09	0.09	0.59
Natural log of Total Assets	0.50	0.73	0.90		0.92	-0.19	-0.24	0.21	0.29	-0.58	-0.45	-0.11	0.14	-0.02	-0.34	-0.10	0.07	-0.05	0.03	0.54
Natural log of Total Revenues	0.56	0.80	0.95	0.90		-0.29	-0.35	0.18	0.26	-0.64	-0.48	-0.16	0.02	0.12	-0.33	0.27	-0.08	-0.11	0.09	0.61
Revenue per Patient-Day	-0.07	-0.28	-0.19	-0.11	-0.20		0.78	0.08	0.08	0.63	0.21	0.10	0.04	-0.14	-0.04	-0.29	0.12	0.02	-0.08	-0.42
Revenue per Patient Discharge	-0.07	-0.23	-0.27	-0.20	-0.31	0.71		0.09	0.02	0.48	0.23	0.15	0.02	-0.14	0.05	-0.31	0.13	0.06	-0.10	-0.35
Return on Assets	0.12	0.10	0.12	0.18	0.15	0.11	0.11		0.67	-0.06	-0.11	-0.08	0.09	-0.32	-0.40	-0.05	0.12	-0.13	-0.02	0.07
Operating Margin	0.14	0.13	0.19	0.27	0.28	0.06	-0.05	0.53		-0.10	-0.12	-0.12	0.03	-0.26	-0.60	-0.01	0.07	-0.12	-0.03	0.09
Outpatient Revenue to Total Revenues	-0.30	-0.58	-0.52	-0.46	-0.53	0.58	0.31	0.00	-0.06		0.37	0.08	0.02	-0.15	0.12	-0.22	0.09	0.01	-0.10	-0.61
Medicare patient Payer Mix	-0.34	-0.39	-0.50	-0.47	-0.49	0.12	0.11	-0.08	-0.09	0.34		0.06	0.02	-0.06	0.12	-0.11	0.09	0.07	-0.10	-0.45
Donation to Revenue	-0.10	-0.12	-0.12	-0.08	-0.17	0.09	0.18	0.01	-0.15	0.04	-0.03		0.28	-0.05	0.14	-0.15	0.06	0.13	-0.03	-0.10
Investment Return to Revenue	0.02	-0.03	0.03	0.15	0.01	0.03	0.02	0.11	0.04	0.02	-0.03	0.07		-0.19	-0.02	-0.29	0.19	0.05	-0.05	-0.02
Financial Leverage	0.08	0.11	0.06	-0.10	0.08	-0.14	-0.12	-0.37	-0.21	-0.15	-0.05	-0.09	-0.22		0.11	0.34	-0.17	-0.05	-0.03	0.18
Total Salary to Revenue	-0.15	-0.18	-0.17	-0.32	-0.33	-0.08	0.05	-0.36	-0.63	0.03	0.07	0.12	-0.04	0.11		-0.02	-0.01	0.11	0.04	-0.12
Asset Turnover (Sales to Assets)	0.15	0.14	0.08	-0.20	0.21	-0.18	-0.19	-0.09	0.02	-0.19	-0.07	-0.13	-0.27	0.43	-0.03		-0.39	-0.15	0.17	0.23
Days Cash On Hand	-0.02	-0.07	-0.04	0.10	-0.04	0.06	0.08	0.11	0.08	0.05	0.04	0.06	0.14	-0.21	-0.06	-0.29		0.01	-0.13	-0.09
Days of Receivable Outstanding	-0.09	-0.06	-0.10	-0.05	-0.13	-0.04	0.02	-0.10	-0.13	-0.01	0.05	0.07	-0.01	-0.05	0.12	-0.14	0.00		-0.02	-0.12
Fixed Asset Age (Years)	0.02	0.03	0.02	-0.01	0.02	-0.03	-0.03	0.01	-0.05	-0.02	-0.04	-0.03	-0.04	-0.02	0.06	0.07	-0.02	-0.01		0.10
Urban Hospital	0.41	0.52	0.57	0.52	0.60	-0.33	-0.24	0.03	0.06	-0.58	-0.43	-0.06	-0.02	0.17	-0.09	0.20	-0.05	-0.11	0.04	

Table 11. The determinants of the natural logarithm of hospital executive compensation

All specifications use OLS regressions with hospital type and state fixed-effects. The dependent variable is the natural logarithm of average executive compensation. The independent variables include the number of hospital beds, natural log of total assets, natural log of total revenues, net income to assets, Operating margin, Medicare patient payer mix, financial leverage, total salary to revenue, asset turnover or sales to assets, working capital to total assets, days cash on hand, days sales outstanding, fixed asset age in years, and urban hospital dummy. z-statistics are shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.

Dependent Variable: Natural Logarithm of Executive Compensation	(1)	(2)	(3)	(4)	(5)	(6)
Natural log of Total Assets	0.161***					
	(13.90)					
Natural log of Total Revenues		0.165***				
		(14.40)				
Number of Beds			0.000674***			
			(8.83)			
Natural log of Employee Number				0.146***	0.144***	0.147***
				(10.94)	(10.73)	(10.96)
Percentage of Independent Trustees on Board	-0.545***	-0.527***	-0.577***	-0.553***	-0.554***	-0.553***
	(-11.18)	(-10.77)	(-11.78)	(-11.25)	(-11.30)	(-11.26)
Natural log of Revenue per Patient-Day	0.0788***	0.0868***	0.0600**	0.0754***		0.0782***
	(3.55)	(3.89)	(2.57)	(3.26)		(3.41)
Natural log of Revenue per Patient Discharge					0.0692***	
					(2.99)	
Operating Margin	0.319	0.252	0.501**	0.358	0.423*	
	(1.31)	(1.03)	(1.99)	(1.43)	(1.72)	
Return on Assets						0.0524
						(0.71)
Medicare Patient Payer Mix	-0.116	-0.108	-0.328***	-0.222**	-0.255***	-0.226***
	(-1.36)	(-1.25)	(-3.86)	(-2.57)	(-2.94)	(-2.61)
Donation to Revenue	-5.173**	-3.985*	-8.193***	-6.066***	-6.561***	-6.543***
	(-2.40)	(-1.84)	(-3.67)	(-2.72)	(-2.95)	(-3.01)
Investment Return to Revenue	-2.178**	-0.888	-0.250	-0.611	-0.572	-0.598
	(-2.11)	(-0.88)	(-0.23)	(-0.59)	(-0.55)	(-0.58)
Financial Leverage	-0.00569	0.000522	-0.0301	-0.0131	-0.0157	-0.0133
	(-0.19)	(0.02)	(-1.04)	(-0.45)	(-0.54)	(-0.45)
Total Salary to Revenue	-0.568***	-0.615***	-0.924***	-1.002***	-1.004***	-1.086***
	(-3.72)	(-4.11)	(-6.10)	(-6.68)	(-6.65)	(-8.15)
Asset Turnover	0.0556***	0.0178***	0.0225***	0.0240***	0.0240***	0.0239***
	(10.16)	(4.05)	(5.04)	(5.44)	(5.43)	(5.47)
Days Cash On Hand	0.000239*	0.000369***	0.000412***	0.000386***	0.000381***	0.000401***
	(1.80)	(2.71)	(2.98)	(2.83)	(2.80)	(2.95)
Days Patients Accounts Receivable Outstanding	-0.000401	0.0000268	-0.0000318	0.000170	0.000152	0.000153
	(-0.93)	(0.06)	(-0.07)	(0.37)	(0.34)	(0.34)
Fixed Asset Age	0.0000663	0.000124	0.0000909	0.000131	0.000117	0.000129
	(0.77)	(1.44)	(0.98)	(1.48)	(1.31)	(1.44)
Urban Hospital	0.160***	0.146***	0.235***	0.204***	0.200***	0.204***
	(5.82)	(5.24)	(8.39)	(7.28)	(7.21)	(7.27)
Constant	9.265***	9.084***	12.62***	11.59***	11.57***	11.59***
	(25.15)	(24.76)	(50.13)	(41.14)	(36.87)	(41.11)
State Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Hospital Type Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	8,238	8,238	8,238	8,238	8,238	8,238
Adj. R-squared	0.476	0.477	0.447	0.454	0.453	0.453

Table 12. Hospital fixed-effects regression

All specifications use OLS regressions with hospital fixed-effects. The dependent variable is the natural logarithm of average executive compensation. The independent variables include the number of hospital beds, natural log of total assets, natural log of total revenues, net income to assets, Operating margin, Medicare patient payer mix, financial leverage, total salary to revenue, asset turnover or sales to assets, current ratio, working capital to total assets, days cash on hand, days sales outstanding, fixed asset age in years, and urban hospital dummy. z-statistics are shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.

Dependent Variable: Natural Logarithm of Executive Compensation	(1)	(2)	(3)	(4)	(5)	(6)
Natural log of Total Assets	0.175*** (3.83)					
Natural log of Total Revenues		0.394*** (10.75)				
Number of Beds			-0.0000231 (-0.16)			
Natural log of Employee Number				0.00877 (0.33)	0.00970 (0.37)	0.00849 (0.32)
Percentage of Independent Trustees on Board	-0.0169 (-0.38)	-0.0333 (-0.76)	-0.00154 (-0.03)	-0.000576 (-0.01)	-0.0147 (-0.32)	-0.0000420 (-0.00)
Natural log of Revenue per Patient-Day	0.195*** (6.09)	0.108*** (3.11)	0.250*** (8.01)	0.249*** (8.01)		0.249*** (7.98)
Natural log of Revenue per Patient Discharge					0.222*** (8.61)	
Operating Margin	0.0253 (0.12)	-0.0144 (-0.07)	-0.0171 (-0.08)	-0.0227 (-0.11)	-0.0220 (-0.10)	
Return on Assets						0.0147 (0.34)
Medicare Patient Payer Mix	-0.244*** (-2.71)	-0.130 (-1.45)	-0.289*** (-3.22)	-0.297*** (-3.30)	-0.355*** (-4.02)	-0.299*** (-3.31)
Donation to Revenue	-0.404 (-0.30)	0.150 (0.12)	-0.381 (-0.28)	-0.367 (-0.27)	-0.200 (-0.15)	-0.377 (-0.27)
Investment Return to Revenue	0.693 (1.05)	1.295* (1.95)	0.792 (1.17)	0.808 (1.19)	0.824 (1.23)	0.786 (1.14)
Financial Leverage	0.000373 (0.01)	0.00474 (0.19)	-0.0288 (-1.14)	-0.0287 (-1.14)	-0.0310 (-1.25)	-0.0276 (-1.12)
Total Salary to Revenue	0.416*** (2.59)	0.415*** (2.62)	0.372** (2.26)	0.377** (2.27)	0.327* (1.96)	0.399*** (3.07)
Asset Turnover	0.0423*** (4.32)	-0.00186 (-0.35)	0.00921* (1.70)	0.00910* (1.68)	0.00984* (1.85)	0.00901* (1.68)
Days Cash On Hand	0.000213** (2.15)	0.000191** (2.21)	0.000330*** (3.50)	0.000330*** (3.51)	0.000309*** (3.35)	0.000331*** (3.49)
Days Patients Accounts Receivable Outstanding	0.000353 (1.38)	0.000443 (1.62)	0.000569** (2.19)	0.000571** (2.17)	0.000517** (1.98)	0.000575** (2.19)
Fixed Asset Age	0.000178 (1.59)	0.000175 (1.45)	0.000227** (1.98)	0.000230** (2.00)	0.000229** (2.04)	0.000230** (2.00)
Urban Hospital	-0.00387 (-0.14)	0.00120 (0.04)	-0.00878 (-0.30)	-0.0145 (-0.50)	-0.0156 (-0.55)	-0.0141 (-0.49)
Constant	7.729*** (9.43)	4.172*** (5.53)	10.63*** (34.94)	10.58*** (32.37)	10.54*** (33.92)	10.57*** (32.48)
Hospital Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	8,238	8,238	8,238	8,238	8,238	8,238
R-squared (within)	0.067	0.087	0.044	0.045	0.047	0.045
R-squared (between)	0.348	0.384	0.001	0.005	0.004	0.005
R-squared (overall)	0.322	0.363	0.001	0.003	0.006	0.003

Table 13. Executive compensation scaled by average employee salary

All specifications use OLS regressions with hospital fixed-effects. The dependent variable is the average executive compensation scaled by average employee salary. The independent variables include the number of hospital beds, natural log of total assets, natural log of total revenues, net income to assets, Operating margin, Medicare patient payer mix, financial leverage, total salary to revenue, asset turnover or sales to assets, current ratio, working capital to total assets, days cash on hand, days sales outstanding, fixed asset age in years, and urban hospital dummy. z-statistics are shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.

Dependent Variable: Executive Compensation to Average Employee Salary Ratio	(1)	(2)	(3)	(4)	(5)	(6)
Natural log of Employee Number	0.736***	0.760***	0.727***	3.089***	3.071***	3.074***
	(6.07)	(6.24)	(5.98)	(5.78)	(5.75)	(5.78)
Percentage of Independent Trustees on Board	-3.510***	-3.452***	-3.507***	0.299	0.261	0.326
	(-8.44)	(-8.32)	(-8.44)	(0.77)	(0.67)	(0.83)
Natural log of Revenue per Patient-Day	0.129		0.0946	0.489***		0.501***
	(0.68)		(0.50)	(2.69)		(2.75)
Natural log of Revenue per Patient Discharge		0.411**			0.616***	
		(2.12)			(3.49)	
Operating Margin	-4.102**	-4.227**		-2.174	-2.131	
	(-2.07)	(-2.19)		(-1.27)	(-1.25)	
Return on Assets			-0.536			-0.244
			(-0.83)			(-0.57)
Medicare Patient Payer Mix	-0.737	-0.915	-0.696	-1.403*	-1.467*	-1.367*
	(-1.04)	(-1.29)	(-0.98)	(-1.80)	(-1.93)	(-1.75)
Donation to Revenue	-26.68*	-29.21**	-21.48	-5.415	-5.373	-3.773
	(-1.81)	(-1.99)	(-1.50)	(-0.54)	(-0.54)	(-0.37)
Investment Return to Revenue	-16.07*	-15.10*	-16.24*	8.255	8.404	8.776
	(-1.83)	(-1.72)	(-1.85)	(1.43)	(1.46)	(1.49)
Financial Leverage	-0.228	-0.241	-0.211	-0.0358	-0.0299	-0.0379
	(-0.90)	(-0.96)	(-0.82)	(-0.14)	(-0.12)	(-0.15)
Total Salary to Revenue	-10.32***	-10.21***	-9.305***	-4.965***	-4.711***	-4.156***
	(-7.64)	(-7.52)	(-7.79)	(-3.55)	(-3.41)	(-3.67)
Asset Turnover	0.182***	0.186***	0.182***	0.0487	0.0484	0.0491
	(4.71)	(4.78)	(4.73)	(0.84)	(0.85)	(0.87)
Days Cash On Hand	0.00297**	0.00287**	0.00279**	0.00134	0.00126	0.00128
	(2.18)	(2.10)	(2.05)	(1.61)	(1.52)	(1.53)
Days Patients Accounts Receivable Outstanding	0.00263	0.00287	0.00286	0.00764***	0.00780***	0.00779***
	(0.60)	(0.66)	(0.65)	(2.69)	(2.74)	(2.75)
Fixed Asset Age	0.00240**	0.00230**	0.00243**	0.00176	0.00174	0.00178
	(2.38)	(2.29)	(2.42)	(1.47)	(1.45)	(1.49)
Urban Hospital	0.958***	0.994***	0.963***	0.0767	0.0781	0.0754
	(4.11)	(4.34)	(4.12)	(0.32)	(0.32)	(0.31)
Constant	4.192*	0.760	4.102*	-15.04***	-17.02***	-15.40***
	(1.75)	(0.28)	(1.70)	(-4.10)	(-4.62)	(-4.22)
Year Fixed-Effects	Yes	Yes	Yes	No	No	No
State Fixed-Effects	Yes	Yes	Yes	No	No	No
Hospital Fixed-Effects	No	No	No	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	4,447	4,447	4,447	4,447	4,447	4,447
R-squared (within)				0.093	0.091	0.091
R-squared (between)				0.103	0.120	0.099
R-squared (overall)	0.217	0.220	0.216	0.094	0.110	0.090

Table 14.000 Executive compensation and hospital performance

z-statistics are shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.

Section A. Service quality

Dependent Variable: Average Score of Service Quality	(1)	(2)	(3)	(4)	(5)	(6)
Natural log of Executive Compensation	4.501***	5.760***	5.063***	0.953	0.904	0.800
	(7.45)	(9.67)	(8.45)	(1.49)	(1.43)	(1.26)
Natural log of Total Assets	2.369***			-0.360		
	(7.14)			(-0.43)		
Number of Beds		0.00231			0.000576	
		(1.33)			(0.08)	
Natural log of Employee Number			2.036***			0.600
			(5.56)			(0.68)
Natural log of Revenue per Patient-Day	3.708***	2.936***	3.611***	1.811	1.712	1.669
	(4.80)	(3.72)	(4.67)	(1.52)	(1.47)	(1.42)
Operating Margin	24.84***	26.93***	24.97***	18.58**	18.67**	18.56**
	(2.90)	(3.13)	(2.89)	(2.18)	(2.19)	(2.18)
Medicare Patient Payer Mix	-3.310	-7.964***	-4.804*	-2.127	-2.043	-2.678
	(-1.35)	(-3.22)	(-1.94)	(-0.44)	(-0.43)	(-0.56)
Donation to Revenue	-165.1**	-211.9***	-175.1**	-64.46	-64.54	-63.66
	(-2.31)	(-2.93)	(-2.44)	(-0.82)	(-0.82)	(-0.81)
Investment Return to Revenue	-30.09	6.447	-6.914	-7.913	-8.088	-11.53
	(-0.88)	(0.18)	(-0.20)	(-0.30)	(-0.30)	(-0.45)
Financial Leverage	-1.077	-1.557*	-1.176	-0.0167	0.0427	0.0504
	(-1.39)	(-1.95)	(-1.49)	(-0.02)	(0.05)	(0.06)
Total Salary to Revenue	-13.34***	-18.37***	-19.34***	4.730	4.850	5.150
	(-2.91)	(-4.04)	(-4.28)	(0.79)	(0.81)	(0.87)
Asset Turnover	0.646***	0.109	0.167	-0.234	-0.165	-0.171
	(4.66)	(0.88)	(1.38)	(-1.06)	(-1.08)	(-1.12)
Days Cash On Hand	-0.00344	-0.00157	-0.00146	-0.00758*	-0.00781*	-0.00763*
	(-0.92)	(-0.42)	(-0.39)	(-1.73)	(-1.78)	(-1.73)
Days Patients Accounts Receivable Outstanding	-0.0154	-0.00944	-0.00726	0.0104	0.0100	0.00847
	(-1.11)	(-0.68)	(-0.51)	(0.85)	(0.82)	(0.69)
Fixed Asset Age	-0.00261	-0.00164	-0.00180	-0.00242	-0.00251	-0.00249
	(-0.96)	(-0.62)	(-0.65)	(-1.01)	(-1.05)	(-1.03)
Urban Hospital	1.464*	3.059***	2.016***	0.0136	0.0209	-0.280
	(1.93)	(4.10)	(2.68)	(0.02)	(0.03)	(-0.36)
Constant	-75.47***	-35.77***	-47.32***	23.50	17.92	16.31
	(-5.45)	(-2.80)	(-3.70)	(1.22)	(1.23)	(1.06)
Year Fixed-Effects	Yes	Yes	Yes	No	No	No
State Fixed-Effects	Yes	Yes	Yes	No	No	No
Hospital Fixed-Effects	No	No	No	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	8,238	8,238	8,238	8,238	8,238	8,238
R-squared (within)				0.006	0.006	0.005
R-squared (between)				0.025	0.089	0.126
R-squared (overall)	0.260	0.245	0.253	0.017	0.062	0.089

Section B. Uncompensated Care

Dependent Variable: Natural log of Uncompensated Care Expenditure	(1)	(2)	(3)	(4)	(5)	(6)
Natural log of Executive Compensation	0.0828***	0.279***	0.160***	-0.0586**	-0.0557**	-0.0554**
	(3.05)	(8.93)	(7.13)	(-2.25)	(-2.14)	(-2.12)
Natural log of Total Assets	0.729***			0.0198		
	(39.12)			(0.60)		
Number of Beds		0.00343***			0.000868**	
		(29.47)			(2.31)	
Natural log of Employee Number			0.879***			0.233***
			(51.29)			(4.07)
Natural log of Revenue per Patient-Day	-0.146***	-0.206***	-0.0814**	-0.123**	-0.115**	-0.132**
	(-3.68)	(-3.68)	(-2.24)	(-2.17)	(-2.11)	(-2.37)
Operating Margin	-1.080***	-0.367	-1.184***	-0.857***	-0.868***	-0.963***
	(-3.01)	(-0.80)	(-3.47)	(-2.72)	(-2.76)	(-3.05)
Medicare Patient Payer Mix	-0.817***	-1.558***	-0.788***	0.134	0.134	0.117
	(-6.16)	(-9.47)	(-6.56)	(0.74)	(0.75)	(0.65)
Donation to Revenue	-9.203***	-21.14***	-7.250**	-8.221***	-8.253***	-8.034***
	(-3.05)	(-5.04)	(-2.23)	(-2.99)	(-3.00)	(-2.91)
Investment Return to Revenue	-4.644***	3.707*	0.713	3.482***	3.443***	3.579***
	(-2.84)	(1.90)	(0.56)	(3.05)	(3.02)	(3.14)
Financial Leverage	-0.0376	-0.127***	-0.00817	0.0248	0.0229	0.0273
	(-0.89)	(-2.93)	(-0.24)	(0.64)	(0.61)	(0.75)
Total Salary to Revenue	1.085***	-0.287	-0.759***	0.330	0.329	0.148
	(5.20)	(-1.11)	(-3.84)	(1.12)	(1.12)	(0.49)
Asset Turnover	0.142***	-0.0113	0.00186	-0.0124	-0.0162**	-0.0169**
	(16.27)	(-1.54)	(0.35)	(-1.22)	(-2.40)	(-2.54)
Days Cash On Hand	-0.000838***	-0.000125	-0.000166	-0.000243	-0.000230	-0.000246
	(-4.53)	(-0.71)	(-1.11)	(-0.78)	(-0.73)	(-0.89)
Days Patients Accounts Receivable Outstanding	-0.00187**	-0.000268	0.000741	-0.00117**	-0.00114**	-0.00130**
	(-2.50)	(-0.41)	(1.27)	(-2.17)	(-2.14)	(-2.36)
Fixed Asset Age	-0.000184	-0.000131	0.0000245	-0.000387*	-0.000383*	-0.000385*
	(-1.28)	(-0.91)	(0.22)	(-1.69)	(-1.69)	(-1.74)
Urban Hospital	-0.0944***	0.138***	-0.0765**	-0.0281	-0.0312	-0.0362
	(-2.59)	(3.01)	(-2.31)	(-0.55)	(-0.61)	(-0.71)
Constant	2.263***	14.45***	9.384***	16.55***	16.65***	15.55***
	(3.88)	(21.00)	(20.72)	(21.61)	(27.81)	(22.84)
Year Fixed-Effects	Yes	Yes	Yes	No	No	No
State Fixed-Effects	Yes	Yes	Yes	No	No	No
Hospital Fixed-Effects	No	No	No	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	8,238	8,238	8,238	8,238	8,238	8,238
R-squared (within)				0.022	0.024	0.028
R-squared (between)				0.001	0.216	0.535
R-squared (overall)	0.772	0.695	0.801	0.002	0.215	0.496

Table 14. Hospital service quality and excessive executive compensation

Specifications (1) to (3) in Sections A and B use OLS regressions with fiscal year and state fixed-effects, and specifications (4) to (6) in both sections use OLS regressions with hospital fixed effects. The dependent variable in all specifications of Section A is the excessive log compensation, and the dependent variables in Section B is the excessive compensation-to-revenue ratio. The independent variables include the natural logarithm of average total compensation of top 5 executives, the number of hospital beds, natural log of total assets, natural log of total revenues, net income to assets, Operating margin, Medicare patient payer mix, financial leverage, asset turnover or sales to assets, current ratio, working capital to total assets, days cash on hand, days sales outstanding, fixed asset age in years, total salary to revenue, and urban hospital dummy. z-statistics are shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.

Section A. Excessive log compensation

Dependent Variable: Average Score of Service Quality	(1)	(2)	(3)	(4)	(5)	(6)
Excessive log compensation	0.238 (0.49)	0.300 (0.62)	0.235 (0.48)	2.356*** (4.63)	2.174*** (4.35)	2.331*** (4.56)
Natural log of Employee Number	3.689*** (13.89)	3.562*** (14.03)	3.703*** (13.89)	-0.207 (-0.35)	-0.490 (-0.83)	-0.317 (-0.54)
Natural log of Revenue per Patient-Day	1.094** (1.96)		1.112** (2.00)	9.834*** (7.71)		9.860*** (7.55)
Natural log of Revenue per Patient Discharge		-0.778 (-1.32)			9.293*** (7.46)	
Operating Margin	5.519 (0.71)	6.768 (0.87)		-17.00* (-1.94)	-17.21** (-2.02)	
Return on Assets			1.130 (0.49)			-1.811 (-0.88)
Medicare Patient Payer Mix	-4.075** (-2.15)	-3.233 (-1.64)	-4.098** (-2.15)	-12.36** (-2.06)	-13.55** (-2.38)	-12.21** (-2.03)
Donation to Revenue	-27.25 (-0.58)	-19.14 (-0.41)	-32.08 (-0.68)	2.757 (0.07)	14.87 (0.39)	11.85 (0.31)
Investment Return to Revenue	10.20 (0.50)	4.298 (0.21)	10.04 (0.49)	2.344 (0.14)	0.517 (0.03)	6.084 (0.35)
Financial Leverage	0.00728 (0.01)	0.0722 (0.10)	-0.0225 (-0.03)	-1.593 (-1.41)	-1.656 (-1.48)	-1.576 (-1.38)
Total Salary to Revenue	-12.62*** (-3.62)	-13.16*** (-3.73)	-13.72*** (-4.60)	12.80** (2.54)	11.24** (2.20)	18.43*** (4.04)
Asset Turnover	0.0314 (0.26)	0.0195 (0.16)	0.0412 (0.34)	0.180 (0.87)	0.215 (1.07)	0.161 (0.77)
Days Cash On Hand	0.00268 (0.84)	0.00315 (0.98)	0.00279 (0.87)	0.000554 (0.12)	0.000224 (0.05)	0.000156 (0.03)
Days Patients Accounts Receivable Outstanding	-0.0115 (-1.02)	-0.0129 (-1.15)	-0.0121 (-1.07)	0.0195 (1.49)	0.0211* (1.71)	0.0216 (1.63)
Fixed Asset Age	0.00161 (0.89)	0.00179 (1.03)	0.00165 (0.90)	0.00215 (0.57)	0.00215 (0.63)	0.00224 (0.60)
Urban Hospital	0.723 (1.45)	0.341 (0.71)	0.707 (1.42)	-1.862* (-1.80)	-1.871* (-1.85)	-1.806* (-1.75)
Constant	52.96*** (8.35)	72.34*** (10.32)	53.27*** (8.46)	4.934 (0.39)	-1.363 (-0.10)	3.140 (0.25)
Year Fixed-Effects	Yes	Yes	Yes	No	No	No
State Fixed-Effects	Yes	Yes	Yes	No	No	No
Hospital Fixed-Effects	No	No	No	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	4,447	4,447	4,447	4,447	4,447	4,447
R-squared (within)				0.091	0.096	0.089
R-squared (between)				0.031	0.093	0.032
R-squared (overall)	0.336	0.336	0.336	0.017	0.048	0.019

Section B. Excessive compensation-to-average employee salary ratio

Dependent Variable: Average Score of Service Quality	(1)	(2)	(3)	(4)	(5)	(6)
Excessive compensation-to-average employee salary ratio	-0.0630 (-1.12)	-0.0628 (-1.10)	-0.0629 (-1.12)	0.236*** (3.95)	0.260*** (4.44)	0.233*** (3.89)
Natural log of Employee Number	3.688*** (13.89)	3.564*** (14.01)	3.701*** (13.89)	-0.387 (-0.64)	-0.668 (-1.10)	-0.494 (-0.83)
Natural log of Revenue per Patient-Day	1.084* (1.95)		1.102** (1.98)	9.745*** (7.59)		9.772*** (7.44)
Natural log of Revenue per Patient Discharge		-0.743 (-1.26)			9.391*** (7.52)	
Operating Margin	5.611 (0.73)	6.852 (0.89)		-16.85* (-1.91)	-17.15** (-2.00)	
Return on Assets			1.208 (0.53)			-1.811 (-0.88)
Medicare Patient Payer Mix	-4.146** (-2.19)	-3.336* (-1.69)	-4.168** (-2.19)	-12.41** (-2.07)	-13.46** (-2.37)	-12.26** (-2.04)
Donation to Revenue	-26.98 (-0.58)	-19.04 (-0.41)	-31.92 (-0.68)	1.767 (0.05)	13.99 (0.37)	10.81 (0.28)
Investment Return to Revenue	10.45 (0.51)	4.716 (0.23)	10.27 (0.50)	2.303 (0.13)	0.576 (0.03)	6.030 (0.34)
Financial Leverage	0.0156 (0.02)	0.0798 (0.11)	-0.00823 (-0.01)	-1.615 (-1.45)	-1.666 (-1.51)	-1.600 (-1.42)
Total Salary to Revenue	-12.61*** (-3.64)	-13.13*** (-3.74)	-13.70*** (-4.63)	12.81** (2.55)	11.55** (2.26)	18.38*** (4.04)
Asset Turnover	0.0280 (0.23)	0.0161 (0.13)	0.0377 (0.31)	0.179 (0.87)	0.211 (1.05)	0.160 (0.77)
Days Cash On Hand	0.00269 (0.84)	0.00316 (0.99)	0.00281 (0.88)	0.000518 (0.11)	0.000185 (0.04)	0.000124 (0.03)
Days Patients Accounts Receivable Outstanding	-0.0114 (-1.01)	-0.0127 (-1.14)	-0.0119 (-1.06)	0.0191 (1.45)	0.0209* (1.69)	0.0211 (1.60)
Fixed Asset Age	0.00156 (0.87)	0.00174 (1.01)	0.00161 (0.89)	0.00230 (0.59)	0.00226 (0.66)	0.00239 (0.63)
Urban Hospital	0.719 (1.44)	0.345 (0.72)	0.704 (1.41)	-1.875* (-1.80)	-1.873* (-1.85)	-1.820* (-1.75)
Constant	53.06*** (8.39)	71.97*** (10.27)	53.38*** (8.49)	6.883 (0.54)	-1.416 (-0.10)	5.085 (0.39)
Year Fixed-Effects	Yes	Yes	Yes	No	No	No
State Fixed-Effects	Yes	Yes	Yes	No	No	No
Hospital Fixed-Effects	No	No	No	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	4,447	4,447	4,447	4,447	4,447	4,447
R-squared (within)				0.088	0.095	0.085
R-squared (between)				0.024	0.088	0.025
R-squared (overall)	0.337	0.336	0.336	0.014	0.045	0.015

Table 15. Uncompensated care provision and executive compensation

All specifications use OLS regressions with hospital type and state fixed-effects. The dependent variable is the ratio of uncompensated care expenditure to total revenue. The independent variables include the natural logarithm of average total compensation of top 5 executives, the number of hospital beds, natural log of total assets, natural log of total revenues, net income to assets, Operating margin, Medicare patient payer mix, financial leverage, asset turnover or sales to assets, current ratio, working capital to total assets, days cash on hand, days sales outstanding, fixed asset age in years, total salary to revenue, and urban hospital dummy. z-statistics are shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.

Section A. Excessive log compensation

Dependent Variable: Uncompensated Care Expenditure to Total Revenue	(1)	(2)	(3)	(4)	(5)	(6)
Excessive log compensation	0.00258***	0.00233**	0.00266***	0.000525	0.000667	0.000504
	(2.68)	(2.46)	(2.77)	(0.67)	(0.85)	(0.64)
Natural log of Employee Number	-0.00648***	-0.00629***	-0.00668***	-0.00173	-0.00138	-0.00235*
	(-11.35)	(-11.19)	(-11.62)	(-1.33)	(-1.07)	(-1.71)
Natural log of Revenue per Patient-Day	0.00245**		0.00242**	-0.00260		-0.00230
	(2.01)		(2.10)	(-1.36)		(-1.23)
Natural log of Revenue per Patient Discharge		0.00334**			-0.00517***	
		(2.51)			(-2.94)	
Operating Margin	-0.0609***	-0.0591***		-0.0760***	-0.0759***	
	(-4.16)	(-4.12)		(-6.00)	(-5.94)	
Return on Assets			-0.00635			-0.0133***
			(-1.31)			(-3.30)
Medicare Patient Payer Mix	-0.00648	-0.00695*	-0.00566	0.00233	0.00163	0.00336
	(-1.62)	(-1.67)	(-1.41)	(0.39)	(0.27)	(0.54)
Donation to Revenue	-0.0459	-0.0488	0.00195	-0.105**	-0.109**	-0.0560
	(-0.51)	(-0.52)	(0.02)	(-2.12)	(-2.19)	(-1.11)
Investment Return to Revenue	0.00336	0.00520	0.00471	0.000549	-0.00102	0.0225
	(0.07)	(0.11)	(0.10)	(0.02)	(-0.04)	(0.77)
Financial Leverage	0.00316*	0.00316*	0.00430**	0.00490***	0.00476***	0.00466***
	(1.76)	(1.77)	(2.38)	(2.86)	(2.80)	(2.62)
Total Salary to Revenue	0.00574	0.00605	0.0230***	-0.00580	-0.00976	0.0173**
	(0.81)	(0.86)	(3.74)	(-0.68)	(-1.14)	(2.16)
Asset Turnover	0.0000323	0.0000646	-0.000129	0.000169	0.000227	0.0000356
	(0.11)	(0.22)	(-0.41)	(0.44)	(0.60)	(0.09)
Days Cash On Hand	-0.0000152**	-0.0000151**	-0.0000164***	-0.00000905	-0.00000849	-0.0000110
	(-2.42)	(-2.44)	(-2.60)	(-1.39)	(-1.30)	(-1.55)
Days Patients Accounts Receivable Outstanding	-0.000000581	0.00000106	0.00000645	0.0000103	0.00000787	0.0000175
	(-0.02)	(0.04)	(0.27)	(0.49)	(0.38)	(0.82)
Fixed Asset Age	-0.0000108**	-0.0000111**	-0.00000984**	0.00000488	0.00000549	0.00000526
	(-2.10)	(-2.18)	(-2.04)	(0.72)	(0.83)	(0.70)
Urban Hospital	-0.00302**	-0.00308***	-0.00272**	0.000553	0.000407	0.000881
	(-2.56)	(-2.66)	(-2.32)	(0.36)	(0.26)	(0.55)
Constant	0.0548***	0.0393**	0.0479***	0.0576***	0.0882***	0.0501**
	(4.13)	(2.45)	(3.82)	(2.94)	(4.36)	(2.56)
Year Fixed-Effects	Yes	Yes	Yes	No	No	No
State Fixed-Effects	Yes	Yes	Yes	No	No	No
Hospital Fixed-Effects	No	No	No	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	4,447	4,447	4,447	4,447	4,447	4,447
R-squared (within)				0.043	0.048	0.029
R-squared (between)				0.063	0.028	0.059
R-squared (overall)	0.372	0.376	0.361	0.057	0.032	0.061

Section B. Excessive compensation-to-average employee salary ratio

Dependent Variable: Uncompensated Care Expenditure to Total Revenue	(1)	(2)	(3)	(4)	(5)	(6)
Excessive compensation-to-average employee salary ratio	0.000207*	0.000198*	0.000211*	0.000127	0.000120	0.000125
	(1.89)	(1.84)	(1.94)	(1.29)	(1.22)	(1.25)
Natural log of Employee Number	-0.00649***	-0.00630***	-0.00670***	-0.00177	-0.00144	-0.00239*
	(-11.31)	(-11.16)	(-11.59)	(-1.34)	(-1.10)	(-1.70)
Natural log of Revenue per Patient-Day	0.00248**		0.00244**	-0.00266		-0.00235
	(2.05)		(2.14)	(-1.38)		(-1.26)
Natural log of Revenue per Patient Discharge		0.00343***			-0.00514***	
		(2.59)			(-2.93)	
Operating Margin	-0.0610***	-0.0591***		-0.0760***	-0.0759***	
	(-4.15)	(-4.11)		(-5.99)	(-5.94)	
Return on Assets			-0.00598			-0.0133***
			(-1.22)			(-3.29)
Medicare Patient Payer Mix	-0.00653	-0.00701*	-0.00570	0.00231	0.00164	0.00334
	(-1.63)	(-1.69)	(-1.42)	(0.38)	(0.28)	(0.54)
Donation to Revenue	-0.0462	-0.0496	0.00154	-0.105**	-0.109**	-0.0561
	(-0.51)	(-0.52)	(0.02)	(-2.11)	(-2.19)	(-1.11)
Investment Return to Revenue	0.00346	0.00541	0.00473	0.000460	-0.00102	0.0224
	(0.08)	(0.12)	(0.10)	(0.02)	(-0.04)	(0.76)
Financial Leverage	0.00316*	0.00316*	0.00434**	0.00490***	0.00476***	0.00466***
	(1.75)	(1.76)	(2.40)	(2.85)	(2.80)	(2.62)
Total Salary to Revenue	0.00574	0.00606	0.0231***	-0.00585	-0.00966	0.0172**
	(0.81)	(0.86)	(3.76)	(-0.69)	(-1.12)	(2.16)
Asset Turnover	0.0000322	0.0000661	-0.000131	0.000170	0.000227	0.0000373
	(0.11)	(0.22)	(-0.42)	(0.45)	(0.60)	(0.10)
Days Cash On Hand	-0.0000152**	-0.0000151**	-0.0000164***	-0.00000905	-0.00000850	-0.0000110
	(-2.43)	(-2.44)	(-2.60)	(-1.39)	(-1.30)	(-1.55)
Days Patients Accounts Receivable Outstanding	-0.000000550	0.00000120	0.00000658	0.0000102	0.00000794	0.0000175
	(-0.02)	(0.05)	(0.27)	(0.48)	(0.38)	(0.82)
Fixed Asset Age	-0.0000108**	-0.0000111**	-0.00000985**	0.00000491	0.00000551	0.00000529
	(-2.11)	(-2.19)	(-2.05)	(0.71)	(0.82)	(0.69)
Urban Hospital	-0.00300**	-0.00306***	-0.00271**	0.000548	0.000406	0.000876
	(-2.54)	(-2.64)	(-2.29)	(0.35)	(0.26)	(0.55)
Constant	0.0546***	0.0383**	0.0477***	0.0585***	0.0882***	0.0509**
	(4.15)	(2.40)	(3.84)	(2.96)	(4.35)	(2.58)
Year Fixed-Effects	Yes	Yes	Yes	No	No	No
State Fixed-Effects	Yes	Yes	Yes	No	No	No
Hospital Fixed-Effects	No	No	No	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	4,447	4,447	4,447	4,447	4,447	4,447
R-squared (within)				0.043	0.048	0.030
R-squared (between)				0.063	0.028	0.059
R-squared (overall)	0.370	0.375	0.360	0.040	0.032	0.0061

Table 16. Pay for performance sensitivity

All specifications use OLS regressions with hospital type and state fixed-effects. The dependent variable is the natural logarithm of average executive compensation. The independent variables include the number of hospital beds, natural log of total assets, natural log of total revenues, net income to assets, Operating margin, Medicare patient payer mix, financial leverage, total salary to revenue, asset turnover or sales to assets, working capital to total assets, days cash on hand, days sales outstanding, fixed asset age in years, and urban hospital dummy. z-statistics are shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.

Section A. Pay for financial performance (percentage change in operating margin)

Dependent Variable: Percentage change in CEO compensation	(1)	(2)	(3)	(4)	(5)	(6)
Percentage Change in Operating Margin	0.000108 (0.59)	0.000121 (0.66)	0.000110 (0.60)	0.0000998 (0.54)	0.000114 (0.61)	0.0000915 (0.52)
Natural log of Total Assets		0.0180*** (3.25)				
Natural log of Total Revenues			0.0178*** (3.46)			
Number of Beds				0.000158*** (3.29)		
Natural log of Employee Number					0.0200** (2.11)	0.0200* (1.79)
Natural log of Revenue per Patient-Day					-0.00233 (-0.24)	0.00271 (0.24)
Medicare Patient Payer Mix					0.0183 (0.37)	0.0302 (0.52)
Donation to Revenue					0.795 (0.58)	1.486 (0.91)
Investment Return to Revenue					2.167* (1.65)	2.856** (2.05)
Financial Leverage					-0.0257 (-1.01)	-0.0279 (-1.09)
Total Salary to Revenue					-0.0447 (-0.52)	-0.0367 (-0.38)
Asset Turnover					0.00138 (0.33)	-0.00125 (-0.24)
Days Cash On Hand					-0.000141 (-1.17)	-0.000148 (-1.16)
Days Patients Accounts Receivable Outstanding					-0.000233 (-0.63)	0.00000863 (0.02)
Fixed Asset Age					0.0000273 (0.23)	0.00000149 (0.01)
Urban Hospital					0.0190 (1.08)	0.0221 (1.16)
Constant	0.0900*** (13.09)	-0.241** (-2.41)	-0.252*** (-2.60)	0.0625*** (6.64)	0.000696 (0.01)	0.0260 (0.17)
State Fixed-Effects	No	No	No	No	No	Yes
Year Fixed-Effects	No	No	No	No	No	Yes
Hospital Type Fixed-Effects	No	No	No	No	No	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	1,964	1,964	1,964	1,964	1,964	1,964
Adj. R-squared	0.001	0.004	0.004	0.004	0.003	0.010

Section B. Pay for quality performance (percentage change in service quality scores)

Dependent Variable: Percentage change in CEO compensation	(1)	(2)	(3)	(4)	(5)	(6)
Percentage Change in Service Quality Score	-0.000209 (-0.06)	0.000861 (0.24)	0.00109 (0.31)	0.000405 (0.11)	0.00133 (0.37)	0.00144 (0.36)
Natural log of Total Assets		0.0170* (1.77)				
Natural log of Total Revenues			0.0186** (2.33)			
Number of Beds				0.000107 (1.59)		
Natural log of Employee Number					0.0105 (0.62)	0.00445 (0.26)
Natural log of Revenue per Patient-Day					-0.00740 (-0.59)	-0.00886 (-0.54)
Medicare Patient Payer Mix					-0.0683 (-0.53)	0.107 (0.95)
Donation to Revenue					3.446 (0.85)	3.198 (0.75)
Investment Return to Revenue					-1.690 (-1.32)	-1.361 (-0.88)
Financial Leverage					-0.00280 (-0.08)	-0.0115 (-0.30)
Total Salary to Revenue					-0.140 (-0.79)	-0.229 (-1.37)
Asset Turnover					0.00104 (0.13)	0.00101 (0.11)
Days Cash On Hand					-0.000103 (-0.55)	-0.000184 (-0.77)
Days Patients Accounts Receivable Outstanding					0.000117 (0.18)	0.000302 (0.42)
Fixed Asset Age					-0.000126 (-1.26)	-0.000207 (-1.59)
Urban Hospital					0.00984 (0.29)	0.0164 (0.49)
Constant	0.0797*** (6.94)	-0.238 (-1.37)	-0.282* (-1.89)	0.0597*** (4.39)	0.166 (0.97)	0.145 (0.66)
State Fixed-Effects	No	No	No	No	No	Yes
Year Fixed-Effects	No	No	No	No	No	Yes
Hospital Type Fixed-Effects	No	No	No	No	No	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	744	744	744	744	744	744
Adj. R-squared	0.001	0.002	0.004	0.000	0.005	0.016

Section C. Pay for charity care performance (percentage change in uncompensated care)

Dependent Variable: Percentage change in CEO compensation	(1)	(2)	(3)	(4)	(5)	(6)
Percentage Change in Uncompensated Care	-0.000436 (-1.26)	-0.000370 (-1.06)	-0.000366 (-1.02)	-0.000412 (-1.19)	-0.000434 (-1.21)	-0.000547 (-1.35)
Natural log of Total Assets		0.0152** (2.55)				
Natural log of Total Revenues			0.0156*** (2.85)			
Number of Beds				0.000142*** (2.85)		
Natural log of Employee Number					0.0146 (1.45)	0.0171 (1.48)
Natural log of Revenue per Patient-Day					-0.00124 (-0.13)	0.0102 (0.85)
Medicare Patient Payer Mix					0.0349 (0.68)	0.0347 (0.56)
Donation to Revenue					-0.351 (-0.27)	0.254 (0.15)
Investment Return to Revenue					2.454* (1.78)	3.152** (2.15)
Financial Leverage					-0.0225 (-0.85)	-0.0308 (-1.15)
Total Salary to Revenue					-0.0729 (-0.76)	-0.107 (-1.03)
Asset Turnover					0.00205 (0.51)	0.00216 (0.42)
Days Cash On Hand					-0.000121 (-0.98)	-0.000119 (-0.93)
Days Patients Accounts Receivable Outstanding					-0.000247 (-0.60)	-0.0000291 (-0.06)
Fixed Asset Age					0.0000550 (0.34)	0.0000339 (0.19)
Urban Hospital					0.0232 (1.27)	0.0252 (1.27)
Constant	0.0887*** (12.51)	-0.191* (-1.76)	-0.211** (-2.03)	0.0643*** (6.47)	0.0233 (0.17)	-0.0544 (-0.33)
State Fixed-Effects	No	No	No	No	No	Yes
Year Fixed-Effects	No	No	No	No	No	Yes
Hospital Type Fixed-Effects	No	No	No	No	No	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	1,964	1,964	1,964	1,964	1,964	1,964
Adj. R-squared	0.000	0.003	0.003	0.004	0.002	0.011

Table XVI. IV regressions

z-statistics are shown in the parentheses with ***, ** and * indicating its statistical significant level of 1%, 5% and 10% respectively.

Section A. Service quality

Dependent Variable: Average Score of Service Quality	(1)	(2)	(3)	(4)	(5)	(6)
Natural log of Executive Compensation (instrumented by trustee independence)	10.79*** (3.68)	11.59*** (4.13)	10.93*** (3.76)	145.2 (0.36)	1615.6 (0.03)	4218.5 (0.01)
Natural log of Total Assets	1.307** (2.17)			-25.66 (-0.37)		
Number of Beds		-0.00179 (-0.67)			0.0382 (0.03)	
Natural log of Employee Number			1.120* (1.92)			-36.39 (-0.01)
Natural log of Revenue per Patient-Day	3.093*** (3.74)	2.476*** (3.03)	3.051*** (3.71)	-26.33 (-0.34)	-402.6 (-0.03)	-1049.9 (-0.01)
Operating Margin	23.00*** (2.63)	24.12*** (2.72)	23.04*** (2.62)	13.96 (0.45)	45.25 (0.05)	113.4 (0.01)
Medicare Patient Payer Mix	-2.492 (-0.99)	-5.887** (-2.14)	-3.416 (-1.30)	33.08 (0.34)	464.6 (0.03)	1249.8 (0.01)
Donation to Revenue	-122.3* (-1.65)	-153.0** (-1.99)	-129.9* (-1.73)	-6.578 (-0.02)	551.0 (0.03)	1484.7 (0.01)
Investment Return to Revenue	-13.65 (-0.38)	9.938 (0.28)	-1.060 (-0.03)	-108.6 (-0.37)	-1287.1 (-0.03)	-3419.3 (-0.01)
Financial Leverage	-0.881 (-1.04)	-1.212 (-1.39)	-0.950 (-1.11)	-0.152 (-0.04)	46.53 (0.03)	120.8 (0.01)
Total Salary to Revenue	-9.394* (-1.85)	-12.51** (-2.30)	-12.97** (-2.34)	-55.53 (-0.34)	-595.3 (-0.03)	-1586.3 (-0.01)
Asset Turnover	0.259 (1.15)	-0.0492 (-0.34)	0.0000603 (0.00)	-6.335 (-0.38)	-15.04 (-0.03)	-38.54 (-0.01)
Days Cash On Hand	-0.00477 (-1.24)	-0.00386 (-0.97)	-0.00361 (-0.91)	-0.0382 (-0.44)	-0.541 (-0.03)	-1.400 (-0.01)
Days Patients Accounts Receivable Outstanding	-0.0122 (-0.84)	-0.00873 (-0.61)	-0.00782 (-0.54)	-0.0404 (-0.28)	-0.909 (-0.03)	-2.402 (-0.01)
Fixed Asset Age	-0.00372 (-1.28)	-0.00286 (-1.01)	-0.00324 (-1.08)	-0.0281 (-0.39)	-0.369 (-0.03)	-0.972 (-0.01)
Urban Hospital	0.475 (0.53)	1.682 (1.64)	0.835 (0.86)	0.696 (0.16)	14.32 (0.03)	60.88 (0.01)
Constant	-128.8*** (-4.63)	-105.6*** (-2.99)	-111.2*** (-3.32)	-1089.9 (-0.35)	-17136.5 (-0.03)	-44592.2 (-0.01)
Year Fixed-Effects	Yes	Yes	Yes	No	No	No
State Fixed-Effects	Yes	Yes	Yes	No	No	No
Hospital Fixed-Effects	No	No	No	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	8,238	8,238	8,238	8,238	8,238	8,238
R-squared (within)				0.000	0.000	0.000
R-squared (between)				0.058	0.129	0.127
R-squared (overall)	0.229	0.217	0.225	0.045	0.097	0.095

Section B. Uncompensated care

Dependent Variable: Natural log of Uncompensated Care Expenditure	(1)	(2)	(3)	(4)	(5)	(6)
Natural log of Executive Compensation (instrumented by trustee independence)	0.374*** (3.14)	0.575*** (4.16)	0.308*** (2.88)	1.682 (0.41)	5.625 (0.18)	5.262 (0.15)
Natural log of Total Assets	0.681*** (26.91)			-0.281 (-0.39)		
Number of Beds		0.00322*** (22.35)			0.00100 (0.84)	
Natural log of Employee Number			0.856*** (37.36)			0.197 (0.70)
Natural log of Revenue per Patient-Day	-0.174*** (-4.02)	-0.230*** (-3.96)	-0.0957** (-2.46)	-0.472 (-0.56)	-1.579 (-0.19)	-1.498 (-0.17)
Operating Margin	-1.175*** (-3.25)	-0.520 (-1.13)	-1.235*** (-3.63)	-0.905* (-1.84)	-0.812 (-0.61)	-0.887 (-0.67)
Medicare Patient Payer Mix	-0.779*** (-5.75)	-1.453*** (-8.44)	-0.753*** (-6.20)	0.589 (0.53)	1.864 (0.19)	1.778 (0.17)
Donation to Revenue	-7.084** (-2.28)	-17.98*** (-4.22)	-6.014* (-1.87)	-7.455* (-1.82)	-5.861 (-0.36)	-5.869 (-0.36)
Investment Return to Revenue	-3.837** (-2.34)	3.928** (2.04)	0.887 (0.70)	2.177 (0.62)	-1.434 (-0.05)	-1.065 (-0.04)
Financial Leverage	-0.0321 (-0.79)	-0.113** (-2.58)	-0.00498 (-0.15)	0.0275 (0.48)	0.196 (0.20)	0.189 (0.18)
Total Salary to Revenue	1.265*** (5.56)	0.00716 (0.02)	-0.599*** (-2.58)	-0.415 (-0.23)	-1.887 (-0.15)	-1.970 (-0.14)
Asset Turnover	0.124*** (11.58)	-0.0192** (-2.37)	-0.00224 (-0.37)	-0.0857 (-0.49)	-0.0693 (-0.23)	-0.0660 (-0.21)
Days Cash On Hand	-0.000901*** (-4.74)	-0.000241 (-1.29)	-0.000222 (-1.43)	-0.000614 (-0.63)	-0.00212 (-0.20)	-0.00201 (-0.18)
Days Patients Accounts Receivable Outstanding	-0.00172** (-2.27)	-0.000233 (-0.35)	0.000733 (1.26)	-0.00186 (-1.04)	-0.00462 (-0.24)	-0.00458 (-0.22)
Fixed Asset Age	-0.000241* (-1.72)	-0.000199 (-1.44)	-0.0000151 (-0.13)	-0.000690 (-0.89)	-0.00165 (-0.23)	-0.00159 (-0.20)
Urban Hospital	-0.141*** (-3.21)	0.0677 (1.15)	-0.107*** (-2.59)	-0.0195 (-0.25)	0.0330 (0.08)	0.0546 (0.09)
Constant	-0.217 (-0.19)	10.93*** (6.50)	7.770*** (6.54)	3.115 (0.10)	-43.34 (-0.13)	-40.40 (-0.11)
Year Fixed-Effects	Yes	Yes	Yes	No	No	No
State Fixed-Effects	Yes	Yes	Yes	No	No	No
Hospital Fixed-Effects	No	No	No	Yes	Yes	Yes
Standard Errors Clustered by Hospital	Yes	Yes	Yes	Yes	Yes	Yes
N	8,238	8,238	8,238	8,238	8,238	8,238
R-squared (within)				0.000	0.000	0.000
R-squared (between)				0.048	0.315	0.332
R-squared (overall)	0.762	0.684	0.799	0.047	0.277	0.291