



Published in final edited form as:

Med Care Res Rev. 2009 December ; 66(6): 725–738. doi:10.1177/1077558709338479.

CEO Compensation and Hospital Financial Performance

Kristin L. Reiter, PhD¹, Guillermo A. Sandoval, MBA^{2,3}, Adalsteinn D. Brown, PhD^{2,3}, and George H. Pink, PhD^{1,2}

¹ Department of Health Policy and Management, The University of North Carolina at Chapel Hill

² Department of Health Policy, Management, and Evaluation, The University of Toronto

³ Health System Strategy Division, Ministry of Health and Long-Term Care, Government of Ontario

Abstract

Growing interest in pay-for-performance and the level of CEO pay raises questions about the link between performance and compensation in the health sector. This study compares the compensation of non-profit hospital Chief Executive Officers (CEOs) in Ontario, Canada to the three longest reported and most used measures of hospital financial performance. Our sample consisted of 132 CEOs from 92 hospitals between 1999 and 2006. Unbalanced panel data were analyzed using fixed effects regression. Results suggest that CEO compensation was largely unrelated to hospital financial performance. Inflation-adjusted salaries appeared to increase over time independent of hospital performance, and hospital size was positively correlated with CEO compensation. The apparent upward trend in salary despite some declines in financial performance challenges the fundamental assumption underlying this paper, that is, financial performance is likely linked to CEO compensation in Ontario. Further research is needed to understand long-term performance related to compensation incentives.

Keywords

hospitals; executive compensation; financial performance

Chief Executive Officer (CEO) compensation receives a lot of scrutiny, and the CEOs of top for-profit healthcare providers and insurers have not been exempt. One of the biggest questions has been whether executive compensation reflects the value that CEOs create. For example, following a payment of \$76 million (including \$73 million in exercised stock options) to the CEO of then-faltering Oxford Health Plans in 2002, the title of a *Modern Healthcare* article asked “Are they worth it? Executive compensation, company performance don’t always relate at top hospital, post-acute and insurance companies” (Galloro & Benko, 2003).

Corresponding Author: Kristin L. Reiter, Ph.D., Department of Health Policy and Management, The University of North Carolina at Chapel Hill, 1104H McGavran-Greenberg Hall, CB # 7411, Chapel Hill, NC 27599-7411, Phone: (919) 843-8619, Fax: (919) 966-6961, reiter@email.unc.edu.

Guillermo A. Sandoval, M.B.A., Department of Health Policy, Management, and Evaluation, The University of Toronto Health System Strategy Division, Ministry of Health and Long-Term Care, Government of Ontario, 80 Grosvenor Street, 8th Floor, Hepburn Block, Toronto, Ontario M7A 1R3, Phone: (416) 314-9061, Fax: (416) 327-5109, Guillermo.Sandoval@ontario.ca

Adalsteinn D. Brown, Ph.D., Department of Health Policy, Management, and Evaluation, The University of Toronto Health System Strategy Division, Ministry of Health and Long-Term Care, Government of Ontario, 80 Grosvenor Street, 8th Floor, Hepburn Block, Toronto, Ontario M7A 1R3, Phone: (416) 327-8929, Fax: (416) 327-5109, Adalsteinn.Brown@ontario.ca

George H. Pink, Ph.D., Department of Health Policy and Management, The University of North Carolina at Chapel Hill, 1105D McGavran-Greenberg Hall, CB# 7411, Chapel Hill, NC 27599-7411, Phone: (919) 843-2728, Fax: (919) 966-6961, gpink@email.unc.edu

More recently, questions about the appropriateness of compensation contracts of nonprofit healthcare organizations have been raised (Carreyrou & Martinez, 2008; Tieman, 2002). The General Accounting Office has investigated executive pay at non-profits (Taylor, 2006) and the Securities and Exchange Commission has proposed full disclosure of compensation arrangements through more specific compensation reports (Evans, 2006). Unreasonable executive pay has also been cited as one reason for stripping hospitals of tax-exempt status (Evans, 2005; Ricaud, 2006).

Experts have argued that tying non-profit hospital executive compensation to the achievement of financial and other goals can minimize legal scrutiny of compensation contracts, and can potentially improve organizational performance (Flannery & Hofrichter, 2007; Newman, Tyler, & Dunbar, 2001). For example, hospital Boards of Trustees can use performance-based pay as one way to align CEOs' objectives with performance targets (Hawthorne, 2000). Financial performance is emerging as an acceptable basis for performance-based pay in nonprofit hospitals because it is vital to the long-term survival of the organization and relatively easily measured (Ackerman, Kibler, Steele, VanHorn & Swartz, 2005). Therefore, this study compares the compensation of non-profit hospital CEOs in Ontario, Canada to the three longest reported and most used measures of hospital financial performance in the jurisdiction.

The extent that CEOs of non-profit hospitals are actually compensated for performance has not been extensively explored. Most prior studies of hospital executive compensation have focused on identifying for-profit/non-profit differences in compensation practices. CEOs in publicly traded companies in Ontario, Canada were found to earn twice as much on average as CEOs in similarly sized non-profit hospitals in Ontario, and to bear roughly eight times the income variance (Preyra & Pink, 2001). Similarly, a sample of U.S. for-profit hospitals was found to pay higher absolute salaries, and to use greater contingent pay thus providing stronger incentives for performance compared to non-profit hospitals (Roomkin & Weisbrod, 1999).

Only two studies were found that directly examined the pay-for-financial performance relationship in non-profit hospitals. Brickley and VanHorn (2002) found that both CEO compensation and CEO turnover were significantly related to financial performance but unrelated to altruistic activities. Ballou and Weisbrod (2003) found that, among non-profit hospitals reporting the use of any contingent pay, government, religious non-profit and secular non-profit hospitals were equally likely to report compensating CEOs based on financial performance, although the size of the sensitivity was not measured.

Background on Ontario Hospital Reimbursement and Financial Performance Goals

Ontario hospitals receive funding from a variety of sources, but most comes from the provincial government in the form of global budgets based on historical budgets, population growth, and changes in program scope and volume. Over the past several years, the Province has experimented with new forms of hospital funding, although only three have had substantial impact. The purpose of the first, provincial priority program funding, is to increase access to designated services such as cardiac surgery. For these services, hospital reimbursement is the product of the price per case and volume of cases, both of which are prospectively determined in negotiations between hospitals and the government. The second builds on this priority program model and provides incremental funding for a range of procedures targeted for shorter wait times. The third uses a health-based allocation model to distribute new funds for population growth based on need and current rates of utilization.

Within the global budgeting environment, Ontario hospitals are accountable for meeting financial performance targets included in formal Accountability Agreements with local health authorities and previously the Ontario Ministry of Health and Long-Term Care (Quigley & Scott, 2004; Ontario Joint Policy and Planning Committee, 2006, 2008b). Financial performance targets currently include a total margin of zero percent and a current ratio between 0.8 and 2.0. Although the target for total margin is breakeven, government has pursued policies to encourage positive margins through cost reduction. Hospital profitability is necessary to support capital investment and ongoing operation of medical technology, and a survey of Ontario hospital CFOs found support for the importance of positive margins to the effective ongoing management of hospitals (Pink et al., 2006).

New Contribution

We add to the body of research on executive compensation in non-profit hospitals by conducting a longitudinal analysis of hospital CEO compensation in Ontario, Canada from 1999 to 2006. Our study provides unique insights into the executive pay-performance relationship in non-profit hospitals because, in Ontario, the Accountability Agreements provide standard measures of financial performance for which hospitals are held accountable; thus creating common financial goals for hospital boards. Moreover, annual salary and financial performance data are collected using common reporting frameworks and definitions across hospitals and over time, allowing us to examine not only differences between hospitals, but also how financial performance within organizations is associated with CEO compensation contracts.

Methods and Measures

We examine correlations between hospital financial performance measures and CEO compensation using fixed effects models. The dependent variable in our model is total salary plus taxable benefits paid to CEO i at hospital h at time t , where time t is defined as the calendar year. All measures of CEO compensation were inflation-adjusted to December 2006 using the consumer price index published by the Bank of Canada.

Data limitations prevented us from including explanatory variables for many CEO and organizational characteristics that would be expected to influence compensation and possibly hospital financial performance (Core, Holthausen & Larker, 1999; Kostiuk, 1990; Ryan & Wiggins, 2001; Santerre & Thomas, 1993; Yermack, 1996). Thus, our empirical model controls for time invariant CEO and hospital characteristics and other potential omitted variables with a fixed effect (Hausman, 1978; Baltagi, 1995). Nesting of all but six of 132 CEOs within hospitals during the study period allowed us to include a single, CEO-level fixed effect to control for both CEO and hospital-level variables.

We control for hospital size at time t using global operating revenues, inflation-adjusted to December 2006 using the consumer price index published by the Bank of Canada. Financial performance is measured with three variables included in the Accountability Agreements. Total margin, a measure of hospital profitability, was defined as the ratio of net income (revenues – expenses) to total revenues, excluding facility amortization. Current ratio, a measure of hospital liquidity, is the ratio of current assets to current liabilities. Unit cost performance, a measure of hospital cost control, reflects the extent to which a hospital's actual cost per equivalent weighted case differs from its expected cost (Canadian Institute for Health Information, 2006). The unit cost performance indicator results from the calculation of an expected cost for care based on the case mix, volumes, size, teaching and tertiary activities, chronic care load, and geographic isolation of the hospital (Ontario Joint

Policy and Planning Committee, 2008a). The indicator is the actual cost's percentage above or below the expected cost per equivalent weighted case and the indicator mean is near zero.

Financial indicators are reported for fiscal years spanning April 1st to March 31st. Financial indicators were recorded in the year corresponding to the beginning of the reporting period. For example, total margin for the fiscal year April 1st 2000 to March 31st 2001 was recorded in the study database as reflecting financial performance in the year 2000. Consistent with hospitals' performance monitoring methods in Ontario, all financial performance indicators were transformed into three categories: (1) below benchmark, (2) within benchmark range, and (3) above benchmark. The within benchmark ranges for total margin and current ratio were set at 0% to 5% and 1.0 to 2.0, respectively, based on a survey of Chief Financial Officers of 138 Ontario hospitals (Pink et al., 2001). For the unit cost performance indicator, -5% and +5% were arbitrarily selected as the benchmark low and high values. Since performance and compensation are not necessarily contemporaneous, the financial performance variables are measured at time t , and also at times $t-1$ and $t-2$. We include dummy variables for each year in the study panel to control for the effect of common time trends on compensation. The remaining error term is assumed to be random.

Sample and Data Collection

Study data are for 92 non-profit, acute care hospitals in Ontario, Canada and their 132 CEOs over the period 1999 to 2006. Study data were collected from four different sources.

Salary Data

In 1996, legislation was passed requiring all organizations that receive funding from the Province of Ontario to disclose the names, positions, salaries, and taxable benefits of all employees earning a salary of \$100,000 or more. The Public Sector Salary Disclosure Act (1996) (the "Act") applies to all government and non-profit organizations that receive at least a million dollars in provincial funding, or more than 10% of their total funding from the provincial government. Data on CEO salaries and taxable benefits for the years 1999 to 2006 were obtained from (unaudited) reports published on the Ontario Ministry of Finance website pursuant to the Act.

Financial Performance Data

Indicators of hospital financial performance were obtained from the Ontario Ministry of Health and Long-term Care Finance and Information Management Branch, the Ontario Joint Policy and Planning Committee (a partnership between the Ontario Ministry of Health and Long-term Care and the Ontario Hospital Association), and the Hospital Report published by the Canadian Institute for Health Information (2007 2006).

CEO Personal Characteristics and Organizational Characteristics

Descriptive data on CEO personal characteristics including sex and physician status were collected from the Ontario Ministry of Finance website pursuant to the Act and researcher knowledge of the CEOs. Data on hospital-level characteristics including type (small, large community or teaching) and location were collected from the Hospital Report (Canadian Institute for Health Information, 2007) and the Ontario Ministry of Health and Long-term Care Finance and Information Management Branch. Hospital location in Ontario was defined by 14 Local Health Integration Networks, or LHINs. To simplify the presentation of location, the 14 LHINs were grouped into five regions. The LHIN Toronto Central was designated as region 1 and the remaining 13 LHINs were grouped into 4 regions based on location relative to Toronto Central.

To build a database, hospitals were identified from the 2007 Hospital Report (Canadian Institute for Health Information, 2007). Compensation, sex, and physician status of each CEO and hospital characteristics and financial performance were then assembled for each hospital. The 96 hospitals initially identified were approximately 75% of all hospital corporations in Ontario – the remaining 25% either had insufficient data or chose not to participate in the Hospital Report. These hospitals were overwhelmingly small hospitals for which CEO compensation may not cross the 100,000 p.a. threshold for reporting. Three small hospitals and one large community hospital initially identified did not have reportable salaries in any of the eight years and were excluded, resulting in a preliminary sample of 92 hospitals and 733 observations.

The unit of analysis was the CEO; therefore, each CEO-hospital-year observation was required to have complete data on all variables of interest. One hundred and twelve observations were excluded because CEO salaries did not meet the CAN \$100,000 reporting threshold in the early years of the study and were missing. Another 76 observations were deleted because mid-year CEO changes made it impossible to measure annual salaries. The final sample consisted of 545 CEO-hospital-year observations reflecting data from 132 CEOs and 92 hospitals.

We estimated three separate regression models using contemporaneous financial performance measures, and measures lagged one and two years, respectively. All models were estimated using robust standard errors to account for any heteroscedasticity (White, 1980). The Hospital Report (Canadian Institute for Health Information, 2007) serves as the primary reporting and benchmarking mechanism in Ontario. Each year's Hospital Report summarizes actual financial results from the prior year (e.g., the 2006 report summarizes financial results from 2005), thus we hypothesized that lagged values of performance would most likely be related to compensation. Moreover, it is possible that compensation reflects the effects of omitted CEO characteristics which would be expected to influence financial performance. Models with lagged financial performance measures would be less likely to suffer from endogeneity bias than the contemporaneous model.

Contemporaneous and lagged values were not included in the model simultaneously because data were missing at different points in time. Specifically, unit cost performance was not available for 2006; therefore, 92 observations were excluded in the contemporaneous model. The total numbers of observations for the 1-year and 2-year lag regression models were 476 and 420, respectively, since the 1-year lag model excluded data from 1999 and the 2-year lag model excluded data from 1999 and 2000. Including all values in the model simultaneously would have resulted in a significantly reduced sample size (i.e. 1999 i.e. 2000 and 2006 would have been missing).

In addition to multivariate regression models, one-way ANOVA was used to explore differences in mean annual salaries across categories of measurable CEO- and hospital-level characteristics that could not be included in the fixed effects regression model. In all cases, a p-value of 0.05 was used to assess significant effects. Descriptive analyses were performed using SPSS 16.0 for Windows (SPSS Inc., 2007). All other statistical analyses were performed using STATA 10 for Windows (StataCorp., 2007).

Results

Table 1 shows the performance distributions for all three financial indicators and the mean inflation-adjusted salary for each year between 1999 and 2006. With the exception of 2001 and 2002, over 50% of hospitals performed consistently within the benchmark range in total margin (i.e. between 0 and 5%) during the period 1999–2006. For current ratio, the

performance of hospitals tended to deteriorate over the period 1999 to 2006 with more hospitals reporting below benchmark performance in recent years. For unit cost performance, hospitals tended to perform within the benchmark range (i.e. between -5 and +5%) during the period 1999–2006. The mean inflation-adjusted salary increased 16% from \$239,000 in 1999 to \$278,000 in 2006 (nominal increase: 36%). Across hospital peer groups and during the same period, the mean inflation-adjusted salary increased 24% from \$413,000 to \$511,000 in teaching hospitals (nominal increase: 45%), 41% from \$194,000 to \$274,000 in large community hospitals (nominal increase: 65%), and 10% from \$125,000 to \$138,000 in small hospitals (nominal increase: 25%).

Table 2 shows descriptive statistics and bivariate relationships between CEOs' total annual salaries and hospital and CEO characteristics. Salaries tended to be statistically higher in cases where the CEO was male (mean: \$268,000 versus \$226,500, $p=0.013$), a medical doctor (mean: \$407,800 versus \$257,600, $p<0.001$), in a teaching hospital (mean: \$475,700 versus \$239,400 in a large community hospital or \$132,600 in a small hospital, $p<0.001$), and in a hospital in the Toronto Central region (mean: \$513,800 versus \$298,300 in the next closest region, $p<0.001$). Not surprisingly, global operating revenues showed a very strong and positive relationship with CEOs' total annual salaries (Pearson's $r = 0.876$, $p<0.001$).

Table 3 presents the results of the three fixed effects regression models. In all three models, salaries showed a statistically significant upward trend over time. The salary increases each year reflect salary adjustments in addition to cost of living adjustments since all values are inflation adjusted to December 2006. After controlling for the effects of salaries' upward trend and time-invariant CEO characteristics, the only statistically significant correlate of CEOs' total annual salaries in all three models was hospital size as measured by global operating revenues. The effect size ranged from \$51,000 for every \$100 million in additional revenues in the contemporaneous model to \$59,000 in the two-year lag model ($p<0.001$).

After controlling for hospital size, time trends and CEO characteristics, hospital financial performance was largely unrelated to total CEO salary. Only performance within the benchmark range on the current ratio in the one-year lag model, and performance above benchmark on total margin in the two-year lag model showed statistically significant relationships to CEO salaries. In the one-year lag model, the effect size was \$7,900 ($p=0.015$) for a current ratio within the benchmark range versus a current ratio below benchmark. In the two-year lag model, the effect size was \$9,900 ($p=0.045$) for a total margin above the benchmark range versus below.

Discussion

Findings from this study generally do not show that financial performance is an important correlate of executive compensation in non-profit hospitals in Ontario. After controlling for common time trends, individual and hospital characteristics, and firm size, total CEO compensation was largely unrelated to hospital financial performance. Consistent with previous research, hospital size as measured by global operating revenues was significantly associated with CEO compensation. Specifically, results suggest that CEOs salaries were positively correlated with total revenues, with effect sizes in the range of \$51 to \$59 thousand per \$100 million of total revenues. The positive correlation suggests the possibility of incentives for CEOs to lobby for increased program size or number which may present a challenge for policy-makers, particularly if lobbying results in program creation where there is insufficient volume to support quality. Over the long-run, it could also create a problem for financial sustainability if the incentive for hospital CEOs is to increase their budget.

The apparent upward trend in salaries that remained after controlling for time invariant CEO and hospital characteristics, hospital size, financial performance and inflation was surprising. One possible explanation is that the rate of CEO salary increase is indexed to the rate of medical price increase, which exceeds general inflation although not by the amount described in the analysis. Alternatively, unmeasured competition for scarce CEOs or increases in job complexity may have pushed salaries higher over time. Regardless of the reason, an upward trend in salary despite some declines in financial performance challenges the fundamental assumption underlying this paper, that is, financial performance is important to hospital boards and thus a likely component of a typical performance-based compensation system.

In Ontario, boards may view the combination of factors, such as the high proportion of funding that comes from government in the form of global budgets or the threat of capacity reduction by government as happened in the late 1990s, as an argument against the utility of performance-based compensation. Thus it is not surprising that a recent survey by the Ontario Hospital Association found that the majority of hospitals still do not have a performance based compensation framework for their CEO (Ontario Hospital Association, personal communication, 2008). However, as described below, there are several incentives for better financial performance in the Ontario system.

Current ratio and total margin are included in the Accountability Agreements between hospitals and the LHINs (Quigley & Scott, 2004; Ontario Joint Policy and Planning Committee, 2006, 2008b). Similarly, Unit Cost Performance has been used by the Ontario Ministry of Health and Long-term Care as a singular measure of hospital efficiency for over 15 years, and has been used to distribute substantial incremental funding to hospitals (e.g., CAN \$240 million in 2004). Finally, government does remove the CEO and board of a hospital from time-to-time due largely to problems with governance or budget deficits.

This study has several limitations that should be noted. First, total CEO compensation was used since the breakdown of contingent and base pay data are not published. Although this is less important in non-profits due to the absence of stock options, failure to isolate contingent pay may have underestimated the pay-performance sensitivity. Second, the study was based on CEOs of hospitals in Ontario Canada where global budgets are the predominant financing mechanism and, therefore, may not be representative of other countries' compensation practices (Zhou, 1999). Nevertheless, Ontario hospitals have recruited CEOs from the U.S. and vice versa, suggesting that the compensation practices for non-profit hospital CEOs in Canada may not differ substantially from those in the U.S. Third, many potentially important CEO and hospital-specific variables were not measurable. It is possible that our use of fixed effects regression and lagged financial performance variables did not adequately address endogeneity bias. Fourth, salary data were missing for CEOs earning less than CAN \$100,000. As a result, smaller hospitals were systematically under-represented in the sample. Evidence from the United States suggests that pay-for-performance is more prevalent among larger hospitals (Ackerman et al., 2005); therefore, it is possible that study results overstate pay-performance sensitivities for the population of hospitals in Ontario. Fifth, this study included indicators of financial performance only. There is some evidence to suggest that pay-for-performance contracts are expanding to include non-financial indicators of performance such as community benefit, patient satisfaction, and achievement of the strategic plan (Ackerman et al., 2005; Pink et al., 2001). Finally, the loss of data in the year where CEOs arrived or departed – and for which there is only a partial year of data – may underestimate the presence of a pay-performance link if hospitals are more likely to put pay at risk in these years.

Overall, results of this study suggest that pay-for-financial performance is limited in nonprofit hospitals in Ontario. Perhaps contributing to regulators' concerns over compensation, hospital CEOs do not appear to be paid for creating financial value. Although the appropriateness of *levels* of CEO pay was not explored in this study, current compensation may be justifiable on the basis of competition for talent in the increasingly complex health care arena, regardless of its relationship to performance (Cleverley, 2008; Kirchheimer, 2001). However, the incentives created by current compensation contracts may not be optimal. It is possible that increasing pay-performance sensitivities may improve the efficiency and performance of nonprofit hospitals; however, financial incentives must be implemented carefully so as not to overshadow the focus on hospitals' charitable missions. Further research is needed to understand longer term performance related to compensation incentives.

Acknowledgments

The authors would like to thank Marisa Domino, George M. Holmes, the late Michelle Mayer, Sally Stearns, and Rebecca Wells for valuable comments on earlier versions of this paper. The lead author on this project was supported by Award Number KL2RR025746 from the National Center for Research Resources. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Center for Research Resources or the National Institutes of Health.

References

- Ackerman K, Kibler WE, Steele GD, Van Horn RL, Swartz K. Executive compensation in nonprofit health care organizations. *Inquiry* 2005;42(2):110–17. [PubMed: 16196309]
- Ballou JP, Weisbrod BA. Managerial rewards and the behavior of for-profit, government, and nonprofit organizations: evidence from the hospital industry. *Journal of Public Economics* 2003;87:1895–1920.
- Baltagi, BH. *Econometric Analysis of Panel Data*. New York: John Wiley & Sons; 1995.
- Brickley JA, Van Horn RL. Managerial incentives in nonprofit organizations: Evidence from hospitals. *Journal of Law and Economics* 2002;45:227–49.
- Canadian Institute for Health Information, Government of Ontario, Ontario Hospital Association and the University of Toronto. *Hospital Report 2006. Acute Care*; Ottawa, Ontario: 2006 [accessed on August 5, 2008]. Available at <http://www.hospitalreport.ca>
- Canadian Institute for Health Information, the Government of Ontario, the Ontario Hospital Association and the Hospital Report Research Collaborative. *Hospital Report 2007. Acute Care*; Ottawa, Ontario: 2007 [accessed on August 5, 2008]. Available at: <http://www.hospitalreport.ca>
- Carreyrou, J.; Martinez, B. *The Wall Street Journal*. New York: NY: 2008 Apr 4. Nonprofit Hospitals, Once for the Poor, Strike it Rich; With Tax Breaks, They Outperform For-Profit Rivals; p. A.1
- Cleverley W. Not-for-Profit Hospitals: Still a Community Value. *Healthcare Financial Management* 2008 June;:24–5. [PubMed: 18637537]
- Core JE, Holthausen RW, Larcker DF. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics* 1999;51(3):371–406.
- Evans M. A higher standard. Report tells Congress to let regulators strip tax-exempt status and go after boards that approve unreasonable executive pay. *Modern Healthcare* 2005;35(26):6–7. 12–1.
- Evans M. Seeking full disclosure. SEC proposes more specific compensation reports. *Modern Healthcare* 2006;36(4):12–3.
- Flannery T, Hofrichter D. What's the right incentive compensation plan? *Trustee* 2007;60(7):22–6. 1. [PubMed: 17685364]
- Galloro V, Benko LB. Are they worth it? Executive compensation, company performance don't always relate at top hospital, post-acute and insurance companies. *Modern Healthcare* 2003;3314(31):6–7. 1.
- Hausman JA. Specification tests in econometrics. *Econometrica* 1978;46:1251–71.

- Hawthorne G. Pay for performance: what trustees should be applauding. *Trustee* 2000;53(7):8–14. 1. [PubMed: 11785231]
- Kirchheimer B. Reaping the rewards - hospitals show their appreciation for top execs by boosting compensation. *Modern Healthcare* 2001;31(31):27–30. 32–3, 38. [PubMed: 11508139]
- Kostiuk PF. Firm Size and Executive Compensation. *The Journal of Human Resources* 1990;25(1):90–105.
- Newman JF, Tyler L, Dunbar DM. CEO performance appraisal: review and recommendations. *Journal of Healthcare Management* 2001;46(1):21–37. discussion 37–8. [PubMed: 11216120]
- Ontario Joint Policy and Planning Committee. Recommendations to the Ministry of Health and Long - Term Care on Hospital Accountability Indicators for 2007/08. 2006 Jun [accessed on August 5, 2008]. Available at: <http://www.jppc.org>
- Ontario Joint Policy and Planning Committee. JPPC Rate Model Results based on 2006/07 Data. 2008a [accessed on August 5, 2008]. Available at: <http://www.jppc.org>
- Ontario Joint Policy and Planning Committee. Schedule B: Performance Obligations. Hospital Service Accountability Agreement for 2008–10. 2008b [accessed on August 5, 2008]. Available at: <http://www.jppc.org>
- Pink GH, Brown AM, Daniel I, Hamlette ML, Markel F, McGillis Hall L, et al. Financial Benchmark for Ontario Hospitals. *Healthcare Quarterly* 2006;9:40–5. [PubMed: 16550648]
- Pink GH, McKillop I, Schraa EG, Preyra C, Montgomery CM, Baker GR. Creating a Balanced Scorecard for a Hospital System. *Journal of Health Care Finance* 2001;27(3):1–20. [PubMed: 14680029]
- Preyra C, Pink GH. Balancing Incentives in the Compensation Contracts of Nonprofit Hospital CEOs. *Journal of Health Economics* 2001;20(4):509–25. [PubMed: 11463186]
- Public Sector Salary Disclosure Act. (1996). Chapter 1, Schedule A.
- Quigley, MA.; Scott, GWS. A report for the Ontario Hospital Association. 2004. Hospital Governance and Accountability in Ontario.
- Ricaud JS. Is your Hospital's Tax-Exempt Status at Risk? *Healthcare Financial Management* 2006 June;;74–8. [PubMed: 16773990]
- Roomkin MJ, Weisbrod BA. Managerial Compensation and Incentives in For-Profit and Nonprofit Hospitals. *Journal of Law, Economics, and Organization* 1999;15(3):750–81.
- Ryan HE, Wiggins RA. The influence of firm- and manager-specific characteristics on the structure of executive compensation. *Journal of Corporate Finance* 2001;7(2):101–23.
- Santerre RE, Thomas JM. The determinants of hospital CEO compensation. *Health Care Management Review* 1993;18(3):31–40. [PubMed: 8225963]
- SPSS Inc. SPSS 16.0 for Windows: Release 16.0.1. Chicago, Illinois, USA: 2007.
- StataCorp. Stata Statistical Software: Release 10. College Station, TX: StataCorp LP; 2007.
- Taylor M. Just compensation? GAO investigating executive pay at not-for-profits. *Modern Healthcare* 2006;36(4):16–7.
- Tieman J. Statement of net worth. As executive salaries keep growing bigger, some healthcare industry experts question whether associations are getting value for money. *Modern Healthcare* 2002;32(6): 6–7. 16–1.
- White H. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 1980;48:817–30.
- Yermack D. Higher market valuation of companies with a small board of directors. *Journal of Financial Economics* 1996;40(2):185–211.
- Zhou X. Executive compensation and managerial incentives: A comparison between Canada and the United States. *Journal of Corporate Finance* 1999;5(3):277–301.

Table 1

Hospital financial performance and CEO compensation during the period 1999–2006

Year	Total Margin						Current Ratio						Unit Cost Performance						CEO total compensation (in thousands)					
	Below Benchmark		Within Benchmark Range		Above Benchmark		Below Benchmark		Within Benchmark Range		Above Benchmark		Below Benchmark		Within Benchmark Range		Above Benchmark		Mean Salary [*]	N	SD	Mfn	Max	Change
	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)							
1999	16 (28)	32 (55)	10 (17)	23 (40)	22 (38)	13 (22)	17 (30)	22 (39)	17 (30)	22 (39)	17 (30)	17 (30)	22 (39)	17 (30)	17 (30)	17 (30)	17 (30)	\$238.6	58	\$118.2	\$120.7	\$639.1	-	
2000	11 (19)	42 (72)	5 (9)	15 (26)	22 (38)	21 (36)	13 (23)	25 (45)	13 (23)	25 (45)	13 (23)	13 (23)	25 (45)	13 (23)	13 (23)	13 (23)	13 (23)	\$237.4	58	\$113.2	\$117.1	\$702.8	0.53%	
2001	36 (62)	20 (34)	2 (3)	24 (41)	19 (33)	15 (26)	13 (23)	25 (45)	13 (23)	25 (45)	13 (23)	13 (23)	25 (45)	13 (23)	13 (23)	13 (23)	13 (23)	\$258.6	58	\$124.3	\$115.3	\$665.6	8.93%	
2002	34 (56)	20 (33)	7 (11)	31 (51)	18 (30)	12 (20)	15 (26)	32 (55)	15 (26)	32 (55)	15 (26)	15 (26)	32 (55)	15 (26)	15 (26)	15 (26)	15 (26)	\$247.1	61	\$120.8	\$109.6	\$678.2	4.44%	
2003	30 (39)	38 (50)	8 (10)	39 (51)	28 (37)	9 (12)	22 (30)	36 (49)	22 (30)	36 (49)	22 (30)	22 (30)	36 (49)	22 (30)	22 (30)	22 (30)	22 (30)	\$271.6	76	\$146.6	\$106.7	\$755.6	9.91%	
2004	27 (39)	37 (53)	6 (9)	35 (51)	22 (32)	12 (17)	17 (25)	35 (51)	17 (25)	35 (51)	17 (25)	17 (25)	35 (51)	17 (25)	17 (25)	17 (25)	17 (25)	\$278.1	70	\$142.3	\$104.4	\$705.0	2.40%	
2005	18 (23)	50 (63)	11 (14)	43 (54)	26 (33)	10 (13)	17 (23)	34 (47)	17 (23)	34 (47)	17 (23)	17 (23)	34 (47)	17 (23)	17 (23)	17 (23)	17 (23)	\$273.2	79	\$138.4	\$111.3	\$622.6	1.74%	
2006	19 (23)	58 (71)	5 (6)	45 (55)	24 (29)	13 (16)	NA [†]	NA [†]	NA [†]	NA [†]	NA [†]	NA [†]	NA [†]	NA [†]	NA [†]	NA [†]	NA [†]	\$277.7	85	\$144.4	\$103.3	\$699.6	1.62%	
Total	191 (35)	297 (55)	54 (10)	255 (47)	181 (33)	105 (19)	114 (26)	209 (47)	114 (26)	209 (47)	114 (26)	114 (26)	209 (47)	114 (26)	114 (26)	114 (26)	114 (26)	\$262.3	545	\$133.3	\$103.3	\$755.6	-	

* Inflation-adjusted to December 2006

† Not available

Table 2
Differences in CEOs' total annual salaries across hospital and CEOs' characteristics

Variable	Proportion/Mean (SD)	Mean	N	SD	P value [‡]
CEO gender					0.013
Female	13.6%	\$226.5	74	\$107.4	
Male	86.4%	\$268.0	471	\$136.2	
CEO MD status					<0.001
Non-MD	96.9%	\$257.6	528	\$130.9	
MD	3.1%	\$407.8	17	\$131.2	
Hospital type					<0.001
Teaching	15.6%	\$475.7	85	139.6	
Large community	71.4%	\$239.4	389	84.1	
Small	13.0%	\$132.6	71	17.3	
Hospital location					<0.001
Toronto Central	8.1%	\$513.8	44	\$145.2	
Region 2 *	22.2%	\$298.3	121	\$99.2	
Region 3 **	23.1%	\$238.4	126	\$111.9	
Region 4 ***	31.2%	\$228.4	170	\$110.4	
North ****	15.4%	\$183.5	84	\$52.5	
Global operating revenues (in Canadian millions)	\$142 (\$154)				Pearson's $r = 0.876$ (N=545)

[‡]One-way ANOVA.

* Central West, Mississauga Halton, Central, and Central East.

** Waterloo Wellington, Hamilton Niagara Haldimand Brant, South East, and North Simcoe Muskoka.

*** Erie St. Clair, South West, and Champlain.

**** North-East and North-West.

Table 3
Fixed effects regression results (coefficients are in CAN\$ thousands inflation adjusted to December 2006)

Variable	No lag model (n=453)			1-year lag model (n=476)			2-year lag model (n=420)		
	Coefficient	SE [†]	p-value	Coefficient	SE [†]	p-value	Coefficient	SE [†]	p-value
Effect year 2006	N/A	N/A	N/A	59.5	7.4	<0.001	51.4	7.1	<0.001
Effect year 2005	60.5	7.6	<0.001	46.7	6.3	<0.001	38.9	6.1	<0.001
Effect year 2004	56.5	7.4	<0.001	43.4	6.2	<0.001	36.0	5.7	<0.001
Effect year 2003	47.7	6.9	<0.001	34.9	5.7	<0.001	28.2	5.1	<0.001
Effect year 2002	36.0	6.1	<0.001	24.1	4.9	<0.001	15.0	4.7	0.002
Effect year 2001	20.7	6.1	0.001	7.7	5.4	0.156	Reference		
Effect year 2000	13.2	5.3	0.014	Reference			N/A	N/A	N/A
Hospital global operating revenues	0.51	0.08	<0.001	0.56	0.10	<0.001	0.59	0.14	<0.001
Total margin within benchmark range (v. below)	-2.4	2.8	0.397	1.1	2.7	0.687	4.3	3.1	0.173
Total margin above benchmark	3.0	5.3	0.568	9.5	5.3	0.077	9.9	4.9	0.045
Current ratio within benchmark range	2.2	3.6	0.547	7.9	3.2	0.015	2.6	3.5	0.453
Current ratio above benchmark	-1.1	5.6	0.841	3.8	5.8	0.515	1.0	5.6	0.856
Unit cost performance within benchmark range	-0.6	3.7	0.873	3.3	3.0	0.269	0.4	3.5	0.901
Unit cost performance above benchmark	4.3	5.0	0.388	3.0	4.0	0.457	-0.5	4.8	0.912
Constant	151.2	10.1	<0.001	144.8	12.1	<0.001	149.1	20.0	<0.001
Number of CEOs (Avg. observations per CEO)	119 (3.8)			124 (3.8)			116 (3.6)		
R-squared (within, between, overall)	0.69, 0.74, 0.74			0.70, 0.75, 0.77			0.66, 0.76, 0.79		

[†] Robust standard error, N/A = Not applicable