

**Audit Committees, Internal Controls, and the Financial Distress  
of U.S. Public Hospitals**

**Wen-wen Chien\***  
Graduate Student  
*Nova Southeastern University*

**Roger W. Mayer**  
Professor of Accounting  
*Globe Institute of Technology*  
291 Broadway,  
New York, NY 10007  
[rmayer@globe.edu](mailto:rmayer@globe.edu)

and contact author,

**John T. Sennetti**  
Professor of Accounting  
*Nova Southeastern University*  
3301 College Avenue.,  
Fort Lauderdale-Davie, FL33314  
[sennetti@nova.edu](mailto:sennetti@nova.edu)

## **The Audit Committees, Internal Controls, and the Financial Distress Found in the Largest U.S. Public Hospitals**

**Wen-wen Chien**  
**Nova Southeastern University**

**Roger W. Mayer**  
**Global Institute of Technology**

**John T. Sennetti**  
**Nova Southeastern University**

**ABSTRACT:** From all the publicly available A-133 audit reports on internal controls over Federal reporting for 180 of the largest individual public hospitals and 700 public clinics operating in the United States, we find financial distress related to the absence of audit committees (ACs) and to committee control quality. The AC quality characteristics (independence, financial expertise, and increased activity) each improve with reduced frequencies of control problems. Just the lack of committee financial expertise alone correlates with financial distress. Quality committees reduce the misappropriation of assets and wasteful spending, and improve billings and collections. Consistent with prior research for public corporations, these results add to AC research for public hospitals, suggest ways to improve public hospital financial controls, to reduce financial stress and the corresponding increases in governmental debt, and contribute to the national debate on health care.

**Key Words:** A-133 audit reports; hospitals; financial

## I. INTRODUCTION

We examine the influence of audit committees on the financial survival of public hospitals and healthcare systems (hereafter, public hospitals) in the United States (U.S.).<sup>1</sup> Public hospitals have an unsustainable financial model and bankrupt hospitals. In 2002, while non-government acute care hospitals reported profit margins of 4.5 percent in the U.S. The average margin for 61 public (safety net) hospitals and hospital networks enrolled as members of the National Association of Public Hospitals (NAPH) is a negative 0.3 percent (Regenstein and Huang 2005).<sup>2</sup> Bankrupt hospitals have poor care and medical errors (Dorshner and Goldstein 2006; Kalb 2006).

The Federal government recognizes the financial burden that indigent and uninsured care places on public hospitals. Beginning in 1981, Congress established the disproportionate share hospital program (DSH) to give hospitals providing charity care additional Medicaid reimbursement (Office of Management and Budget [OMB] 1981). These payments provide about two-thirds of the \$22.3 billion in uncompensated care costs reported by hospitals in 2002 (Mechanic 2004) and contribute to the increases in the national debt, also currently considered unsustainable (Peterson 2004).

But Federal funding is not sufficient to prevent financial disaster. Many local governments levy sales and property taxes specifically designated to support public hospitals. But local and state tax revenue subsidize 38 percent of uninsured costs (Regenstein and Huang 2005). Therefore, as an additional revenue source, the Federal government provides special grant revenue for programs with high acuity uninsured patients, thus effectively creating a form of national health insurance and adding to the national healthcare debate (Kalb 2006).

All public hospital institutions that receive Federal grants in excess of \$500,000 must complete the Office of Management and Budget (OMB) Circular A-133 (A-133) audit at least nine months after the close of the fiscal year (OMB 2003). If a hospital's internal controls are not sufficient, it risks losing the Federal funding. A-133 audits identify financial control deficiencies and potential misstatements with "more than remote" likelihoods, as reportable conditions.<sup>3</sup> These deficiencies typically identify the misappropriation of assets, wasteful spending for supplies and services, and providing services to ineligible patients (e.g., illegal aliens).

To control for these events, most public hospitals have board members who form committees directly responsible for the hospital's financial control activities, not unlike audit committees for public corporations. Unfortunately, members of these committees, as those in public corporations, may seek private (or self-serving political) benefits.

While public company (corporate) audit-committee members may benefit directly or indirectly from unfairly increased stock prices, public hospital audit-committee members may benefit directly from hospital services, kickbacks, or political gains and influences. For example, a politician may influence votes from a geographic area by providing it with a greater likelihood of health care benefits such as local clinics and hospital buses and less enforced billing or collections. Public hospitals attempt to prevent this self-serving conflict by requiring its committee members to sign a "Conflict of Interest Statement,"<sup>4</sup> but such controls only limit obvious kickbacks. In general, these efforts made to prevent self-serving activities nonprofits are not likely to be successful (Cenziper 2006) since typically it may be difficult to measure even obvious financial and managerial conflicts of interest.

Corporations which control for audit committee independence, increase committee size and financial expertise, positively influence financial reporting and reduce the likelihood of misstatement or restatement (as shown in prior research, e.g., Abbott et al. 2004; Carcello and Neal 2000; Krishnan 2005). Generally, public hospitals committees function, composition, and effectiveness differ from audit committees of public corporations. Often politically appointed, board and hence committee members serve with no salary but have political incentives not limited by financial responsibility. For example, in November 2007, “the politically appointed” ten-member board of Grady Memorial Hospital in Atlanta “effectively voted itself out of business,” so that a nonprofit corporation could “reconstitute the hospital’s governance structure.” “The hospital’s board was perceived to lack technical expertise to block corruption and cronyism (The New York Times, 2007).” This hospital particularly identified in its most recent A-133 report for its lack of financial controls. Still, those hospitals with government contracts (i.e., A-133 audits) may have more effective audit committees (Vermeer, Raghunandan and Forgione 2006). Pridgen and Wang (2007) also find that other variables, such as funding, can change the effect of the committee.

Therefore, we investigate all available A-133 audit reports of all large public hospitals. From these and another corresponding follow-up study of personal interviews and responses, we find the presence and quality of audit committees related to the financial control quality and the financial distress likelihood, consistent with similar findings for public corporations (Carcello and Neal 2000; Krishnan 2005).

The next section describes the background, hypotheses, and research method. In Section III, we describe data. Section IV follows with empirical results. The final section contains conclusions, discussion, and limitations.

## **II. BACKGROUND, HYPOTHESES, AND RESEARCH METHOD**

### **Background: Public Hospitals in the United States**

Public hospitals in the U.S. emerged from public institutions, such as the almshouses, that provided care and custody for the poor and ailing people (National Association of Public Hospitals [NAPH] 2006). Public hospitals still provide critical access points for the uninsured population (Regenstein and Huang 2005). Because of their special commitment to serving the uninsured (Bazzoli et al. 2003) and their role in providing disproportionate amounts of care to low-income populations, public hospitals have become “safety net” hospitals/institutions (Baxter and Mechanic 1997; Fishman and Bentley 1997). Because they serve so many recipients, public hospitals require many large financial contracts and other transactions involving physicians, nurses, service workers, vendors, health insurance companies, and even collection agencies. To control for the accounting of these transactions, administrators, board members, and publicly elected officials who form committees directly responsible for the hospital financial activities, not unlike audit committees for public corporations.

### **Hypotheses**

#### ***The Presence of Audit Committees (ACs)***

While public corporations have shareholders demanding accountability, public hospitals are not required to establish audit committees (ACs), and as in the case of

Grady Hospital, the taxpayers typically are late in taking action, but because of losses and funding questions, the incentives for and number of ACs in the public sector continues to increase (Hardiman 2006). U.S. Government Accountability Office (GAO) is currently recommending the use of audit committees (ACs) to improve financial reporting in the public sector (George 2005).

Corporate ACs seem to influence corporate internal controls (e.g., COSO 1992; Krishnan 2005; New York State Attorney General 2005; Securities and Exchanges Commission [SEC] 2003a). The “model” audit committee charter identifies specific duties related to internal controls and financial reporting.<sup>5</sup> These include obtaining reports on significant findings and validating these with management’s responses. Most corporate committees take their role over internal controls seriously (Carcello et al. 2002; DeZoort 1997) and engage in the examination of internal controls (Krishnan 2005).

Current AICPA standards require the external auditor communicate to the AC about significant deficiencies in the entity’s control system (SAS No. 112, AICPA 2006), whether government funded or not. In some nonprofit hospitals, Pridgen and Wang (2007) find ACs may be less effective than corporate ACs, especially if not government funded and, without government funding, may not exist at all. Vermeer et al. (2006) find ACs more effective when the nonprofit hospitals have government contracts (i.e., may be subject to A-133 audits, hereafter government audits).

Since ACs are directly responsible for the hospitals the financial controls subject to government audits, serve as a reporting source for the internal auditors and influence the choice of the external auditors, we would anticipate H1 for public hospitals:

**H1:** The presence of a public hospital AC is positively associated with the quality of the internal controls reported in government audits.

### *Audit Committee Quality*

Prior research finds the audit committee characteristics of size, of meeting frequency, of independence (whether the members are independent of management) and of financial expertise (whether the committee has a financial expert), to serve as proxies for AC quality (Abbott et al. 2003, 2004; Bedard et al. 2004; Carcello and Neal 2000, 2003; Chen et al. 2005; Felo, Krishnamurthy and Solieri, 2003; Klein 2002; Krishnan 2005; McMullen and Raghunandan 1996; Xie, Davidson, Dadalt, 2003).

For corporations Krishnan (2005) finds the association between this AC quality and internal control problems. She compares 128 public corporations who changed auditors and had reported internal control (8-K) deficiencies from 1994-2000 with those firms who did not change auditors and had no internal control deficiencies. She finds those committees with self-reported independence and financial expertise questions also to have financial control problems, i.e., AC quality to be associated with internal control quality.

By increasing AC quality corporations also obtain a significantly lower cost of debt financing (Anderson et al., 2004). Other studies in public corporations find at least one improved committee quality (size, independence, and financial expertise) related to improved quality financial reporting outcomes (Abbott et al. 2004; Agrawal and Chadha 2005; Bedard et al. 2004; Carcello and Neal 2000; Felo et al. 2003; Klein 2002; Xie et al. 2003). Therefore, as before, we could anticipate AC quality to have a similar impact on public hospitals, H2:

**H2:** A public hospital's AC quality is positively associated with the quality of internal controls reported Government audits.

***Financial Distress***

Negative financial consequences would follow the increased likelihood of not billing or collecting from indigents, and reduced likelihood of collections from the complexity of public hospital transactions themselves. For example, the billing of Medicare, Medicaid, and other insurance payers requires specialized expertise in assigning service codes and diagnostic requirements. Without controls for these requirements the insurance (e.g. Medicare) collections, and hence financial viability, is less likely. "Almshouse" hospitals may not be able to invest resources adequately and/or have the time to meet or maintain these control requirements. In a sample from public corporations, Doyle et al. (2006) and Ge and McVay (2005) find that financially weaker firms are less likely to properly fund proper internal controls continuing the financial stress cycle. Similarity, Krishnan (2005) also finds that financial distress associated with the increased likelihood of internal control problems. Therefore, we expect poor financial controls to associated with financial stress for public hospitals, H3:

**H3:** The increased likelihood of financial stress is negatively associated with the quality of financial controls reported in government audits.

If improving the quality of the AC (H2) improves the quality of the internal controls, this should also likely reduce financial stress. Given H1 (and the AC presence) and H3 (financial stress), we would expect H4, the AC presence, and H5, the quality of the AC, to reduce the likelihood of financial stress in public hospitals:

**H4:** The presence of a public hospital AC is positively associated with the reduced likelihood of financial distress.

**H5:** A public hospital's AC quality is positively associated with the reduced likelihood of financial distress.

## **Research Method**

We investigate these hypotheses, similarly to what Krishnan (2005) does for corporations: we first define their conceptual variables and then provide their corresponding constructs for modeling.<sup>6</sup>

## **The Dependent Variable and Its Construct**

We define the dependent variable as the presence of a reported control problem (a significant control deficiency) as identified in the A-133 report.<sup>7</sup> Its construct, internal control problem, *ICPROB*, is coded 1 or 0 according to the reported presence or absence of a deficiency. Correspondingly, those independent variables that reduce these control problems will be negatively associated with *ICPROB*.

The A-133 report identifies control deficiencies as reportable conditions and their more serious versions, material weaknesses, similar to AICPA requirements prior to SAS no. 112. A reportable condition is a significant deficiency "in the design or operation of internal control that could adversely affect the entity's ability to record, process, summarize, and report financial data consistent with assertions of management in the financial statements" (U.S. General Accounting Office [USGAO] 2003, 50: similar to AICPA SAS No. 60 which was replaced by SAS No. 112). A material weakness is:

A reportable condition in which the design or operation of one or more of the internal control component does not reduce to a relatively low level the risk that misstatements caused by error or fraud in amounts that would be material in relation to the financial statements being audited may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions" (USGAO 2003, 51).<sup>8</sup>

A reportable condition over financial reporting occurs when a misstatement could arise (or has arisen) in the financial statements or the schedule of Federal award expenditures in all material respects in relation to the financial statements taken as a whole (OMB 2003, Section 500). Figure 1 outlines the A-133 audit reporting guidelines.

A reportable condition over major Federal award programs occurs when the external auditor does not obtain reasonable assurance that internal controls are in place and are operating effectively and that the major Federal programs comply with 14 program and financial requirements (OMB 2004). External auditors report the findings as part of the annual report. Figure 2 outlines the reporting requirements of the OMB over reportable conditions and non-compliance.

## **The Independent Variables**

### ***The Audit Committee***

We define the independent variables similarly to previous research (e.g., Krishnan 2005). The first is the presence or absence of an audit (or similar function) committee (AC) responsible for the internal controls. We code AC 1, if a public hospital has an AC, and 0 otherwise.

The next variable is the quality of the AC. While the Securities and Exchange Commission (SEC) has no regulatory authority over public hospitals, their requirements provide a benchmark for examining the quality of ACs of public hospitals. The SEC (1999) benchmark requires ACs to have (1) at least three members, (2) all members are independent of management, and (3) at least one member with financial expertise.

The Blue Ribbon Committee *Report* (1999) implies that ACs should meet at least quarterly. Similarly, the National Association of Corporate Directors (1999) indicates this

minimum recommendation. Therefore, in addition to the three SEC requirements, we add a fourth measure of AC quality, meeting frequency. Those ACs that meet five or more times a year, exceed the minimum of four, and therefore this frequency defines a measure of quality.

Consequently, we use four parameters, size (*SIZE*), independence (*INDEP*), financial expertise (*EXPERT*), and meeting frequency (*MEET*) to proxy for AC quality. We code *SIZE* 1 if the AC consists of at least three members, and 0 otherwise. *INDEP* is coded 1 if the AC consists entirely of (non-management) independent members, and 0 otherwise. We code *EXPERT* 1 if the AC includes at least one member with financial expertise as defined by the AICPA Audit Committee Toolkit (and illustrated by Morrow and Pastor 2007), and 0 otherwise. *MEET* is coded 1 if the AC met more than four times during the 2005 fiscal year, and 0 otherwise.

### ***Financial Distress***

We construct a modified Altman Z-Score that predicts the probability of bankruptcy or financial distress (*FDISTRESS*). Altman et al. (1995) modified the model for non-manufacturing and general service organizations. Almwajeh (2004) and Langabeer (2006) apply the Altman Z-Score model to predict the financial distress in a hospital setting and find that the Altman Z-Score revised model is a good predictor of financial performance. Technically, a score less than 2.6 indicates that the hospital has a very likely probability of bankruptcy or financial distress. We code *FDISTRESS* 1 if the Altman Z-Score is less than 2.6 and 0 otherwise.

### ***Other Monitors***

Three monitors –management qualifications, the external auditors, and internal audit function – interact with ACs to contribute to the control environment (COSO 1992). These monitors form the basis of the control environment and affect the entity’s internal controls (Krishnan 2005).

#### Management Qualifications

Similar to Krishnan (2005), we use as a proxy for management qualifications (*CFOEXP*) the presence of a CPA certification, or similar financial experience of the Chief Financial Officer (CFO) or Controller.

#### The External Auditor

The external auditor characteristics include auditor type (*BIG4*) and auditor tenure (*TENURE*). We include external auditor control variables since they may have an independent effect on the internal control quality (Krishnan 2005). Section 404 of Sarbanes-Oxley Act of 2002 (SOX) requires that every registrant to contain an assessment by management of the design and operating effectiveness of its internal control over financial reporting in its financial statements and independent auditor to attest to the management’s assessment of the company’s internal control over financial reporting (SEC 2003b). In addition, these variables serve to control for differences in auditors’ discovery, determination, and reporting of control problems (Krishnan 2005).

It is generally assumed that “brand name” (Big Four International) auditors enhance audit quality. Prior studies on the use of Big Four auditors focus mostly on public corporations. The Big Four auditors generally have more audit expertise and experiences, and greater resources to identify control issues than non- Big Four auditors do (Doyle et al. 2006; Ge and McVay 2005). Brand-name auditors generally have higher

quality of financial reporting (Becker et al. 1998; Francis et al. 1999; Reynolds and Francis 2000). Becker et al. (1998) and Reynolds and Francis (2000) argue that Big Six auditors are able to detect earnings management and act to curb opportunistic earnings management. Becker, Defond, Jiambalvo, and Subramanyam (1998), Francis, Maydew, and Sparks (1999), and Reynolds and Francis (2000) provide evidence that clients with the use of Big Six auditors have lower discretionary accruals than clients with the use of non- Big Six auditors. Moreover, Krishnan (2005) finds that companies with internal control problems are more likely to have Big Five auditors than companies with no internal control problems. Ge and McVay (2005) find that companies with larger audit firms are more likely to disclose a material weakness in internal control, after controlling for business complexity, firm size, and firm profitability.

Auditor tenure (*TENURE*) is the second proxy for external auditor quality. Research finds a negative association between auditor tenure and the measures of control quality, such as discretionary accruals (Frankel, Johnson, and Nelson 2002; Johnson et al. 2002; Myers, Myers, and Omer 2003), the likelihood of failures in auditor reporting (Geiger and Raghunandan 2002), and the incidence of internal control problems (Krishnan 2005). However, in public hospitals where the auditor would provide the lower audit fee financial audit and the Federal programs audit, tenure is less likely used into obtain additional consulting and to treat the audit fee as annuity or to breed familiarity so as to reduce professional skepticism. Here, auditor tenure may actually increase the auditor's ability to find reportable conditions and may be required as some programs are not audited each year.

#### Internal Audit Function

The internal audit department (*IAUDIT*) is a primary resource available to the AC to assist in their responsibility over corporate governance (Gramling et al. 2004). The internal audit department should be able to identify and monitor internal controls uses, and hence may help to reduce the control problems.

### ***Other Monitor Variables***

We identify two additional variables – the size and age of the hospital – that have a potential impact on internal control quality. We measure public hospital size as the logarithm of total assets (*LASSET*), as used in Krishnan (2005). In the business sector, large firms generally have higher quality internal controls (e.g., Defond and Jiambalvo 1991). Large firms likely have more financial reporting processes and control procedures in place (Ge and McVay 2005). These firms generally have higher quality employees and resources as well as the ability to invest in internal control systems. The findings on the association of firm size and the quality of internal control yielded mixed results. Krishnan (2005) finds that firm size is positively associated with the incidence of internal control problems. However, Doyle et al. (2006) and Ge and McVay (2005) find that firm size is negatively associated with the disclosure of material weaknesses in internal control.

The hospital's age (*HOSPAGE*) is another control variable that may be associated with the quality of internal control. Younger firms likely have less established processes and procedures of internal control, and might have employees with less experience compared to older, more established firms (Ge and McVay 2005). Empirical studies by Doyle et al. (2006) find that younger firms (measured by the number of years the firm has price information on Center for Research in Security Prices) are more likely to disclose material weaknesses in internal control.

### III. DATA

While there are over 1,100 public, non-federal acute care hospitals in the United States, most are relatively small (Regenstein and Huang 2005). Eighty-five percent have fewer than 200 beds (Regenstein and Huang 2005). These smaller hospitals generally do not receive sufficient Federal awards to require an A-133 audit and are influenced by unique circumstances. Therefore, we identified all hospital and hospital systems with bed sizes over 200 and operated by state, county, city, or hospital district or authority from the U.S. News/ American Hospital Association National Directory provided by American Hospital Association (AHA). The AHA is an association of health care provider organizations and is a national database that includes data on almost 5,000 public and private hospitals, health care systems, networks and other providers of care. This yielded a population of 154 reporting hospitals.

We also contacted each of the 154 by either email or telephone using a standardized questionnaire to obtain and to verify as best as possible the financial and nonfinancial information. Each of these 154 responded with information on how to obtain their copies of their 2005 fiscal year audited financial statements and A-133 reports, if they were available, and information on their audit committees. [Every state in the U.S. has a law requiring that public records be open and available for inspection and copying by any member of the public.]<sup>9</sup>

Seventy-six hospitals did not have an A-133 audit because they did not expend \$500,000 or more in Federal grants during 2005 and three more hospitals did not complete the year 2005 A-133 audit as of January 31, 2007. These three have missed the reporting deadline for 2005 reports (OMB 2003), and these three confirmed this by the

questionnaire. By removing these 79, we find 75 hospitals that meet the A-133 audit requirement for 2005 fiscal year.<sup>10</sup>

We use the published audited financial statements with A-133 reports to assess our measures of financial distress, auditor type, and hospital size.<sup>11</sup> We also used the additional supporting (questionnaire) documentation from each of the 75 hospitals to construct the AC variables, the qualification of management variable, the auditor tenure variable, the internal audit function variable, and the age of hospital variable.<sup>12</sup> We classify an AC member as either an independent member or non-independent/affiliated member as in prior research (Beasley 1996; Carcello and Neal 2000, 2003; Klein 2002; Krishnan 2005). Independent members are not employees or officers. We consider employees of banks, accounting firms, law firms, and others in public corporations as independent members for our study. (Some prior research, classifies these as non-independent or gray members). In addition, we consider public (or appointed) officials as independent members since they are not paid.<sup>13</sup>

Because the definition of “financial expertise” varies, we asked the respondent the same two different questions used by Vermeer et al. (2006) to determine the presence of financial experts on the AC. The first question asks for the “number of [audit or similar function committee] members who are CPAs.” The second question asks for the “number of [audit or similar function committee] members (other than CPAs) who have senior-level accounting or finance experience.” Yes responses to either of these two questions signify financial expertise.

## **IV. EMPERICAL RESULTS**

### **Descriptive Statistics**

Table 1 reports the means and standard deviations for the hospitals with ACs (AC sample) and those without ACs (NOAC sample). The AC and NOAC samples differ significantly in the presence of internal control problems (*ICPROB*) ( $p\text{-value} = 0.048 < 0.05$ ) and the probability of bankruptcy or financial distress (*FDISTRESS*) ( $p\text{-value} = 0.059 < 0.10$ ). The mean number of AC (NOAC) sample with control problems is 29 percent (62 percent). Sixty-two (31) percent of NOAC (AC) sample had the probability of bankruptcy or financial distress.

With respect to other monitors and other independent variables, the AC and NOAC samples differ in external auditor type (*BIG4*) ( $p\text{-value} = 0.003 < 0.01$ ), the existence of internal audit function (*IAUDIT*) ( $p\text{-value} = 0.003 < 0.01$ ), and the size of public hospitals (*LASSET*) ( $p\text{-value} = 0.008 < 0.01$ ). AC sample is more likely to use Big Four auditor (69 percent) compared to NOAC sample (23 percent). Sixty-nine (23) percent of AC (NOAC) sample have internal audit function. Finally, larger hospitals are more likely to have ACs than smaller or median hospitals.

### **Support for H1**

Table 2 gives the 2x2 Chi-Square analysis of the corresponding of ACs with control problems, and shows that 62 hospitals with ACs are less likely to have internal control problems (29 percent) than those 13 without ACs (62 percent) ( $p\text{-value} = 0.025 < 0.05$ ).<sup>14, 15</sup>

### **Support for H2 and H3**

Table 3 shows the results of the logistic regression model and the relationship between quality of the AC (size, independence, financial expertise, and meeting frequency) and the incidence of control problems (H2). The first measure of AC quality,

size of an AC (*SIZE*) is not related to control problems (p-value = 0.985 > 0.05).

However, the other three characteristics are related. The presence of an AC comprised of solely independent members (*INNDEP*) (p-value = 0.050 < 0.10),<sup>16</sup> an AC possessing at least one financial expert (*EXPERT*) (p-value = 0.036 < 0.05), and committee meeting frequency (*MEET*) (p-value = 0.045 < 0.05) are negatively associated with the incidence of control problems. These control problems are positively related to the incidence of financial distress (H3) (p-value = 0.027 < 0.05). Among the additional control variables, the use of Big Four auditor (*BIG4*) (p-value = 0.029 < 0.05, and the number of years the hospital has been existed (p-value = 0.074 < 0.10) are negatively related to control problems, as anticipated. Also, auditor tenure (*TENURE*, p-value = 0.108) is not statistically significant but close, as these are two tail p-values, and has a negative sign suggesting the possibility that tenure could be a positive influence.

#### **Support for H4 and H5**

Because we find support that links both internal controls to financial distress (H3) and the AC to internal controls (H1), we now investigate the relationship between the presence of an AC, and financial distress in Panel A of Table 4: for 75 hospitals, the 62 with ACs are less likely to experience financial distress (29 percent) than those 13 without ACs (62 percent) (p-value = 0.025 < 0.05).

Panels B - E of Table 4 consider the AC quality characteristics (size, independence, financial expertise, and meeting frequency) and hospital financial distress. In Table 3, three characteristics (*INDEP*, *EXPERT*, and *MEET*) are significantly related to control problems, but now only one, financial expertise (*EXPERT*) seems related to hospital financial distress (see Panel D of Table 4, p-value = 0.025 < 0.05). If most of the

committee characteristics relate to control quality, only one characteristic, *EXPERT*, correlates with financial distress.

Since a financial expert on the committee seems to matter, could then a CFO with financial expertise substitute for this positive effect of the AC? Panel F of Table 4 examines this. Eight of the 13 hospitals have financial distress and five of these (more than half) have qualifications the same as would a financial expert on the AC (e.g., CPA certifications or with previous experience in a similar capacity). Descriptively, having a CFO with financial expertise does not seem to replace the effect of the AC.

## V. CONCLUSION AND DISCUSSION

In this paper, we examine the association of audit committees with the internal control quality and the financial distress of public hospitals. As does Krishnan (2005), we find the presence and quality of audit committees related to the quality of hospital financial controls and to the quality of financial stress. We therefore extend results found for public corporations (Krishnan 2005; Ge and McVay 2005; Doyle et al. 2006) and results found for some nonprofit audit committees by Vermeer et al. (2006) to large public hospitals with government funding.

We test our hypotheses using all publicly available (seventy-five) 2005 A-133 audit reports of large U.S. public hospitals and follow-up questionnaires, improving prior research that uses restricted settings (e.g., Carcello and Neal 2003; Krishnan 2005). These seventy-five reports cover 180 of the largest public hospitals and over 700 public clinics in the United States. We find support for all five hypotheses. Just the presence of an audit

committee, and especially one with independence, financial expertise, or increased activity (meeting frequency), improves internal control quality and reduces financial distress.

Table 5 provides a comparison of this study to the logistic regression model of Krishnan (2005). In addition, our research expands Krishnan's (2005) model by including additional variables and testing. Using a 2x2 Chi-Square test, we find that the presence of an audit committee is positively associated with internal control quality and with reduced financial distress.

We find other variables may also reduce control problems. Auditor size or type and hospital system tenure may improve financial control quality. Auditor size or type is often associated with improved client internal controls (Ashbaugh-Skaife et al. 2007), although this was not found by Krishnan (2005). We find older hospitals are more likely to have "ironed out the kinks" in their internal control processes (Doyle et al. 2006), which was not investigated by Krishnan (2005). Older hospitals with larger audit firms and better audit committees have less wasteful spending and improved billing and collection systems.

In addition to improving the quality of the financial controls, we find that hospital audit committees with at least one financial expert seem to reduce the likelihood of financial distress. Less stressed public hospitals have less medical errors (Dorshner and Goldstein 2006; Kalb 2006). Because financially stressed public hospitals continue to serve the uninsured and underserved, continue to stress budgetary constraints (Regenstein and Huang 2005) and increase the tax burden to federal, state and local taxpayers, these findings are critical to the national interest and to the national health care debate (that

begins with defined budgetary constraints). Those hospitals that create quality audit committees may reduce this tax burden and the continuing increases in the national debt, held unsustainable.

Because of these tax burdens, more federal support will be necessary and therefore more A-133 reports will become available for analyses, but the political influences on public hospitals may also increase.<sup>17</sup> Future research can then further examine a concept of committee independence that does not include members politically appointed or elected. For example, some public hospitals are set up as hospital districts and remain autonomous from the local government and potentially injurious political influences.

FIGURE 1	
Audit Results	OMB Citation
The type of report the auditor issued on the financial statements (e.g., unqualified opinion, qualified opinion, adverse opinion, or disclaimer of opinion).	OMB 2003, Section 505 (d) (1) (i)
Where applicable, a statement that reportable conditions in internal control were disclosed by the audit of the financial statements and whether any such conditions were material weaknesses.	OMB 2003, Section 505 (d) (1) (ii)
A statement as to whether the audit disclosed any noncompliance which is material to the financial statements.	OMB 2003, Section 505 (d) (1) (iii)
Where applicable, a statement that reportable conditions in internal control over major programs were disclosed by the audit and whether any such conditions were material weaknesses.	OMB 2003, Section 505 (d) (1) (iv)
The type of report the auditor issued on compliance for major programs (i.e., unqualified opinion, qualified opinion, adverse opinion, or disclaimer of opinion).	OMB 2003, Section 505 (d) (1) (v)
A statement as to whether the audit disclosed any audit findings which the auditor is required to report under the requirements listed in FIGURE 2.	OMB 2003, Section 505 (d) (1) (vi)
A statement as to whether the auditee qualified as a low-risk auditee.	OMB 2003, Section 505 (d) (1) (ix)

FIGURE 2	
Reporting Requirement	OMB Citation
Reportable conditions in internal control over major programs.	OMB 2003, Section 510 (a) (1)
Material non-compliance with the provision of laws, regulations, contracts, or grant agreements related to a major program.	OMB 2003, Section 510 (a) (2)
Known questionable costs, which are greater than \$10,000 for a type of compliance requirements for a major program.	OMB 2003, Section 510 (a) (3)
Know questionable costs, which are greater than \$10,000 for a Federal program and is not audited as a major program.	OMB 2003, Section 510 (a) (4)
Known fraud affecting a Federal award.	OMB 2003, Section 510 (a) (6)

**TABLE 1**  
**Descriptive Statistics of All Hospitals**

Variable	AC Sample		NOAC Sample		Diff. in + Means	t-statistics ++	p-value
	Mean	Std. Dev.	Mean	Std. Dev.			
<i>ICPROB</i>	0.290	0.458	0.615	0.506	-0.325	2.14	0.048**
<i>FDISTRESS</i>	0.307	0.465	0.615	0.506	-0.309	2.03	0.059*
<i>CFOEXP</i>	0.903	0.298	0.692	0.480	0.211	-1.52	0.150
<i>BIG4</i>	0.694	0.465	0.231	0.439	0.463	-3.42	0.003***
<i>TENURE</i>	6.936	6.414	6.769	8.776	0.166	-0.06	0.949
<i>IAUDIT</i>	0.694	0.465	0.231	0.439	0.463	-3.42	0.003***
<i>LASSET</i>	6.599	1.834	5.391	1.248	1.208	-2.90	0.008***
<i>HOSPAGE</i>	72.903	39.476	83.000	47.720	-10.097	0.71	0.486
n	62		13				

\*, \*\*, \*\*\* = p-value < .10, .05, .01, respectively, one-tail if in predicted direction, two-tail otherwise.

+ Difference in means may actually be differences in percentage, where appropriate.

++ Test for significant differences in means.

AC sample is the sample of hospitals with audit committees.

NOAC sample is the sample of hospitals without audit committees.

Variable Definitions:

*ICPROB* = 1 for a hospital has internal control problems, and 0 otherwise;

*FDISTRESS* = 1 if the Altman's Z-Score is less than 2.6 (technically bankrupt), and 0 otherwise;

*CFOEXP* = 1 if the Chief Financial Officer (or Controller) has a CPA certification or previous experience in a similar capacity with another company, and 0 otherwise;

*BIG4* = 1 if audited by Big 4 accounting firm, and 0 otherwise;

*TENURE* = number of years the auditor has audited the client;

*IAUDIT* = if internal audit function exists, and 0 otherwise;

*LASSET* = natural logarithm of total assets (in million);

*HOSPAGE* = number of years the hospital existed.

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**TABLE 2**  
**Chi-Square Analysis of All Reporting Hospitals**

<i>ICPROB</i>	Frequency	<i>AC</i>		n
		1	0	
1	18	8		26
0	44	5		49
n	62	13		75

Chi-Square

P-value

0.025\*

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\* = p-value <.05.

Variable Definitions:

*ICPROB* = 1 if a hospital with internal control problems, and 0 otherwise;

*AC* = 1 if a hospital with an audit committee, and 0 otherwise;

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**TABLE 3**  
**Logistic Regression for the Incidence of Internal Control Problems**  
**for 62 Hospitals with Audit Committees**

$$ICPROB = \alpha + \beta_1 SIZE + \beta_2 INDEP + \beta_3 EXPERT + \beta_4 MEET + \beta_5 FDISTRESS + \beta_6 CFOEXP + \beta_7 BIG4 + \beta_8 TENURE + \beta_9 IAUDIT + \beta_{10} LASSET + \beta_{11} HOSPAGE + \varepsilon$$

Variable	Expected Sign	Coefficient Estimate	Logistic p-value	Wald Chi-Square
Intercept	+/-	20.782	0.974	0.001
<i>SIZE</i>	-	-10.753	0.985	0.000
<i>INDEP</i>	-	-1.760	0.050*	3.829
<i>EXPERT</i>	-	-3.223	0.036**	4.413
<i>MEET</i>	-	-2.046	0.045**	4.008
<i>FDISTRESS</i>	+	1.940	0.027**	4.910
<i>CFOEXP</i>	-	-0.396	0.762	0.092
<i>BIG4</i>	+/-	-2.083	0.029**	4.755
<i>TENURE</i>	-	-0.104	0.108	2.590
<i>IAUDIT</i>	-	0.202	0.843	0.039
<i>LASSET</i>	+/-	-0.037	0.950	0.004
<i>HOSPAGE</i>	-	-0.025	0.074*	3.204
Chi-Square (p-value)			27.244 0.004	
Adjusted R			0.203	
N			62	

\*,\*\* = p-value < .10, .05, respectively, one-tail if in predicted direction, two-tail otherwise.

Variable Definitions:

- ICPROB* = 1 if a hospital with internal control problems, and 0 otherwise;  
*SIZE* = 1 if an audit committee has at least three members, and 0 otherwise;  
*INDEP* = 1 if audit committee members are totally independent, and 0 otherwise;  
*EXPERT* = 1 if audit committee members with at least one financial expertise, and 0 otherwise;  
*MEET* = 1 if an audit committee meets more than four times annually during the sample year, and 0 otherwise;  
*FDISTRESS* = 1 if the Altman's Z-Score is less than 2.6 (technically bankrupt), and 0 otherwise;  
*CFOEXP* = 1 if the Chief Financial Officer (or Controller) has a CPA certification or previous experience in a similar capacity with another company, and 0 otherwise;  
*BIG4* = 1 if audited by Big 4 accounting firm, and 0 otherwise;  
*TENURE* = number of years the auditor has audited the client;  
*IAUDIT* = if internal audit function exists, and 0 otherwise;  
*LASSET* = natural logarithm of total assets (in million);  
*HOSPAGE* = number of years the hospital existed.

**TABLE 4**  
**Chi-Square Analysis of the Presence and Quality of Audit Committees,  
 Management Qualifications, and Financial Distress**

**Panel A: The Presence of An Audit Committee and Financial Distress of All Reporting Hospitals**

		<i>AC</i>		
<i>FDISTRESS</i>	Frequency	1	0	n
	1	18	8	26
	0	44	5	49
	n	62	13	75

Chi-Square  
 P-value 0.025\*

**Panel B: Audit Committee Size and Financial Distress of 62 Hospitals with Audit Committees**

		<i>SIZE</i>		
<i>FDISTRESS</i>	Frequency	1	0	n
	1	17	1	18
	0	44	0	44
	n	61	1	62

Chi-Square  
 P-value 0.115

**Panel C: Audit Committee Independence and Financial Distress of 62 Hospitals with Audit Committees**

		<i>INDEP</i>		
<i>FDISTRESS</i>	Frequency	1	0	n
	1	13	5	19
	0	33	11	43
	n	46	16	62

Chi-Square  
 P-value 0.821

\* = p-value < 0.05.

Variable Definitions:

*AC* = 1 for a hospital with an audit committee, and 0 otherwise;

*FDISTRESS* = 1 if the Altman's Z-Score is less than 2.6 (technically bankrupt), and 0 otherwise;

*SIZE* = 1 if an audit committee has at least three members, and 0 otherwise;

*INDEP* = 1 if audit committee members are totally independent, and 0 otherwise.

TABLE 5

TABLE 4 (continued)

**Panel D: Audit Committees with At Least One Financial Expert and Financial Distress of 62 Hospitals with Audit Committees**

		<i>EXPERT</i>		
		1	0	n
<i>FDISTRESS</i>	Frequency			
	1	13	5	18
	0	41	3	44
n		54	8	62

Chi-Square  
P-value 0.025\*

**Panel E: Audit Committee Meeting Frequency and Financial Distress of 62 Hospitals with Audit Committees**

		<i>MEET</i>		
		1	0	n
<i>FDISTRESS</i>	Frequency			
	1	6	12	18
	0	23	21	44
n		29	33	62

Chi-Square  
P-value 0.175

**Panel F: The Management Qualifications and Financial Distress of 13 Hospitals with No Audit Committees**

		<i>CFOEXP</i>		
		1	0	Total
<i>FDISTRESS</i>	Frequency			
	1	5	3	8
	0	4	1	5
Total		9	4	13

Chi-Square  
P-value 0.506

\* = p-value < 0.05.

Variable Definitions:

*EXPERT* = 1 if audit committee members with at least one financial expertise, and 0 otherwise;

*FDISTRESS* = 1 if the Altman's Z-Score is less than 2.6 (technically bankrupt), and 0 otherwise;

*MEET* = 1 if an audit committee meets more than four times annually during the sample year, and 0 otherwise;

*CFOEXP* = 1 if the Chief Financial Officer (or Controller) has a CPA certification or previous experience in a similar capacity with another company, and 0 otherwise.

A Comparison of This Study to the Logistic Regression Model of Krishnan (2005)					
Independent Variables	Variables Investigated		Significant Variables Found		Comments
	Krishnan (2005)	This Study	Krishnan (2005)	This Study	
<i>ACSIZE/SIZE</i>	X	X			
<i>ACINDEP</i>	X		X		We used the variable, <i>INDEP</i> , instead of <i>ACINDEP</i>
<i>INDEP</i>		X		X	We used this variable, <i>INDEP</i> , a requirement under SEC's rules. In addition, this variable is with an enhanced independence definition compare to <i>ACINDEP</i> .
<i>ACEXP</i>	X		X		We used the variable, <i>EXPERT</i> , instead of <i>ACEXP</i>
<i>EXPERT</i>		X		X	We defined this variable based upon the SEC's requirement.
<i>MEET</i>		X		X	BRC Report (1999) implies that audit committees (ACs) should meet at least quarterly. Similarly, the National Association of Corporate Directors (1999) indicates this minimum recommendation. Therefore, we added a fourth measure of AC quality, meeting frequency (ACs that meet five or more times a year).
<i>ACCTEXP</i>	X				Our data was not sufficient in size to test.
<i>CFOEXP</i>	X	X	X		We tested the same variable but did not find a significant relationship.
<i>FRAUD</i>	X		X		Our data was not sufficient in size to test.
<i>ASHARE</i>	X				Our data was not sufficient in size to test.
<i>TENURE</i>	X	X	X	X	

TABLE 5 (continued)					
Independent Variables	Variables Investigated		Significant Variables Found		Comments
	Krishnan (2005)	This Study	Krishnan (2005)	This Study	
<i>BIG5/BIG4</i>	X	X		X	We find auditor type improves financial control quality. The Big Four auditors generally have more audit expertise and experiences, and greater resources to identify control issues than non- Big Four auditors do (Doyle et al., 2006; Ge & McVay, 2005).
<i>INTAUD/IAUDIT</i>	X	X			
<i>BDINDEP</i>	X				We expanded our definition of audit committees to include board committee responsible for internal controls.
<i>LASSET</i>	X	X	X		Our data was not sufficient in size to test.
<i>HIGHGR</i>	X				Public hospitals have a special commitment to serve the uninsured and provide disproportionate amounts of care to low-income thus patient revenue generally do not cover operating expenses. Therefore, this variable, <i>HIGHGR</i> , used to capture the growth rate in assets does not apply to this study.
<i>IPO</i>	X				This variable does not apply to our population. We used <i>HOSPAGE</i> , a variable that indicates the number of years the hospital existed.
<i>RECAST</i>	X				Our data was not sufficient in size to test.

TABLE 5 (continued)					
Independent Variables	Variables Investigated		Significant Variables Found		Comments
	Krishnan (2005)	This Study	Krishnan (2005)	This Study	
<i>PRBANK</i>	X				We used <i>FDISTRESS</i> instead of the probability of bankruptcy.
<i>FDISTRESS</i>		X		X	Public hospitals generally have a higher degree of financial distress (Andrulis & Duchon, 2005). We include this variable because of its application to our population.
<i>LOSS</i>	X		X		Our data was not sufficient in size to test.
<i>YEAR</i>	X				This variable was not suitable for our study.
<i>NASD</i>	X				This variable was not suitable for our study.
<i>NYAM</i>	X				This variable was not suitable for our study.
<i>RESIGN</i>	X		X		Our data was not sufficient in size to test.
<i>HOSPAGE</i>		X		X	We used <i>HOSPAGE</i> , indicating the number of years the hospital existed, a variable appropriate for our population.
Variable Definitions: <i>ACSIZE/SIZE</i> = 1 if an audit committee has at least three members, and 0 otherwise; <i>ACINDEP</i> = proportion of independent outside members on the audit committee; <i>INDEP</i> = 1 if audit committee members are totally independent, and 0 otherwise; <i>ACEXP</i> = number of audit committee members with financial expertise; <i>EXPERT</i> = 1 if audit committee members with at least one financial expertise, and 0 otherwise; <i>MEET</i> = 1 if an audit committee meets more than four times annually during the sample year, and 0 otherwise; <i>ACCTEXP</i> = 1 if the Chief Financial Officer (or Chief Accounting Officer or Controller) has CPA certification or previous experience in public accounting, and 0 otherwise;					

**TABLE 5 (continued)**

## Variable Definitions:

<i>CFOEXP</i>	= 1 if the Chief Financial Officer (or Controller) has a CPA certification or previous experience in a similar capacity with another company, and 0 otherwise;
<i>FRAUD</i>	= 1 if there was an SEC action against the company's management or the company restated financial due to GAAP violation, and 0 otherwise;
<i>ASHARE</i>	= auditor's share in two-digit industry;
<i>TENURE</i>	= number of years the auditor has audited the client;
<i>BIG5</i>	= 1 if the predecessor auditor is Big 5, and 0 otherwise;
<i>BIG4</i>	= 1 if audited by Big 4 accounting firm, and 0 otherwise;
<i>INTAUD/IAUDIT</i>	= 1 if internal audit function exists, and 0 otherwise;
<i>BDINDEP</i>	= proportion of independent outside members on the board, excluding the audit committee;
<i>LASSET</i>	= natural logarithm of total assets (in million);
<i>HIGHGR</i>	= 1 if growth rate in assets above the industry median, and 0 otherwise;
<i>IPO</i>	= 1 if the company had an <i>IPO</i> within five years of the last year of the predecessor auditor, and 0 otherwise;
<i>RECAST</i>	= ratio of receivables to total assets;
<i>PRBANK</i>	= probability of bankruptcy using Zmijewski's (1984) model;
<i>FDISTRESS</i>	= 1 if the Altman's Z-Score is less than 2.6 (technically bankrupt), and 0 otherwise;
<i>LOSS</i>	= 1 if net income is negative, and 0 otherwise;
<i>YEAR</i>	= 1 if the observation is from 1999 or 2000, and 0 otherwise;
<i>NASD</i>	= 1 if the stock was traded in National Market System of NASDAQ, and 0 otherwise;
<i>NYAM</i>	= 1 if the stock was traded in NYSE or AMEX, and 0 otherwise;
<i>RESIGN</i>	= 1 if the auditor resigned, and 0 otherwise;
<i>HOSPAGE</i>	= number of years the hospital existed.

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## Footnotes

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<sup>1</sup> These hospitals indirectly provide some degree of universal health coverage to 43 million individuals living in the United States who lack medical insurance (Cosman 2005), many of whom are illegal aliens.

<sup>2</sup> Our study finds this to be negative 6.1 percent, with over 35 percent of public hospitals near bankruptcy, even with Federal governmental support.

<sup>3</sup> This wording is similar to what was recently used and then changed slightly by the PCAOB in 2007.. Currently for financial reporting, the external auditor reports significant deficiencies to the audit committee (SAS No. 112, American Institute of Certified Public Accountants [AICPA] 2006). On February 1, 2007, the Comptroller General of the United States issued the 2007 revision of Government Auditing Standards (GAGAS), which supersedes the 2003 revision. The effective date for the 2007 revision of GAGAS is for financial audits and attestation engagements for periods beginning on or after January 1 2008, and for performance audits beginning on or after January 1, 2008. Until the 2007 GAGAS revisions becomes effective, auditors adopt the terminology and definitions in the AICPA statement on Auditing Standards No. 112, when reporting on internal control deficiencies and include in their reports material weaknesses and other significant deficiencies, but here instead all internal control deficiencies (in 2005, it is reportable conditions), not just material weaknesses, are reported in the A-133 report. The Federal OMB Circular No. A-123 (A-123) applicable to Federal agencies, contains requirements similar to SOX including assessing, documenting, and reporting on the effectiveness of controls over financial reporting (OMB 2004).

<sup>4</sup> For example, the Florida Statute 112.3144 requirement for conflict of interest.

([http://www.leg.state.fl.us/Statutes/index.cfm?App\\_mode=Display\\_Statute&Search\\_String=&URL=Ch0112/SEC3144.HTM&Title=->2006->Ch0112->Section%203144#0112.3144](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=Ch0112/SEC3144.HTM&Title=->2006->Ch0112->Section%203144#0112.3144)).

<sup>5</sup> Identified by Roth and Espersen (2003) for the Institute of Internal Auditors Research Institute and by Morrow and Pastor (2007) for the American Institute of Certified Public Accountants.

<sup>6</sup> Due to data limitations and appropriateness to our population, we did not test for all variables investigated by Krishnan (2005). We also added additional variables and testing because of its application to this study.

<sup>7</sup> There is the possibility that the auditor failed to identify existing internal control problems related to Federal reporting. In addition, control weaknesses may be present in programs that are not audited. The A-133 audit program does not require all major programs to be reviewed annually. Thus, the likelihood that the sample is free of unrecognized internal control problems is remote.

<sup>8</sup> The 2007 revision of GAGAS will be not effective until January 1, 2008. Thus, while the USGAO updated the standards, to date, OMB still follows the 2003 revision of GAGAS for the 2005 fiscal year.

<sup>9</sup> For example, Section 610.011 of Missouri Sunshine Law.

<sup>10</sup> One of the 75 hospitals is in the U.S. territory, Guam. Although the Sarbanes Oxley Act (SOX) does not cover public hospitals directly, many by 2005 had adopted SOX, Section 404, guidelines for operational and financial reporting which make their reports different from 2004.

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<sup>11</sup> Vermeer, Raghunandan, and Forgione (2006) analyzed the nonprofits, including hospitals and universities, using financial data from Internal Revenue Service (IRS) Forms 990/990EZ which is easier to obtain but is also unaudited.

<sup>12</sup> Direct interview, email, fax, and USPS mail responses to a two-page form.

<sup>13</sup> For example, county-owned hospitals have publicly-elected Commissioners who serve audit committees. In one sense, these members are “grey” members since they may benefit from political influence and votes at the expense of the hospital, but we consider them independent as in prior research since they do not have direct financial benefits.

<sup>14</sup> For the twenty-six hospitals with internal control problems, sixteen have reportable conditions and ten material weaknesses.

<sup>15</sup> Thirty-four of the 62 hospitals (55 percent) have an audit committee while the other 28 hospitals (45 percent) have a committee similar to an audit committee (such as finance committee, finance and audit committee, fiscal affair committee, finance and compliance committee, financial review committee, and university audit committee).

<sup>16</sup> However, all one-tailed Chi-square p-values are in one sense two-tailed normal “z” values, so the argument that independence is related to control problems, the one-side argument, is then significant at p-value = 0.025 < 0.05.

<sup>17</sup> This effort may have to compromise hospital size, but may be possible when more A-133 reports become available.