

**Communicating Performance:
The Extent and Effectiveness of Performance Reporting
by U.S. Colleges and Universities
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ABSTRACT

Performance measures have long been a topic of interest in higher education although no consensus on the best way to measure performance has been achieved. Selective reporting of financial and non-financial data has become the norm for higher education institutions. Government and not-for-profit organizations have come under increasing criticism for an excessive proliferation of performance indicators that are not linked to input, output and outcome measures. Measuring performance plays a very important part in translating organizational strategy into results and, when externally reported, provides accountability to stakeholders. In contrast with the statistical section of a government's comprehensive annual financial report, performance indicators are not a required part of either financial statements or another type of report.

This paper first examines the extent of services efforts and accomplishment reporting by public and not-for-profit U.S. colleges and universities. We then report on the effectiveness of this performance information using the Government Accounting Standards Board (GASB) recommended criteria that are intended to help assure that such reports communicate relevant and reliable information about the results of an institution's programs and services.

The extent of disclosure is affected by size, leverage, level of education provided and regional accreditation agency but we find no difference between public and private institutions. However, private institutions rate themselves as more effective communicators of performance information. The effectiveness of communication is also impacted by the extent of disclosures, level of education provided and accreditation region.

Note: The authors express their appreciation to the National Association of College and University

Business Officers (NACUBO) for permission to use data collected from their member institutions. NACUBO owns and retains all rights to the survey data.

1. Introduction

Despite repeated calls for accountability from a variety of sources including the U.S. Congress, the higher education community has not found a satisfactory way to measure and report its performance. Selective reporting of financial and non-financial data has become the norm for higher education institutions. For example, they report such diverse information as retention rates, library holdings, student scores on national achievement exams, deferred maintenance, and endowment giving. Although several institutions have designed models to assess student learner outcomes, most institutions insist that those initiatives cannot be replicated or that education outcomes cannot be measured (Couturier and Scurry 2005). Unlike the statistical section mandated for a government's comprehensive annual financial report (CAFR), performance indicators are voluntary disclosures for higher education.

Government and not-for-profit organizations have come under increasing criticism for placing too much emphasis on financial control as well as suffering from an excessive proliferation of performance indicators (Modell 2004) without linking the indicators to inputs or outputs. Measuring performance plays a very important part in translating organizational strategy into results. Various nontraditional performance systems have been devised to aid in selecting and implementing measures (Pun and White 2005) without linking the measures as a means to demonstrate accountability. Government budget officers and others claim performance measures improve communication, increase awareness about service quality results, and enable changes in strategies to ensure results (Willoughby 2004). However budget officers do not use performance measures as effective tools to cut costs or amend spending levels.

This paper first examines the extent of performance reporting by colleges and universities (C&Us) in the United States and reports on the effectiveness of the information communicated. Evaluation of effectiveness was based on the nonauthoritative guidance for communicating

performance information developed by the Government Accounting Standards Board (GASB 2003). The suggested reporting criteria are a basis for the external reporting of performance information that communicates relevant, reliable information about the results of the institution's programs and services provided. Data on the type of performance indicators used and the importance and effectiveness of the communication was supplied by institutions themselves in response to an on-line survey of members of the National Association of College and University Business Officers (NACUBO). We find that the extent of performance reporting is influenced by size, leverage, accreditation region and level of education provided. Private C&Us evaluate their communication of performance information as more effective than public C&Us. Other factors that influence effectiveness include the number of different types of indicators reported, level of education provided and accreditation region. While size influences the extent of reporting, it had no clear relationship with the effectiveness of performance reporting.

2. Background

In 2003, some 16.5 million students enrolled in higher education institutions within the U.S. (NCES 2005a). These students comprise a population greater than Florida (Enchanted Learning 2005) and many developing nations such as Chile and the Netherlands (Population Reference Bureau 2004). The higher education sector's \$258.7 billion reported revenue (NCES 2005a) represents over two percent of the U. S. gross domestic product (Wikipedia 2005). The size of U.S. higher education is matched by its diversity. While there are a few federal military academies and a growing number of degree-granting for-profit schools such as the University of Phoenix, the bulk of students attend one of the 1,689 degree-granting public institutions operated by state or local governments or one of the 2,530 private non-profit institutions (Higher Education Directory 2004, p. I).

U.S. private colleges and universities, and to a smaller extent public institutions, have a higher degree of autonomy from supporting governments than is typical in other countries. U.S. entities are able to levy tuition and fees based on what the market will bear. In addition, both public and private institutions benefit from contributions and endowment gifts while seeking capital bond market long-term financing for major projects. Given these attributes, U.S. higher education institutions are sensitive to economic fluctuations. The most obvious impact is the reduction in state support of public institutions during economic downturns. Private schools are

also susceptible to economic changes as they must rely on students' ability to pay tuition and fees. Overall, C&Us in the U.S. rely on a number of funding sources which makes performance measures and accountability more significant in the U.S. than perhaps would be the case for educational systems reliant on central and local government sponsors (Fischer et al, 2004).

For a large part of the past century, the U.S. was acclaimed as having the finest system of higher education in the world in terms of access, graduates and research. At its best, the U.S. system of higher education continues to set a standard for excellence and research that remains the envy of the world. However the foundations of the system may be too weak to sustain the country's economy and quality of life (State Higher Education Executive Officers (SHEEO) 2005). For the first time in decades, the U.S. no longer leads the developed world in the rate of college completion. In the U.S., four out of ten students enrolled in colleges and universities fail to graduate within six years. One-fourth of low-income students in the top quartile of academic ability and preparation fail to enroll in college within two years of high school graduation. While more minorities and low-income students are enrolling, the majority of minority students do not graduate. In addition, large developing economies, especially China and India, are successfully educating thousands of scientists and engineers in order to compete in the global economy. A large percentage of the U.S. workforce in science and technology comes from these highly motivated and able international students. Given the changes occurring within U.S. higher education, the institutions need to regain their initiative by holding themselves to the highest standards of accountability and reporting their performance to constituents and stakeholders (SHEEO 2005).

2.1 Performance Reporting

Performance measures have long been a topic of interest in higher education. Micek and Arney (1974), Romney (1978), and Engstrom (1988) conducted large sample surveys regarding the importance of potential performance indicators to various user groups. Ratio analysis is one form of performance measurement and, in some cases, the ratios include enrollment or other nonfinancial data. For example, bond rating agencies use student demand ratios (selectivity and matriculation) in their evaluations and compute a number of ratios that involve enrollment data such as debt per student (Moody's 1999, 2002; Standard and Poor's 2001, 2002, 2003; Fitch 2001).

The Financial Accounting Standards Board (FASB) and the Government Accounting Standards Board (GASB) discuss the reporting of service efforts and accomplishments (SEA) in their conceptual frameworks (FASB 1980; GASB 1994) although neither body has yet to mandate disclosure of performance indicators. Both boards have sponsored research studies on the topic and the GASB has proposed governments experiment with reporting service efforts and accomplishments. Without mandated disclosure, government reports containing SEA information have little content consistency across the sector. Several GASB research reports had emphasized current practices in SEA reporting. Based on the lessons learned through experimentation with SEA for budgeting, management and reporting, GASB (2003) has now taken a normative approach in *Reporting Performance Information: Suggested Criteria for Effective Communication*. This report provides guidelines to state and local governments to enhance the production of external reports through the suggested use of 16 criteria. The criteria provide a basis for expanded experimentation with the external reporting of SEA data to communicate relevant, reliable information about the results of government programs and services to elected officials, citizens and other report users. The 16 criteria are arranged in three categories. The first category of seven criteria is directed toward the external reporting of performance information that provide a basis for understanding the extent to which the organization accomplishes its mission, goals, and objectives in the context of potential significant decision-making or accountability implications. The second category of seven criteria concerns what performance information to report based on the extent to which the organization and its programs, services and strategies have contributed to achieving the organization's goals and objectives. The third category of two criteria addresses how performance information is communicated and its availability.

Government Service Efforts and Accomplishments Performance Reports: A Guide to Understanding (GASB 2005) is a follow-up report that provides a tool to help report users better understand SEA data. The main feature of the guide is a discussion of what information users are likely to find, how to use the information to assess a government's SEA performance and where to find more information. The guide also provides an overall context for performance reporting to help report users understand the reasons for reporting performance and how to use performance information as well as where to find more information available on the internet.

Like governmental entities, colleges and universities do not have a single measure of performance comparable to net income and earnings per share that corporate entities report. In addition, many resource providers are not the direct recipient of the services provided by the institution and are unable to determine the quality or efficiency of the services provided. Along with the FASB and GASB endorsement of SEA reporting in conjunction with annual reports, researchers have suggested ways C&Us might report their performance results. Examples and detailed recommendations include Gordon and Fischer (1990), Hatry et al. (1990), Fischer and Gordon (1991), Brown and Fischer (1994), Hatry (1999), and Walters (1998). Others have pointed out examples of misleading measures (Cave et al. 1991; Stecklow 1995). Journalists are beginning to report how well governments (states, cities and counties) communicate critical results from performance measurement systems (Barrett and Greene 1999; Barrett et al. 2001). For example, Barrett and Greene note that all states have recognized the utility of the managing for results process and that some states are concerned that the measures they report are accurate (1999).¹

2.2 Extent of Disclosure Literature

Gordon, et al. (2002) examined the annual reports (audited financial statements) of 100 public and private institutions and found the following factors were associated with the inclusion of nonfinancial performance indicators. Public institutions, as compared to privates, were more likely to include performance indicators in their annual reports. Public institutions audited by state auditors rather than certified public accounting firms tended to disclose more SEA information. However, the presence of a statewide consolidated governing board for public institutions was associated with a lower level of SEA reporting. Among the private C&Us, private institutions heavily reliant on tuition and fees disclosed less SEA information than their less tuition-dependent counterparts that charged higher tuition rates and had larger endowments.

The extent of disclosure literature has generally been limited to audited financial statements and tends to be geared toward dichotomous assessment of the presence or absence of specific mandatory or voluntary disclosures. A subset of the literature (Coy et al. 1993; Coy et al. 1994; Coy and Dixon 1996; Dixon et al. 1994) does consider the quality of the disclosures as

¹ The managing for results experiences of the states was important in GASB's development of their suggested criteria for communicating performance information (GASB 2003, p.7).

rated by the researchers. In this study, we are looking at both the extent and the effectiveness of performance reporting regardless of its association with audited financial statements. The evaluations of effectiveness are provided by the institutions themselves. This is both a strength and a weakness of the study: SEA is not necessarily part of annual reports and need not follow any standard format or dissemination process. This makes the data difficult to obtain and difficult for an outsider to assess. However, the self-evaluation may be biased despite promised anonymity.

3. Development of Models

To explore environmental and institutional factors pertinent to the extent and effectiveness of performance reporting, we considered factors that have previously been shown to be relevant in the extent of disclosure literature. Some of them are not pertinent for this study. For example, type (or size) of audit firm is not a factor since the performance reporting being evaluated is unaudited and not necessarily associated with audited financial statements. Many characteristics that may help explain extent and effectiveness of performance reporting are common to both public and private institutions. These characteristics might include size, reputation, and leverage. However, public institutions may be subject to additional scrutiny by state government and other external stakeholder groups particularly given the efforts that GASB has made to promote SEA reporting. Likewise, endowments may be more critical to private C&Us that are otherwise more heavily dependent on student tuition and fees. Accordingly, we consider additional variables that may be relevant only to public C&Us or only to private institutions.

The proposed models for the extent of SEA reporting and the effectiveness of SEA communications are provided in Exhibit 1. The following discussion explains the variables included in the models.

3.1 Institution Size and Wealth

In the extent of disclosure literature, size of the entity is one of the most prevalent explanatory variables: as size increases, the level of disclosure increases. For a review of this literature, see Wallace and Naser (1995). Size is often considered a surrogate for the concept of political costs. Economies of scale in the production of information and the desire to reduce the

political costs that arise as the entity's visibility increases are suggested as explanations for the association of size and disclosure (Foster 1986). Both factors should lead to increased quality of disclosures. Larger and wealthier institutions can allocate necessary resources to facilitate the collection and dissemination of information on SEA. Accordingly, we control for institutional size in our proposed models of effectiveness of SEA reporting.

In the for-profit sector, size has been measured as total assets, sales, and market capitalization (Foster 1986). We examine two size-related variables: total assets (SIZE) and a separate scaled version we refer to as WEALTH (total assets divided by full-time equivalent fall enrollment).

- Ha1: Larger colleges and universities (as measured by total assets) will communicate a broader range of SEA indicators.
- Ha2: Wealthier colleges and universities (as measured by total assets per student) will communicate performance more effectively.

3.2 Leverage

Leverage is another variable common in the extent of disclosure literature since firms with a greater proportion of debt incur higher monitoring costs and are thus more likely to make more extensive disclosures than those with little or no debt. A common explanation relates to potential conflict between debt holders and stockholders (e.g., Schipper 1981) but is not relevant to the government and not-for-profit entities we examine. However, many C&Us do issue debt securities. This subjects them to the scrutiny of bond rating agencies. As discussed earlier, the rating agencies consider, among other factors, ratios that are similar to certain types of performance indicators that C&Us may also include in their SEA reports. Thus institutions that have publicly-traded securities will have gained experience in performance reporting (potentially leading to more reliable measures) and may choose to make some of the same statistics available to other stakeholders.

- Ha3: Highly leveraged colleges and universities communicate more different types of SEA indicators and are more effective in communicating performance than less leveraged institutions.

3.3 Tuition Dependence, Tuition Rates and Endowments

Gordon et al. (2002) found that private C&Us with higher tuition rates had more extensive SEA disclosures in their annual reports. In discussing their findings, they suggest that competition between highly selective institutions could be encouraging superior reporting practices. A recent NACUBO study found a 47 percent increase in the level of “tuition discounting” between Fall 1990 and Fall 2004 (Hubbell and Lapovsky 2005). Interestingly, the wealthier and most prestigious private institutions provide higher amounts of financial aid to fewer students which results in lower overall discount rates. Those with larger endowments tend to have the highest tuition rates and the lowest discount rates. The endowments give them the resources to design the academic experience in accordance with their mission. Endowments at less wealthy institutions tend to be used to fill seats to maximize net tuition revenue. Even without substantial endowments, private institutions may be able to earn enough on students not receiving financial aid to support their discounting strategies.

Without considering discounting practices, high tuition rates coupled with similar enrollment levels would suggest that high tuition rates would be associated with a higher proportion of revenues coming from net tuitions (tuition dependence). Gordon et al. (2002) found that tuition dependent C&Us made fewer mandatory and voluntary financial statement disclosures. Lacking taxpayer support, one would expect that private C&Us would be more dependent on tuition and fees than public institutions. However, there is considerable variation, particularly as state support for higher education has been declining in recent years. Less selective private C&Us are often highly dependent on tuition revenue even though they charge relatively modest fees. Such institutions are virtually indistinguishable from many public C&Us. High tuition dependence is a surrogate for market-driven management. In these institutions, tuition is paid in a quid pro quo relationship and communication of performance to other stakeholders is arguably less of a priority. Thus tuition dependence should be associated with a lower level of performance reporting.

Ha4 Colleges and universities whose operations are proportionally less reliant on tuition and fee revenues report a broader range of SEA indicators.

The institutions that comprise the not-for-profit higher education are extremely diverse with respect to size, mission, and funding sources. One of the major differences is the

substantial endowments that many private C&Us have accumulated. Gordon et al. (2002) argue that high levels of endowment assets indicate a relationship of trust between an institution and its supporters developed through effective communication over long periods of time. Commuter campuses are at a distinct disadvantage since alumni support is generally associated with the undergraduate residential experience. C&Us have well-developed mechanisms in place to keep in touch with alumni and to encourage both annual and major contributions. Cumulatively successful institutions, i.e., those with larger endowments, are thus presumed to be generally more effective communicators.

Consistent with Gordon et al. (2002) findings, the next hypotheses argue that private C&Us that compete on the basis of prestige (i.e., those with higher tuition) and greater alumni support (i.e., larger endowments), have stronger incentives to produce high quality performance reports. Given the high correlation between endowment and tuition rates and the high level of missing data on endowments, we chose tuition rate as our measure of prestige at private C&Us.

Ha5: High prestige private colleges and universities (high published tuition rates) report a broader range of SEA indicators and communicate SEA more effectively than less prestigious institutions.

3.4 Type of Institution

C&Us are often categorized in accordance with a scheme used by the Carnegie Foundation (Carnegie Foundation 2001) that distinguishes five types of institutions based on the level and number of degrees granted, research grants, and other factors. It can be argued that major research institutions may compete with each other, regardless of classification as private or public, and therefore tend to behave in similar ways with respect to financial and other reporting practices. Community colleges, as entities that are authorized to assess taxes, may differ from other public institutions.² We posit no directional hypotheses related to the major groupings of institutions.

Public institutions are larger than private C&Us in terms of total assets, total revenues, and enrollment. This systematic difference is impossible to avoid in models that include both

² Within public C&Us, the Carnegie levels are essentially ordinal: research institutions are more prestigious than masters-level which in turn are more prestigious than four-year institutions and two-year community colleges are at the lowest level of prestige. Specialized institutions would be more or less prestigious depending on the area of specialization.

types of institutions. However, regardless of size, public institutions may be subject to greater pressures to report their performance due to their more numerous constituents. Both public and private institutions need to communicate with alumni, students, faculty, bondholders, accrediting bodies and the like but publics are also subject to scrutiny by taxpayers, voters, legislators and possibly state-level coordinating or governing boards. Accordingly, when holding all other factors constant, we expect public institutions to be more effective in communicating their performance to stakeholders.³

Ha6: Public colleges and universities report a broader range of SEA indicators and communicate SEA more effectively than private institutions.

3.5 Experience with Performance Reporting

We believe the old adage “practice makes perfect” likely applies to performance reporting. Institutions that use SEA in their internal management processes should be more comfortable with the selection of useful and relevant criteria and reliable measurement techniques. Presumably, this experience enables them to report useful and reliable performance indicators to external stakeholders. While enrollment and similar input measures are reliable and easily reported, they are arguably less useful than output and outcome measures. Institutions that report more different types of performance indicators are more likely to include in their reports output measures like the percentage graduating in five years and outcome measures like alumni performance on national exams.

The need to obtain and maintain institutional accreditation is another external influence through which C&Us gain experience with performance reporting. There are six regional accreditation agencies in the United States, each with its own particular reporting guidelines. Outcomes assessment is becoming an accreditation requirement and institutions should be establishing mechanisms by which the data needed for the periodic accreditation visit can be routinely collected. We compare both extent and effectiveness of SEA reporting by accreditation

³ A dichotomy for the public versus private dimension in higher education is problematic particularly as public funding for post-secondary education has been declining in recent decades (NCES 2005 a). Historically, the earliest U.S. “private” institutions received public support while some of the earliest “public” institutions had self-perpetuating boards and operated essentially as private institutions (Brubacher and Wills, 1976: 145). Even today there is a great deal of variation from state to state in the pattern of taxpayer support for public institutions and scholarship support for students attending private institutions. Unfortunately, we could find no available data on the true level of public support for C&Us.

region and use REGION as a control variable in our models without making any predictions regarding the impact on performance reporting.

Ha7: Institutions that report more different types of performance indicators will communicate SEA more effectively than institutions reporting fewer types.

Gordon et al. (2002) argue that a state-wide centralized governing board would require substantial amounts of financial and nonfinancial information, perhaps in standardized form, to efficiently administer higher education. However, they found the opposite -- the overall extent of disclosure for public institutions in states with a consolidated governing board was significantly less than public institutions in other states. Since their index was constructed from the annual reports that included audited financial statements, it is possible that performance indicators were being reported via another mechanism. Without positing a positive or negative relationship, we include the existence of a consolidated governing board as a control variable in our “publics only” model of extent of SEA reporting.

Growing attention is being placed on outcomes assessment for public education at the kindergarten through high school levels (“K- 12”). A number of states were working on measurement even before the federal “no child left behind” act. In 2002, 32 states had established a state-level agency to coordinate public education and post-secondary education (McGuinness 2002). It is possible that such entities might encourage or require more extensive SEA reporting by the public C&Us in their respective states. Again, without positing a positive or negative relationship, we include the existence of a state-wide structure to coordinate K- 12 and higher education as a control variable in our “publics only” model of the extent of SEA disclosure.

Ha8: Public institutions located in states with a K-12 coordinating agency will report more different types of performance indicators than those in other states. **4.**

Data, Research Design, and Methodology

To determine college and university reporting of performance information, we use survey data as well as financial, enrollment and other facts obtained from published sources. The survey data was provided by National Association of College and University Business Officers

(NACUBO.)⁴ In December 2003, NACUBO released a Web-based survey instrument to its approximately 1,100 member institutions. The response window was December 2, 2003 through January 8, 2004. Of the 278 respondents who began answering the questionnaire, 262 completed most questions. Although promised anonymity, many respondents voluntarily provided their name, institution and contact information. The response software usually captured the email address of the respondents.⁵ With this information (matched with information included on the survey regarding state, enrollment and type of institution) we were able to identify 97 percent of the institutions. For the institutions we could identify, we acquired additional financial data from Integrated Postsecondary Education Data System (IPEDS) (NCES 2005b) and enrollment and tuition rate data from the Higher Education Directory (HEP 2004).⁶ Information on state-level variables was obtained primarily from McGuinness (2002). Missing data for some but not all variables led to a reduction in final sample size as indicated in Table 1.

4.1 Construction of Reporting Indices

Simple (unweighted) indices have often been used in extent of disclosure research. However, indices weighted by importance to key user groups are considered conceptually superior.⁷ To determine the level of extent and effectiveness of performance reporting, we derived extent of SEA reporting (EXTENT) and effectiveness of SEA communication (EFFECTIVE) indices. The first is an unweighted index and the latter is weighted by importance as explained in the following discussion.

⁴ The authors express their appreciation to the National Association of College and University Business Officers (NACUBO) for permission to use data collected from their member institutions. NACUBO owns and retains all rights to the survey data.

⁵ The majority of the respondents were from institutional planning or budgeting or had responsibility for financial reporting. Two-thirds said they held executive-level administrative positions on their campus.

⁶ For public institutions, the in-state full-time tuition rate was obtained and used. For private institutions, the published tuition rate was used.

⁷ While conceptually superior, many studies that report both weighted and unweighted results find no significant increase in explanatory power from their compound index (for example, Robbins and Austin 1986 and Gordon et al. 2002).

4.1.1 Extent of SEA Disclosure Index

The survey asked respondents about different types of SEA reported or used. Most categories were supplemented by several examples.⁸ By counting the different types of SEA disclosures reported, we created a simple index of the extent of SEA reporting that ranges from zero to 14.⁹ While the survey respondents were also asked to select the five most critical types of indicators and whether each type of indicator should be reported internally, externally, or not at all, this evaluation is clearly from the perspective of internal users rather than the external users. Accordingly, it did not seem appropriate to create a weighted index for extent of SEA disclosure. Given that there are many possible indicators in each SEA category, the EXTENT index is only a surrogate for the breath of SEA reporting. However, the higher the number, the more likely that output and outcome measures are being reported. Thus a high number on EXTENT may also be an indication of the quality of the SEA reporting.

4.1.2 Effectiveness of SEA Communication Index

Respondents were also asked to evaluate their institution's effectiveness in communicating performance on each of the 16 GASB reporting criteria. A seven-point scale was used with labels on the beginning and ending points: 1=does not meet; 7=meets very well. From this information, it would be possible to create a simple index by merely summing the 16 evaluation scores to create an measure that ranges from a low of 16 to a high of 112. However, importance weights were available to create a weighted index since the survey asked respondents from institutions not currently engaged in SEA reporting to evaluate the 16 GASB criteria with respect to importance. Assuming that these evaluations were made from a public interest perspective, they should be useful in evaluating reported effectiveness of communication.

⁸ The "selectivity measures" category gave the following examples: acceptance rate, high school GPA and SAT or ACT scores. Other categories were supplemented in the same fashion if there was concern that the respondent might not know what was intended by the category label.

⁹ Our index includes and counts all unique types of SEA indicators for institutions that reported SEA both internally and externally. There were 13 listed categories but respondents were allowed to write-in additional types of performance measures. Regardless of the number of other items listed, we counted "other" as one category in creating the index. Tuition cost and financial aid, endowment performance, and various financial ratios were among the categories listed under "other indicators."

We created a weighted effectiveness of SEA communication index as follows. First, we converted the effectiveness ratings for each criterion into a percentage by dividing by the maximum score of 7. Second, we multiplied the resulting percentage by the average importance score for the criterion. The importance weights were the mean importance scores assigned by the 59 respondents from institutions that were not currently involved with performance reporting.¹⁰ They evaluated each criterion on a 7-point scale anchored with 1 = not important and 7 = very important so that higher scores indicate greater importance. After multiplying the effectiveness percentage by the average importance score for each criterion, the final step was to sum the weighed scores for all 16 items. The average score was 57 and ranged from a low of 14 to a high of 89.

4.2 Characteristics of Sample Institutions

Table 2 presents the means of selected financial and enrollment data broken out between reporting and non-reporting C&Us (Panel A) and between private and public C&Us (Panel B). Panels C and D provide cross-tabulations for the types of institutions (Carnegie classification) and accreditation regions for public and private C&Us. This analysis, along with more extensive statistics not presented in tabular format, revealed problematic relationships between the dummy variables that would be necessary for coding the categorical variables used in ordinary least squares linear regression. In addition, the anticipated systematic differences for continuous variables with respect to public versus private C&Us were confirmed since publics are larger than private institutions. Panels E and F in Table 2 highlight differences in continuous variables by categorical variables.

While the level of education provided at an institution and the standards used by its particular regional accrediting agency might each lead to improved communication of performance indicators, the structural pattern indicates strong potential for multicollinearity. In particular, institutions that grant doctoral degrees and community colleges were both significantly more likely to be public institutions while institutions granting bachelor's degrees and those classified as specialized schools were significantly more likely to be private institutions (Table 1, Panel C and confirmed by Spearman rank-order correlations of .19, .40,

¹⁰ Some respondents, inadvertently or otherwise, skipped one or more of the 16 criteria. The lowest number of evaluators for any criterion was 57 but only 55 evaluated all 16 criteria.

-0.45 and -0.21 respectively, with $p < .05$).¹¹ Specialized institutions were more common in the New England region ($r = .18$, $p = .006$) and community colleges were more common within the South region ($r = .13$, $p = .045$). For this sample, the existence of a K-12 coordinating structure was more common for states within the Southern region ($r = .31$, $p = .000$) while such structures were less common in the Middle States, Western and New England regions (correlations ranges from -0.18 to -0.24 with $p < .05$).

In addition, there were numerous significant differences between the categorical variables and the continuous variables potentially useful as surrogates for size, wealth, and prestige. Institution age, endowment, leverage, tuition dependence and tuition were all significantly different between accreditation regions at the .05 level (Table 2, Panel E). Panel F in Table 2 shows that age, total assets, total revenues, enrollment, endowment, assets per student, tuition dependence and tuition and fees per year differ significantly depending on Carnegie classification ($p < .03$). Panel B reports that age, total revenues, enrollment, endowments, assets per student, tuition dependence and tuition and fees per year differ between public and private C&Us ($p < .01$). The following paragraphs briefly describe the major differences in means.

Size and Wealth. Not surprising, private C&Us had larger endowments and assets per student than public C&Us but lower total revenues and lower Fall 2003 full-time equivalent enrollments. There was no significant difference for total assets (mean = \$329 million). C&Us in the Western and Middle States regions were the largest (in terms of total assets) and those in the Northwest and North Central regions were the smallest. Total revenues were highest in the Western region and lowest in the North Central and Northwestern regions. Research C&Us were above average and all other types of institutions were below the mean of \$158 million in total revenues. Average enrollment for the sample was 7,613 full-time equivalent students for Fall 2003. Enrollment at private institutions averaged 3,009 as compared to 12,064 at public institutions. There were 17,311 students enrolled at the average Research C&U (the largest institutions in terms of students) and just 2,108 students at the average Bachelors institution (the smallest). There are no significant differences ($p < .05$) in enrollments among the accreditation

¹¹ For Spearman rank-order correlations, public was coded 1 and private was coded 0. If a school was located in a particular region it was coded 1, otherwise 0. The analysis results are included in the discussion but not reported in tabular format.

regions. The average endowment¹² was \$76 million but endowments were far larger in New England (\$249 million). Endowments were smallest in North Central at just \$32 million. Assets per student did not differ significantly between accreditation regions. Assets per student were highest at Research C&Us at \$135 thousand followed by Bachelors C&Us at \$112 thousand. All other classifications were below the mean with 2-year institutions at just \$39 thousand per student.

Leverage. Debt to net assets averaged 62 percent and there was no difference between public and private institutions and no differences among the Carnegie categories (LEVEL). However, C&Us in the Southern region were the least leveraged (43%) and those in the Middle States region were the most leveraged (95%).

Prestige. Private C&Us are significantly older than public institutions. Associates and Specialized institutions were below the mean and Bachelors and Research C&Us were well above the mean of 96 years of age. The oldest C&Us were located in the New England region and the youngest were in the Western and Northwest regions. Bachelors and Specialized C&Us had the highest published tuition rates with Research and Masters institutions at slightly less than the mean and the tuition at two-year schools at less than a third of the \$10,745 average for Fall 2003. Not surprisingly, the published tuition rates at private C&Us were well above the mean at \$17,981. Public institutions averaged \$3,661 per year. The costliest regions were New England and Middle States. The average institution derived 48 percent of total revenues from net tuition and fees. New England C&Us were the most tuition dependent at 61 percent and Southern, Northwest and Western regions were below average in dependence on tuition revenues, possibly due to the higher percentage of public institutions in the western part of the country.

4.3 Methodology

The relationship between extent and effectiveness of disclosure was first examined with respect to each hypothesized independent variable. To determine whether the independent

¹² We obtained the data on end of the year endowment from IPED. If no endowment amount was listed, we substituted total restricted net assets from the same source (for private C&Us) or restricted nonexpendable net assets (for public C&Us). Unfortunately, this measure is flawed since restricted net assets for private C&Us includes both temporarily and permanently restricted net assets. We also noted that some public institutions reported restricted nonexpendable net assets while leaving endowment blank (or reporting zero).

variables considered together contribute to the overall variance in the model, a multivariate technique was needed. Linear regression with dummy variables for accreditation region, Carnegie level, and public/private status and transformed continuous variables produced significant models but had too much collinearity to facilitate meaningful analysis of the coefficients. We turned to the optimal scaling categorical regression procedure in SPSS 13.0 for Windows (2004). This procedure assigns numerical values to categories and simultaneously scales nominal, ordinal and numeric variables so that the quantifications reflect characteristics of the original categories. Variables are transformed and standardized to create a linear relationship between the original response and the original set of predictors. The alternating least squares technique optimizes the quantifications so the significance levels for the coefficients must be interpreted conservatively and in accordance with the specific quantification for the model. Size of coefficient alone does not indicate importance to the model and must be interpreted in conjunction with the zero-order correlations.

5. Findings

Table 1 shows that nearly two-thirds of responding institutions report performance indicators externally or internally for management purposes. Sixteen percent of the 256 respondents that answered the question are from institutions that reported SEA externally but not internally. Another 15 percent report SEA internally but not externally. Twenty-percent of the C&Us are engaged in neither internal nor external performance reporting. This high level of SEA reporting (80 percent) may not be reflective of the population. Individuals asked to participate in a “measuring and reporting performance” study are more likely to respond if their institution is doing something rather than nothing. Table 2 (Panel A) shows that C&Us that report SEA are not significantly different from those that do not. The only exception is related to wealth. According to this univariate test, non-reporters are significantly larger in terms of assets, endowments, and assets per student.¹³

Panel A in Table 3 presents the list of performance indicators survey respondents identified as being used. They checked all that applied with respect to their external and/or internal reporting. The most common indicator categories relate to enrollment, persistence, and

¹³ As will be shown in Section 5.1, this finding does not hold in the multivariate analysis.

graduation statistics. Note that every category is more likely to be included in an internal SEA report as compared to an external SEA report. Panel B reports a test of whether external reporting is less extensive than internal reporting. For the 124 institutions that said they had both internal and external SEA reports, we compare the number of indicator categories included. The difference is statistically significant: C&Us report fewer types of SEA measures externally than internally.¹⁴

5.1 Extent of Disclosure Model

This part of the analysis includes C&U respondents that reported no internal use and no external reporting of performance measures. Respondents that answered “not sure” about both types of performance reporting were omitted from the analysis. (See Table 1 for derivation of sample size for each model.) In exploring extent of SEA reporting, we first examine the data with univariate tests. The comparison of means by categorical independent variables is reported in Table 4. Accreditation region is the only significant analysis and shows that institutions located in the Middle States and North Central regions tend to provide more types of performance indicators (Panel C in Table 4). The C&Us located in the Western and Northwest regions provide the fewest number. Panel F in Table 4 shows that the “external reports only” institutions have significantly fewer types of indicators than those with internal SEA reporting. Panel G in Table 4 shows that the correlations between continuous variables in Model 1 are modest in size. EXTENT can best be considered an ordinal indicator of the breath of SEA reporting rather than the depth of detail. Accordingly, it was interesting that the parametric correlations between EXTENT and size and between EXTENT and leverage are not significant while the rank-order correlations were positive and significant.

Table 5 presents the multivariate test of Model 1 (see Exhibit 1). The model is significant with an adjusted R^2 of .139 and, with the exception of tuition dependence and auspices, and all the coefficients for Model 1 are significant.¹⁵ According to the Pratt (1987)

For this analysis, we used only the 13 categories of indicators listed on the survey since the open-ended category included a wide variety of measures that were not necessarily comparable between internal and external sections of the survey.

Including the dichotomous variable for public/private slightly reduces adjusted R^2 but does not change the explanatory power of the model or interpretation of variables. Therefore, we report a reduced model in Table 5 that omits PUBLPRIV.

importance index,¹⁶ the most important variables in the model are SIZE (total assets) and accreditation region followed by leverage and then level of education provided. Both SIZE and LEVERAGE (debt to net assets) are positively associated with the extent of SEA reporting. REGION and LEVEL are categorical variables that require care in interpretation. The optimal scaling procedure quantifies the Middle States and North Central regions as negative numbers. Coupled with the negative coefficient, this confirms that these two regions are associated with higher values for extent of SEA reporting (more types of SEA indicators). The ranking confirms the relative order of the means presented in Table 4, Panel C. Interestingly, the influence of the Carnegie classification is different than what would be expected from an examination of the means (Table 4, Panel B). When size, leverage and region are controlled, the two-year institutions outperform all other institutions by a large margin. Masters-degree granting institutions also move ahead of the prestigious research institutions. Specialized institutions provide the fewest types of indicators, which is perhaps consistent with their narrower missions.

5.1.1 Private Institutions

Re-running Model 1 for only private institutions provides a major improvement in model fit with adjusted R^2 at .238. Size and accreditation region are the only significant variables. To test Model 1.2 (see Exhibit 1), we add TUITION to the model and this causes a modest increase in adjusted R^2 to .247. As predicted, the coefficient for tuition rate is significant and positive. However, the post transformation correlations as well as the importance and tolerance indicators show problems with multicollinearity. Dropping the LEVEL variable from the model solves the problem and increases adjusted R^2 to .262. This is consistent with the discussion in Section 3.4 that Carnegie classification may be a more appropriate measure of prestige for public C&Us and less relevant to private C&Us.¹⁷ However, the main collinearity problem is that, among private C&Us, tuition rate is strongly correlated with total assets ($R^2=.529$, $p<.000$) and converting to ranks in the categorical regression procedure is actually harmful -- for the transformed variables the correlation is .619. Using assets per student (WEALTH) instead of total assets (SIZE)

¹⁶ Pratt's relative importance measure equals the product of the regression coefficient and the zero-order correlation for a predictor. Since these products add to R^2 they are divided by R^2 and sum to 1.

¹⁷ Note the Carnegie classification was not a significant variable in the publics-only model. If Carnegie class is indeed a measure of prestige, its impact was felt only in the effectiveness of communication scores as will be discussed with respect to Model 2.

reduces the multicollinearity problem without materially changing model fit but WEALTH is not significant. In all cases, REGION is significantly associated with EXTENT: private institutions located in the Middle States and North Central regions report more types of performance indicators than other private C&Us.

5.1.2 Public C&Us

Running Model 1 for just the public institutions produced a model that explains very little of the variance in extent of SEA reporting ($p = .063$ and adjusted $R^2 = .068$). SIZE is the most important variable followed closely by REGION with leverage a distant third. No other coefficients are significant. To test Model 1.2, we add the two structural variables hypothesized to be relevant to the extent of SEA reporting by public institutions (see Exhibit 1). The addition does not change the significance of the model although the goodness of fit increases to .074. Having a K-12 coordinating structure within the state has no impact on the number of different types of performance measures reported. Likewise, the type of governance structure for higher education within the state makes no difference. These findings confirm the univariate statistics reported in Table 4, Panels D and E.

5.1.3 Extent of Disclosure Reporting - Summary

The analysis confirms the importance of organization size in extent of reporting issues but whether this is the effect of economies of scale or political costs (i.e., visibility) is less certain. Bond rating agencies may be influential since they require C&Us to report to them various ratios. However, regional accreditation bodies apparently have a greater influence on the extent of performance reporting. This could be related to either peer pressure within a region or to differences in accreditation standards.

5.2 Effectiveness of SEA Communication Model

Table 6 lists the 16 GASB criteria for effective communication of performance. The survey respondents were presented a short description of each criterion and were asked to evaluate “how well your current performance reporting meets each criterion on a scale of 1 (does not meet) to 7 (meets very well.)” The mean scores are listed in the first column. Respondents

who indicated that there was no SEA reporting at their institution were routed to an equivalent section of the survey and asked to “indicate the importance of each criterion in a hypothetical report on a scale of 1 (not important) to 7 (very important).” The mean importance scores are listed in the second column.

GASB groups their criteria in three sets with the headings as shown in Table 6. We wondered if the importance assigned to the criteria would be structured in the same fashion. A principal components analysis is reported in Table 7. There are indeed three factors and the GASB ordering is reflected within the factors, but not quite in the same groups. The first factor includes the items at the end of the list and the second factor includes items at the beginning of the list. Only Criterion No. 5 fell into a non-contiguous factor. We test to see if the factors were considered equally important and find that Factor 3 (reliable information, resources used & efficiency, relevant measures of results, and focus on key measures) is rated as significantly more important than the first factor. There is no difference between the Factors 1 and 2 or between Factors 2 and 3. Factor 1 could be labeled “the mechanics of reporting” and Factor 2 is the “purpose of reporting,” Factor 3 is clearly the heart “what to report.” Finally, we compare the effectiveness scores to the importance scores. On 7 point scales, effectiveness is rated lower than importance but the scores are the highest in both cases for Factor 3.

5.2.1 All Institutions

For the test of Model 2, we include only the 166 institutions that evaluated all 16 GASB criteria regarding effectiveness of communication and for which we were able to obtain financial, tuition, and enrollment data (see Table 1, Panel D).

Table 8 shows the univariate analysis for variables included in Model 2. For the categorical variables (Panels A, B and C), only control is significantly different with private institutions evaluating themselves as more effective than publics (contrary to Hypothesis Ha6). Panel D in Table 8 shows that the C&Us with external SEA reporting not used for management purposes rate themselves as significantly less effective communicators.

Panels E, F and G in Table 8 analyze potential collinearity problems between independent variables in Model 2. Panel E shows the correlations between the continuous independent variables included in Model 2. EXTENT is significantly and positively correlated with EFFECTIVE consistent with Hypothesis Ha7. EXTENT is also positively correlated with

WEALTH but only for the rank-order correlation. Interestingly, leverage has a significant but negative coefficient with effectiveness of communication, possibly because any positive influence is indirect through the extent of reporting variable.

As shown on Table 9, Model 2 is significant ($p=.016$) but explains less than ten percent of the variance in self-reported effectiveness of performance reporting when applied to all 166 institutions for which we were able to identify and obtain financial, tuition, and enrollment data (see Table 1). According to the importance statistics, the most influential variable is PUBLPRIV followed by LEVEL, EXTENT and then REGION. The optimal scaling for PUBLPRIV has privates quantified at -1.09 and publics at .92. Accordingly, the negative coefficient on the variable confirms that private institutions are more effective in communicating SEA even when controlling for the other variables (Table 8, Panel A). The regional impact is somewhat less consistent with the univariate analysis (Table 8, Panel C) although the New England and Middle States regions are confirmed as promoting more effective communication (negative quantifications times negative coefficient on REGION) while the Western region is confirmed as having the lowest effectiveness ratings (high positive quantification times the negative coefficient). The coefficient for LEVEL is positive and the optimal scaling quantifications for Bachelors and Masters degree institutions are negative with the quantification in the same order as the means reported in Table 8, Panel B. Specialized and Research institutions are more effective communicators when the extent of reporting (number of different types of indicators), auspices (public or private) and accreditation region are taken into consideration. The coefficient for leverage (debt to net assets ratio) is also significant but negative suggesting that high levels of debt are associated with less effective communication. WEALTH is the least important variable with a coefficient not significantly different from zero and with a negative importance statistic that indicates a potential multicollinearity problem. Removing the variable slightly improves model fit without changing signs of coefficients or interpretation of categorical variables.

5.2.2 *Private C&Us*

When Model 2 is applied to the data for just the 76 private institutions, the model is marginally significant ($p=.084$) but only REGION, EXTENT and LEVEL are significant at the .05 level. Removing the non-significant variables improves fit and significance (adjusted $R^2 = .117$, $p=.048$). The quantifications for REGION are comparable to the model as a whole and can

be interpreted as discussed above. However, the quantification for LEVEL is slightly different and Specialized institutions move ahead of Research C&Us.¹⁸ Bachelors C&Us have a high negative quantification and come in as the least effective communicators.

As discussed in Section 3.3, published tuition rates may be a signal of institutional prestige particularly relevant to private institutions. Adding this variable to test Model 2.1 (Exhibit 1) improves the significance of the model ($p=.024$) and adjusted R^2 increases to .151. Interestingly, the coefficient for TUITION is negative indicating that high tuition institutions rate themselves as less effective communicators once EXTENT, REGION, and LEVEL are taken into consideration. The relative importance of the variables is similar to the discussion of Model 2 with EXTENT being most important and then REGION and LEVEL with approximately the same importance score. Tuition rate is the least important variable. Interpretation of the categorical variables remains the same as in the previous paragraph.

5.2.3 Public C&Us

Running Model 2 for just the 90 public institutions produces a model that is only marginally significant at $p=.07$ with adjusted R^2 of .088. REGION and LEVEL are the only variables significant at $p<.05$. Removing the nonsignificant variables does not improve the model. To test Model 2.2 (Exhibit 1) we add the structural variables for K-12 coordinating agency and consolidated governing boards but neither is significant and the addition does not improve the fit.

5.2.4 Sensitivity analysis

Using unweighted effectiveness scores for the dependent variable in Model 2 actually improves the fit to $R^2=.129$ ($p=.001$). However, the coefficients are substantially identical to the weighted analysis with the same significant coefficients, signs, and similar quantification for categorical variables. Replacing WEALTH with SIZE (total assets) does not change either the weighted or unweighted models. SIZE, like total assets scaled by number of students, is not associated with effectiveness of performance reporting. However, substituting enrollment for total assets or assets per student improves model fit (adjusted $R^2=.092$ with $p=.001$) with all

¹⁸ There are only two associate degree granting institutions in this group and their effectiveness scores are also high.

variables being at least marginally ($p < .10$) significant. Enrollment and leverage remain the least influential variables and interpretation of the coefficients and categorical variables is substantially the same as reported above.

5.2.5 Effectiveness of Reporting - Summary

Private C&Us are communicating performance indicators more effectively than public C&Us. Size or wealth does not seem to be a driving factor other than through any impact it has on the extent of SEA reporting (see Model 1 in Exhibit 1). The type of institution does have an impact with Specialized programs and Research institutions rating themselves as more effective communicators. The impact of bond rating agencies is less clear, with some indication that more highly leveraged institutions are less effective communicators. Geographic distribution or regional accrediting agencies seem to be associated with effectiveness beyond any indirect impact through the EXTENT variable. A higher number on EXTENT means that an institution is more likely to be reporting output and outcome measures. In particular, this could enhance the ratings on GASB Criteria 8 and 6 (relevant measures of results and focus on key measures).

5.3 Summary of Hypotheses

To summarize the results of the tests of the eight hypotheses developed in Section 3, we provide a brief discussion of the findings by hypothesis number. Although both Model 1 (extent of performance reporting) and Model 2 (effectiveness of communication) were significant, not all proposed variables are significant and not all are in the expected direction. In addition to the directional hypotheses, we find that the control variables for level of education provided (Carnegie classification) and accreditation region are significant in explaining both the extent and the effectiveness of SEA reports. On the other hand, the higher education governance structure within a state is not associated with either extent or effectiveness of reporting by public colleges and universities.

Ha1: (Confirmed). Colleges and universities with more assets communicate a broader range of performance indicators.

Ha2: (Confirmed). Wealthier colleges and universities (as measured by total assets per student) communicate performance information more effectively.

- Ha3: (Partially confirmed). As predicted, highly leveraged colleges and universities report more different types of SEA indicators. However, leveraged institutions are less effective in communicating performance as compared to institutions with lower debt to net asset ratios.
- Ha4: (Not confirmed). There is no difference in the extent of performance reporting associated with dependence on tuition revenue (net tuition revenue divided by total revenue).
- Ha5: (Partially confirmed). As predicted, high prestige private colleges and universities (high published tuition rates) report a broader range of SEA indicators. However, they rate themselves as significantly less effective in communicating this information as compared to private institutions with lower tuition rates once extent of disclosure, accreditation region and level of education provided are taken into consideration.
- Ha6: (Not confirmed). There is no difference in the number of performance indicators reported by public and private colleges and universities. However, the effectiveness of communication is significantly different but in the opposite direction than our prediction. Private institutions rate themselves as more effective communicators of performance information than public colleges and universities.
- Ha7: (Confirmed). As predicted, institutions reporting more types of performance indicators communicate performance more effectively than institutions reporting fewer types.
- Ha8: (Not confirmed). The existence of a K-12 coordinating agency in a state is not associated with differences in the number of performance indicators reported by public colleges and universities in that state.

5.4 Limitations

The primary limitation to the study is that participating C&Us may not be reflective of the overall C&U population. As compared to national statistics, the sample proportion for public versus private institutions is essentially identical at 51 percent public and 49 percent not-for-profit.¹⁹ However, two-year institutions are under-represented. Nationally, almost two-thirds of public C&Us are two-year programs but only a third of the publics in this study are classified at

¹⁹ This statistic was computed by authors from IPEDs data for 2002-03 and excludes 297 for-profit four-year and 494 for-profit two-year colleges from the analysis. They were omitted since for-profit entities were not included in the sampling frame for this study.

the associates degree level. Since 89 percent of the associate degree programs in the U.S. are public institutions (91 percent of the two-year schools in our sample), the under-representation of these community colleges causes our sample to be proportionately heavy with respect to public four-year C&Us.²⁰ In addition, C&Us that choose to become members of NACUBO (our sampling frame) may differ in unknown ways from other institutions of higher education. Thus, nonresponse bias suggests that the high level of SEA reporting (80) percent found in this study may not reflect the proportion for the entire nation.

In addition, the surrogates selected to represent constructs like prestige may not be adequate. In this study, tuition rate (our prestige variable for private C&Us) had less explanatory power than Carnegie classification, another potential indicator of prestige, particularly for public institutions. Other potential surrogates for prestige such as institutional age and endowment were, like tuition rate, highly correlated with size. Indeed, many inherent attributes of C&Us make multicollinearity issues unavoidable. We selected total assets as the least problematic size variable but all financial statement data is somewhat suspect given that public and private institutions report under different accounting standards. Finally, the results are based on survey responses and subject to the limitations of survey research.. Both the extent of performance reporting index and the effectiveness of performance communication index were based on information provided by representatives of each institution. In particular, the brief discussion of each GASB criterion that was provided on the survey may not have been sufficiently clear since the guidance was published at about the same time as the survey. Accordingly, subsequent queries regarding effectiveness may differ from the results reported here due either to changes in achievement or improved understanding of the recommended GASB guidelines.

6. Conclusion

With respect to extent of disclosure for performance indicators, this study supports earlier research findings with respect to size and prestige (as measured by published tuition rates). We find a clear size effect consistent with past literature (e.g. Wallace and Naser 1995; Gordon et al. 2002). Larger institutions report more types of performance indicators due either to economies of scale or higher visibility (political costs). Among private colleges and universities, we find

²⁰Nationally, only 29 percent of public four-year institutions were classified as public in 2003-2003 as compared to 41 percent for our sample.

that higher tuition rates are also associated with more extensive use of performance indicators, consistent with Gordon et al. (2002). We do not, however, find support for other factors that were significant in that study. For example, in Gordon et al. (2002) leverage was not associated with overall disclosures and tuition dependence was associated with less performance information. They found that public institutions reported more performance indicators in their annual reports than private colleges and universities. In this study, we find leverage positively associated with extent of performance reporting but tuition dependence and auspices (public vs. private) not associated with disclosure level. We also find accreditation region and level of education (Carnegie classification) to be associated with the extent of disclosure.²¹ This study includes a broader range of institutions,²² is not limited to reports associated with audited financial statements, and examines performance reporting nine years later. Any of these factors could cause differences in results.

The most common performance measures reported by colleges and universities included enrollment, persistence, and graduation statistics. Institutions that report performance measures only in external reports include fewer types of indicators than those that report performance measures internally. Colleges and universities that report measures of service efforts and accomplishments both internally and externally also report fewer types of indicators to external stakeholders.

We find that private institutions rate themselves more effective in communicating performance on the 16 GASB reporting criteria. Other important factors related to effectiveness include the extent of disclosures, the level of education provided, and regional accreditation agency. Specialized colleges and universities and those granting doctoral degrees seem to be more effective communicators than other types of institutions. The importance of the level of education provided might be related to peer group pressure or differences in reputation. New England and Middle States regions are associated with more effective communication of performance data. We do not know why accreditation region is a factor but propose differences

²¹ Neither of these variables was explicitly included in Gordon et al. (2002) although they reported that research institutions more commonly produced a corporate-style annual report with pictures, graphs, and performance statistics as compared with the other four-year institutions in their sample.

²² In Gordon et al. (2002), the mean enrollment for the 49 public institutions was over 40,000 students and the mean for the 51 private institutions was just under 10,000 as compared to the 12,000 and 3,000 means in this sample. Their sample was skewed toward research institutions and included no two-year colleges and no public institution that did not provide advanced degrees.

in accreditation standards or peer pressure within geographic areas as possible explanations. While size (wealth) was associated with more extensive reporting of performance, it was not related to the perceived effectiveness of that reporting.

More research on performance measure reporting is warranted to determine why the accreditation region is such an important factor for both extent of disclosure and effectiveness of communication. Future research is also need to determine what, if any, influence the 16 GASB criteria will have on performance reporting because, at the time of this study, the GASB guidelines were not well known (GASB 2003).

Although performance reporting is a concept with a long history in higher education, institutions have has not reached agreement on what to measure, the importance of the measures, or how the measures should be used. Coy et al. (2001) argue that institutions of higher education should adopt a public accountability perspective that acknowledges the existence of a wider audience for more comprehensive information regarding performance. College and university annual reports should provide a broad range of disclosures about their key activities of teaching, research, and service. Such reporting should enhance institutional reputation and help increase and maintain the perceived value of the diploma, arguably the ultimate purpose of a university. More importantly, a wide range of nonfinancial metrics will help avoid a narrow bottom-line economic perspective that would, in the long run, lead higher education away from many of its real societal responsibilities (Lawrence, 1978). The 16 GASB reporting criteria recommended in 2003 can help colleges and universities effectively communicate and report performance information as part of a managing for results paradigm. Since most institutions prepare and use various statistics for internal management purposes, the benefits to the public (and in the long term to the institution itself) should far outweigh the cost of more extensive and effective performance reporting. Highlights from such performance reporting would be a welcome addition to higher education's audited financial statements and annual reports.

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Exhibit 1 – Models of Extent and Effectiveness of Performance Reporting

Model 1– Extent (Breath) of Performance Reporting

$$1 \text{ EXTENT} = \nu + E_1 \text{ SIZE} + E_2 \text{ LEVERAGE} + E_3 \text{ TUITDEP} + E_4 \text{ REGION} + E_5 \text{ LEVEL} + E_6 \text{ PUBLPRIV} + H$$

1.1 Private C&Us Only

$$\text{EXTENT} = \nu + E_1 \text{ SIZE} + E_2 \text{ LEVERAGE} + E_3 \text{ TUITDEP} + E_4 \text{ REGION} + E_5 \text{ LEVEL} + E_6 \text{ TUITION} + H$$

1.2 Public C&Us Only

$$\text{EXTENT} = \nu + E_1 \text{ SIZE} + E_2 \text{ LEVERAGE} + E_3 \text{ TUITDEP} + E_4 \text{ REGION} + E_5 \text{ LEVEL} + E_6 \text{ K12} + E_7 \text{ CONSBOARD} + H$$

Model 2– Effectiveness of Performance Reporting

$$2 \text{ EFFECTIVE} = \nu + E_1 \text{ EXTENT} + E_2 \text{ WEALTH} + E_3 \text{ LEVERAGE} + E_4 \text{ REGION} + E_5 \text{ LEVEL} + H + E_6 \text{ PUBLPRIV}$$

$$2.1 \text{ Private C\&U Only EFFECTIVE} = \nu + E_1 \text{ EXTENT} + E_2 \text{ WEALTH} + E_3 \text{ LEVERAGE} + E_4 \text{ REGION} + E_5 \text{ LEVEL} + E_6 \text{ TUITION} + H$$

$$2.2 \text{ Public C\&U Only EFFECTIVE} = \nu + E_1 \text{ EXTENT} + E_2 \text{ WEALTH} + E_3 \text{ LEVERAGE} + E_4 \text{ REGION} + E_5 \text{ LEVEL} + E_6 \text{ K12} + E_7 \text{ CONSBOARD} + H$$

where:

ν	= Intercept
EFFECTIVE	= Regression Coefficient
EXTENT	= Weighted Combined Effectiveness Score (all 16 GASB items)
SIZE	= Extent of Disclosure (number of different types of performance indicators)
LEVERAGE	= Total Assets
TUITDEP	= Leverage (Debt to Net Assets)
REGION	= Tuition Dependence (Net Tuition Revenue divided by Total Revenue)
LEVEL	= Accreditation region (categorical variable)
PUBLPRIV	= Level of Education Provided (Carnegie categories)
WEALTH	= Public or Private Institution (1=public, 0=private)
TUITION	= Total assets per student = Published Tuition Rate
K12	= K-12 Coordinating Structure within State (1=yes, 0=no)
CONSBOARD	= Consolidated State-Level Governing Board (1=yes, 0=no)

Table 1 – Sample Size and General Descriptive Statistics

Panel A – Survey Respondents			
Total number of respondents that started survey instrument			278
Not sure about SEA reporting at their institution			9
Did not answer questions regarding SEA reporting			13
Respondents with definite answers to questions on SEA reporting at own institution			256
Panel B – Performance Reporting			
Uses SEA internally but not reported externally	39		15%
Reports SEA externally but does not report for management purposes	41		16%
Both internal & external reporting	125		49%
Neither internal nor external reporting	51		20%
	Total	256	100%
Reports SEA internally for management purposes		164	64%
Reports SEA externally		166	65%
Panel C – Sample Size for Model 1			
Either or both types of SEA reporting	205	80% of definite answers	
Did not complete SEA indicator section	-4		
Respondents with EXTENT measures > 0	201		
Non-reporters (EXTENT =0)	51		
Maximum possible for Model 1	252	98% of definite answers	
Missing one or more independent variables	-14		
Actual sample size for Model 1	238	93% of definite answers	
Panel D – Sample Size for Model 2			
Evaluated effectiveness of SEA communication at own institution			192
Less those who skipped one or more of the 16 GASB criteria			=
Maximum sample size for Model 2			13
Missing one or more independent variables			179
Actual sample size for Model 2			=

Table 2 – Institutional Characteristics

Panel A	No SEA Reporting (n=52)		SEA Reporting (n=180 to 186)		All C&Us (n=232to238)		(a)
	Mean	Std.	Mean	Std.	Mean	Std.	
		Deviation		Deviation		Deviation	
Total assets (in thousands)	\$541,407	1,677,672	\$270,063	493,773	\$329,348	899,228	*
Total revenue (in thousands)	\$181,684	400,100	\$151,598	331,215	\$158,171	346,751	
Endowment (in thousands)	\$143,357	430,477	\$56,751	133,033	\$76,163	236,509	*
Assets per student	\$141,076	385,381	\$55,268	96,522	\$74,016	201,233	**
Debt to Net Assets	0.547	0.637	0.639	0.772	0.619	0.744	
Tuition Dependence	0.518	0.262	0.471	0.266	0.481	0.265	
Tuition & fees per year	\$11,942	8,000	\$10,406	8,669	\$10,746	8,533	
Enrollment (Fall 2003)	6,116	9,308	8,031	8,830	7,613	8,952	
Age of institution in 2003	108	62	93	49	96	52	

* Means significantly different between groups at p < .05 ** Means significantly different between groups at p < .01

Panel B	Private C&Us (n=1 17)		Public C&Us (n=115 to 121)		All C&Us (n=232 to 238)		(a)
	Mean	Std.	Mean	Std.	Mean	Std.	
		Deviation		Deviation		Deviation	
Total assets (in thousands)	\$331,927	1,125,548	\$326,855	610,218	\$329,348	899,228	
Total revenue (in thousands)	\$90,325	234,388	\$223,775	418,966	\$158,171	346,751	**
Endowment (in thousands)	\$109,986	298,947	\$41,751	141,559	\$76,163	236,509	*
Assets per student	\$121,476	273,858	\$28,125	56,202	\$74,016	201,233	**
Debt to Net Assets	0.597	0.770	0.639	0.721	0.619	0.744	
Tuition Dependence	0.693	0.197	0.276	0.122	0.48 1	0.265	**
Tuition & fees per year	\$17,891	6,297	\$3,661	2,149	\$10,746	8,533	**
Enrollment (Fall 2003)	3,009	3,677	12,064	10,225	7,613	8,952	**
Age of institution in 2003	113	48	79	52	96	52	**

* Means significantly different between groups at p < .05 ** Means significantly different between groups at p < .01

Notes:

a For Panels A and B, slight differences in n are due to missing values on variables not included in Model 1.
Asterisks indicate level of significance for means test for variable on that row.

Table 2 (continued)

Panel C - Level of Education by Auspices

Private	Public	Total	Chi -Square (b)	d.f.	Significance	
Research (Doctoral)	13	31	44	8.309	1	0.004
Masters	30	37	67	0.717	1	0.397
Bachelors	51	6	57	48.738	1	0.000
Associates	4	42	46	37.355	1	0.000
Specialized	19	5	24	9.616	1	0.002
Total	117	121	238	83.136	4	0.000

Panel D - Accreditation Region by Auspices

Private	Public	Total	Chi -Square (b)	d.f.	Significance	
New England	12	5	17	3.364	1	0.056
Middle States	28	22	50	1.185	1	0.276
North Central	40	39	79	0.103	1	0.749
Southern	28	37	65	1.324	1	0.250
Northwest	4	10	14	2.523	1	0.112
Western	5	8	13	0.63	1	0.571
Total	117	121	238	8.060	5	0.153

Notes:

- b In Panels C and D, the Chi-square test results on each row are for institutions in each category or region against all other institutions. The chi-square reported on the total line is the chi-square for the overall contingency table.

Table 2, continued

Panel E - Means by Accreditation Region

	New England	Middle States	North Central	Southern	Northwest	Western	Means Test	
							F	Sig.
Total assets (in thousands)	\$490,220,855	\$550,478,454	\$175,593,200	\$255,406,177	\$181,908,011	\$731,324,526	1.89	0.10
Total revenue (in thousands)	\$139,964,741	\$177,554,162	\$ 99,731,445	\$154,412,643	\$ 93,330,462	\$551,189,119	3.72	0.00
Endowment (in thousands)	\$249,883,108	\$109,181,114	\$ 32,022,704	\$ 48,903,098	\$ 90,963,626	\$105,880,011	2.90	0.01
Assets per student	\$ 144,889	\$ 99,406	\$ 47,597	\$ 63,728	\$ 43,916	\$ 128,084	1.14	0.34
Debt to Net Assets	76.1%	94.8%	53.1%	43.0%	68.2%	57.4%	3.32	0.01
Tuition Dependence	60.7%	55.6%	48.6%	41.4%	41.7%	40.2%	2.90	0.01
Tuition & fees per year	\$ 18,418.59	\$ 13,541.31	\$ 10,341.58	\$ 8,253.78	\$ 7,948.64	\$ 8,041.62	6.11	0.00
Enrollment (Fall 2003)	4,759	7,621	6,998	7,429	9,007	14,468	2.06	0.07
Age of institution in 2003	128	106	97	91	73	72	2.92	0.01

Panel F - Means by Carnegie Classification

	Research (Doctoral)	Masters	Bachelors	Associates	Specialized	Means Test	
						F	Sig.
Total assets (in thousands)	\$ 994,903,020	\$ 183,745,255	\$ 166,671,045	\$ 173,044,702	\$ 201,579,237	8.31	0.00
Total revenue (in thousands)	\$ 448,949,225	\$ 110,904,114	\$ 41,027,855	\$ 124,308,769	\$ 100,152,794	11.76	0.00
Endowment (in thousands)	\$ 228,234,087	\$ 27,238,215	\$ 74,379,224	\$ 32,859,824	\$ 34,540,398	5.97	0.00
Assets per student	\$ 135,080	\$ 34,166	\$ 112,002	\$ 38,683	\$ 50,817	2.69	0.03
Debt to Net Assets	48%	76%	51%	67%	64%	1.37	0.25
Tuition Dependence	37%	51%	64%	26%	64%	25.05	0.00
Tuition & fees per year	\$ 9,642.63	\$ 10,313.73	\$ 16,834.12	\$ 3,477.38	\$ 13,078.92	21.81	0.00
Enrollment (Fall 2003)	17,311	7,581	2,108	6,897	4,365	27.84	0.00
Age of institution in 2003	105	95	123	64	81	9.94	0.00

Notes:

For Panels E and F, sample means are the same as Panel A and B and are not repeated here. The F and significance level for the means test of the continuous variables by the categorical variable are reported in the last two columns.

Table 3– Performance Indicators Reported by Institutions

Panel A – SEA Categories Selected by Respondents

Number of respondents:	Included in External Reports		Used Internally by Management	
	159		156	
	Number	Percentage	Number	Percentage
Enrollment statistics	146	91.8%	156	100.0%
Persistence and graduation outcomes	120	75.5%	137	87.8%
Graduation statistics	101	63.5%	135	86.5%
Quality of educational experience indicators	94	59.1%	130	83.3%
Efficiency or comparative financial data/ratios	110	69.2%	126	80.8%
Diversity measures	100	62.9%	121	77.6%
Student satisfaction or graduating senior survey	55	34.6%	118	75.6%
Selectivity measures	90	56.6%	112	71.8%
Student outcomes indicators	79	49.7%	104	66.7%
Quality of faculty indicators	69	43.4%	91	58.3%
Faculty or staff morale, comparative salary studies	41	25.8%	88	56.4%
Performance on nationally recognized exams	44	27.7%	71	45.5%
Alumni or employer survey results	29	18.2%	65	41.7%

Note: Reported in descending order based on reported use for internal management purposes

Panel B - Comparison of SEA Indicator Usage for Internal versus External Reporting

	Median	Mean	Std. Deviation
Percent of SEA categories reported externally	54%	53%	0.24
Percent of SEA categories reported internally	69%	69%	0.23

(Paired differences test: Mean=-2.06 categories, Std. Dev. 3.24 categories, t=-7.07, d.f.=123, p=.000)

Note: Panel B includes only the 124 institutions that reported SEA both internally and externally and completed both sets of questions regarding the categories of indicators included in each type of report. The responses ranged from 1 to 13 for both internal and external reports.

Table 4– Extent of SEA Reporting by Institutional and Structural Factors**Panel A – Extent by Auspices**

	N	Median	Mean	Std. Deviation
Private (not-for-profit) institutions	117	8	6.73	5.20
Public institutions	121	8	7.55	4.47
Total	238	8	7.15	4.85

(Means test $F= 1.734$, 1 d.f., $p = .19$)

Panel B – Extent by Level of Education Provided (Carnegie Classification)

	N	Median	Mean	Std. Deviation
Research (Doctoral)	44	9	7.91	5.07
Masters	67	8	7.36	4.89
Bachelors	57	8	6.47	5.07
Associates	46	8	7.57	4.48
Specialized	24	6	5.96	4.45
Total	238	8	7.15	4.85

(Means test $F= 1.023$, 4 d.f., $p = .40$)

Panel C – Extent by Accreditation Region

	N	Median	Mean	Std. Deviation
New England Association of Schools and Colleges	17	6	6.12	5.21
Middle States Association of Colleges and Schools	50	10	8.38	4.89
North Central Association of Colleges and Schools	79	9	7.92	4.54
Southern Association of Colleges and Schools	65	8	6.43	4.89
Northwestern Association of Schools and of Colleges and Universities	14	6.5	5.93	4.71
Western Association of Schools and Colleges	13	2	3.92	4.23
Total	238	8	7.15	4.85

(Means test $F=2.926$, 5 d.f., $p=.01$)

Panel D – Extent by State-level Agency with Responsibility for Coordinating K-12 and Higher Education

	N	Median	Mean	Std. Deviation
No K- 12 Coordinating Structure	66	8	7.76	4.41
K- 12 Coordinating Agency in State	55	8	7.31	4.58
Total public institutions	121	8	7.55	4.47

(Means test $F= 0.300$, 1 d.f., $p = .59$)

Panel E – Extent by Governance Structure for Public Higher Education within State

	N	Median	Mean	Std. Deviation
Individual governing boards	30	8	7.53	4.51
Consolidated or coordinated governing body with regulatory powers over public institutions	91	8	7.56	4.49
Total Public Institutions	121	8	7.55	4.47

(Means test $F= 0.001$, 1 d.f., $p = .98$)

Note: EXTENT scores ranged from 0 to 14 categories of SEA indicators.

Table 4 (continued)

Panel F – Extent by External versus Internal Reporting

	N	Median	Mean	Std. Deviation
External reporting only	34	5	5.88	3.273
Internal reporting only	38	10	9.37	3.157
Both internal and external reporting	115	10	9.96	3.110
Neither	51	0	.00	.000
Total	238	8	7.15	4.852

(Means test F= 160.5, 3 d.f., p = .00 for all 238)
 (Means test F= 22.13, 2 d.f., p = .00 for 187 SEA reporters only)

Panel G – Correlations between Continuous Variable in Model 1

(n = 238)	EXTENT	SIZE	LEVERAGE	TUITDEP
EXTENT (of SEA reporting)	1	0.236 **	0.140 *	0.006
SIZE (Total Assets)	-0.018	1	-0.045	-0.078
LEVERAGE (Debt to Net Assets)	0.049	-0.078	1	0.197 *
TUITDEP (net tuition revenue/total revenue)	-0.014	-0.177 **	0.137 *	1

Pearson correlations are in the bottom right with Spearman rank-order correlations in top left corner of the matrix.

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Table 5 - Categorical Regression for Model 1: Extent of SEA Reporting

(a) n=238 institutions	SIZE	LEVERAGE	TUITDEP	REGION	LEVEL
Standardized Coefficients					
Beta	0.336	0.149	0.068	-0.253	0.127
Std. Error	0.063	0.062	0.073	0.062	0.072
d.f.	1	1	1	4	4
F	28.524	5.780	0.879	16.747	3.130
Significance	0.000	0.017	0.349	0.000	0.016
Correlations					
Zero-Order	0.266	0.151	0.041	-0.227	0.056
Partial	0.335	0.158	0.062	-0.263	0.117
Part	0.322	0.145	0.057	-0.247	0.107
Importance	0.498	0.126	0.016	0.321	0.039
Tolerance					
After Transformation	0.919	0.942	0.691	0.951	0.701
Before Transformation	0.745	0.952	0.910	0.926	0.744

	Sum of Squares	d.f.	Mean Square	F	Sig.
<u>ANOVA (b)</u>					
Regression	42.621	11	3.875	4.482	0.000
Residual	195.379	226	0.865		
Total	238	237			
	Multiple R	R Square	Adjusted R Square		
	0.423	0.179	0.139		

Notes:

- a. The dependent variable is the unweighted extent of disclosure index and ranges from 0 to 14 types of performance indicators.
- b. The PUBLPRIV variable was not significant and reduced Model 1's adjusted R². The omission of this variable does not affect significance or interpretation of the coefficients reported.

**Table 6– Criteria for Effective Communication of Performance:
Self-reported Achievement Level and Importance Ratings**

	Evaluation of Performance ^a	Importance ^b
GASB Criteria for Performance Reporting	Mean	Mean
The External Report on Performance Information		
1. Purpose and Scope	4.69	6.22
2. Statement of major goals and objectives	4.76	5.93
3. Involvement in establishing goals and objectives	3.89	5.17
4. Multiple levels of reporting	3.92	5.10
5. Analysis of results and challenges	4.37	5.93
6. Focus on key measures	4.82	5.98
7. Reliable information	4.89	5.80
What Performance Information to Report		
8. Relevant measures of results	5.02	6.24
9. Resources used and efficiency	4.19	5.14
10. Citizen and customer perceptions	3.43	4.56
11. Comparisons for assessing performance	4.65	5.52
12. Factors affecting results	4.09	5.72
13. Aggregation and disaggregation of information	4.11	5.02
14. Consistency	5.18	6.34
Communication of Performance Information		
15. Easy to find, access and understand	4.37	5.28
16. Regular and timely reporting	5.06	5.54

Notes:

- a. Only respondents from institutions with either external performance reporting and/or internal use of performance measures were asked to evaluate how well their reporting met the GASB criteria. The seven-point scale was anchored with 1 = does not meet and 7 = meets very well with no labels on intervening numbers. The number of evaluations ranged from 189 to 192 per criterion since some respondents deliberately or inadvertently failed to evaluate a particular item.
- b. Only respondents from institutions that did not use performance indicators internally and that did not report performance measures externally were asked to evaluate the importance of the GASB criteria. The seven-point scale was anchored with 1 = not important and 7 = very important with no labels on intervening numbers. The number of evaluators per criterion ranged from 57 to 59 since some respondents deliberately or inadvertently failed to evaluate a particular item.

Table 7– Principal Components Analysis – Importance of GASB Reporting Criteria

Panel A		Mean (a)	Std. Deviation	Rotated Component Matrix (b)		
GASB Criteria for Effective Communication				1	2	3
14	Consistency from year to year	6.309	0.998	0.799	0.044	0.118
11	Internal comparisons for assessing performance	5.491	1.303	0.765	(0.187)	0.291
13	Aggregation of information	4.927	1.438	0.737	0.069	0.199
12	Factors affecting results	5.709	1.031	0.736	0.333	0.105
16	Regular & timely reporting	5.491	1.332	0.652	0.118	0.311
5	Analysis of results & challenges	5.873	1.055	0.632	0.325	0.359
15	Accessibility	5.255	1.391	0.601	0.439	0.228
10	Stakeholder perceptions	4.455	1.274	0.515	0.270	0.461
3	Involvement in establishing goals & objectives	5.073	1.359	(0.120)	0.850	0.129
1	Clearly stated purpose & scope	6.164	1.118	0.035	0.831	(0.002)
2	Mission statement & major goals	5.891	1.227	0.339	0.809	0.113
4	Multiple levels of reporting	5.000	1.491	0.383	0.538	0.109
7	Reliable information	5.727	1.471	0.035	(0.015)	0.813
9	Resources used & efficiency	5.073	1.303	0.323	0.025	0.740
8	Relevant measures of results	6.218	0.975	0.307	0.294	0.573
6	Focus on key measures	5.945	0.931	0.346	0.127	0.484
Initial Eigenvalues			4.356		2.998	2.451
Variance explained (rotated)		Total	=61.28%	27.22%	18.74%	15.32%

Panel B – Comparison of Mean Importance Scores by Factor

	Paired Differences		Importance Scores (c)		
	Mean	Std. Dev.	Factor 1	Factor 2	Factor 3
Factor 1 to Factor 2	-0.093	1.049	5.44	5.53	
Factor 2 to Factor 3	-0.209	1.137		5.53	5.74
Factor 1 to Factor 3	-0.302*	0.787 * Difference in	5.44		5.74

means significant at p < .01.

Panel C – Comparison of Importance Scores to Effectiveness Scores by Factor

	n	Factor 1	Factor 2	Factor 3
Mean importance ratings	55	5.44	5.53	5.74
Mean effectiveness ratings	179	4.40	4.29	4.71
Significance of means test (2-tail):	(d)	0.000	0.000	0.000

Notes:

- Only respondents from institutions that had no performance reporting evaluated the importance of the GASB criteria. This analysis includes only the 55 respondents who rated all 16 items.
- Principal component analysis was used to extract the factors. The rotation method was Varimax with Kaiser Normalization. Rotation converged in 3 iterations.
- The importance scores for each factor are summed by respondent and then divided by the number of items in the factor. Significance levels reported are confirmed by nonparametric Wilcoxon test.
- The effectiveness score for each factor was determined by summing unweighted scores by institution and then dividing by number of items in the factor. As with importance scores, a seven point rating scale was used with higher numbers indicating greater effectiveness. The t-test compares the effectiveness scores to the importance scores for each factor. Significance levels reported above are confirmed by nonparametric Wilcoxon test.

Table 8 - Effectiveness of SEA Communication by Institutional and Structural Factors**Panel A – Effectiveness by Auspices**

	N	Median	Mean	Std. Deviation	Minimum	Maximum
Private (not-for-profit) institutions	76	60.46	60.25	14.64	28.13	89.49
Public institutions	90	54.32	54.21	15.04	14.37	83.99
Total	166	57.93	56.97	15.12	14.37	89.49

(Means test $F= 6.798$, 1 d.f., $p = .01$)

Panel B – Effectiveness by Level of Education Provided (Carnegie Classification)

	N	Median	Mean	Std. Deviation	Minimum	Maximum
Research (Doctoral)	31	58.10	58.73	15.65	26.67	89.49
Masters	48	57.05	56.13	15.42	20.50	80.53
Bachelors	34	56.91	54.36	15.29	19.04	78.48
Associates	35	58.33	56.37	15.43	14.37	80.05
Specialized	18	60.05	62.31	12.13	44.98	89.49
Total	166	57.93	56.97	15.12	14.37	89.49

(Means test $F= 0.970$, 4 d.f., $p = .43$)

Panel C – Effectiveness by Accreditation Region

	N	Median	Mean	Std. Deviation	Minimum	Maximum
New England Association of Schools and Colleges	12	60.94	59.93	15.51	32.57	89.49
Middle States Association of Colleges and Schools	36	64.53	61.32	16.41	20.50	89.49
North Central Association of Colleges and Schools	58	57.76	54.94	13.22	14.37	76.71
Southern Association of Colleges and Schools	42	56.02	57.22	15.89	19.04	83.99
Northwestern Association of Schools and of Colleges and Universities	9	58.10	55.09	12.45	28.18	66.09
Western Association of Schools and Colleges	9	47.78	49.51	17.81	26.67	80.36
Total	166	57.93	56.97	15.12	14.37	89.49

(Means test $F= 1.382$, 5 d.f., $p = .23$)

Notes:

The effectiveness of reporting measure displayed has been weighted by the importance assigned to each of the 16 GASB criteria (see Table 6). Survey respondents rated their institution's effectiveness on each criterion. The rating scale for each was anchored with "1" indicating "does not meet" and "7" indicating "meets very well." To construct the weighted effectiveness score, the evaluation of each criterion was converted to a percentage (by dividing by the maximum score of 7) and then multiplied by the average importance rating for that criterion. The 16 weighted scores were then summed to provide EFFECTIVE (the effectiveness of SEA reporting measure).

Table 8 (continued)

Panel D – Effectiveness by External versus Internal SEA Reporting

	N	Median	Mean	Std. Deviation	Minimum	Maximum
External only	30	50.15	50.29	14.88	14.37	71.54
Internal only	35	58.01	60.33	15.18	19.04	89.49
Both	101	59.91	57.80	14.72	20.50	89.49
Total	166	57.93	56.97	15.12	14.37	89.49

(Means test F= 4.093,2 d.f., p = .02)

Panel E – Correlations between Continuous Variables in Model 2

(n=166)	EFFECTIVE	EXTENT	WEALTH	LEVERAGE
EFFECTIVE (Weighted Index)	1	0.176 *	0.142	-0.053
EXTENT (of SEA reporting)	0.172 *	1	0.238 **	0.123
WEALTH (Assets per Student)	-0.006	0.078	1	-0.139
LEVERAGE (Debt to Net Assets)	-0.183 *	0.025	-0.143	1

Pearson correlations are in the bottom right with Spearman rank-order correlations in top left of matrix.

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Panel F – Level of Education by Auspices (SEA Reporting Institutions Only)

	Private	Public	Total	Chi-Square*	d.f.	Significance
Doctoral/Research	9	22	31	4.309	1	0.038
Masters	20	28	48	0.461	1	0.497
Bachelors	31	3	34	35.494	1	0.000
Associates	2	33	35	28.687	1	0.000
Specialized	14	4	18	8.326	1	0.004
Total	76	90	166	62.118	4	0.000

Panel G - Accreditation Region by Auspices - Institutions involved in SEA Reporting

	Private	Public	Total	Chi-Square	d.f.	Significance
New England	8	4	12	2.273	1	0.132
Middle States	23	13	36	6.071	1	0.014
North Central	27	31	58	0.021	1	0.884
Southern	12	30	42	6.71	1	0.010
Northwest	3	6	9	0.594	1	0.441
Western	3	6	9	62.118	1	0.000
Total	76	90	166	13.013	5	0.023

Notes:

In Panels F and G, the Chi- square test results on each row are for institutions in each category or region against all other institutions. The chi- square reported on the total line is the chi-square for the overall contingency table.

**Table 9 - Categorical Regression for Model 2:
Effectiveness of SEA Communication**

n=1 67 institutions	EXTENT	WEALTH	LEVERAGE	REGION	LEVEL	PUBLPRIV
Standardized Coefficients						
Beta	0.179	-0.013	-0.142	-0.152	0.274	-0.255
Std. Error	0.078	0.089	0.080	0.077	0.085	0.089
d.f.	2	1	1	4	4	1
F	5.253	0.020	3.120	3.873	10.507	8.178
Significance	0.006	0.889	0.079	0.005	0.000	0.005
Correlations						
Zero- Order	0.207	0.082	-0.045	-0.179	0.136	-0.181
Partial	0.183	-0.011	-0.142	-0.158	0.254	-0.226
Part	0.171	-0.010	-0.132	-0.147	0.242	-0.213
Importance	0.242	-0.007	0.041	0.179	0.244	0.301
Tolerance						
After Transformation	0.916	0.696	0.867	0.929	0.779	0.703
Before Transformation	0.890	0.709	0.872	0.852	0.940	0.754

ANOVA	Sum of Squares	d.f.	Mean Square	F	Sig.
Regression	25.417	13	1.95 5	2.114	0.016
Residual	140.583	152	0.925		
Total	166	165			
	Multiple R	R Square	Adjusted R Square		
	0.391	0.153	0.081		

Notes:

The dependent variable is the importance-weighted effectiveness of SEA reporting index.