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## ABSTRACT

The purpose of this study was to explore issues arising from the proliferation in use of electronic survey methods in higher education. Specifically, it examined whether response rates differed between surveys administered utilizing traditional, mailed, paper-and-pencil instruments and surveys administered utilizing electronic mail (e-mail) and the World Wide Web. A case study approach provided a two-tiered analysis that included intra-institutional and inter-institutional findings. The mailed survey began by sending informational letters to all graduating seniors in the spring semester, then sending a copy of a survey 2 weeks later. Reminders were sent through the mail. The Web survey used an e-mail message to notify the entire freshman and sophomore class of an upcoming survey, then another e-mail to provide the Web address of the survey. Reminders were sent via e-mail. Data analysis indicated that regardless of the survey method used, women responded at greater rates than did men and underrepresented minority students responded at lower rates than did whites, Asian Americans, and international students. The response rate was substantially higher for the mail survey than for the Web survey. (Contains 29 references.) (SM)

# To Mail or to Web: Comparisons of survey response rates and respondent characteristics

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# To Mail or to Web: Comparisons of survey response rates and respondent characteristics

## Abstract

The purpose of this study was to explore issues arising from the proliferation in use of electronic survey methods in higher education. Specifically, we examined whether response rates differed between surveys administered utilizing traditional, mailed paper and pencil instruments, and surveys administered utilizing electronic mail and the World Wide Web (web). A case study approach was used to provide a two-tiered analysis that included intra-institutional and inter-institutional findings. Our findings suggest that women respond at greater rates than men regardless of survey method, and that underrepresented minority students generally respond at lower rates than Whites, Asian-Americans, and International students, regardless of the survey method used. These findings suggest that respondent characteristics, rather than survey method, are tightly coupled to response rates. Hence, we believe that too much focus—in research and practice—on aggregate response rates as the sole basis for increasing data reliability and validity might obscure some nonresponse data that is potentially biased by low response rates for men and underrepresented minorities.

## Introduction

The use of electronic survey research is gaining popularity inside and outside of higher education. Driven largely by increased cost efficiency, timely availability of data, and accuracy of data, electronic mail (e-mail) and the World Wide Web (WWW or web) surveys have emerged as common alternatives to the time honored self-reporting method of mailed instruments (Couper, 1998; Hayes, 1998; Mertens, 1998; Smith, 1997). These advantages have not been lost on colleges and universities, particularly in institutional research where e-mail and web surveys are quickly becoming important means for collecting information about students (Aisu et al., 1998; Kawasaki & Raven, 1995; Watson, 1998). However, amid the growth in the use of electronic survey methods in higher education there is a notable absence of research and understanding about how it affects the practice of institutional research. The purpose of this study is to begin to develop such an understanding by examining whether these recent innovations in research methods might differ from traditional mailed paper and pencil means for collecting self-reported data.

To do this, we turned our focus toward a natural starting point for such inquiry: survey response rates. Response rates have long been hallowed ground in social science survey research, leading Fowler (1993) to conclude that "[t]he response rate is a basic parameter for evaluating a data collection effort" (p. 39). Despite such heralded importance, research about response rates has been surprisingly narrow in scope and focuses predominately on methods and strategies for increasing overall response rates to reduce the likelihood of nonresponse bias (Fowler, 1993; Heberlein & Baumgartner, 1978; Jobber, 1984; Yin, 1994). But for practitioners of institutional research, response rates typically have value beyond an overall percentage and often help tell a larger story about who is responding to our data collection efforts. Indeed, it is not unusual for social science researchers in a variety of contexts to value information about

respondents' gender or racial and ethnic backgrounds (Pascarella & Terenzini, 1991; Van Maanen et al., 1982; Wolcott, 1994).

Hence, we chose to look at how new survey technologies might affect higher education research by comparing the response rates from Cornell University's recent administration of two surveys: a survey of graduating seniors and a survey of currently enrolled students (the Cycles Survey). Both surveys were administered in collaboration with peer institutions that are members of the Consortium on Financing Higher Education (COFHE). Specifically, we examine the response rates by overall percentages and by the respondents' gender, racial, and ethnic characteristics. Cornell provided an excellent case for such a comparison because the Senior Survey was a traditional, mailed paper and pencil instrument, while the Cycles Survey was administered electronically via the web. This produced two discrete experiences that we could examine in an up close, side-by-side way (Yin, 1994). Moreover, these surveys provided the particular advantage of being administered relatively contemporaneously (within a year of each other) and targeting similar subject matters and respondents (Dillman et al., 1974; Fowler, 1993).

Perhaps the greatest value in studying Cornell's surveys, however, is that it provided for a two-tiered analysis that includes intra-institutional analysis and inter-institutional analysis. Comparing the two surveys intra-institutionally is useful because it permits us to explore the largely under-researched issue of how a single institution's experience might differ between electronic and mail survey administrations. And, because we can study a survey administered by a set of similar institutions (the Cycles Survey), we add the value of viewing our data against a backdrop of the experiences of other schools. In this way, our study begins to address issues surrounding the increased use of electronic surveys in higher education at both a micro- and macro-level, and in so doing provides a sorely missed first step in considering how institutional research might be affected.

The remainder of this paper is comprised of four sections: theoretical framework, methods, findings, and conclusions and implications. Initially, the theoretical framework sets out the research and the literature that formed the basis of our exploration and interpretations. Next, we discuss the methods used in the administration of Cornell's electronic and mail surveys that are the subject of our study. Then, our findings are presented in a two-tiered approach. First, we present our findings regarding the intra-institutional comparison of the two surveys. Second, we present inter-institutional findings by comparing Cornell's web survey—the Cycles Survey—to the experiences of other consortium schools that administered the survey using both electronic and mail methods. Finally, we present our conclusions and discuss the possible implications they hold for institutional researchers in particular, and social scientists generally.

### **Theoretical Framework**

There is a lengthy and voluminous body of research that addresses response rates in social science survey administration (Donald, 1960; Filion, 1975; Fowler, 1993; Kish, 1965; Majchrzak, 1984). Despite this history, response rate research can be readily narrowed into two general categories of study: research that explores methods for increasing response rates, and research on particular characteristics of respondents. The former category has received the vast majority of attention, while the latter category has been substantially less developed. Donald (1960), Kish (1965), Vigderhous (1978), among others, for example, have argued the paramount concern regarding survey response rates is to maximize rates so that non-response bias will be reduced. Similarly, Yin (1994), Fowler (1993), and Majchrzak (1984) tell us that better response rates not only translate into better data and better statistical inferences, but that policy and decision making functions are improved because getting information from more respondents means that more stakeholder voices are being heard.

The focus on maximizing survey response rates has resulted in a sort of cottage industry for researchers who have explored methods for increasing rates. Dillman et al. (1974), for example, developed a seminal method for increasing survey response rates that is anchored in systematic and repetitive correspondence with members of the survey population. Others have discovered different means to improving response rates, including the provision of incentives for responding (Dillman et al., 1974; Oskenberg et al., 1991), instrument color and format (Heberlein & Baumgartner, 1978), tailoring the subject matter of the survey to particular populations (Fox et al., 1988), and coercion or forced participation (Hecht, 1993). And, as Watson (1998) tells us, research about ways and means of improving response rates continues to receive considerable attention from social scientists.

Receiving less attention, however, is the study of response rates by respondent characteristics. Recall that our study sought to develop an understanding of whether electronic and mail surveys differed by respondent characteristics. As noted, Yin (1994), Fowler (1993), Majcharzac (1984), and others tell us that understanding “who” our respondents are is essential to policy decisions because decision makers must know, as well as possible, who their stakeholders are and who is providing them with the solicited information. Despite such expressed value, relatively little research has focused on the differences in response rates by characteristics such as gender or race and ethnicity. There is some recent research, however, that provides us with a basis for examining the Cornell surveys. Green and Stager (1986) summarize a lengthy history of research that suggests response rates differ by gender with women more likely to respond than men. Similarly, Taylor and Summerhill (1985), as well as Watson (1998) point to research that suggests response rates might differ by race and ethnicity when the subject matter of the survey is particularly meaningful to respondents of particular racial or ethnic backgrounds. Specifically, minorities seem to respond at rates equal to, or greater, than whites when the subject matter is perceived as directly applicable to

them (Watson, 1998). But little more has been done to thoroughly explore the idea that respondent characteristics—particularly gender, race, and ethnicity—might affect response rates. This is particularly troubling in light of higher education efforts at increasing our understanding of the needs of traditionally marginalized students, including women and under-represented minorities (Bowen & Bok, 1997).

Thus, we know quite a lot about the importance of maximizing response rates, as well as the methods used to increase the rate of response in self-reported social science survey research. However, we know considerably less about whether the gender, racial, and ethnic composition of respondents affects their rate of response to such surveys, except that women generally respond at higher rates than men, and underrepresented minorities—by negative implication—might respond at rates similar to whites only when the subject matter of the survey is perceived as directly important to them. These theories and concepts, however underdeveloped, provided us with a framework to begin our examination of comparative response rates between electronic and mail surveys.

In addition to these ideas, we drew upon a small but emerging body of research that explores the differences between electronic and mail surveys. Similar to the research on respondent characteristics, we know relatively little about whether response rates for electronic surveys differ from response rates for mailed surveys (Smith, 1997). However, Smith (1997), Couper and others (1998) examined the results of numerous electronic surveys and suggest that response rates for e-mail and web surveys do not necessarily differ from mailed paper and pencil surveys, and that many of the same techniques for improving the latter will apply toward improving rates for electronic efforts. Similarly, Watson (1998) saw no appreciable difference in response rates between the media, and foresees a time when the ease of respondent access to computer technology will work to increase overall response rates above what we have grown to expect from mail surveys. Others, however, caution that certain issues might



curb response rates for electronic surveys, including privacy concerns regarding the internet (Goree & Marzalel, 1995), a lack of familiarity with computer technology (Kaminer, 1995), and respondent interest in the subject matter of the survey (Kawasaki & Raven, 1995).

In summary, there is consensus around the great importance of maximizing response rates and, to a lesser degree, around the best methods for doing so. There is less uniformity in thinking around issues of response rates and respondent characteristics, particularly along gender, racial, and ethnic lines. Moreover, there is a striking void in research that compares response rates between electronic and mail surveys, although some concepts have recently emerged that begin to shed light upon the issue. The exploratory nature of our study is, in part, an effort to untangle these overlapping, conflicting, and underdeveloped ideas about whether differences exist between electronic and mail surveys.

As discussed below, our findings help to begin to sort out this theoretical entangling and take steps toward advancing many of the concepts presented here. Next, however, we turn to a discussion about the methods we used to develop our findings.

## **Methods**

This study is foremost an exploratory case study of Cornell's experience in administering two similar self-reporting surveys using different data collection media—the web and a paper and pencil instrument. Yin (1994) explains that limiting a study to a single case is particularly useful for exploratory purposes because it provides both a basis for describing the phenomena at hand, and for extending emerging theories to practice and generalizing one experience to a larger theoretical framework. Hence, this case was particularly appealing because the emerging theories discussed here are directly applicable to Cornell's experience and offer rich ground for making the connections contemplated by Yin (1994).

Additionally, because we explicitly sought to inform our decision making about the administration of surveys to students, our inquiry includes elements of explanatory case studies—or what policy researchers most generally refer to as “policy science” (Fischer, 1995). Fischer notes that policy science includes research aimed at informing the decision-making processes within an organization, and that examining a single case is a particularly effective approach to understanding phenomena when there is little existing research from which to draw information. Hence, our choice of a case study approach was particularly appropriate for developing a better understanding of issues surrounding the use of electronic surveys and response rates. The remainder of this section presents the methods used to administer the web and mail surveys that are the focus of this study.

Cornell University is a highly selective, private, Research I university, as are the other schools discussed below. Recall this study focused on Cornell’s administration of two surveys both administered consortially through COFHE—a survey of graduating seniors and the Cycles Survey, Cornell’s first administration of a web-based survey. The Senior Survey was intended to learn more about the undergraduate experiences and future plans of graduating seniors, and utilized a mailed paper and pencil instrument for its administration at Cornell. The Cycles Survey assessed enrolled students’ perceptions about a wide-range of their undergraduate experiences, and was administered at Cornell as an electronic survey via e-mail and the web. Our study compared the response rates from the two surveys intra-institutionally and inter-institutionally.

Dillman's (1974) strategies for administering surveys were used for both the mail and web surveys. The mail survey (Senior Survey) began by sending informational letters describing the upcoming survey to all graduating seniors in the middle of the spring semester. Two weeks later, a letter and a copy of the survey were sent out. Three weeks later, a reminder letter and a copy of the survey were mailed to those who had

not responded. Additionally, incentives for responding were offered, including a campus store discount coupon for all respondents and a raffle of 30 prizes, the grand prize being a \$1,000 credit for travel. Survey instruments were collected and data were scanned and entered into a database for analysis.

The web survey (Cycles Survey) used similar methods with newer technologies. First, an e-mail message was sent to the entire freshman and sophomore classes immediately following spring break notifying them of the upcoming web-based survey. A week later, an e-mail message was sent with the web address of the survey so students could quickly locate it using a web browser. Over the next three weeks, three reminders with the web address were e-mailed to those who had not completed the survey. Incentives similar to those used for the Senior Survey were offered to increase response rates; all respondents received a campus store discount coupon and there was a raffle of prizes. Respondents completed the survey entirely online and data were instantaneously entered into a database.

For the intra-institutional analysis, response rates were calculated for both surveys and reported in nonweighted percentages for comparison in the aggregate and across respondent gender and race/ethnicity characteristics. For the inter-institutional analysis, data from the most recent administration of the Cycles Survey were solicited from other COFHE institutions for comparison to Cornell. We asked for Cycles Survey data from the other institutions because we knew many had used web surveys in the administration and this would provide a basis for extending our findings into a larger context of web-based survey experiences. Additionally, we asked the other schools to provide aggregated data across respondent gender and race/ethnicity characteristics. Six COFHE institutions—all private, highly selective, Research I universities—provided data for comparison. The inter-institutional data were collected from entire populations of students with the exception of two institutions that reported using a stratified sampling technique for collecting the data presented here.

Our findings are presented below under the two categories of analysis: intra-institutional and inter-institutional.

## Findings

This section begins with a discussion of our intra-institutional findings, looking at differences in response rates between Cornell's recently administered web and mail surveys. Next, we turn to a discussion of inter-institutional findings regarding the response rates of Cornell and six other COFHE institutions that administered the 1999 Cycles Survey. Both sections examine response rates in the aggregate and across gender and racial/ethnic characteristics. Moreover, the intra- and inter-institutional findings share themes that emerged from the data that point to provocative conclusions and implications.

Our examination of intra-institutional response rates began by looking at the aggregate rates that resulted from Cornell's administration of the mail and web surveys. As Table 1 illustrates, the overall response rate for the mail survey (61%) was considerably higher than the rate for the web survey (36%).

Survey	Method	Response Rate
'98 Senior Survey	Mail	61%
'99 Cycles Survey	Web	36%

Recall that existing theories and concepts are inconclusive regarding disparate response rates between electronic and mail surveys. Recall, too, that the same strategies for increasing response rates were used for both surveys (i.e., Dillman, 1974), they were administered at about the mid-point of spring semester, and that the surveys were similar in content, length, and respondents targeted. Nevertheless, we experienced

widely divergent rates in favor of the mail survey. It must be noted, however, that the 1999 Cycles Survey was the first web-based survey administered by Cornell's Office of Institutional Research and Planning. Thus, the relatively low response might be attributable—in whole or in part—to our lack of familiarity with the medium. Still, the substantially lower rate caused us to consider looking deeper into our data.

Table 2 sets out the results of our next level of analysis: response rates by gender. Viewed in this light we see that women responded at much higher rates than men to both the mail and web surveys. In fact, 70% of the women surveyed via mail completed and returned the questionnaire compared to 53% of men. Similarly, 42% of the women completed the web survey versus 30% of the men.

<b>Table 2: Cornell's Response Rates by Gender</b>			
Survey	Method	Gender	
		Male	Female
'98 Senior Survey	Mail	53%	70%
'99 Cycles Survey	Web	30%	42%

These findings suggest that men are less likely than women to respond to survey questionnaires, regardless of the medium used in administration. Such a finding, if consistently present, might trouble researchers who seek more balanced response rates between men and women. However, equally noteworthy was our finding that both men and women were less likely to respond to our web survey than to our mail survey. Hence, Table 2 suggests there might be differences in response rates that result from mail and web surveys, but those differences are not apparent when examined by the gender of respondents.

Similarly, Table 3 sets out Cornell's response rate data by the race and ethnicity of respondents. However, unlike the data regarding gender, the findings here suggest other respondent characteristics might play a larger role in the response rates achieved through mail and web surveys.

Survey	Method	Race/Ethnicity					
		White	African A.	Asian A.	Hispanic	Native A.	Intrn'l
'98 Senior	Mail	64%	34%	60%	44%	36%	63%
'99 Cycles	Web	37%	24%	38%	31%	35%	35%

As Table 3 depicts, White and Asian-American students were more likely than underrepresented minority students to respond to both surveys. Here, the greatest disparity in these response rates was found in the mail survey, particularly among African-Americans (a 34% response rate) and Native-Americans (a 36% response rate). However, the data from the web survey are equally troubling, and are tempered only when viewed in light of the relatively low response rates for Whites (37%). This relative view does not overcome the very low rates of response by African-Americans (24%), Hispanics (31%), and Native-Americans (35%).

Thus, Table 3 presents two issues worth noting. First, the mail survey results indicate a wide-disparity between the response rates of underrepresented minorities and the White, Asian-American, and International students. Here, because the latter groups of respondents comprise the majority of the population surveyed, such disparity raises questions akin to sampling bias where the aggregate data might represent only the views of the majority population. The views of the underrepresented students, to the extent they differ, are subsumed into an aggregate dominated by the majority. The

second issue raised by the data in Table 3 involves possible bias resulting from the nonresponse of underrepresented minorities. When response rates are very low, too much data might be missing to draw meaningful conclusions about the views of the population as a whole (Dillman et al., 1974; Fowler, 1993). That is, our data might be telling us about the views of a narrow sub-group within the population who were disproportionately inclined to respond. Both potential biases stemming from Table 3 beg a question of growing importance to campuses across the country: are we getting enough information from underrepresented minority respondents under either survey method?

In summary, our findings regarding Cornell's experience suggest the emergence of several themes. First, we found the aggregate response rate for the web survey to be substantially lower than the rate for the mail survey. Second, we found that both men and women responded at lower rates for the web survey than for the mail survey, but that the overall response rates for men were lower for both the mail and web surveys. Finally, we found that underrepresented minorities responded at lower rates than Whites and Asian-Americans for both mail and web surveys. Although both surveys resulted in lower response rates for minorities, the web survey results were particularly disappointing because they bring into question issues of nonresponse bias even more so than the rates for the mail survey. Thus, our initial analysis suggested that information from males and minorities might be further excluded by web surveys than by mail surveys. However, because these issues arose from our single case study, we determined that they ought to be interpreted in light of other institutions' experiences before attempting to generalize to a larger theoretical understanding.

The remainder of this section presents inter-institutional findings that resulted from comparing Cornell's experience to those of six other COFHE institutions. Specifically, we compare response rates for the 1999 Cycles Surveys across institutions and across gender and racial/ethnic categories. Similar to the intra-institutional

findings above, several themes emerged from this analysis that help us understand our earlier analyses in a larger context.

The data in Table 4 suggest that aggregate response rates differ widely among institutions but not necessarily along survey method lines.

Institution	Method	Response Rate
Cornell	Web	36%
Institution 1*	Web	84%
Institution 2	Web	53%
Institution 3	Web	57%
Institution 4	Mail	52%
Institution 5	Mail	41%
Institution 6	Both	42%

\*Institution 1 included its web survey as part of the registration for classes for the upcoming semester.

As the table shows, Cornell and the first three COFHE universities listed used the web to administer the survey. Aggregate response rates for this approach ranged from a low of 36% (Cornell) to a high of 84% (Institution 1). It should be noted that Institution 1's survey was tied to course registration for the next semester, and its respondents were essentially "coerced" into responding. Nevertheless, Institutions 2 and 3 experienced response rates over 50% using the web. Furthermore, Institutions 4 and 5 used a mail survey approach that produced response rates of 52% and 41%, respectively, while Institution 6 used both methods simultaneously and achieved an aggregate rate of 42%.

Read alongside Cornell's experience (the mail survey produced a much higher rate than the web), Table 4 tempers our earlier analysis regarding the wide disparity between response rates that favored mail over web administration. Indeed, the salient



finding from Table 4 is that the data are inconclusive. Because this finding is consistent with much of the existing research about response rates, we are inclined to conclude that our study resulted in no clear evidence that one method of survey administration is inherently better than the other at achieving higher response rates. However, as will be shown, we did find Cornell's experience was more consistent with other schools regarding response rates by gender and racial/ethnic characteristics.

Specifically, as Table 5 sets out, other COFHE institutions found that males tended to respond to both surveys at lower rates than females.

<b>Table 5: '99 Cycles Survey COFHE Institutions Response Rates by Gender</b>			
Institution	Method	Gender	
		Male	Female
Cornell	Web	30%	42%
Institution 1*	Web	84%	84%
Institution 2	Web	45%	60%
Institution 3	Web	57%	57%
Institution 4	Mail	45%	60%
Institution 5	Mail	37%	46%
Institution 6	Both	37%	47%

\*Institution 1 included its web survey as part of the registration for classes for the upcoming semester.

Here, we see that irrespective of method, men responded at lower rates than women in all but two instances when men responded at rates equal to women. Again, because this finding is consistent with the larger body of research about response rates, we are compelled to look closely at the issues it raises, including whether such disparate response rates affect statistical analyses or undermine the information needs of institutional decision makers. Because our data were drawn from a limited sample of institutions (highly-selective, private, Research I), it is difficult to generalize our finding

that men respond at lower rates than women for both web and mail surveys. However, we found enough consistency across schools to warrant considerable future attention from researchers and decision-makers interested in developing a better understanding of their stakeholders. As we will show, such interest should extend into further exploration of underrepresented minority student response rates, as well.

Recall that we found substantially lower response rates for Cornell's underrepresented minority students than its White and Asian-American students for both the mail and web surveys. As Table 6 illustrates, that finding was generally true for the other COFHE institutions.

Institution	Method	Race/Ethnicity					
		White	African A.	Asian A.	Hispanic	Native A.	Intrn'l
Cornell	Web	37%	24%	38%	31%	35%	35%
Institution 1*	Web	85%	61%	72%	70%	100%	71%
Institution 2	Web	54%	43%	56%	49%	63%	N/A
Institution 3**	Web	76%	55%	66%	52%	88%	96%
Institution 4	Mail	50%	36%	63%	42%	9%	44%
Institution 5	Mail	42%	34%	42%	40%	40%	45%
Institution 6	Both	46%	26%	45%	29%	9%	20%

\*Institution 1 included its web survey as part of the registration for classes for the upcoming semester.

\*\*Institution 3 permitted double reporting of race/ethnicity categories.

Here we see that White, Asian-American, and International students generally out respond underrepresented minority students in both web and mail surveys. Although the disparity ranges between student populations and survey method, the general trend suggests schools are getting lower responses from students who are often the most marginalized on campus (Bowen & Bok, 1997). This finding is especially

troubling because lower response rates suggest a further exclusion of populations who have been historically excluded from many aspects of higher education, including institutional research (Bowen & Bok, 1997). Moreover, the administration of the Cycles Survey at these institutions included questions about campus climate and diversity, and the information missed from underrepresented minority students would likely be particularly important to increasing our understanding of these issues. These findings, because of the importance of the issues raised, compel us to conclude that too little has been done to understand the nature of minority student participation in survey research. This conclusion will be addressed again in the final section of this paper.

In summary, our most salient findings suggest that women respond at greater rates than men regardless of survey method, and that underrepresented minority students generally respond at lower rates than Whites, Asian-Americans, and International students, regardless of the survey method used. These findings tell us those respondent characteristics, rather than survey method, are tightly coupled to response rates. This coupling raises questions and concerns that we address in the next and final section.

### **Conclusions and Implications**

Our findings produced several themes worthy of further consideration. As discussed, comparing Cornell's administration of two surveys—one mail and one web-based—produced three themes: the aggregate response rate was substantially higher for the mail survey than for the web survey, women responded more than men, and White, Asian-American, and International Students responded at higher rates than underrepresented minority students.

Similarly, when we viewed Cornell's experience against a backdrop of other COFHE institutions' administration of the Cycles Survey, we found that several themes emerged. First, unlike our intra-institutional data, the inter-institutional comparison produced no consensus around aggregate response rates, irrespective of survey

method. Second, other schools generally found that males responded less than females, and that White, Asian-American, and International students respond at higher rates than underrepresented minorities.

These findings raise several provocative issues for practitioners. First, there is little empirical evidence that web-based surveys result in lower response rates than mail surveys. However, our intra-institutional findings suggest that more research is needed before firm conclusions can be drawn. This subject is surprisingly under-researched considering the proliferation of electronic surveys and we hope that our study places the issue among institutional research priorities.

Second, the idea that men respond at lower rates than women is troubling because of the possibility that it will lead to biased data or misleading analysis. Again, little contemporary empirical research exists on this issue. We believe that too much focus—in research and practice—on aggregate response rates as the sole basis for increasing data validity might obscure some nonresponse data that is potentially biased. Institutional researchers typically place a premium on “good information” for use in decision-making processes. However, that charge is undermined if potentially biased data are overlooked or if too little information is collected from essential stakeholders. Hence, we encourage further research on the differences between the response rates of men and women as a means to increasing the quality and value of the data and analyses we produce, as well as to develop a better understanding of why such differences might exist.

Finally, our findings suggest that too little is understood about lower response rates of minority students. As discussed, there is a paucity of research on the subject despite the increased commitment to understanding issues of climate and diversity on our campuses. Furthermore, the notably low response rates for some minority populations—particularly African-Americans, Hispanics, and Native Americans—found by Cornell and our comparator institutions raise concerns about the

generalizability of the information provided by these students. We contend that increasing response rates for underrepresented minority students is necessary to developing an authentic understanding of their needs and roles at our institutions. Hence, we encourage a vigorous undertaking of research into the response rates of minority students and possible methods for increasing their survey participation.

These efforts might begin by exploring response rates in other higher education contexts. Recall the data presented here came from students at seven private, highly-selective research institutions and consequently represent only a small percentage of the students who participate in US higher education. Thus, it would be helpful to explore our findings in light of other, broader contexts that include different types of institutions with students who possess different skills, have different levels of experience and comfort with computers and the internet, and who come from different social and economic backgrounds. The proliferation of electronic survey research compels us to look at how the new medium for collecting information about and from students unfolds into a larger social context and raises the possibility of further excluding the most marginalized students from our data collection efforts. Indeed, the idea that access to, and the use of, computer technology and the Internet differs greatly along racial, social, and economic lines is gaining popularity. The concept of an emerging “digital divide” has troubled researchers who have found that access to the information advantages of cyberspace is woefully lagging for disadvantaged populations (Ebo, 1998; Perelman, 1998). But as we have demonstrated here, the Internet is used for more than *disseminating* information: it is increasingly used for *collecting* it, as well. Developing a better understanding of a growing digital divide along racial, gender, and economic lines seems as important for those who collect information via the Internet as it is for those who use the web to disseminate information.

Thus, we urge others from all types of institutions of higher education to look closely at how the increased use of electronic surveys might affect the data collected from underrepresented students. In so doing, the normative ideal of maximizing aggregate response rates in pursuit of increased quality of data might be refound on a more comprehensive and inclusive concept of “good data” that seeks to increase response rates from stakeholders across campuses and beyond.

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