Research in Higher Education, Vol. 47, No. 2, March 2006 (© 2006)
DOI: 10.1007/s11162-005-8887-1

STUDENT SURVEY RESPONSE RATES ACROSS INSTITUTIONS: Why Do They Vary?

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While many studies have examined nonresponse in student surveys, little research investigates why some schools achieve higher student survey response rates than other schools. Using hierarchical linear modeling, we analyze survey data from 321 institutions that participated in the 2003 National Survey of Student Engagement to understand how characteristics of colleges and universities relate to student survey response rates. We find that the makeup of the student body, as well as institutional characteristics such public/private status and urban location affects response rates, and that the number of computers per undergraduate has a strong positive effect for web survey response rates.

KEY WORDS: nonresponse; response rates; student surveys.

Surveys of students and faculty are one of the primary data sources for research in higher education. These data are used for a wide variety of analyses, including research that focuses on the impact of institutions. Yet one remarkable fact that has gone largely unnoticed is the large variation in institutional student survey response rates. For example, the National Survey of Student Engagement (NSSE) has response rates that vary across 316 different institutions from a low of 14% to a high of 70% (National Survey of Student Engagement, 2003).

This variation is troubling because of the bias that is introduced by survey nonresponse (Groves, Dillman, Eltinge and Little, 2002).

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Research on the general population has found large differences in characteristics and behavior between respondents and non-respondents (Brennan and Hoek, 1992; Goyder, 1986, 1987; Goyder, Warriner and Millller, 2002; Moore and Tarnai, 2002; Stinchcombe, Jones and Sheatsley, 1981), and one recent study of students in higher education found that respondents were more likely to be engaged and were more oriented towards the sciences than non-respondents (Porter and Whitcomb, 2005).

The purpose of this study is to understand how student survey response rates vary by the makeup of the student body and institutional attributes. Understanding why survey response rates vary between institutions is quite difficult because research shows that aspects of survey design and administration can heavily influence response rates. In other words, to adequately compare institutional response rates, survey type and administration should be as similar as possible. Thus the typical national student survey which is administered by individual schools, such as the Cooperative Institutional Research Program (CIRP) and College Student Experiences Questionnaire (CSEQ), cannot be used for comparison of response rates because the resulting data will be strongly influenced by the different samples and the different administration techniques used by individual schools. This study uses an administration of the National Survey of Student Engagement (NSSE), a national student survey that is uniquely suited for this topic. Because our survey instrument, survey sample design, and methods of administration are very similar across institutions, we can for the first time understand the impact of institutional characteristics on survey response rates. We seek to answer three questions:

1. How do attributes of the institution, such as selectivity and urban location, affect response rates?
2. How do attributes of the student, such as SAT score and race/ethnicity, affect the probability of survey response?
3. How do the effects of these attributes vary across survey mode (paper versus web) and class year (first-year versus senior)?

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

The literature on survey nonresponse is quite extensive, but most of this work is empirical and focuses on finding correlates of nonresponse. There has been some effort to develop theories as to why some people respond to surveys and some do not, with two dominant approaches in the literature.[1] The first, an application of Blau's (1964) social exchange

theory, posits that people make calculations about the costs and benefits of survey participation, and then respond if the perceived benefits exceed the costs (Dillman, 2000). Social exchange theory has focused mainly on explaining how certain aspects of survey design and administration affect survey response. The second approach is social-psychological, positing that that survey response is driven by heuristic devices (Groves, Cialdini and Couper, 1992) and social context (Couper and Groves, 1996; Groves and Couper, 1995). In other words, survey response is influenced by an individual's social environment and their personal characteristics (Groves et al., 2004a). We use both approaches to understand why survey response rates vary across colleges and universities.

School Characteristics

Our review of the literature did not reveal any studies investigating the relationship between school characteristics and student (or faculty) survey response rates. Instead, we frame our study using literature on survey response in the general population, and the social environmental factors that may affect student survey response rates.

Several studies have documented the effect of the social environment on survey response (e.g., Groves and Couper, 1995). Urban areas, for example, have consistently lower survey response rates than rural areas (Groves and Couper, 1998). In part, this is due to higher crime rates and their effect on perceptions of the threat of in-person interviews, but other social environmental factors may also play a role. Couper and Groves (1995) theorize that the greater density and crowding of urban areas leads to greater contact with strangers, eventually resulting in less helping tendencies among urban residents. If so, then we would expect response rates to be lower at larger, more dense schools.

Leverage-saliency theory predicts that the salience of a survey, or individual interest in the survey topic, should be strongly correlated with survey response (Groves, Presser and Dipko, 2004b; Groves, Singer and Corning, 2000). Under this theory, people place different levels of importance on features of a survey. For example, different aspects of the survey, such as topic salience and burden, are leveraged resulting in a refusal or acceptance of a survey request (Groves et al., 2004a). Several studies have confirmed the positive impact that salience has on response rates (Groves et al., 2000; Heberlein and Baumgartner, 1978; Kojetin, Borgida and Snyder, 1993; Van Kenhove, Wijnen and De Wulf, 2002). One possible measure of salience for this study is students' level of engagement in effective educational practices

(see Pascarella and Terenzini (2005) and Kuh (2001)) that lead to higher levels of learning and development while in college. In other words, students who are more engaged in the college experience might be more likely to respond to surveys endorsed or supported by their college. Some researchers have found evidence to support this in that college student survey respondents were more engaged in extracurricular activities in high school compared with nonrespondents (Porter and Whitcomb, 2005). Research in this area is difficult, because pre-survey measures of interest are required for both survey respondents and nonrespondents.

In the current study we lack such measures; however, if more engaged students are more likely to respond in general, and if more engaged students are more likely to respond to a survey about engagement due to its salience, then we should observe some correlations between individual survey response and institutional characteristics. More specifically, the institutional characteristics that are correlated with engagement should be correlated with response rates for a survey about engagement. The engagement literature has found that students at private schools (Kuh and Hu, 2001) and students at liberal arts colleges (Kuh and Hu, 2001; Pascarella and Terenzini, 2005; Pascarella, Wolniak Cruce and Blaich, 2004; Umbach and Kuh, in press) tend to be more engaged than students at public schools and research universities. The impact of selectivity is mixed, with some scholars finding positive effects and other scholars no effects (Kuh and Hu, 2001; Lundberg and Schreiner, 2004; Pascarella et al., in press; Porter, in press).

Student Characteristics

Two academic factors at the individual level are also related to survey participation. Students with high grade point averages and self-ratings of academic ability are more likely to respond to surveys in college (Dey, 1997; Hutchinson, Tollefson and Wigington, 1987; Porter and Whitcomb, 2005; Sax, Gilmartin and Byrant, 2003), although there has been little theoretical discussion as to why this should be the case. It is possible that students with higher academic ability tend to have more positive feelings toward their institution, resulting in a higher probability of survey response. Some scholars, for example, have found a positive relationship between student satisfaction and college grade point average (Kuh and Hu, 2001; Umbach and Porter, 2002). We would thus expect to find the probability of survey response to be positively related to SAT scores.

Finally, research in the general population and college student population has shown response rates to vary by gender (Moore and Tarnai,

2002; Porter and Whitcomb, 2005; Sax et al., 2003) and race/ethnicity (Sax et al., 2003; Singer, Groves and Corning, 1999; Singer, van Hoewyk and Maher, 2000), again with little theoretical discussion as to why this should be the case. In general, females and Whites are more likely to respond than males and non-Whites.

Survey Mode

The survey design and administration of this study is almost constant across schools, with two exceptions. First, schools were able to do additional things to raise response rates, such as pay for advertisements in the student newspaper or offer some sort of post-paid incentive. We believe these additional efforts had little effect on survey response rates, in part because no research to date shows that publicity raises response rates in student surveys, and because the literature demonstrates conclusively that post-paid incentives have no effect on response rates (Porter and Whitcomb, 2003). However, because more wealthy schools can afford these additional efforts, we include expenditures per student as a control variable to take these possible efforts into account.

Second, some schools administered the survey via paper and others via the web. Because some schools may have self-selected into the web mode group, we do not investigate why response rates vary between mode and instead analyze the two groups separately. However, variation within a mode may still be affected by the mode chosen. Social exchange theory, for example, predicts that the probability of response increases as the burden of response decreases (Porter, Whitcomb Weitzer, 2004; Sharp and Frankel, 1983). For web surveys, access to a computer is obviously necessary to respond; thus, schools that provide extensive computing facilities should have higher response rates for web surveys compared with schools with less extensive computing facilities. Alternatively, schools with extensive computer facilities may have a more technology-friendly student body, which would be more likely to respond to a web survey; some scholars have found that students who choose to respond via the web provide more favorable responses for information technology related items than students who respond via paper (Carini, Hayek, Kuh, Kennedy and Ouimet, 2003).

METHODOLOGY

Data and Statistical Approach

We use NSSE data and data drawn from Peterson's college guidebook and IPEDS surveys to examine factors that impact student survey

response rates. Unlike other national surveys in higher education, the NSSE is an excellent instrument for this analysis. The NSSE is administered to all participating schools at the same time during the academic year, uses the same groups of students at each school (first-years and seniors), the sample is drawn by NSSE rather than the school, and almost the exact same administration method is used at each school as NSSE rather than the school mails out and collects the surveys; the result is one of the highest quality student surveys in the country. The design of the NSSE is particularly important for several reasons. First, using different surveys across multiple institutions would confound survey and institutional variation, as survey salience can affect response rates (Groves et al., 2000; Heberlein and Baumgartner, 1978; Kojetin et al., 1993; Van Kenhove et al., 2002). Second, a similar argument can be made when comparing response rates across different methods of survey administration; response rates vary by the number of contacts (Dillman, 2000; Fox, Crask and Kim, 1988; Yammarino, Skinner and Childers, 1991; Yu and Cooper, 1983) and mode such as paper versus web (Cobanoglu, Warde and Moreo, 2001; Shannon and Bradshaw, 2002). Third, having similar samples and survey timing across schools is crucial, because response rates will vary as the sample and timing during the semester varies.

NSSE allowed institutions to select their mode of administration. Regardless of the mode, NSSE mailed a personalized prenotification letter on institutional letterhead announcing the survey. For schools surveying via the web, the letter include a URL. NSSE included a copy of the instrument in this initial mailing for schools surveying via paper. For web institutions, NSSE then sent four follow-up emails to sample participants inviting them to participate in the survey. The emails included a link to the survey website and log-in information. Non-respondents received up to three follow-up emails encouraging them to complete the survey. For paper institutions, NSSE mailed a survey with a self-addressed stamped envelope. A postcard reminder followed the first survey mailing. NSSE then mails a second survey to all non-respondents. In addition, most paper schools were sent one or two email reminders after the second paper questionnaire. In a few cases, NSSE sent sampled students from some paper schools a third questionnaire.

In the fall of 2002 and early spring 2003, institutions participating in NSSE provided a data file that included all of their first-year students and seniors. From each institutional file, NSSE drew a random sample of students. The final random sample consisted of 306,962 students (119,218 first-year students and 117,060 seniors) from 437 schools. For our analyses, we included only those schools that chose to survey their

students via email and the internet or via paper through the mail. We removed mixed-mode schools, schools that did not provide student-level characteristics (gender, race/ethnicity, or SAT/ACT) in their data submission, and schools that had missing data in the Peterson's or IPEDS databases. Our resulting sample included 167,375 students from 321 colleges and universities. Given that our sample included seniors and first-year students that were surveyed by paper or the Web, we built four parallel models (first-year web, senior web, first-year paper, and senior paper).

Because we have data on students grouped within institutions, a multilevel approach that takes into account the clustering of our data is needed (Heck and Thomas, 2000; Raudenbush and Bryk, 2002). Given that our dependent variable is dichotomous, we use logistic regression within a multilevel context to analyze student survey response. For all of the models we allowed the intercept to vary by college and modeled the intercept, or the institutional response rate, using school characteristics.

Variables

In spring 2003, the average response rate of the 321 schools in our sample was approximately 43%. Figure 1 shows the distribution of these response rates. As can be seen, the variance in these response rates is substantial, especially given the survey instrument and administration method.

Table 1 presents the descriptive statistics for the independent variables included in our models. Our independent variables can be divided into two groups: student-level variables and school-level variables. At the student level we have variables measuring the student's gender, race/ethnicity, and SAT. Unfortunately no other student-level data are available; however, gender and race are two common predictors for survey response (Curtin, Presser and Singer, 2000; Groves and Couper, 1996; Moore and Tarnai, 2002; Singer et al., 1999; Singer et al., 2000; Voigt, Koepsell and Daling, 2003). We expect to find that females, Whites, and students with higher SAT scores to be more likely to respond to the NSSE.

At the school level, we use several different variables that measure differences between institutions, derived from the IPEDS Institutional Characteristics, Enrollment, Faculty Salaries, Financial Aid and Finance surveys, and Peterson's college guidebook. Our measures of the social environment include urbanicity, density, and selectivity. Urbanicity is operationalized with two dummy variables indicating that the school is in an urban area (defined by IPEDS as large or mid-size city) or an urban fringe area (defined by IPEDS as the urban fringe of a large or

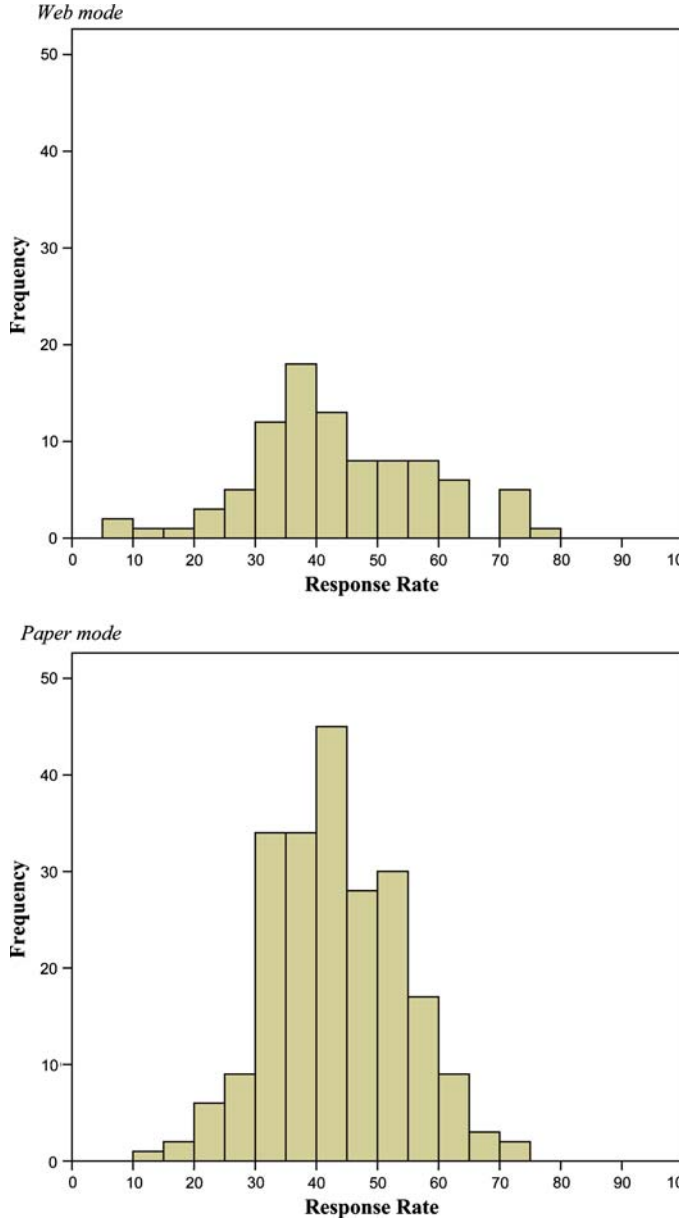

FIG. 1. Frequency distribution of institutional response rates.

TABLE 1. Descriptive Statistics

	Web mode				Paper mode			
	First-year students		Seniors		First-year students		Seniors	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
School variables	$N = 91$		$N = 90$		$N = 226$		$N = 217$	
Expenditures per student	19745.98	10696.86	19744.63	10756.78	17528.88	12978.34	17078.23	11267.79
Public	0.38	0.49	0.39	0.49	0.46	0.50	0.47	0.50
Urban	0.48	0.50	0.49	0.50	0.50	0.50	0.51	0.50
Fringe	0.21	0.41	0.20	0.40	0.25	0.43	0.24	0.43
Rural (reference group)	0.31	0.46	0.31	0.47	0.25	0.43	0.24	0.43
Graduates to undergraduates	0.19	0.31	0.18	0.31	0.25	0.33	0.25	0.34
Percent part time	0.12	0.11	0.12	0.11	0.18	0.13	0.19	0.13
Average SAT	1090.72	101.82	1090.77	102.39	1041.26	115.80	1044.44	114.17
Computers per undergraduate	0.15	0.11	0.15	0.11	0.12	0.12	0.11	0.10
Density	0.08	0.11	0.08	0.11	0.18	1.10	0.18	1.12
Student variables	$N = 41{,}651$		$N = 31{,}857$		$N = 57{,}051$		$N = 36{,}816$	
Respond (dependent variable)	0.41	0.49	0.39	0.49	0.41	0.49	0.45	0.50
SAT	1103.72	174.34	1120.68	174.22	1053.99	172.65	1068.01	177.44
Female	0.54	0.50	0.55	0.50	0.58	0.49	0.59	0.49
African American	0.10	0.30	0.06	0.23	0.11	0.31	0.09	0.28
Asian Pacific American	0.06	0.23	0.05	0.22	0.05	0.21	0.04	0.20
White (reference group)	0.75	0.43	0.81	0.39	0.71	0.45	0.77	0.42
Latino/a	0.04	0.20	0.03	0.17	0.07	0.26	0.06	0.24
Other race/ethnicity	0.05	0.22	0.04	0.20	0.06	0.23	0.03	0.18
International	0.01	0.08	0.01	0.10	0.01	0.08	0.01	0.08

mid-size city). Institutional density is measured by using the number of students per acre of campus, using the number of acres for campus size reported by the school to Peterson's. Selectivity is measured by the combined SAT score of the Fall 2002 incoming class.

We examine correlates of engagement such as sector (public or private) and percentage of part-time students among undergraduates. We also include a ratio of graduates to undergraduates that serves as a proxy for institutional emphasis on research. Finally, because one of our modes is electronic, we use the number of computers per undergraduate to represent access to computing facilities and the technological focus of the campus.

LIMITATIONS

Perhaps one of the greatest limitations of this study is that our data are not nationally representative. Institutions choose to participate in NSSE, and we lost several institutions (and their students) due to missing data at the institution or student level; therefore, our results may suffer from selection bias. While we cannot claim that our results apply to all schools in the U.S., there is still substantial variation in our dependent and independent variables, which will allow us to shed some light as to why some institutions are able to achieve higher student survey response rates than other institutions. Clearly better data are needed to investigate this phenomenon, but given the nature of institutional surveys and participation, such data are difficult (if not impossible) to collect.

We also are limited by the lack of student-level predictors that may affect student response, such as SES or personality type. Again, this was dictated by the nature of the data collected. Future research should include more complete student-level models.

The lack of student-level predictors also means that the institution-level results should be interpreted with caution, particularly the correlates with engagement. As Raudenbush and Bryk (2002) note, in order to estimate contextual effects one generally requires both an individual-level measure and institutional-level measure for the same variable. We lack such a measure at the individual-level for the part-time student variable.

Finally, although the research design is almost constant across schools, it is possible that additional efforts to raise response rates by some schools could be correlated with some of our independent variables.

RESULTS

Table 2 presents the coefficients and standard errors for our models, and Table 3 displays the discrete changes in the probability of response

TABLE 2. Coefficients and Standard Errors for Models Predicting Survey Response

	Web mode		Paper mode	
	First-year	Senior	First-year	Senior
School variables				
Intercept	−0.216**	−0.304***	−0.354***	−0.189***
	(0.068)	(0.064)	(0.028)	(0.027)
Expenditures per student	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Public	−0.367^{+}	−0.267	−0.209**	−0.243***
	(0.195)	(0.171)	(0.061)	(0.062)
Urban	−0.441**	−0.417**	−0.066	−0.117
	(0.152)	(0.155)	(0.081)	(0.078)
Fringe	0.144	0.228	−0.050	−0.079
	(0.176)	(0.174)	(0.084)	(0.082)
Graduates to undergraduates	−0.222	−0.231*	−0.166*	−0.084
	(9.164)	(0.115)	(0.078)	(0.056)
Percent part time	−1.532^{+}	−1.582^{+}	−0.242	−0.212
	(9.885)	(0.878)	(0.271)	(0.225)
Average SAT	0.000	0.000	0.001**	0.001*
	(9.001)	(0.001)	(0.000)	(0.000)
Computers per undergraduate	3.908**	3.622**	−0.181	−0.378^{+}
	(1.431)	(1.232)	(0.191)	(0.204)
Density	−1.701*	−1.514*	−0.018	−0.005
	(0.7314)	(0.719)	(0.021)	(0.017)
Student variables				
SAT	0.002***	0.002***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Female	0.706***	0.438***	0.802***	0.687***
	(0.033)	(0.029)	(0.025)	(0.023)
African American	−0.138*	−0.229**	−0.269***	−0.412***
	(0.056)	(0.072)	(0.040)	(0.051)
Asian Pacific American	0.111	0.021	0.133**	−0.151**
	(0.091)	(0.073)	(0.047)	(0.055)
Latino/a	0.012	0.025	−0.011	−0.154**
	(0.056)	(0.064)	(0.046)	(0.058)
Other race/ethnicity	−0.144**	−0.004	−0.162**	0.084
	(0.043)	(0.081)	(0.051)	(0.058)
International	0.431***	0.265**	0.654***	0.348*
	(0.116)	(0.089)	(0.122)	(0.175)

$^{+}p < 0.10$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

TABLE 3. Changes in the Probability of Response

		Web mode		Paper mode	
	Δx	First-year	Senior	First-year	Senior
School variables					
Expenditures per student	1 SD ($10,697)	0.00	0.00	0.00	−0.01
Public	0 to 1	−0.09^{+}	−0.06	−0.05**	−0.06***
Urban	0 to 1	−0.10**	−0.10**	−0.02	−0.03
Fringe	0 to 1	0.04	0.06	−0.01	−0.02
Graduates to undergraduates	1 SD (.31)	−0.02	−0.02*	−0.01*	−0.01
Percent part time	1 SD (.11)	−0.04^{+}	−0.04^{+}	−0.01	−0.01
Average SAT	1 SD (102 pts.)	0.00	−0.01	0.03**	0.02*
Computers per undergraduate	1 SD (.11)	0.11**	0.10**	0.00	−0.01^{+}
Density	1 SD (.11)	−0.05*	−0.04*	0.00	0.00
Student variables					
SAT	1 SD (174 pts.)	0.09***	0.08***	0.05***	0.04***
Female	0 to 1	0.17***	0.11***	0.20***	0.17***
African American	0 to 1	−0.03*	−0.05**	−0.06***	−0.10***
Asian Pacific American	0 to 1	0.03	0.01	0.03**	−0.04**
Latino/a	0 to 1	0.00	0.01	0.00	−0.04**
Other race/ethnicity	0 to 1	−0.04**	0.00	−0.04**	0.02
International	0 to 1	0.11***	0.07**	0.16***	0.09*

$^{+}p < 0.10$; $*p < 0.05$; $**p < 0.01$; $***p < 0.001$.
Note: numbers are the discrete change in $\Pr(y = 1|x)$; see (Long, 1997).

resulting from the listed change in the independent variable (Long, 1997). To compare changes across samples, for the continuous variables we use standard deviations from the first-year Web sample.

Web Mode

Academic ability, as measured by SAT score, is a positive predictor of response for both first-year students and seniors. With every standard deviation increase in SAT score (approximately 174 points), the probability of response for first-year students increases 9 percentage points and for seniors 8. Similar to previous research, race and gender also affect the likelihood of response. First-year and senior females are (17 percentage points and 11 percentage points respectively) more likely to respond than their male peers. African American students in their first year of college were 3 percentage points less likely than White students to respond to the survey. Similarly, African American seniors were 5 percentage points less likely than their White peers to answer NSSE's request to complete the survey. International students also were less likely (11 percentage points for first year students and 7 percentage points for seniors) than their native peers to respond to the survey.

We observe some differences between Web administration schools. On average, the response rate at urban schools is 10% lower than rural schools. For first-year students at Web schools, the response rates are 9% lower at public schools compared to privates. Density (as measured by the number of students per acre of campus) is statistically significantly related to institutional response rates: as the density of a school increases, the NSSE response rate decreases, 4–5 percentage points for every standard deviation increase in density. Computer access and emphasis on technology, as measured by number of computers per undergraduate, is positively related to response rates; the effect size for this measure is 10–11 percentage points. Percent part-time students has a statistically significant but modest effect on response rates, about −4 percentage points for every 11 point increase in the percentage of part-time students. Research emphasis, as proxied by graduate to undergraduate student ratio, has a negative effect on seniors but not first-years. With every standard deviation increase in the graduate to undergraduate ratio, response rates for seniors decrease by 2%.

Paper Mode

At the student level, the pattern of statistically significant effects at paper schools is similar to Web schools. SAT is positively related to

likelihood of response. A one standard deviation increase in SAT score translates into a 5 percentage points increase in the likelihood a first-year student will respond and a 4 percentage points increase in likelihood that a senior will respond. First-year and senior females are more likely to respond (20 percentage points and 17 percentage points, respectively) than are their male counterparts. On average, African American students are less likely than Whites to respond (6 percentage points for first-year students and 10 percentage points for seniors) to the NSSE. Asian Pacific American students in their first year of college are 3 percentage points more likely than Whites to respond to the NSSE. However, senior Asian Pacific Americans and Latinos/as in their senior year are both 4 percentage points less likely than Whites to respond to the survey. Similar to the Web administration, international students are more likely to respond (16 percentage points for first-year students and 9 percentage points for seniors) to the NSSE than Whites.

At the institution level, on average, public colleges have a lower response rate than private colleges. The response rate for first year students at public institutions is 5% lower for first-year students and 6% lower for seniors. Average academic ability, measured by average SAT, positively affects survey response rates. Every standard deviation increase in average SATs, increases response rates by 3% for first-year students and 2% for seniors. In contrast, the ratio of graduate students to undergraduate students has a small negative effect on response rates for first-year students; and the number of computers per student has a negative effect on response rates for seniors.

DISCUSSION AND IMPLICATIONS

These findings offer some interesting insights into college student survey response rates. Our findings confirm some of what we already know about student survey response. High ability students (as proxied by SAT scores) are more likely to respond than low ability students, and women are more likely to respond than men. On the other hand, students of color, in general, are less likely to respond to surveys. Clearly one of the major reasons that response rates vary between institutions is the student body: selective institutions and women's colleges will tend to have high survey response rates regardless of the survey administration procedures. Given the potential for bias resulting from these response differentials, higher education researchers should consider targeting some additional resources to boost the response rates for students who are less likely to respond to survey requests.

At the institutional level, it appears that a myriad of factors influence response rates. In general, the social environment does have an impact, although the effect of these factors varies by mode of administration. Density, urbanicity, and percentage of part-time students are correlated with response rates at schools using the Web survey mode. This result should be interpreted with some caution, as schools self-selected into the Web and paper survey modes; with this in mind, the differential finding is quite interesting.

It is possible that paper surveys in some fashion help to ameliorate the impact of the social environment. The social norms affected by the environment may exert a stronger effect for Web surveys due to the nature of the contact: a virtually costless email requesting students to log in to an unknown website, versus a complete paper survey mailed at some expense to the student. Given the form and expense of the paper survey contacts, the paper approach may invoke the norm of reciprocity more than the web approach, so that students who typically reject a survey request may find it more difficult to say no.[2]

Average academic ability, controlling for academic ability at the individual level, is related positively with response rates, but only for schools using the paper mode. While this contextual effect is modest, it does suggest that a student attending a selective institution is more likely to respond to a survey than if they had attended a less selective institution. It has been argued that a positive effect for selectivity should be interpreted as the presence of peer effects (Pascarella et al., in press; Porter, in press); it is possible that more selective institutions have a social norm that encourages survey participation.

Across modes, public schools tend to have lower response rates than private schools, while an increasing emphasis on research (as measured by the ratio of graduate to undergraduate students) has a modest but negative effect on survey response. Given some of the findings in the engagement literature, one interpretation of this finding is the impact of survey salience: these attributes are associated with schools that tend to have lower levels of engagement.

Equally as interesting are some of the non-significant results in our analysis. Expenditures per student appear to have no relationship with response rates, suggesting that institutional wealth per se does not create an environment that induces students to respond to surveys.

Deciding what mode to use when administering a survey can be challenging, but the findings of this paper provide some guidance to colleges and universities. Although administering Web surveys can be very inexpensive and quick, urban, high-density, and high part-time percentage campuses would be advised to administer surveys via

paper. Institutional research and assessment office also would be wise to gauge the technological emphasis of their campus if they are considering a Web survey. Comparing two hypothetical schools, one with a computer for every 10 students and one with a computer for every 5 students, we would expect the latter school to have a response rate 30 percentage points higher than the first school. Clearly, and not surprisingly, the computer infrastructure of a campus has a strong positive effect on Web survey response rates. Given some of our small negative effects for the computer to student ratio variable for paper schools, all institutions may want to assess their campuses computing resources. One quick way to gauge this emphasis is to assess the number of computers on campus per student.

In addition to assistance in decision making, those who survey college students will benefit greatly from having a reasonable expectation of survey responses. It is reasonable to expect that schools with high male populations or high proportions of students of color will have lower response rates. Likewise, urban, public schools with high percentages of part-time students who are forced for financial reasons to survey their students via the Web, are likely to yield low response rates. Although more extensive survey administration, such as the use of prepaid incentives or additional contacts, may increase response rates, it is clear that some schools will almost always have lower response rates.

These expectations also highlight concerns that policymakers should consider when mandating surveys as part of assessment plans. If policymakers want quality survey data, they must consider how to provide resources that will ensure high response rates, especially when mandating surveys for a heterogeneous group of schools. Future research could examine how other individual-level variables affect student survey response rates. Also of interest would be studies of how incentives and other survey administration strategies can ameliorate institutional differences in response rates.

ENDNOTES

1. We do not include satisficing (Krosnick, 1999) in our review of the literature because this theory focuses on item response rather than overall survey response.
2. This argument would imply higher response rates for paper surveys than web surveys, while the data in Table 1 indicate that the response rates for the two modes are equivalent. We note, however, that these equivalent response rates are the result of one additional contact for web survey respondents; in addition, web respondents could fill out the survey with each additional followup, while paper survey respondents received only two copies of the survey.

REFERENCES

Blau, P. M. (1964). *Exchange and Power in Social Life*, Wiley, New York.

Brennan, M., and Hoek, J. (1992). The behavior of respondents, nonrespondents, and refusers across mail surveys. *Public Opinion Quarterly* 56(4): 530–535.

Carini, R. M., Hayek, J. C., Kuh, G. D., Kennedy, J. M., and Ouimet, J. A. (2003). College student responses to web and paper surveys: Does mode matter? *Research in Higher Education* 44(1): 1–19.

Cobanoglu, C., Warde, B., and Moreo, P. J. (2001). A comparison of mail, fax and web-based survey methods. *International Journal of Market Research* 43(4): 441–452.

Couper, M. P., and Groves, R. M. (1996). Social environmental impacts on survey cooperation. *Quality and Quantity* 30(2): 173–188.

Curtin, R., Presser, S., and Singer, E. (2000). The effects of response rate changes on the index of consumer sentiment. *Public Opinion Quarterly* 64(4): 413–428.

Dey, E. (1997). Working with low survey response rates: The efficacy of weighting adjustments. *Research in Higher Education* 38(2): 215–227.

Dillman, D. A. (2000). *Mail and Internet Surveys: The Tailored Design Method*, John Wiley & Sons, New York.

Fox, R. J., Crask, M. R., and Kim, J. (1988). Mail survey response rate: A meta-analysis of selected techniques for inducing response. *Public Opinion Quarterly* 52(4): 467–491.

Goyder, J. (1986). Surveys on surveys: Limitations and potentialities. *Public Opinion Quarterly* 50(1): 27–41.

Goyder, J. (1987). *The Silent Minority: Nonrespondents in Sample Surveys*, Westview Press, Boulder.

Goyder, J., Warriner, K., and Miller, S. (2002). Evaluating socio-economic status (ses) bias in survey nonresponse. *Journal of Official Statistics* 18(1): 1–11.

Groves, R. M., Cialdini, R. B., and Couper, M. P. (1992). Understanding the decision to participate in a survey. *Public Opinion Quarterly* 56(4): 475–495.

Groves, R. M., and Couper, M. P. (1995). Theoretical motivation for post-survey nonresponse adjustment in household surveys. *Journal of Official Statistics* 11(1): 93–106.

Groves, R. M., and Couper, M. P. (1996). Contact-level influences on cooperation in face-to-face surveys. *Journal of Official Statistics* 12(1): 63–83.

Groves, R. M., and Couper, M. P. (1998). *Nonresponse in Household Surveys*, Wiley, New York.

Groves, R. M., Dillman, D. A., Eltinge, J. L., and Little, R. J. A. (2002). *Survey Nonresponse*, John Wiley & Sons, New York.

Groves, R. M., Fowler, F. J. J., Couper, J. M., Lepkowski, M. P., Singer, E., and Tourangeau, R. (2004a). *Survey Methodology*, Wiley-Interscience, Hoboken, NJ.

Groves, R. M., Presser, S., and Dipko, S. (2004b). The role of topic interest in survey participation decisions. *Public Opinion Quarterly* 68(1): 2–31.

Groves, R. M., Singer, E., and Corning, A. (2000). Leverage-saliency theory of survey participation. *Public Opinion Quarterly* 64(3): 299–308.

Heberlein, T. A., and Baumgartner, R. (1978). Factors affecting response rates to mailed questionnaires: A quantitative analysis of the published literature. *American Sociological Review* 43(4): 447–462.

Heck, R. H., and Thomas, S. L. (2000). *An Introduction to Multilevel Modeling Techniques*, Lawrence Erlbaum Associates, Mahwah, NJ.

Hutchinson, J., Tollefson, N., and Wigington, H. (1987). Response bias in college freshman's response to mail surveys. *Research in Higher Education* 26(1): 99–106.

Kojetin, B. A., Borgida, E., and Snyder, M. (1993). Survey topic involvement and nonresponse bias. Paper presented at the Proceeding of the Section on Survey Research Method, Vol. II. American Statistical Association.

Krosnick, J. A. (1999). Survey research. *Annual Review of Psychology* 50: 537–567.

Kuh G. D. (2001). Assessing what really matters to student learning: Inside the national survey of student engagement. Change 33(3): 10–17, 66.

Kuh, G. D., and Hu, S. (2001). The effects of student-faculty interaction in the 1990s. *Review of Higher Education* 24(3): 309–332.

Long, J. S. (1997). *Regression Models for Categorical and Limited Dependent Variables*, Sage Publications, Thousand Oaks, CA.

Lundberg, C. A., and Schreiner, L. A. (2004). Quality and frequency of faculty-student interaction as predictors of learning: An analysis by student race/ethnicity. *Journal of College Student Development* 45(5): 549–565.

Moore D. L., and Tarnai J. (2002). Evaluating nonresponse error in mail surveys. In: Groves, R. M., Dillman D. A., Eltinge J. L., and Little R. J. A. (eds.), *Survey nonresponse*, pp. 197–211.

National Survey of Student Engagement (2003). The college student report: 2003 overview.

Pascarella, E. T., Cruce, T. M., Umbach, P. D., Wolniak, G. C., Kuh, G. D., Carini, R. M., et al. (in press). Institutional selectivity and good practices in undergraduate education: How strong is the link? Journal of Higher Education.

Pascarella, E. T., and Terenzini, P. T. (2005). *How College Affects Students: A Third Decade of Research*, Jossey-Bass, San Francisco.

Pascarella, E. T., Wolniak, G. C., Cruce, T. M., and Blaich, C. F. (2004). Do liberal arts colleges really foster good practices in undergraduate education? *Journal of College Student Development* 45(1): 57–74.

Porter, S. R. (in press). Institutional structures and student engagement, *Research in Higher Education*.

Porter, S. R., and Whitcomb, M. E. (2003). The impact of lottery incentives on student survey response rates. *Research in Higher Education* 44(4): 389–407.

Porter, S. R., and Whitcomb, M. E. (2005). Nonresponse in student surveys: The role of demographics, engagement and personality. *Research in Higher Education* 46(2): 127–152.

Porter, S. R., Whitcomb, M. E., and Weitzer, W. H. (2004). Multiple Surveys of Students and Survey Fatigue. In: Porter, S. R. (ed.), *Overcoming Survey Research Problems*, Jossey-Bass, San Francisco.

Raudenbush, S. W., and Bryk, A. S. (2002). *Hiearchical Linear Models: Applications and Data Analysis Methods*, Sage Publications, Thousand Oaks, CA.

Sax, L. J., Gilmartin, S. K., and Bryant, A. N. (2003). Assessing response rates and nonresponse bias in web and paper surveys. *Research in Higher Education* 44(4): 409–432.

Shannon, D. M., and Bradshaw, C. C. (2002). A comparison of response rate, response time, and costs of mail and electronic surveys. *Journal of Experimental Education* 70(2): 179–192.

Sharp, J., and Frankel, L. M. (1983). Respondent burden: A test of some common assumptions. *Public Opinion Quarterly* 47(1): 36–53.

Singer, E., Groves, R. M., and Corning, A. D. (1999). Differential incentives: Beliefs about practices, perceptions of equity, and effects on survey participation. *Public Opinion Quarterly* 63(2): 251–260.

Singer, E., van Hoewyk, J., and Maher, M. P. (2000). Experiments with incentives in telephone surveys. *Public Opinion Quarterly* 64(2): 171–188.

Stinchcombe, A. L., Jones, C., and Sheatsley, P. (1981). Nonresponse bias for attitude questions. *Public Opinion Quarterly* 45(3): 359–375.

Umbach, P. D., and Kuh, G. D. (in press). Student experiences with diversity at liberal arts colleges: Another claim for distinctiveness. The Journal of Higher Education.

Umbach, P. D., and Porter, S. R. (2002). How do academic departments impact student satisfaction? Understanding the contextual effects of departments. *Research in Higher Education* 23(2): 209–233.

Van Kenhove, P., Wijnen, K., and De Wulf, K. (2002). The influence of topic involvement on mail-survey response behavior. *Psychology and Marketing* 19(3): 293–301.

Voigt, L. F., Koepsell, T. D., and Daling, J. R. (2003). Characteristics of telephone survey respondents according to willingness to participate. *American Journal of Epidemiology* 157(1): 66–73.

Yammarino, F. J., Skinner, S. J., and Childers, T. L. (1991). Understanding mail survey response behavior: A meta-analysis. *Public Opinion Quarterly* 55(4): 613–639.

Yu, J., and Cooper, H. (1983). A quantitative review of research design effects on response rates to questionnaires. *Journal of Marketing Research* 20(1): 36–44.

Received June 6, 2005.