

**Survey Lottery Incentives and Institutional Response Rates:  
An Exploratory Analysis**

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## **Introduction**

Many institutional and educational researchers are well aware that response rates for assessment surveys have been declining over the past few decades (Dey, 1997; Laguilles, Williams, & Saunders, 2011). As a result, many researchers have noted that our ability to adequately assess student academic experiences, satisfaction, engagement, use of campus resources, and other important topics in higher education are at risk (Pike, 2008). Consequently, use of incentives are one tool that many institutional researchers have come to rely on to boost or hold steady their response rates for various campus student surveys. Though research regarding the efficacy of incentives to boost survey response rates in higher education is scant, the research that does exist suggests that incentives are an effective way to boost institutional response rates (Heerwegh, 2006; Laguilles, Williams, & Saunders, 2011). The purpose of this study is to investigate the efficacy of lottery incentives (the most frequently used incentive approach) to boost responses rates for institutions using the National Survey of Student Engagement (NSSE).

## **Leverage-Salience Theory**

As noted by Groves, Singer, and Corning (2000), there have been “scores” of studies investigating influences of survey cooperation. However, many of these studies provided idiosyncratic results with interventions for one study proving effective, but the same intervention in another study proving ineffective. Given so many inconsistent results led Groves, Singer, and Corning

(2000) to claim that “such a status is common in science when the hypotheses may be true, but only for a limited set of circumstances” (p. 299). To counter the prevalence of the abundance of atheoretical research in the area, they proposed the Leverage-Saliency Theory.

Leverage-Saliency Theory (LST) is a decision-making theory that considers the “subjective weight” of various factors to participate or not participate in relation to the saliency of the survey invitation to the individual (Groves, Singer, & Corning, 2000). The saliency of the survey topic and attributes of the survey request contribute to the individual’s decision to respond and to the bias introduced by nonresponse. Thus, LST predicts that individuals interested in the survey topic will be more likely to respond. For example, those that are more involved in the community (volunteerism, politics, community groups, etc.) are significantly more likely to complete a survey about their community (Groves, Singer, & Corning, 2000). Leverage-Saliency Theory (LST) is particularly relevant for studies investigating the use of survey incentives where the survey incentives are the “leverage.” This varies depending on the size of the incentive. A \$5 pre-paid gift card provides some leverage, but a \$20 pre-paid gift card provides even stronger leverage. LST is an attempt to move beyond the atheoretical research that is common in nonresponse studies and that have resulted in idiosyncratic, non-generalizable results.

Social Exchange Theory (SET) is another theory that explains why respondents choose to participate in a survey (Dillman, 1978). The theory claims

that there are three important factors that are considered by the individuals when presented with an opportunity to complete a survey. One factor is the reward as perceived by the individual. In other words, what does the respondent expect to gain by participating in the survey? An individual also considers the “cost” of participation. How much does it “cost” to obtain the reward. Costs can include time, effort, providing personal information, or other situations. The third factor is whether or not the individual “trusts” that the reward will outweigh the costs. If the costs are too great or the potential respondent does not believe he or she will receive the reward, then their participation in the survey is not likely.

Both of these theories help to explain the potential effectiveness of survey incentives and associated survey promotion. The leverage of LST or the reward of SET both help to understand the impact of incentive types and value. The salience of LST explains why promotional efforts can arouse interest in a survey. The cost of SET helps us to understand the effort and time commitment that respondents perceives. The attributes (SET) of the promotional material and survey help to explain the importance of survey design and effective promotion. Finally, the trust from SET help survey designers to consider the total value a respondent feels they are gaining by their participation.

### **Use of Incentives for Web-Based Surveys**

As with most all higher education surveys, NSSE is a web-based survey instrument. Compared to traditional paper surveys, web surveys provide researchers with an easy platform to administer surveys and quickly access

respondent data (Umbach, 2004). However, along with this mode of survey administration, researchers face increasing difficulty convincing students to respond. Many researchers have noted decreasing response rates as a threat to the validity and generalizability of survey data (Pike, 2008). To counter these decreasing response rates, many survey researchers are now employing incentives. These incentives can take many forms. Some examples include: incentive paid prior to completion (pre-paid); eligibility for the incentive only upon completion of the survey (post-paid); lottery-based where the respondent has a chance to win the incentive; participation based where every respondent receives the incentive; one high-dollar, lottery-based incentive; many low dollar value incentives with greater odds of winning, and many others. The primary purpose for using incentives is to increase student motivation to respond, especially for those students that would otherwise refuse (Singer & Ye, 2013). Many researchers have found incentives effective at increasing responses rates for general population surveys using random digit dialing, mailed paper surveys, and face-to-face interviews (Cobanoglu, & Cobanoglu, 2003; Deutskens, De Ruyter, Wetzels, & Oosterveld, 2004; Heerwegh, 2006). However, there is a limited amount of research regarding the use of incentives to enhance responses rates on college campuses, especially for web-based surveys that predominate in higher education.

Though fewer, there were some important studies that provided information regarding effectiveness of incentives to boost response rates with higher education surveys. Parsons and Maniere (2013) conducted a survey of

first-year college students enrolled at a single institution. Students were randomly assigned to a control or experimental group. Students in the experimental group all received \$2 upon invitation to participate in the survey. Overall, they reported a significant increase in response rate for the experimental group compared to the control (49.4% versus 37.6%, respectively). Similarly, Laguilles et al (2011) reported that across four surveys covering different topics, use of lottery-based incentives significantly boosted responses rates between 5% and 9%. However, not all studies found a relationship between incentives and increased student response. Porter and Whitcomb (2003) surveyed prospective college students while still enrolled in high school. Students were randomly assigned to one of 5 groups (control and 4 experimental groups). The four experimental groups were distinguished by the dollar value of the lottery incentives which ranged from \$50 to \$200. Comparing all four experimental groups to the control group, these researchers found that lottery incentives had minimal effect on response rates, with the exception that those offered a chance to win \$100 responded at a significantly higher rate than the control group (16.9% versus 13.9%, respectively). However, as noted by Porter and Whitcomb, “Although the difference was significant, in terms of substantive results, the offer of a \$100 gift certificate had minimal impact” (p. 403). In a 2013 review of research regarding use of survey incentives for web-based surveys, Singer and Ye concluded that incentives did generally boost the overall response rate, but only by a small amount.

## **Study Rationale & Research Questions**

Participating NSSE schools have been using incentives in increasingly greater numbers. During the 2012 administration, 25% of participants used some kind of incentive. By 2014 the proportion increased to 54%. As institutional response rates have declined over time it is understandable that incentives have been employed to maintain or reverse the downward trend. The vast majority (92%) during the 2013 NSSE administration used a lottery incentive approach, which is not surprising given the costs associated with guaranteeing meaningful prizes for all respondents. Though some anecdotal NSSE related evidence exists about the effectiveness of lottery incentives to boost response rates, no study has been conducted combining NSSE results from hundreds of participating institutions. Furthermore, there is no empirical evidence that NSSE participating institutions' response rates will benefit from a greater dollar investment in lottery incentives or campus promotional efforts (above and beyond lottery incentives). We thus focus on the following groups of related questions:

1. Do different types of lottery incentives correlate with higher NSSE response rates after controlling for various institutional characteristics?
2. Does the relationship between incentive type and average institutional response rates vary by first-year and senior NSSE administrations?
3. Are certain types of incentives more strongly related to institutional response rates than others? Does the amount spent by institutions on incentives matter?
4. What is the relationship between campus promotional efforts and

response rates, above and beyond incentives? Does the relationship vary by class level?

## **Methods**

*Data Source.* In order to address these research questions, we used institution-level response rates for both first-year and senior NSSE 2013 administrations and then merged three other data sources that reflected details about each institutions use of participation incentives (i.e., incentive type and quantity, lottery or guaranteed prize, etc.), how much effort was spent promoting the administration, including *how* NSSE was promoted and *who* was involved, and various pieces of institutional characteristics from IPEDS (i.e., public-private control, undergraduate enrollment). The incentive data set was created by NSSE staff who reviewed incentive description text embedded in recruitment messages. All institutions participating in NSSE must include their incentive details in their recruitment messages per NSSE's IRB protocol. Various pieces of information were documented, including the different types of incentives used by an institution, the quantity offered of each type, their value, etc. The additional information related to other promotions came from respondents that agreed to participate in NSSE 2013's Quick Response Panel. Panel members agreed to complete up to two short surveys of no more than four questions each in order to help NSSE better understand varying topics from an institutional perspective.

*Sample.* After removing certain institutions, 531 institutions out of 621 that participated in NSSE 2013 could be used for analytical purposes. Institutions were excluded for one of the following reasons: 1) they used more than one incentive type concurrently; 2) used a guaranteed incentive; 3) were neither a US or Canadian institution; 4) had their NSSE administration halted at least once, stemming from either technical difficulties or extreme lack of participation; or 5) were an influential outlier in statistical models. 191 of the 531 institutions were Quick Panel Response participants. Incentive information was available for all 531 institutions.

The 531 institutions used to answer this study's research questions were very similar to the overall 2013 NSSE institutional sample of 621 institutions. The first-year average institutional response rate equaled 27% while the senior rate was 33%. 43% of the analytical sample used an incentive, slightly lower than all NSSE schools (47%). In terms of incentive types offered, 7% offered at least one cash incentive; 6% offered a general gift card (e.g., Amazon.com, Walmart); 17% offered a specific gift card (e.g., a local ice cream store); 11% offered a technology product (e.g., iPad); and 2% offered another form of incentive, including school souvenirs, school benefits (e.g., free parking), and other hard to classify incentives (e.g., a donation to a local charity if either the first-year or senior class participated at the highest rate) . On average, schools incentive investment was \$0.17 per NSSE sample member. In terms of promoting NSSE administrations, 7% promoted NSSE at a high level, 14% medium level, and 15%

low level, with the remaining 64% of schools being non-participants in the Quick Response Panel. On average, campuses were 85% full-time students, 58% female, 13% African-American, and 9% Latino. 4% of institutions were Canadian, 37% public control, and the average undergraduate enrollment was approximately 5,500 students. Additional descriptive statistics about the analytical sample as well as all NSSE 2013 schools, Quick Response Panel members, and those analytical sample institutions that either offered an incentive or did not appear in Table 1.

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Insert Table 1 about here  
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*Dependent Variables.* This study used two different institution-level dependent variables: first-year and senior NSSE 2013 response rates. The calculation used for these variables mirrors the official response rate calculation used with NSSE institutional reports:

$$\text{RR\%} = (\text{Complete respondents} + \text{Partial respondents}) / (\text{Total \# of eligible students})$$

Eligible students include first-year and senior students who 1) completed NSSE by answering at least one student background question on the final online survey page, 2) partially completed NSSE by answering at least one item on the first three pages of the online instrument, but did not answer any items on the final page, 3) either implicitly or explicitly refused to complete the survey, or 4) did not respond to the survey invitation at all. If there was any indication (e.g., bad email

address) that someone did not receive the five recruitment email messages, they were not included in the response rate calculation. Ineligible students include those that were identified as ineligible by institutions to participate in NSSE due to a change in the students class level, enrollment at the institution (graduated or dropped out), etc.

*Independent variables.* We created a series of dummy coded variables to identify institutions that conducted lottery incentives using a set of mutually exclusive incentive types: cash, general gift card, specific gift card, technology, and other incentive types (that included either a school benefit, school souvenir, or other incentive type). Institutions were coded “1” if they used a particular incentive type and “0” if they did not use it. Institutions that did not use an incentive served as the reference group. To account for different levels of financial investment in incentives by each institution we calculated dollars spent per campus sample member. For example, if an institution spent a total of \$1,000 on all prizes for a lottery (ten \$100 Amazon.com gift cards, for example) and there were 500 first-year students and 500 seniors for a total sample size of 1,000, dollar spent per campus member would equal \$1 ( $\$1,000/1,000$  students). To measure the amount of effort an institution devoted to promoting their NSSE administration, we used the following question from the Quick Response Panel, and categorized institutions into Low, Medium and High promotional effort NSSE 2013 administration categories:

Apart from participation incentives, how would you describe your NSSE 2013 promotional activities?

- We did not have any special promotional activities. Students only received our official recruitment messages. [coded as “Low” promotional effort]
- We promoted the survey using one or two simple methods (e.g., posters, advertisements) but did not invest much otherwise. [coded as “Medium” promotional effort]
- We promoted the survey in many different ways and invested significant effort in getting the word out. [coded as “High” promotional effort]

We used institutions with Low level promotional effort administrations as the reference group. Additional controls for the statistical models included the proportion of full-time, female, African American and Latino students on each campus, taken from IPEDS. Other IPEDS derived information included whether the institution was publicly controlled (1=Public; 0=Private), undergraduate enrollment (in thousands), and undergraduate enrollment (in thousands) squared to account for a nonlinear relationship. Lastly, we also controlled for being a Canadian institution (Canadian = 1; US = 0).

### *Statistical Models.*

To answer our research questions we developed two Ordinary Least Squares regression models predicting first-year and senior response rates. Due to the skewed distribution of both first-year and senior institutional response rates and

to counter problems with heteroskedasticity we transformed response rate values by taking their natural log. This transformation helped ensure the accuracy of all coefficient statistical significance testing. For ease of interpretation, all coefficients were multiplied by 100 so they could be interpreted as percentage changes. For instance a continuous variable's .15 coefficient signifies an expected increase in response rate by 15% given a one unit change in the independent variable. For dummy coded variables, the coefficient is interpreted relative to the reference group. Therefore a coefficient of .20 for a cash incentive type means that institutions that used only a cash incentive would be predicted to have a 20% greater response rate than institutions that did not use an incentive. Given the two different models used for first-year and senior administrations, coefficients for dummy coded variables cannot be directly compared in terms of actual percentage point differences; therefore all comparisons between incentive types will be made in relative terms.

## **Results**

As shown in Table 2, both the first-year and senior regression models are statistically significant (F-statistics of 33.8 and 28,  $p < .000$ , respectively). The first-year model explained 51% of the variation in institutional response rates while the senior model explained 47%. Regarding our first research question, we found statistically significant differences in NSSE response rates between institutions that used cash, general gift card, specific gift card, and technology lottery incentive types and those that did not use an incentive for either first-year or

senior survey administrations, holding all other model variables constant. The only incentive type category that did not show any statistically significant difference was the Other incentive type category that included many several types of incentive approaches.

As explained previously, first-year and senior model coefficients for dummy coded variables are not directly comparable, but we can compare their relative impact on first-year and senior administration response rates. Relatively speaking, first-year administrations that used any of the five lottery incentive types had greater increases in response rates compared to institutions that did not use incentives. The greatest relative difference first-year and senior results was with general and specific gift card types.

Are certain types of incentives more strongly related to response rates than others? Differences between the various incentive types are generally modest. For first-year administrations, the greatest difference can be seen between both general gift card and technology incentive types and specific gift card types. First-year administrations that use either a general gift card or technology incentive show about a 19% greater expected response rate compared to those administrations that did not use any incentive. Institutions using a specific gift card showed a response rate 12% greater than no-incentive administrations. For senior administrations, both cash and technology incentive administrations had the greatest difference from administrations that did not use an incentive (12%

and 13%, respectively). Specific gift cards though showed the smallest expected increase in response rate relative to no-incentive senior administrations (7%).

Does the amount an institution invests in their incentive approach matter to response rates? In both first-year and senior models a dollar spent per NSSE sample member was associated with a statistically significant 9% and 8% increase to the expected response rate, respectively ( $p < .05$ ).

What is the relationship between campus promotional efforts and response rates, above and beyond incentives? For first-year NSSE administrations, schools that applied either a medium or high level of promotional effort had 21% ( $p < .001$  for medium level and  $p < .01$  for high level) higher expected response rate relative to those administrations that used low promotional effort. For senior NSSE administrations, schools that used a medium level of promotional effort had a 12% higher response rate compared to low promotional administrations ( $p < .05$ ). However, the relationship between high promotional effort administrations and low ones was statistically insignificant. Comparing first-year and senior promotional effort results, we see that relative to their respective low level promotion reference groups, first-year medium and high promotional effort administrations exhibit greater expected increases to expected response rates than senior administrations.

## **Discussion**

This study suggests that lottery incentives can be used as part of a NSSE administration to boost response rates. Cash, gift cards and technology prizes are all associated with increased response rates. We also found evidence that higher financial investment in lottery incentives is associated with higher response rates as well. Furthermore, institutions that promote their administrations on campus also see increased response rates relative to institutions that do not promote their NSSE administration. These findings confirm anecdotal evidence that has accumulated since NSSE started in 2000.

This study also provides evidence that certain incentive types are more strongly related to increased response rates than others. Technology incentives and general gift cards for both first-year and senior administrations, and cash for senior administrations, appear to be good choices for NSSE institutions to select for their lottery incentives though the likely impact of choosing alternative incentive types is probably modest (3% point difference in final response rate).

Given that only 50% of the variation in response rates can be explained by our models, our models do not include all variables that could possibly influence our results and conclusions. For example, we currently do not have any viable ways to estimate the amount of oversurveying that likely happens on campuses, which in theory could strongly influence student willingness to participate in a relatively long survey such as NSSE.

Possible future research to extend the current study's findings include the implementation of a controlled experiment whereby an institution's sample would be divided into different experimental groups each receiving the chance to win a different incentive type. Within a controlled setting, we could also evaluate the impact of guaranteed incentives or combining different incentive types together. Other unanswered questions remain for NSSE administrators and participating institutions, namely whether dividing an incentive budget across several smaller prizes rather than one large prize is effective. Also, the current models do not test for any interaction between incentive type and promotional effort levels. It is conceivable that institutions that use certain types of incentives in conjunction with certain levels of promotional effort will see higher response rates.

Incentives are widely used among NSSE participating institutions. This study is the first large scale evaluation aimed at better understanding whether their investment pays dividends. Based on this study's results, incentives and other promotional methods appear to be useful tools at slowing or halting a general decline in response rates.

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**Table 1. Institution-Level Descriptive Statistics**

		Analytical Sample							
		NSSE 2013				Quick Response Panel	Entire Sample	Incentive Used	No Incentive Used
Institutions (N)		621				230	531	229	302
		Mean	s.d.	Min	Max	Mean	Mean	Mean	Mean
<b>Response Rates (%)</b>	First Year	.27	.13	.05	.93	.28	.27	.30	.25
	Senior	.34	.14	.08	.96	.34	.33	.36	.32
<b>Incentive Type</b>	Incentive Offered	.47	.50	0	1	.53	.43	1.00	.00
	Cash	.07	.26	0	1	.10	.07	.17	.00
	Gift Card - General	.07	.26	0	1	.10	.06	.15	.00
	Gift Card - Specific	.20	.40	0	1	.21	.17	.39	.00
	Technology	.13	.34	0	1	.16	.11	.25	.00
	Other Incentive	.01	.12	0	1	.03	.02	.04	.00
<b>Incentive Expenditure</b>	Dollars spent per NSSE sample member (\$)	.24	.79	0.00	14.69	.25	.17	.40	.00
<b>NSSE Administration Promotional Effort</b>	Promotion level: High	.08	.27	0	1	.21	.07	.10	.04
	Promotion level: Medium	.15	.36	0	1	.40	.14	.14	.14
	Promotion level: Low	.14	.34	0	1	.37	.15	.15	.15
	2013 Quick Response Panel	.37	.48	0	1	1.00	.36	.41	.33
<b>Institutional Characteristics</b>	Full-time students (%)	.85	.16	.05	1.00	.84	.85	.86	.85
	Female (%)	.58	.13	.00	1.00	.60	.58	.57	.58
	African-American (%)	.14	.18	.00	.96	.15	.13	.11	.15
	Latino (%)	.09	.13	.00	1.00	.09	.09	.09	.09
	Canadian Institution	.04	.20	0	1	.03	.04	.07	.02
	Public Institution	.37	.48	0	1	.36	.37	.39	.36
	Undergraduate Enrollment (000s)	6.1	12.5	.2	249.6	5.3	5.5	6.0	5.1

**Table 2. First-Year and Senior OLS Regression Models  
Predicting Natural Log of Institution-Level Response Rates**

		First-Year				Senior			
		B	s.e.	Sig.	% change	B	s.e.	Sig.	% change
(Constant)		2.938	.139			3.480	.120		
<b>Incentive Type</b>	Cash	.153	.061	*	<b>15.3</b>	.122	.052	*	<b>12.2</b>
<i>reference group: no incentive</i>	Gift Card - General	.194	.063	**	<b>19.4</b>	.108	.054	*	<b>10.8</b>
	Gift Card - Specific	.123	.043	**	<b>12.3</b>	.069	.037	+	<b>6.9</b>
	Technology	.196	.056	***	<b>19.6</b>	.134	.048	**	<b>13.4</b>
	Other Incentive	.166	.117		<b>16.6</b>	.050	.100		<b>5.0</b>
<b>Incentive Expenditure</b>	Dollars spent per NSSE sample member	.093	.042	*	<b>9.3</b>	.084	.036	*	<b>8.4</b>
<b>NSSE Administration Promotional Effort</b>	Promotion level: High	.210	.067	**	<b>21.0</b>	.089	.058		<b>8.9</b>
<i>reference group: Low</i>	Promotion level: Medium	.206	.055	***	<b>20.6</b>	.120	.047	*	<b>12.0</b>
	2013 Quick Response Panel	-.062	.042		<b>-6.2</b>	-.024	.036		<b>-2.4</b>
<b>Institutional Characteristics</b>	Full-time students (%)	.500	.001	***	<b>0.5</b>	.200	.001	*	<b>0.2</b>
	Female (%)	.233	.001	+	<b>0.2</b>	.157	.001		<b>0.2</b>
	African-American (%)	-.773	.001	***	<b>-0.8</b>	-.556	.001	***	<b>-0.6</b>
	Latino (%)	-.460	.001	***	<b>-0.5</b>	-.414	.001	***	<b>-0.4</b>
	Canadian Institution	.385	.086	***	<b>38.5</b>	.189	.075	*	<b>18.9</b>
	Public Institution	-.257	.040	***	<b>-25.7</b>	-.138	.035	***	<b>-13.8</b>
	Undergraduate Enrollment (000s)	-.056	.008	***	<b>-5.6</b>	-.063	.007	***	<b>-6.3</b>
	Undergraduate Enrollment (000s) squared	.002	.000	***	<b>0.2</b>	.002	.000	***	<b>0.2</b>
N		531				527			
F-statistic		33.8				28.0			
sig.		0.000				0.000			
Adjusted R-squared		0.51				0.47			

+p<.10; \*p<.05; \*\*p<.01; \*\*\*p<.001