

(Inter) Net Gain?

Experiments to increase response

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Abstract

This paper focuses on using monetary incentives to increase overall response and Internet response when both mail and Internet choices are offered. Previous research has indicated that offering an Internet option does not increase total response rates for mail out questionnaires, but there are methods that can increase Internet response over mail response. Given the advantages of an Internet administration, Census and NCES wanted to encourage Internet response for the 2004-05 Teacher Follow-up Survey (TFS). At the same time, incentives were offered to increase response. An experiment designed to assess the impact of incentives on overall response and on Internet response was embedded into the administration of the TFS. The experiment looked at three different Internet treatments: 1) initially providing only the Internet option, 2) providing the Internet option initially and informing respondents that a paper questionnaire is forthcoming, and 3) no Internet option. Half of each of these groups was provided a \$10 gift card incentive at the time of first contact. This paper will compare the relative impact of each method on the response rates, and make recommendations for other surveys interested in encouraging Internet response and/or using pre-paid incentives.

Keywords: Internet, Incentive, Response Rate.

Introduction

The Teacher Follow-up Survey (TFS) is a component of the Schools and Staffing Survey (SASS). The TFS consists of two self-administered questionnaires: a Current Teacher questionnaire, with 53 questions, and a Former Teacher questionnaire, with 40 questions. A sample of teachers who completed the 2003-04 SASS Teacher Questionnaire was selected for participation in TFS. Teachers are contacted at

their home address if they provided one during the SASS. Researchers use the results to understand retention of teachers in public and private schools. In addition, the results provide researchers insight to teachers' job satisfaction. The TFS is unique in that it draws information from both current and former teachers. Results from prior TFS administrations have been used to:

- Analyze changes in the teacher labor force over time;
- Develop incentive programs to encourage teacher retention; and
- Understand the effects of school practices and policies on teacher's decision to stay in or leave the profession.

A goal of the 2004-2005 TFS was to increase (or at least maintain) overall self-administered response rates by offering an Internet reporting option (in addition to the paper questionnaire) and by providing a monetary incentive to respondents. It also was desirable to maximize the Internet responses, as questionnaires administered via the Internet can reduce errors in survey data by invoking automatic edits. This can potentially save resources during the data processing.

In order to encourage Internet response, the Internet option was offered before the paper option. To further boost the Internet response rate, a \$10.00 incentive gift card was given to half of the respondents at the first contact (prior to the mail option). It was hoped that these treatments would yield higher Internet response rates and total response rates.

Background

In recent years there has been a great push to offer an Internet mode of data collection in government surveys. Griffin et al. (2001) suggest three potential advantages of an Internet mode over mail: 1) improved response rates by offering an alternative mode of data collection; 2) potential for cost savings through reduction in mailing expenses; and 3) increased data quality compared with paper self-administered questionnaires through the automation of skip patterns, range checks and consistency edits. Many studies are

finding that adding an Internet option does not increase response rates, and, in some cases, the Internet option has been found to negatively impact response rates. Griffin et al. 2001 found that offering a combined mail and Internet option lowered the overall initial response rate for a household survey by almost six percent. Warner (2004) also found a lower final response rate when respondents were offered both modes compared with groups offered only Internet initially, followed by a mailed questionnaire. Interestingly, both studies noted a low Internet completion rate. In the Griffin et al. (2001) study, response by Internet was less than 3 percent of overall response. In the study conducted by Warner (2004), response by Internet ranged from 11.2 percent to 19.6 percent depending on the treatment group. Tedesco et al (1999) had an overall Internet response rate of less than two percent in testing an Internet version of the Library Media Center Survey (the LMC is another component of the SASS). Improvements made to allow easier access during the full-scale survey in 2000 did increase Internet response to nearly 20 percent.

To combat this lower response rate, some self-administered surveys have experimented with different ways to encourage Internet response. On the LMC, Nichols et al. (2001) attempted to increase Web response by utilizing varying motivational messages. The group that received stronger encouragement at each stage of data collection had twice the Internet response than the group with less encouragement (although total response was about the same). On the 2001-2002 Private School Survey (PSS), Warner et al (2004) offered the Internet option three different ways: (1) Internet and mail options were offered together (Internet response of 11.2 percent); (2) the Internet option was offered first, with mention of forthcoming mail questionnaire (Internet response of 16.5 percent); and (3) the Internet option was offered first, with no mention of the mail questionnaire (Internet response of 19.6 percent).

Incentives have long been recognized as an effective method to increase overall response to a mail survey (see Church, 1993 for a meta-analysis on the subject). In recent years, government agencies, including the Census Bureau, have experimented with the use of incentives to boost response rates (Leslie and Bryson, 2003). In order for incentives to be cost-effective for the TFS, the number of respondents requiring field

follow-up needs to be reduced. Most studies have not looked at the overall cost and response rate trade-off.

Methods

Of the 63,135 teachers who completed the SASS Teacher questionnaire, 8,297 were selected by random sample to participate in the TFS. Of these, 559 did not have sufficient contact information and were excluded from the experiment. The remaining 7,738 cases were divided into six treatment groups. The groups varied on three dimensions, which include offering an Internet option, offering a prepaid \$10 incentive, and notifying respondents in the Internet groups of a paper option in the near future.

Groups one and two were not given the option of completing the survey on the Internet and were sent only paper questionnaires throughout the duration of the experiment. Groups three through six were initially given the Internet option and shortly afterwards were sent the questionnaire. However, groups three and four were not made aware that they would receive paper versions of the TFS a week later. Groups five and six were told of the forthcoming paper questionnaire in the initial letters they received requesting their participation in the TFS. Finally, these six groups were further broken down into incentive panels. Groups one, three and five were given a \$10 incentive card with the first mailing of TFS materials. The remaining groups were not offered any kind of incentive. Table 1 documents the number of respondents that were assigned to each group initially. Cases that had inaccurate or unreachable addresses were removed from the experiment. Table 1 also shows the resulting final sample sizes.

At the beginning of the experiment, all teachers were mailed either a letter offering the Internet option (Groups 3-6) or a letter and questionnaire (Groups 1-2) at the same time. The \$10.00 incentive card was included in this mailing for Groups 1, 3, and 5. The non-Internet groups were mailed a reminder postcard approximately 10 days later. At the same time, the Internet groups were mailed questionnaires and reminded about their Internet option. Approximately six weeks after the original mailout, non-responding teachers were mailed a second questionnaire. The Internet groups again were reminded about their Internet option. Approximately four weeks

following the second mailout, remaining non-respondents were assigned for field follow-up. Table 2 shows the dates of each of these the treatments for each group.

The incentive card was an American Express gift card preloaded with \$10.00. Teachers could use the card anywhere American Express is accepted.

Table 1. Treatments

Group	1	2	3	4	5	6
Mode Offered	No Internet	No Internet	Internet, without mention of mailout one week later	Internet, without mention of mailout one week later	Internet, with mention of mailout one week later	Internet, with mention of mailout one week later
Incentive Offered	Yes	No	Yes	No	Yes	No
Original Sample Size	1266	1340	1266	1292	1266	1308
Final Sample Size	1074	1147	1096	1100	1067	1131

Table 2. Timing of Treatments

Group	1	2	3	4	5	6
Action	No Internet	No Internet	Internet, without mention of mailout one week later	Internet, without mention of mailout one week later	Internet, with mention of mailout one week later	Internet, with mention of mailout one week later
Original mailout: Advance letter w/Internet option			Jan 21	Jan 21	Jan 21	Jan 21
Original mailout: Advance letter w/questionnaire	Jan 21	Jan 21				
Original mailout: Incentive card	Jan 21		Jan 21		Jan 21	
Reminder postcard (first reminder)	Jan 31	Jan 31				
Questionnaire w/reminder letter (first reminder)			Feb 1	Feb 1	Feb 1	Feb 1
Email reminder ¹ (second reminder)	Feb 11	Feb 11	Feb 11	Feb 11	Feb 11	Feb 11
Second mailout	Mar 10	Mar 10	Mar 10	Mar 10	Mar 10	Mar 10
End of mail/Internet phase	Apr 15	Apr 15	Apr 15	Apr 15	Apr 15	Apr 15

¹ Email reminders were sent to approximately 1500 teachers, for whom staff was able to obtain addresses. The impact of this treatment is not covered in this report.

Results

The design allows us to see the relative impact of the different treatments on increasing overall self-response rates and increasing response by Internet. The response rates were calculated at the end of the mailout/Internet phase of data collection. The TFS has an in person follow-up of non-respondents after the mailout/Internet phase where we expect to convert the non-respondents and obtain a final response rate of approximately 90 percent across all treatment groups. As the in person follow-up is more expensive, it is desirable to maximize response prior to field follow-up, and the analysis focuses on the response before field follow-up.

In analyzing the results, the total, mail only, and Internet only weighted response rates for each treatment group as well as various combinations of these groups were calculated at the end of the mailout/Internet phase of data collection. The variance associated with these response rates (r) was calculated using the following formula, a replication method based on bootstrap

methodology: $\frac{1}{n} \sum_{i=1}^n (r_i - \bar{r})^2$, where r_i is the

response rate for each replicate. The response rates for each of the treatment groups, or combinations of groups, were compared against one another and tested at the five percent significance level.

The total response rates, mail response rate, and Internet response rates are summarized for each group in Table 3. Analyses of differences between groups follow.

Table 3. Response Rates by Group

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Total response	52.1% 0.00044	45.5% 0.00040	46.6% 0.00050	44.1% 0.00059	46.3% 0.00051	38.6% 0.00064
Mail response	52.1% 0.00044	45.5% 0.00040	21.9% 0.00028	25.3% 0.00034	23.7% 0.00039	23.3% 0.00035
Internet response	N/A	N/A	24.6% 0.00042	18.8% 0.00024	22.6% 0.00021	15.3% 0.00027

Total Response Rates—Mode Treatment Effects

Mail Only (Groups 1+2) versus Mail and Internet (Groups 3+4+5+6)

The impact of providing an Internet response option in addition to the mail option is shown in Table 4. As noted, the Internet option was provided prior to the mailout of the questionnaire. The results show that that the overall response of the mail only group, with a 48.8 percent response, exceeded that of the mail and Internet groups, with a 43.9 percent response. This difference is significant ($P < .05$) and is consistent with some of the previous studies as noted earlier.

Table 4. Response Rates, Mail Only versus Mail and Internet

Mail only (Groups 1+2)	Mail and Internet (Groups 3+4+5+6)
48.8% 0.00019	43.9% 0.00016

Mail Only (Groups 1+2) versus Internet A (Groups 3+4) versus Internet B (Groups 5+6)

Table 5 shows the impact of providing the mail only response option versus the Internet response options broken out by the two variations—informing respondents that they would receive a paper questionnaire approximately a week later (Groups 5 and 6), and offering the Internet option without informing them (Groups 3 and 4). The results show that that the overall response for the mail only group is significantly higher than the Internet with mention of mail group ($p < .05$). The rate difference between the mail only group and the Internet without mention of mail group is not significant. So, the worst outcome results from offering respondents a known choice of mail and Internet responses.

Table 5. Total Response Rates, Mail Only versus Two Treatments of Mail and Internet

Mail only (Groups 1+2)	Internet without mention of mail (Groups 3+4)	Internet with mention of mail (Groups 5+6)
48.8%	45.4%	42.4%
0.00019	0.00026	0.00030

Internet response rates (Groups 3+4) versus (Groups 5+6)

Table 6 shows the impact on Internet response rates of providing the Internet response option broken out by the two variations—informing respondents that they would receive a paper questionnaire approximately a week later (Groups 5 and 6), and offering the Internet option without informing them (Groups 3 and 4). While the Internet response rate for the group without mention of the mail option is somewhat higher, the result is not significant.

Table 6. Total, Mail, and Internet Response Rates, Two Treatments of Mail and Internet

	Internet without mention of mail (Groups 3+4)	Internet with mention of mail (Groups 5+6)
Total response	45.4%	42.4%
	0.00026	0.00030
Mail response	23.6%	23.5%
	0.00018	0.00019
Internet response	21.7%	18.9%
	0.00017	0.00014

Impact of Incentives

Overall impact of incentives: (Groups 1+3+5) versus (Groups 2+4+6)

The overall impact of incentives is shown by comparing the response rate of the teachers who were provided incentives against those who were not. The results show that that the overall response of the incentive groups, with a 48.3 percent response, significantly exceeded that of the non-incentive groups, with a 42.8 percent response ($P < .05$).

Table 7. Total Response Rates, Incentive and Non-incentive

Incentive groups (Groups 1+3+5)	No incentive groups (Groups 2+4+6)
48.3%	42.8%
0.00014	0.00020

Impact of incentives within mode (Group 1 response minus Groups 2 response) versus (Group 3 response minus Groups 4 response) versus (Group 5 response minus Groups 6 response)

Table 8 examines whether the incentive impacted the treatment groups differently. While the increase in response resulting from the incentive differed between the groups, the results were not significant.

Table 8. Additional Response As a Result of Incentives by Mode

Mail only (Groups 1+2)	Internet without mention of mail (Groups 3+4)	Internet with mention of mail (Groups 5+6)
6.6%	2.5%	7.7%
0.00083	0.00108	0.00115

Impact of incentives on Internet response: Group 3 versus Group 4 and Group 5 versus Group 6

Table 9 examined whether or not the incentive impacted the Internet response rate. The results show that both Internet treatment groups had a higher Internet response rate when offered the incentive ($p < .05$).

Table 9. Internet Response Rates by Incentive Treatment within Internet Treatment

	Internet without mention of mail (Groups 3+4)	Internet with mention of mail (Groups 5+6)
Incentive	24.6%	22.6%
	0.00042	0.00021
No Incentive	18.8%	15.3%
	0.00024	0.00027

Impact of monetary incentives and Internet response on costs

The incentives cost approximately \$50,000 in total, including administrative expenses. Table 7 shows that the incentives increased the pre-field response by 5.5 percent (approximately 200 cases). The variable cost per field case is approximately \$150.00 per case; the provision of incentives saved \$30,000 in field costs. Therefore, providing the incentives had a net cost of \$20,000.

The costs of adding the Internet option included authoring and testing the Internet questionnaire, preparing the Internet case management system for this survey, and developing programs to re-format Internet data to combine with the keyed questionnaire data at the beginning of data processing. Savings from the Internet responses include data keying for those cases as well as less data review during processing as a result of automated edits in the questionnaire. The costs of adding the Internet option far exceeded the savings, with the net costs exceeding \$100,000.

Implications

Adding Internet options—net gain?

No, net loss. The impact on response of adding the Internet option was negative—the response rate of the mail-only group exceeded the combined Internet groups by 4.8 percent (Table 4). When the mail group was compared to the Internet groups separately, the mail group's response was significantly higher than the Internet group with mention of the mail option, but not the Internet group without mention of the mail option (Table 5). It appears total response can be maximized for the TFS by offering mail only. Recognizing that it may be desirable to add the Internet option for reasons other than response, it should be offered without mentioning the mail option.

Providing incentives

The overall impact of providing the \$10.00 incentive did increase the response rate by 5.5 percent (Table 7), but it did not pay for itself even with the reduction in field costs. While there was a net cost to providing the incentives, it appears to be a desirable treatment. Further, the incentive also increased Internet response among both Internet treatment groups (Table 9), but as noted,

the total response of the Internet groups was lower than the mail only group.

Conclusions

It appears that the best response for the TFS can be achieved by offering respondents mail questionnaires. Offering a small incentive increases initial response, and may increase final response. It may be worth testing a \$5.00 incentive to see if it could pay for itself. Adding an Internet option negatively impacts total response. The negative impact can be reduced by offering the Internet option initially without mentioning that there will be a mail option. When an incentive is included with this treatment, approximately half of the responses received at the end of the mail/Internet phase of data collection are Internet responses. While Internet responses may lower data processing costs, the cost of adding the Internet option far exceeds those savings. If managers of surveys administered by mail have limited resources, they should be spent on incentives rather than providing Internet alternatives.

References

- Church, A.H (1993). Estimating the Effect of Incentives on Mail Survey Response Rates: A Meta-Analysis. *The Public Opinion Quarterly*, 57, No. 1, pp. 62-79.
- Griffin, D., Fischer, D., and Morgan, M. (2001). "Testing an Internet Response Option for the American Community Survey." Paper presented at the Annual Conference of the American Association for Public Opinion Research Annual Conference, Montreal, Quebec, May.
- Leslie, T. and Bryson, K.R. (2003) Incentives in Mail Surveys. U.S. Census Bureau Report.
- Nichols, E., Marquis, K., and Hoffman III, R. 2001. "The Effect of Motivational Messaging on Mode Choice and Response Rates in the Library Media Center Survey." *2001 Proceedings of the American Statistical Association, Survey Research Methods Section [CD-ROM]*, Alexandria, VA: American Statistical Association.
- Tedesco, H., Zukerberg, A., and Nichols, E. (1999). "Designing Surveys for the Next Millennium: Web-based Questionnaire Design Issues." *Proceedings of the Third ASC*

International Conference, Edinburgh, September,
pp103-112.

Warner, T. (2004). 2001-02 Private School
Survey (PSS) Computerized Self-Administered
Questionnaire (CSAQ) Analysis. Internal Census
Bureau Memorandum, February 2004.