

POST-COMPLETION MAIL SURVEY INCENTIVES AND DATA QUALITY:  
AN EMPIRICAL INVESTIGATION

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Low response rates, a perennial problem in mail survey research, are potentially troublesome because they can affect both the validity and the reliability of a study. For instance, subjects who do not respond to a questionnaire often possess characteristics different from those who do respond--especially as regards the specific topic under investigation. This, in turn, may lead to biased estimates of population parameters. Consequently, it creates a validity problem. Second, the lower the response rate, the less reliable are sample statistics since standard error is an inverse function of sample size.

Attempts to increase response rates have utilized numerous strategies, including presurvey respondent contact, "personalized" approaches, follow-up schemes, and incentives [1,3,7,10]. While all of these have, to some extent, obtained equivocal results, incentives at least seem to have consistently produced relatively high response rates.

The most widely used incentives are "pre-completion" incentives or gifts. This type of incentive usually consists of a nominal amount of money (often a quarter) included in each outgoing survey [4,5,11]. Although the amount of money is negligible, it has been hypothesized that individuals being surveyed feel "obligated" or committed to returning questionnaires once they have accepted the incentive [6]. Regardless of the reason, the result is typically a high response rate.

A second type of incentive is the "post-completion" or "reward-for-completing" incentive [8,9]. Rather than being a gift to all sample members, it is a payment only to those respondents completing and returning questionnaires. As such, it is typically more valuable than a pre-completion incentive and is a nonmonetary inducement.

The purpose of this paper is to present the results of using a post-completion incentive in a mail survey. While some attention will be given to response rate (the quantity or reliability issue), the primary focus will be upon response quality--the quality of the resulting data.<sup>1</sup> Incorporated into the paper are insights into the advantages and disadvantages of this type of incentive.

#### METHOD

To investigate the residential determinants of students at a major southwestern university a mail survey was designed and executed. Due to the nature of the investigation--it was a commercial study basically consisting of an uninteresting and lengthy questionnaire contracted to be completed in a relatively short period of time and involving a relatively large sample size--

it was deemed necessary to employ a post-completion incentive.<sup>2</sup> By doing so it was hoped there would be a high response rate, a representative sample, a rapid response, and a high degree of item completion.

Specifically, a systematic random of 1300 students was selected from the fall semester student telephone directory. This sampling frame was unusually complete; less than one-tenth of one percent of students enrolled in the fall were excluded. Each sample member was given a choice of one of the following incentives for returning a completed questionnaire:

- two tickets to a local night spot
- a lunch (hamburger, french fries, drink)
- a two week membership at a health spa

The potential value of these incentives ranged from \$1.75 to \$15.00. All sample members were mailed a reminder postcard three days after the initial survey mailing.

#### RESULTS

Data collection ceased after two weeks; at this time questionnaire returns were as follows:

	<u>Number</u>
Surveys mailed	1300
Unlocatable Subjects	100
Effective Sample	1200
Total responses	603
Ticket responses	211
Lunch responses	286
Membership responses	85
"No incentive" response	21

The 100 surveys which were returned due to lack of proper address constituted 7.7 percent of the initial sample. These 100 students were presumed to have graduated fall semester or to have left the university for other reasons. Since (1) questionnaires were mailed first class and forwarded wherever possible, (2) this percentage corresponded almost exactly with the decrease in university enrollment from fall to spring semesters (7.7 percent versus 7.6 percent), and (3) only those students enrolled during the spring semester were of interest, this lack of response in no way invalidated the sampling procedure.

Initial analysis of the returns revealed the lunch was the most popular incentive (selected by 47 percent of the respondents) while the health spa membership was least preferred (only 14 percent chose it). Approximately 3.5 percent of the respondents stated they did not want any incentive.

Following data collection, two analyses relevant

to this paper were conducted. Selected respondent-nonrespondent characteristics were compared, and traits and responses of respondents choosing different incentives were compared. Both of these analyses were designed to evaluate the quality of the survey data. Because the student directory was used as the sampling frame, it was possible to identify and compare certain characteristics of respondents and nonrespondents. Three such comparisons are detailed in Table 1--sex, residence location, and academic classification. In addition, comparable data for the entire student population (N=39,900) are also contained in the table.

groups--age ( $p<.01$ ) and marital status ( $p<.07$ ). However, there were significant differences on four of the six self-image items (each measured on a 5-point scale). Respondents selecting the health spa membership described themselves as more impulsive, liking to spend money more, and liking to socialize more than the other groups.<sup>3</sup>

More important, however, were differences in response to 30 residence determinants which were to be used in designing new student housing. In particular, there were significant response differences ( $p<.05$ ) on six (20 percent) determinants. Moreover, there was a consistent pattern to the

TABLE 1  
Comparison of Respondents and Nonrespondents

Characteristic	Percent		
	Respondents	Nonrespondents	Population
Sex			
Male	59	57	60
Female	41	43	40
Residence Location			
On-Campus	14	20	13
Off-Campus	86	80	87
Academic Classification			
Freshman	22	24	20
Sophomore	19	22	19
Junior	19	25	20
Senior	20	16	22
Graduate	20	13	19

Two conclusions emerge from this table. Respondents differed significantly from nonrespondents on two of the three characteristics--residence location ( $p<.001$ ) and academic classification ( $p<.001$ ). Nonrespondents had a greater propensity to live on campus and possessed fewer years of schooling than respondents. Second, there were no practical differences between respondents and the population. Hence the sample was judged both sufficiently representative and large to permit reliable and unbiased parameter estimates.

A second analysis, comparing characteristics of respondents selecting different incentives, indicated there were significant differences among the three incentive groups. Table 2 reports two types of comparisons, demographic and self-image. With respect to demographics, only two characteristics differentiated among the

differences, again due to those respondents selecting the health spa membership. These respondents indicated strong preferences for residences containing such amenities as game or party room, social activities, and "full services"--color, cable television, and (not unexpectedly) an exercise room.

#### DISCUSSION

Although the implications to be drawn from this investigation are limited by the sample, questionnaire, and incentives studied, two major inferences are of note.

It was possible, through the use of a post-completion incentive, to obtain a relatively large and representative sample within a short period of

TABLE 2

## Comparison of Respondents Selecting Different Incentives

	Respondent Group		
	Tickets	Lunch	Membership
Sex			
Male	59%	58%	57%
Female	41%	42%	43%
Residence Location			
On-campus	13%	14%	12%
Off-campus	87%	86%	88%
Academic Classification			
Freshman	17%	15%	12%
Sophomore	16%	13%	17%
Junior	26%	26%	28%
Senior	28%	27%	25%
Graduate	13%	19%	18%
Mean age <sup>a</sup>	20.4	21.6	22.0
Marital status <sup>b</sup>			
Single	80%	72%	81%
Married	20%	28%	19%
Mean Self Description Score <sup>c</sup>			
Conservative <sup>d</sup>	3.49	3.21	3.38
Impulsive	2.90	2.95	2.81
Like to spend money <sup>a</sup>	2.17	2.44	1.84
Self-assured	2.34	2.33	2.13
Like to socialize <sup>a</sup>	2.14	2.35	1.98
Trend follower <sup>d</sup>	3.44	3.67	3.69

<sup>a</sup>  $p < .01$

<sup>b</sup>  $p < .07$

<sup>c</sup> The smaller the mean, the more the description was defined as applying.

<sup>d</sup>  $p < .05$

time and with a minimum of followup. Furthermore, by judicious incentive selection, it was possible to employ such an incentive at a minimum cost. Here, the incentives were basically costless--they were provided as promotional devices by three firms just opening for business. Since the only expenses were those associated with printing and mailing, the overall cost was actually less than that associated with the more commonly-used 25¢ pre-completion incentive.

Hence, from a cost-benefit perspective, such a strategy might prove most amenable as research costs skyrocket.

However, there is a cautionary note to employing such incentives. Incentives must be selected to possess relevance and be desirable to all population elements; they must not bias responses through differential appeal to certain population segments. Here the incentives as a group

produced an acceptable sample. However, if only one incentive had been used, the resulting sample may have been biased; even the most popular incentive was selected by less than half of the respondents, and respondents selecting the least popular incentive were markedly different from other respondents.

In brief, there are instances where post-completion incentives can prove extremely valuable in generating mail survey respondents at a minimum cost. However, caution must be used when employing such incentives so that bias is not unintentionally introduced into the sample. Wherever possible it is probably better to offer respondents a choice of incentive to ensure that "incentive bias" does not enter into the data. Still, there is a need for future research on the effect of incentives on data quality. The present study dealt with only one aspect of data quality--response bias. Other aspects, such as item completion, response speed, and response coherency, also deserve study if we are to fully understand those whom we research.

#### Footnotes

- 1 A thorough review of studies of the effects of premiums on data quality is contained in [2].
- 2 This decision was bolstered by pre-survey discussions with potential sample members who stated a 25¢ pre-completion incentive or traditional strategies would be ineffectual in increasing response rates.
- 3 The "no incentive" group was not incorporated into the comparisons due to its small sample size. In general terms it contained slightly younger (average age = 19.3 years), and more female students than the other three groups.

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