The influence of respondent incentives on item nonresponse in a web survey

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1 Introduction

Even though a sampled person may agree to participate in a survey, she may not provide answers to all of the questions asked, resulting in item nonresponse. Particularly in web surveys where no interviewer is present, the prevalence of satisficing responses like "no answer" and "don't know" can result in a significant proportion of missing data. It is well known that incentives can effectively be used to decrease *unit nonresponse*, but it is not known whether incentives are able to decrease *item nonresponse* among respondents as well.

To examine the effect of incentives on item nonresponse, we conducted an incentive experiment as part of a websurvey on labor market and living conditions conducted by the Institute of Employment Research of the German federal employment agency. In addition to a general conditional participation incentive of 3 €, respondents of the survey were given unconditional incentives, of varying amounts, towards the end of the survey with the request to keep thinking hard on the next hard-to-answer questions.

Our research question is whether additional incentives can be used to decrease the proportion of item nonresponse and, if so, whether higher incentives have a higher effect.

2 Incentive Experiment

2.1 Experimental Design

The survey consists of four main question blocks. The incentive experiment appears in the third block and consists of two sub-blocks. The structure of the questionnaire is:

- Employment and residence history
- Big 5 personality characteristics questionnaire
- **Incentive experiment**
  - question block 1
  - question block 2
- Socio-demographics

Our analysis concentrates on the incentive experiment.

Respondents were randomly assigned to eleven treatment groups (see table 1). Ten groups were requested to take their time and think very hard about the answers to the next questions and be as precise as possible (as Cannell et al. (1981) show, asking respondents to give extra effort can increase response quality). Of these ten groups, nine were further told that these questions take more effort to answer and that they will therefore receive an additional incentive in advance. This incentive was assigned randomly and ranged from 0.50 € Euro to 4.50 € and was sent to the respondents in form of an Amazon-voucher after the interview. In this experiment, there are two control groups: one group received the request but no incentive, and the other did not receive any request nor incentive. This setting allows us to differentiate between the effect of the additional incentive and the effect of the request for added effort.

2.2 Questions

The incentive experiment includes two blocks of questions that were asked in random order, one block is on personal health and one on personal finances. The questions contain knowledge questions, recall questions referring to different time periods,

group	request to think hard	amount of additional incentive
no incentive, no request	no	0
request only	yes	0
0.5 - 4.5	yes	0.5 , . . . , 4.5

Table 1: Treatment groups included in incentive experiment

sensitive questions, and questions about subjective expectations. Questions required either yes/no or numerical responses.

For all questions in the incentive block, we are interested in the proportion of "don't know" and "no answer" responses. In addition, for two questions about subjective expectations, we also look at "50%" answers as they can be seen to express a "don't know" answer. Our general hypothesis is that item nonresponse is lower for people who receive an incentive than for those who do not, and that higher incentives lead to larger decreases in item nonresponse.

1. The health block contains:

   - One general knowledge question: "What do you think is the recommended daily number of calories for an average adult of your sex?"
   - One recall question referring to 2011: "How many times did you visit a doctor in 2011"?
   - One recall question / sensitive question: "Have you ever been told by a doctor to have one of the following diseases?" (17 diseases are listed from less to most common)
   - One subjective expectation question: "How likely do you think it is that you will live until age x?" (x depending on a persons age)

2. The finance block contains:

   - One recall question referring to last month / sensitive question: "What was your last monthly income?"
   - One recall question referring to 2012 / sensitive question: "Did your household receive unemployment benefit (UB II) during the last 12 months?"

- One recall question: "Please think of all employments in your life: how long was your longest period of employment you had without being unemployed in between? How many years and months have you been employed in that period?"
- One subjective expectation question: "How likely do you think it is that your living standard will decrease in the next five years?"

3 Preliminary results

In total, 1092 respondents completed the questionnaire. Item nonresponse varied across the items (see table 3). Furthermore, there is a difference in the composition of "don't knows" and "no answers" within item nonresponse. Thus, the analysis is done for "don't knows" and "no answers" separately as well.

For most variables – with exception of the expectation questions – we find that asking the respondents to think hard decreases item nonresponse. The effect of incentives is more ambiguous. For example, for the expectation questions respondents in the "request only" group seem to substitute "no answer" responses by rounding to 50% (see table 3).

4 Discussion

The above results raise some interpretational issues and some questions for further research, for example

- What does explain the difference between the proportion of "don't know" vs. "no answer"?
- Why do the proportions of "don't know" and "no answer" change differently for different questions if incentives are given?
- Why do additional incentives for some variables lead to increasing item nonresponse compared to "request only"?

question	% item nr	% don't know	% no answer
knowledge			
calories	0.24	0.21	0.03
recall			
doctor visits	0.12	0.06	0.06
employment year	0.11	0.04	0.07
employment month	0.49	0.05	0.44
diseases	0.07	0.01	0.06
sensitive			
income	0.22	0.04	0.18
UB II	0.03	0.01	0.03
expectation			
standard of living	0.14	0.1	0.05
life expectancy	0.13	0.08	0.05
rounding			
standard of living	0.14		
life expectancy	0.07		

Table 2: Proportions of item nonresponse, "don't knows" and "no answers" responses for the variables of the incentive experiment

group	% item nr	% don't know	% no answer	rounding to 50 %
standard of living				
no incentive, no request	0.17	0.08	0.09	0.12
request only	0.16	0.10	0.06	0.19
additional incentive	0.14	0.10	0.04	0.14
life expectancy				
no incentive, no request	0.12	0.07	0.05	0.03
request only	0.11	0.07	0.04	0.10
additional incentive	0.13	0.08	0.05	0.07

Table 3: Proportions of item nonresponse, "don't knows" and "no answers", and rounding to 50 % by treatment groups

References

Cannell, Miller, and Oksenberg (1981). Research on interviewing techniques. *Sociological Methodology 12*, 389–437.