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Incentivizing the respondents of the SOM-surveys: Estimating the effects on questionnaire response rates

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ABSTRACT

In the fall of 2016, a large scale experiment on the effects of incentives was embedded in the regional and local SOM-surveys. In this report, we study the effects of incentives (a 30 SEK lottery ticket) on the questionnaire return rate after the first 45 days of fieldwork. Our analysis of the experiment shows that the incentivized respondents – particularly younger age groups – answered the survey much faster than the control group that did not receive any incentives. In the regional SOM-survey, the gross response rate after 45 days of fieldwork was 6.6 percentage points higher in the experiment group than in the control group. The corresponding figure for the local SOM-survey was 6.8 percentage points.

Incentivizing the respondents of the SOM-surveys: Estimating the effects on questionnaire response rates

Introduction

Many surveys today are struggling with the effects of lower response rates. Although it has long been known that incentives may substantially boost the response rates in self-administered mail surveys (Church 1993; Edwards et al 2003; Singer and Ye 2013), Swedish public agencies and academia have largely refrained from using incentives in their large scale surveys. The thinking behind this conservative view is that a large scale use of incentives will make surveys more expensive to carry out because respondents will become increasingly accustomed to receiving incentives. In an international comparison, Swedish surveys in the social sciences have had impressive response rates in the past, even without economic incentives. However, in the last 10-15 years, the response rates have decreased also in Sweden; in the case of the annual SOM-surveys from around 60-65 percent to closer to 50 percent. The primary concern of the SOM Institute is that the response rates among the younger cohorts of the population is plummeting to levels close to 30 percent while the response rates for older cohorts are unaffected This development has for example increased the difference in response rates among age groups over time and for instance, the difference in response rate between 20-24 year olds and 60-69 year olds was 32 percentage points in 2015(Vernersdotter 2016:446).

This report examines the effect of offering the incentive of a lottery ticket to random subsamples of two large-scale surveys of the Swedish population conducted in 2016 by the SOM Institute at the University of Gothenburg. Sufficiently large fractions of the two samples (1,947 out of 7,000 and 1,929 out of 8,000, respectively) were provided a € 3 lottery ticket as a conditional incentive to be paid upon survey completion.

Large scale experiments of the effects of incentives in the context of a SOM survey will inform the SOM-institute of possible changes to the survey design in future studies. This research report constitutes the first part of a series of analyses of the effects of incentives on questionnaire response rates and overall data quality. In a subsequent report, we will also address the effects of incentives on the final response rates, and a set of indicators of data

quality, such as the prevalence of don't know-responses, speeding, straight-lining and break offs. In this report, our focus is on the response rates after 45 days of fieldwork.

The effect of incentives on response rates

The relationship between incentives and response rates has been widely examined during the past decades and is a commonly used indicator of data quality. The findings are clear – the use of incentives paired with multiple contacts leads to an increase in response rates Also, unconditional incentives yield significantly higher response rates than conditional incentives (for an overview, see Singer and Ye 2013). This report will however evaluate the effect of an incentive conditional upon completion on a randomly selected experimental sample.

To any survey distributor, the questionnaire response rate is interesting in itself, since high levels of response rates will have potentially positive effects on the overall costs of field work and shorten the total length of field work. If many more respondents answer a survey on an early stage, the costs of subsequent reminders – by postcards, mail, telephone or text messages – can be reduced, potentially to a point where it may actually balance out the costs of the incentives. In this study, we will deploy a cut-off in 45 days in order to investigate the potential response rate when having a shorter fieldwork period.

Based on previous findings on the effect of incentives on response rates, we first hypothesize that receiving the incentive of a lottery ticket will produce a significant increase in response rates within the first 45 days.

Moreover, some studies also point towards effects on sample composition as a result of different effect sizes among different groups. Direct attempts to deliberately use incentives in order to collect more answers from subgroups that are less prone to respond have, however, only received limited support (Groves et al 2006). A number of studies have demonstrated differential effects on respondents with specific characteristics such as education (Berlin et al. 1992; Petrolia and Bhattacharjee 2009), where the effect of incentives are stronger in groups who are generally less prone to respond: younger people and those with lower education. Singer and Kulka (2002) show in their review that monetary incentives can increase recruitment to online panels in groups who are generally more difficult to reach. A previous study by the Laboratory of Opinion Research (LORE) at the University of Gothenburg also confirms that incentives seem to decrease the age bias in panel recruitment to some extent (Martinsson & Riedel 2014).

As previously noted, the SOM-surveys have witnessed increased differences in the response rates between younger and older age cohorts. Therefore, if our hypothesized main effect of incentives on the response rate holds true, we could hope to see a beneficial effect of the incentives with a comparatively stronger main effect among the younger age cohort that is generally less prone to answer the survey. Despite mixed support in previous research, we hypothesize that the effect of incentives on response rates differ between age groups and that the incentive have a stronger effect on response rates in younger age cohorts.

Data

This study examines the effects of a lottery ticket incentive in two large-scale surveys of the Swedish population. The surveys were conducted by the SOM-institute at the University of Gothenburg. The samples were drawn from population registers and later randomized into two groups, respectively. The experiments were carried out in two distinct large-scale with a total sample size of 15,000 individuals (see table 1).

The two surveys were directed towards two geographically defined areas. Both surveys were postal and included an option to answer the survey online. The local survey (the SOM-survey in Gothenburg) targets inhabitants 16-85 years who live in the city of Gothenburg, while the regional survey (the SOM survey in Western Sweden) targets inhabitants 16-85 years who live in the region of Västra Götaland or in the municipality of Kungsbacka. As Gothenburg not only is a part of, but also is the by far largest city in Västra Götaland, both surveys have a large share of residents in Gothenburg.

The two surveys differ in three aspects. 1) Firstly, the local survey has a more narrow *geographic scope* and target urban citizens who possibly are a more difficult group to reach (Bové 2016). 2) Secondly, the surveys differ in *questionnaire length* where the local survey (9 pages) is considerably shorter than the regional survey (17 pages). This difference might induce an overall higher response rate in the shorter, local survey than in the regional survey. 3) Thirdly, the *design of the field work* differs as regards the use of reminders such as postal reminders, telephone calls and text-reminders. Here, the regional survey is considerably more costly. The biggest difference is the usage of reminders by phone in the regional survey (starting off at field day 22), while no such reminders are deployed in the local survey. The local survey makes greater use of reminders by text messages which were used at up to four occasions for those who did not respond.

The surveys were dispatched by the Swedish postal agency (Postnord) on Friday 30th of September 2016. Both surveys operate with lengthy field periods with the potential for considerable savings and thus reduced overall field work costs if the response rates can increase through other means. Such cuts do however require increased efforts in the beginning of the field period in order to boost response rates at an earlier stage instead. One such possible effort is the introduction of early incentives.

Setting up two incentive experiments

The experiment included the total survey sample (Table 1) with exceptions of those in the total sample under the age of 19. Swedish law prohibits the provision of lottery tickets to respondents below 18 years of age and the experiment was therefore carried out among 19-85 year olds[1]. Leaving out those under 19, the total survey sample was randomly assigned into an incentivized group and control group.

The sample sizes in the regional and local survey respectively are large enough to allow for valid inferences. The sample sizes for the control and experimental groups, respectively, were calculated considering the probability of correctly rejecting the null hypothesis when the null hypothesis is false, expressed as the power of the test. We used power calculations to guide the size of the group that was randomly assigned to the incentive group (the treatment group). Under the assumptions of a medium sized effect (3.5 percentage points, with expected proportions of response rates around .40 after 45 days of fieldwork (based on experiences from previous SOM-surveys), a .05 level of statistical significance, and with a control group of 6,000, the power (π) is .79 for an treatment group size of 2,000. The corresponding figure for the Local SOM-survey (with sample sizes 5,000 and 2,000 for the control group and incentive group respectively) is π=.77.

Table 1. Sample sizes in the experiments

	Control group	Lottery ticket incentive	Total sample size
Regional survey	5,794	1,929	7,723
Local survey	4,837	1,947	6,784

Note: In Sweden, the law prohibits people under the age of 18 to be given, offered or to buy lottery tickets. The experimental sample therefore differs between the total samples, as persons under the

[1] Since the surveys were sent out mid-September, a few of the respondents born 1998 included in the total sample were still to be 18 years of age. In order to avoid confusion, only respondents born 1997 or later were included in the sample experiment.

age of 18 were excluded in the experiment. The total sample in the Regional and Local surveys were 8,000 and 7,000, respectively.

The lottery incentive is of moderate monetary value. The cost of each lottery ticket was 30 SEK (approx. €3), and the cost of sending the physical ticket by mail to the respondents were about 8 SEK (approx €). The type of lottery ticket is of a very familiar brand ("Trisslott") – celebrating its 30 year anniversary in 2016 – and by far the most sold lottery ticket in Sweden. The respondents were instructed to fill in the questionnaire, either postal or web, in order to receive the lottery ticket.

This report aims to evaluate the effects of a lottery incentive on questionnaire response rates among all respondents and among different groups. We hypothesize that there will be a distinct and significant main effect on response rates during the first 45 days of fieldwork. Based on previous research, we also hypothesize that the effect of the treatment is stronger in groups who are generally less prone to respond to surveys such as inner-city residents and younger age groups

As noted, this study focuses on the first 45 days of field work. The cutoff is motivated by a willingness to investigate the potential for future SOM-surveys to operate with a shorter field work period with fewer contact attempts and reminders. An increased response rate in the early stages of the field work may shorten the overall length of fieldwork and the need for costly reminders, and thus balancing out the costs of incentives.

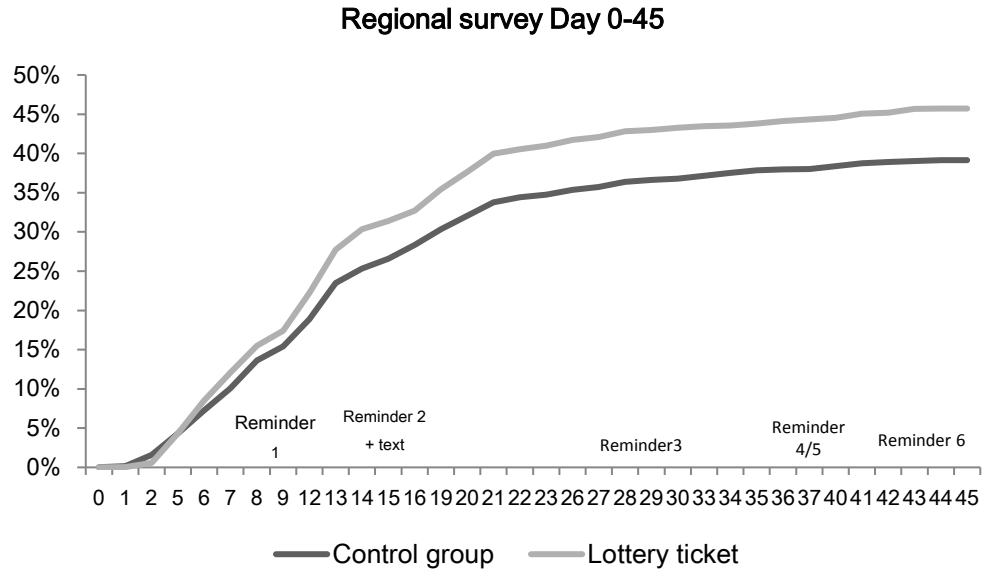
Results

In the result section, we begin with a descriptive report of the inflow of questionnaires for both experiments during the first 45 days of field work. Secondly, we perform the hypothesis tests of the main experimental effects. Thirdly, we test whether the incentive effects seem to have been larger in some groups of the population.

Descriptive results

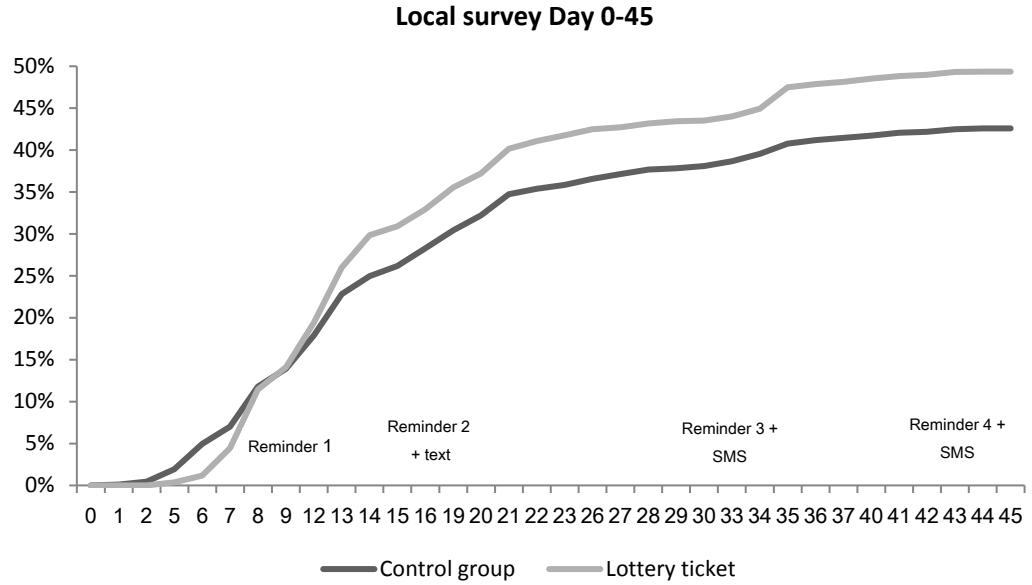
Figure 1 visualizes the day by day return of questionnaires during the first 45 days of field work. As one can note, a large share of the surveys are collected within the first 20 days. The two figures also display the reminders and contact attempts conducted under this 45 day period.

Figure 1. In-flow of questionnaires the first 30 days of field work for incentivized sample and control sample, regional survey (cumulative percent during field work period)



Comment: Entries are cumulative gross return rates for the experiment group that was offered an incentive (n=1,929) and the control group (n=5,794). The figure only displays working days and questionnaires returned during the weekend is reported the on first work day of the week. The figure has marks for contacts during day 0-45. The postal reminders differ by target; R1: all non-responders; R2/R3/R4/R6: Those who indicated a willingness to answer as a result of reminders by phone; R5: Unable to contact by phone, non-responders. In addition, a text message was sent out with a push-to-web. *Source:* The regional SOM-survey in Västra Götaland, 2016.

Figure 2. In-flow of questionnaires the first 30 days of field work for incentivized sample and control sample, local survey (cumulative percent during field work period)



Comment: Entries are cumulative gross return rates for the experiment group that was offered an incentive (n=1 947) and the control group (n=4 837). The figure only display working days and questionnaires returned during the weekend is reported the on first work day of the week. The figure marks up contact attempts during day 0-45. The postal reminders (1-4) are directed towards non-responders. In the case of the local SOM-survey, no phone-reminders were conducted. Three text message reminders were sent out with a push-to-web. *Source:* The Local SOM-survey in Göteborg, 2016.

Hypotheses tests: Main effects

Building on previous findings on the effects of incentives, we hypothesize that receiving an incentive will lead to a significantly higher response rate. Table 2 present the results of two-sided t-tests. In both the regional and local survey, receiving an incentive led to significantly higher response rates, thus confirming the hypothesis. In the local survey, response rates in the incentivized groups was 49.8 percent after 45 days compared to 42.9 percent in the control group (t=5.11, p=0.00).

The regional survey displays a lower response rate overall, approximately 3-4 percentage points lower, but a similar difference in the effect of incentives where the incentivized group had a response rate of 45,9 percent and the control group 39,2 percent (t=5.15, p=0.00).

In both surveys, providing an incentive has a significant positive effect and increases the response rate close to 7 percentage points after 45 days. Such an increase is in proximity to final net response rates in the national and regional SOM-surveys from previous years (Vernersdotter 2016). We can therefore conclude how the use of incentives create response

rates in proximity to other SOM-surveys conducted with considerably lengthier field periods. For instance, the national SOM-surveys carried out for thirty years have a field period spanning for over 120 days. The effect on response rates therefore opens up for a decrease in the number of field days, including costly efforts such as additional reminders.

Table 2. Response rates in local and regional SOM-survey 2016, after 45 days of fieldwork (per cent).

	Lottery ticket	Control group	Δ	t	p
Regional survey	45,9	39,2	+6,7	5,146	0,000
Local survey	49,8	42,9	+6,9	5,114	0,000

Comment: **Results are from the Local and Regional SOM-surveys 2016.**

Differentiating effects

Our second interest lies in whether the effects differ between groups. We therefore begin with a test of the main effects of incentives in three groups: age, sex and residential area. Again, this section only examines the effect of incentives on the return rate after 45 days.

From a two-sided test we can first get an overview of the mean differences in response rates after 45 days. For more detailed analyses, see Appendix 1.

Results from the local survey reveal a 9 percent significant difference in reference to those who are male (t=4.90, p=0.000), and a corresponding 7 percent difference in the regional survey. The mean differences in the group women are somewhat smaller compared to among men (4.2 in regional survey, 6.6 in local survey), albeit also significant.

As for age, both the regional and the local survey reveal significant mean differences within the younger age cohorts (see Appendix 1). In the younger age cohorts (19-29 and 30-49 years of age), there are significantly higher response rates in the incentivized group compared to those who did not receive an incentive. More divergent results emerge from the older age cohorts where 50-64 year olds do not display significant mean differences in the local survey and 65-85 year olds have no significant mean differences in the regional survey.

We also perform a t-test on the mean differences in return rates in different geographic areas in the regional SOM-survey. The analyses comparing geographic areas are only conducted in the Regional survey, since the local survey was conducted in Gothenburg municipality alone. We conclude that those who received an incentive in Gothenburg

municipality and in Western Sweden display significantly higher return rates compared to a control group.

In summary, the t-tests indicate that the incentivized group displays significantly higher return rates among most subpopulations. Males, females, younger age cohorts and both rural and inner-city residents. There were three groups where the use of incentives did not yield significantly higher response rates; those who are 50-64 years old in the local survey, 65-85 year olds in the regional survey and residents of the Gothenburg region ("GR-regionen") in the regional survey.

The younger, the more effective?

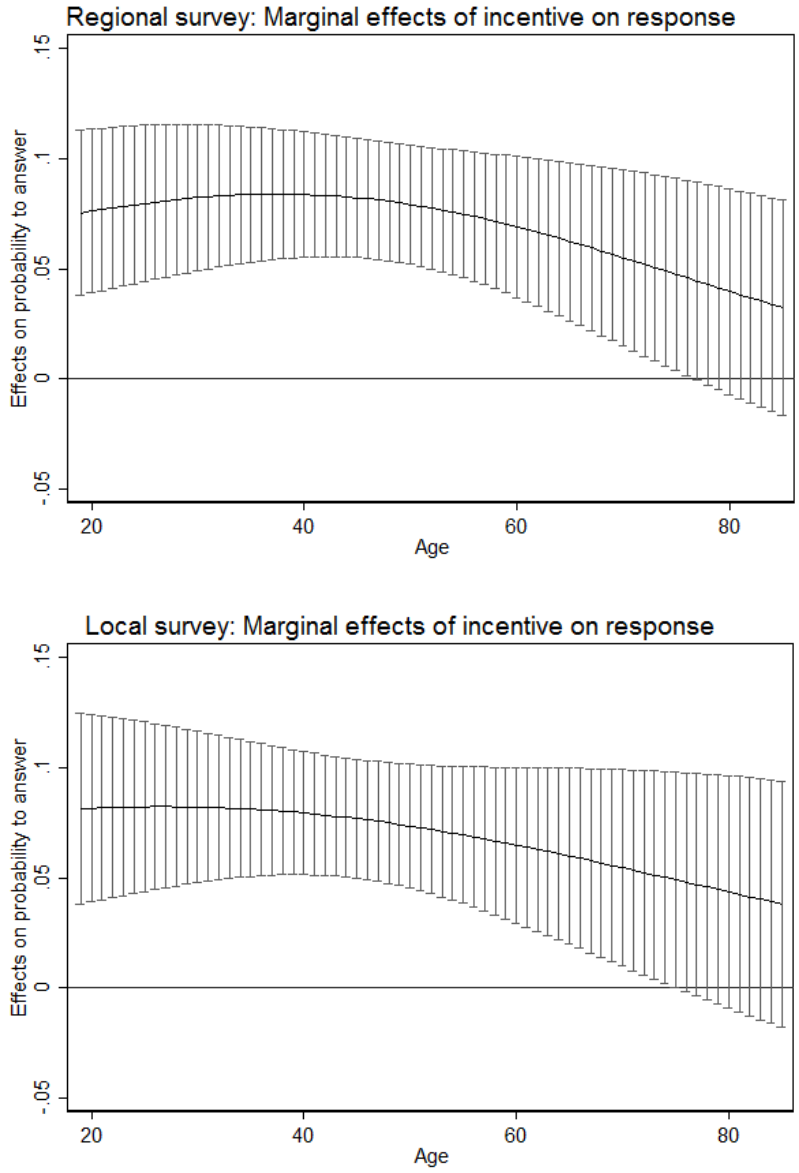
Another area of interest is if the effect size of incentives is different between groups. Below we analyze such differences in differences with a focus on age differences. Over the last decade, age has become the most problematic aspect in terms of representativeness the SOM-surveys. The increasing gap in representativeness is first and foremost the result of the increase in non-response during the same time period (Vernersdotter 2016). A positive function of the incentives, besides an overall increase in response rate, would therefore be if the incentive has a stronger effect in those groups who are harder to reach and where non-response is increasing (e.g. those who are younger). Below, this effect is tested.

We test this idea by means of a logistic regression model in which we estimate the probability to have answered the survey as a function of the incentive and age. In order to estimate if differences between age categories are significant, an interaction term is added based on the age of the respondent (19-29, 30-49, 50-64, 65-85). We then calculate the predicted probability for the outcome 'Answered' (1).[2] The logistic regression reveal that both age and incentives have an effect on response rates. However, the interaction term does not reach statistical significance. Moreover, the results show that for the local and regional survey respectively the null hypothesis is rejected with regard to the younger age cohort (19-29) both not the oldest cohort (65-85). Thus, receiving an incentive increases the probability to answer within the younger age groups but not the oldest. However, the Wald test reveals that the null hypothesis cannot be rejected for the difference in difference. The regional survey (p=0.078) nearly reaches statistical significance in contrast to the local survey (p=0.43).

[2] In our model, we use a measure of respondents' age which is solely based on data from the Swedish population register and not the respondents' self-report of their age.

Finally, the effects of incentives on the probability to answer are estimated by using a continuous age variable (19-85). We enter an interaction term in our logistic regression where the effect of incentive is a function of our continuous age variable. Again, the interaction term does not reach statistical significance in the model. However, the marginal effects reveal a pattern which point towards somewhat non-linear effects. Figure 2 display the plotted estimates of the effect on probability to answer the local and regional surveys respectively.

Figure 2 Marginal effects of incentives in different age groups (logistic coefficients with CIs).



We observe indications of a potential ceiling effect for the oldest age cohort of 75-85 where there is no significant difference between the incentivized groups versus control group. Overall, despite non-significant interactions effects our findings indicate that the use of incentives can have differential effects on different age cohorts where the younger cohorts display higher probabilities to answer when offered an incentive while this is not equally clear for the oldest age cohort.

Summary

Providing incentives are costly, but clearly effective when it comes to improving the return rate of surveys. Our conditional incentive cost about 38 SEK (around €4) including the lottery ticket and the postage cost. However, a faster in-flow of questionnaires may reduce the overall cost because of a shorter field work and fewer rounds of reminders. Costs of printing and distributing mail back questionnaires may be reduced substantially if respondents return their questionnaires faster.

For the operations of the SOM Institute, the potential of incentives might prove important for the calculation of future field work costs. In this study, we found that introducing the incentive of a conditional lottery ticket yielded a significantly higher return rate after 45 field days for two large-scale surveys conducted fall 2016. The difference were 6,7 and 6,9 percentage points respectively. The local survey, which was considerably shorter in lengths, almost reached a 50 percent return rate within 45 days. If we look at previous SOM surveys, 50 percent is within a close reach to previous final response rates. The results of the use of incentives therefore suggest that incentives do have a large potential to considerably shorten lengthy field periods. In the annual cycle of the SOM surveys, this would effectively mean more valuable time for analyzing the data and report findings.

Our second area of interest was the potential heterogeneity in the effects of incentives: differences between groups. Here, somewhat mixed evidence point towards incentives as having differential effect between age groups. Although the difference in differences was not significant when comparing the youngest cohort (19-29) to the oldest (65-85), we could still notice a pattern where the marginal effect decreased with age, particularly above the age of 50. The effect is however not strictly linear, and there seem to be a ceiling effect on the use of incentives when reaching higher age groups. Such differential effects of the use of incentives do have the potential to narrow the previously mentioned gap in representativeness in relation to age. The development in the SOM-surveys are similar to

the general trend: declining response rates reduces the representativeness of those responding.

This is the first report from this study and analyses that are more comprehensive will follow in future reports in order to fully explore the effects of the introduction of incentives in the SOM surveys. A higher overall response rate or a high questionnaire return rate in the SOM surveys are of course welcome, but not at the expense of data quality. A follow-up report from our large scale incentive experiment will therefore focus on the effects of incentives on data quality indicators such as the proportion of don't know-responses, the propensity to respond by web questionnaire, and evidence of speeding, straight-lining and survey break-offs.

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Appendix 1. Effects of incentives in different groups, two-sided t-tests

Table 1 The effect of incentives in different groups (two-sided t-test), regional SOM-survey

Characteristic	Control	Incentive	Δ	T	P	N
Gender						
Male	40,3	49,3	+9.0	4,903	0,000	3 877
Female	38,1	42,4	+4,2	2,346	0,019	3 821
Age						
19–29	18,7	28,2	+9,4	4,031	0,000	1 532
30–49	31,5	39,6	+8,1	3,816	0,000	2 625
50–64	45,2	51,0	+5,8	2,114	0,034	1 805
65–85	62,2	66,8	+4,6	1,730	0,083	1 755
Residential area						
Gothenburg municipality (GM)	37,6	43,8	+6,1	2,658	0,007	2 428
Gothenburg region (GR), not GM	40,7	45,3	+4,5	1,768	0,077	1 926
West Sweden, not GR	39,5	47,6	+8,0	4,138	0,000	3 344

Table 2 The effect of incentives in different groups (two-sided t-test), local SOM-survey

Characteristic	Control	Incentive	Δ	T	p	N
Gender						
Male	45,9	53,2	+7,3	3,802	0,000	3 312
Female	40,0	46,6	+6,6	3,565	0,000	3 408
Age						
19–29	29,7	39,3	+9,6	3,657	0,000	1 554
30–49	36,7	44,3	+7,5	3,539	0,000	2 495
50–64	50,7	55,3	+4,6	1,603	0,109	1 499
65–85	63,3	69,7	+6,4	2,066	0,039	1 172

Svensk titel: Incitament i SOM-undersökningarna: svarsfrekvens efter 45 dagar

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SAMMANFATTNING

Hösten 2016 genomfördes ett experiment med syftet att testa effekterna av att införa incitament i SOM-undersökningen i Göteborg och den västsvenska SOM-undersökningen. Rapporten undersöker effekterna av incitamenten genom att analysera svarsfrekvensen efter 45 dagars fältarbete. Incitamentet bestod av en Trisslott som skickades ut i utbyte mot en ifylld enkät. Analysen visar att gruppen som emottog incitament – särskilt i de yngre ålderskategorierna – svarade på enkäten betydligt snabbare och i högre utsträckning än kontrollgruppen som inte emottog incitament. I den västsvenska SOM-undersökningen var bruttosvarsfrekvensen efter 45 dagar 6.6 procentenheter i experimentgruppen jämfört med kontrollgruppen. I SOM-undersökningen i Göteborg var motsvarande siffra 6.8 procentenheter.

The Laboratory of Opinion Research (LORE) is an academic web survey center located at the Department of Political Science at the University of Gothenburg. LORE was established in 2010 as part of an initiative to strengthen multidisciplinary research on opinion and democracy. The objective of the Laboratory of Opinion Research is to facilitate for social scientists to conduct web survey experiments, collect panel data, and to contribute to methodological development. For more information, please contact us at:

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