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Reassessing incentive effects: Further exploring the role of diversified incentives on persons aged 18-39 and persons born outside the Nordics

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ABSTRACT

Surveys have consistently encountered challenges with low and waning response rates, especially within specific, hard-to-reach demographics. This issue raises concerns about biased data and the possible misinterpretation of survey results. Targeting these hard-to-reach groups with additional monetary incentives might be a cost-effective strategy to boost response rates and reduce overall nonresponse bias. This note presents findings from two randomized experiments focused on two hard-to-reach segments in Sweden: people aged 18-39 and people born outside the Nordics. The experiments revealed that offering higher-value incentives indeed increased response rates without compromising data quality. For individuals aged 18-39, offering a cinema gift card with a retail value of 150 SEK or a grocery shop gift card with a retail value of 75 SEK statistically significantly increased response rates by 4 percentage points compared to offering a lottery scratch ticket with a retail value of 30 SEK ($p < .001$). Similarly, among those born outside the Nordics, offering a café gift card with a retail value of 100 SEK statistically significantly increased the response rate by 6 percentage points compared to offering a lottery scratch ticket with a retail value of 30 SEK ($p < .001$). The analysis also showed that by diversifying incentives to those born outside the Nordics, the overall nonresponse bias was decreased for the full sample. However, similarly diversifying the incentives to those aged 18-39 did not. An interesting finding was that the 75 SEK grocery shop card was as effective as the 150 SEK cinema gift card in improving response rates among 18–39-year-olds. This suggests that diversified incentives indeed may be a cost-effective approach to address declining response rates and improve nonresponse bias. Further exploration into the impact of incentive values on response propensities could be a valuable direction for future research.

INTRODUCTION

Surveys have long faced challenges with decreasing response rates and the consequent enhanced risk of nonresponse bias (Groves, 2006). This decline in response rates, particularly among hard-to-reach segments within survey populations, can skew the data and insights derived from these surveys (Groves, 2006; Groves and Couper, 2012; Groves and Peytcheva, 2008). While numerous studies have examined the effects of nonresponse, there has been less focus on strategies to enhance response rates and on investigating potential heterogeneity of such effects across hard-to-recruit subgroups (Blumberg and Luke, 2007; Groves and Couper, 2012 Groves & Peytcheva, 2008). Offering incentives for survey participation has been recognized as an effective method to boost overall response rates (Singer and Ye, 2013). This approach aligns with theories in social psychology, such as the social exchange theory and leverage-salience theory, suggesting that highlighting participation benefits can lead to higher engagement (Dillman, 2014). Incentives, whether monetary or otherwise, are one such method. Prior research generally supports the idea that incentives elevate response rates (Singer and Ye, 2013). Nonetheless, several previous studies have not been able to evaluate the differing impacts incentive strategies may have across respondent groups, mainly due to insufficient register data on sample individuals, as noted by Singer and Ye (2013). In addition, although incentives of larger values have been found to result in higher response rates, there is still a lack of knowledge as to what degree varying incentive values influence response rates (Mercer et al., 2015), especially among hard-to-reach groups. Two subgroups known to be associated with low response rates are young people and those born outside the native country and countries similar to the native country. It is further confirmed that response rates in these groups have declined in recent years, more so than in other groups leading to the likely growth of nonresponse rates (SOM-institutet, 2023; Lundmark and Backström, 2023).

The two experiments presented in this study follow up on two experiments administered in 2021 that used an incentive strategy aiming to increase response propensities among those aged 18-39 and those born outside the Nordics (Sandelin & Falk, 2023). The study in 2021 found that increasing the incentive from a lottery scratcher ticket (retail value 30

SEK) to a digital gift card of 50 SEK reduced the response rate by 3.8 percentage points among those aged 18-39 and increasing the incentive to a digital gift card the of 99 SEK had no effect on the response rate among those born outside the Nordics (Sandelin & Falk, 2023).

This note presents the results from two experiments conducted in 2022 that targeted the same two subgroups as in the experiments in 2021, those aged 18-39 and those born outside the Nordics, however, different treatment incentives were offered this time. In the experiment targeting people aged 18-39, one treatment group was offered a cinema gift card with a retail value of approximately 150 SEK, whereas the other treatment group was offered a gift card at the largest grocery shop chain in Sweden (*ICA*) with a retail value of 75 SEK. In the experiment targeting people born outside the Nordics, the treatment group was offered a gift card at a known café chain in Sweden (*Espresso House*) with a retail value of 100 SEK. The control groups in both experiments were offered the same type of lottery scratch ticket as the control groups in the experiments conducted in 2021 (*Trisslott*). The gift cards, as well as the lottery scratch ticket, were sent in physical form to the respondents' addresses, compared to the experiments in 2021 where the digital gift card was sent out by email.

The aim of the study remained the same as in 2021: to investigate cost-effective incentive strategies to boost response propensities and reduce nonresponse bias while not compromising data quality among two subgroups with difficulties engaging in survey participation.

HYPOTHESIS

Five hypotheses were assessed:

RESPONSE RATES

H1a: Sample persons aged 18-39 offered the higher value monetary incentives may be more likely to complete the questionnaire than sample persons aged 18-39 years who are offered the lower value lottery scratcher incentive.

H1b: Sample persons not born in the Nordics who are offered the higher value monetary incentive may be more likely to complete the questionnaire than sample persons not born in the Nordics who are offered the lower value lottery scratcher incentive.

NONRESPONSE BIAS

H2a: Respondents may be more similar to nonrespondents when individuals aged 18-39 are offered the higher value monetary incentives than when they are offered the lower value lottery scratcher incentive.

H2b: Respondents may be more similar to nonrespondents when individuals born outside the Nordics are offered the higher value monetary incentives than when they are offered the lower value lottery scratcher incentive.

DATA QUALITY

Larger incentives might lead to poorer data quality, as some respondents may rush through the questionnaire to receive the higher-value incentive more quickly.

H3a: Sample persons aged 18-39 who are offered the higher value monetary incentives may produce worse data quality than individuals aged 18-39 who are offered the lower value lottery scratcher incentive.

H3b: Sample persons born outside the Nordic who are offered the higher value monetary incentive may produce worse data quality than individuals born outside the Nordic who are offered the lower value lottery scratcher incentive.

EXPLORATORY HYPOTHESES

In addition to testing these hypotheses, several preregistered exploratory hypotheses less grounded in established theory were assessed, specifically focusing on assessing potential heterogeneity of the incentive effects across sex, age, and birth country. The subcategory sex was not part of the preregistered analysis.

METHODS AND MATERIALS

PREREGISTRATION

The hypotheses, procedure, exclusion criteria, and analysis plan were preregistered before data collection had completed and prior to analyses. The preregistrations can be found at https://osf.io/9btd4/ and https://osf.io/tekcm/.

SAMPLE

Two samples were invited. The first sample was administered in the experiment targeting individuals aged 18-39 and consisted of three subsamples. The first sub-sample was a random sample of individuals 16-90 years old registered by the Swedish Tax Authority as residing in Sweden. Since Swedish law prohibits sending lottery tickets to citizens under 18 years, this left 9,071 individuals 18-39 years to participate in the experiment. The second sub-sample was a random sample of individuals 16-90 years old registered by the Swedish Tax Authority as residing in the West Region of Sweden. Among these, 2,133 were between 18 and 39 years old and included in the experiment. The third sub-sample was a random sample of individuals registered by the Swedish Tax Authority as residing in the Värmland Region of Sweden. Among these, 1,867 were between 18 and 39 years old and included in the experiment. The second sample was administered in the experiment targeting persons born outside the Nordics and consisted of 9,000 individuals 16-90 years old, who were randomly selected as registered by the Swedish Tax Authority as residing in the city of Gothenburg. Among these were 2,648 inhabitants born outside the Nordics and over the age of 18. See Tables 1 and 2 for an overview of the groups. All samples were drawn on August 9, 2022.

The surveys were administrated by the SOM Institute at the University of Gothenburg. All samples were examined prior to administration to not contain the same individual twice. If that occurred, other randomly selected individuals replaced those individuals. Analyses were conducted on the two samples separately.

PROCEDURE

Prior to being invited to complete the questionnaire, each sample person in the experiment among 18-39 years old was randomly assigned to one of three groups, and those in the born outside the Nordics experiment to one of two groups. Numbers for the randomizations of the samples were extracted from random.org. In the experiment among individuals aged 18-39 years old, one group was offered a cinema gift card incentive with a retail value of approximately 150 SEK (treatment group), one group was offered a grocery shop gift card incentive with a retail value of 75 SEK (treatment group) for a grocery chain, and one group was offered a lottery scratcher incentive with a retail value of 30 SEK (control group). The grocery gift card was valid in one of Sweden's largest grocery chains (*ICA*) with about 1,300 stores. There is at least one store in 285 out of Sweden's 290 municipalities. The cinema ticket was valid at Sweden's largest cinema chain (*Filmstaden*, *Svenska Bio*, and *Cinemascenen*). In the born outside the Nordics experiment, one group was offered a café gift card incentive with a retail value of 100 SEK (treatment group), and one group was offered a lottery scratcher incentive with a retail value of 30 SEK (control group). The café gift card was valid in a café chain (*Espresso House*) with multiple franchises throughout the city. The lottery incentive was a scratcher ticket, a so-called *Trisslott*, a well-known and the most sold lottery ticket one in Sweden. All incentives were sent to respondents by mail together with a letter, thanking them for participating in the survey.

The procedure differed slightly between the two experiments. In the first invitation, the full sample of the born outside the Nordics experiment was offered to complete the questionnaire only by an online self-administrated questionnaire. In the experiment among persons aged 18-39, two-thirds of all the sample persons in the national and the West regional survey, and all the sample persons in the Värmland regional survey were offered to complete the questionnaire either through the self-administered paper-and-pencil questionnaire or by the online self-administrated questionnaire in the first invitation, whereas the remaining third of all sample persons in the national and the West regional survey were offered to complete the questionnaire only by an online self-administrated questionnaire.

All sample persons were sent a pre-notification by postcard one week prior to the first invitation. In the first invitation, sample persons were either offered to complete the

questionnaire through the self-administered paper-and-pencil questionnaire or by the online self-administrated questionnaire or were only offered to complete the questionnaire by an online self-administrated questionnaire (for more information, see previous paragraph). Nine days after the first invitation, all sample persons received a postcard with an envelope in which the person was thanked for their participation and reminded to participate if not yet done so. The postcard included instructions on how to respond to the online self-administrated questionnaire. Sample persons who had not yet submitted their questionnaire or had refused 17 days after the first invitation received a text message on their cell phone, reminding them to participate.[1] The text message included a link to the online questionnaire. Sample persons who had not submitted her or his questionnaire 28 days after the first invitation were sent a mailed reminder to complete the questionnaire either through the self-administrated paper-and-pencil questionnaire or by the online self-administrated questionnaire.[2] All mailed out letters and sent out text messages containing information about the incentives, the type of incentive (cinema gift card or grocery gift card or café gift card or lottery), and (in the case of grocery gift card and café gift card) the amount of the incentive (75 SEK and 100 SEK respectively).

Sample persons who had not submitted their questionnaire or had not refused to participate received four mailed reminders with an offer to complete the questionnaire either through a paper-and-pencil questionnaire or by the online questionnaire, a postcard included instructions on how to respond to the online self-administrated questionnaire, and four text messages including a link to the online questionnaire sent to their cell phone (i.e., nine reminders in total).

[1] Individuals who refused to respond either informed the SOM Institute this by email or telephone, or by clicking on a refuse link in text message two, three or four.

[2] The postal reminders included the survey, an information letter, and a return envelope.

Table 1. *Overview of experimental groups persons aged 18-39.*

		Persons aged 18-39		
		Survey		
		The National survey	**The West regional survey**	**The Värmland regional survey**
Incentive types and amounts	Conditional grocery shop gift card (retail value 75 SEK)	Group 1 *n* = 3,020	Group 1 *n* = 710	Group 1 *n* = 589
	Conditional cinema gift card (retail value appr. 150 SEK)	Group 2 *n* = 3,079	Group 2 *n* = 704	Group 2 *n* = 661
	Conditional lottery incentive (retail value 30 SEK)	Group 3 *n* = 2,972	Group 3 *n* = 719	Group 3 *n* = 617

Table 2. *Overview of experimental groups persons born outside the Nordics.*

	Persons born outside the Nordics 18-90 years	
Incentive types and amounts	Conditional café gift card incentive (retail value 100 SEK)	Group 1 *n* = 1,319
	Conditional lottery incentive (retail value 30 SEK)	Group 2 *n* = 1,329

MEASURES AND ANALYSIS PLAN

RESPONSE RATES

To compare response rates between the groups, Response Rate 1 (RR1) was estimated according to the guidelines of the American Association for Public Opinion Research (AAPOR, 2023). To assess the response rates, the parameters of OLS regression equations projected the difference in RR1 between the treatment and control groups.

To investigate the exploratory hypothesis on response rates, OLS regression equations predicted the response rate with the incentive variables in each experiment, and the interactions between the subgroup independent variables and the incentive variables

respectively. The subgroups estimated in the experiment targeting those aged 18-39 were sex, age cohort (18-24, 25-29, and 30-39), and immigrant status (born in the Nordics, born outside the Nordics but in Europe, and born outside Europe). In the experiment targeting those born outside the Nordics, the same subgroups were estimated however with different coding (age cohort: 18-29, 30-39, 40-49, 50-64, 65-74, and 75-90, (immigrant status: born outside the Nordics but in Europe, born outside Europe).

NONRESPONSE BIAS

To investigate the nonresponse bias, representativity indicators (R-indicators) were computed using the R-code provided on the web page of Representativity Indicators for Survey Quality project. The R-indicators were based on the standard deviation of probabilities of responses of units. In the models, nonresponse bias was estimated based on sex, age cohort, marital status, and immigrant status.

The R-indicators were estimated of the full samples in each experiment including all sample persons in each survey.[3] The advantage of estimating R-indicators with the full samples was to grasp how the overall nonresponse bias was affected by offering higher valued incentives to only the targeted subgroups.

In the experiment among persons aged 18-39 the R-indicator was estimated using a model with the variables sex (female, male), age cohort (18-29, 30-39, 40-49, 50-64, 65-74, 75-90), marital status (married, not married) and immigrant status (born in the Nordics, born outside the Nordics but inside Europe, born outside Europe).[4] The R-indicator was estimated once excluding sample persons aged 18-39 and assigned the grocery shop gift card or the lottery scratch ticket (to evaluate the effect of the cinema gift card on the full sample), once excluding sample persons aged 18-39 and assigned the cinema gift card or the lottery scratch ticket (to evaluate the effect of the grocery shop gift card), and once

[3] 25,484 in the national survey, 5,816 in the West Regional Survey, 5,841 in the Värmland regional survey and 8,766 in the Gothenburg survey.

[4] The coding of the variable immigrant status used in this note (born in the Nordics, born outside the Nordics but inside Europe, born outside Europe) differs from the preregistered coding (born in the Nordics, born outside the Nordics).

excluding sample persons aged 18-39 and assigned the cinema gift card or the grocery shop gift card (to evaluate the effect of the lottery scratch ticket).

In the experiment among persons born outside the Nordics, the R-indicator was estimated using the same model as in the experiment among persons aged 18-39. The R-indicator was estimated once excluding sample persons not born in the Nordics and assigned the lottery scratch ticket (to evaluate the effect of the café gift card) and once excluding sample persons not born in the Nordics and assigned the café gift card (to evaluate the effect of the lottery scratch ticket). The higher the value of the R-indicators, the less nonresponse bias.

DATA QUALITY

Data quality was assessed based on two concepts, *item nonresponse* and *concurrent validity*. Sample persons who answered at least one question were included in the estimations of both concepts.

Item nonresponse: This indicator measured the proportion of questions a sample person chose not to answer. An answer was considered missing if a specific question was left without a response. Sample persons who responded to at least one question were included in the estimations. The parameters of OLS regression equations predicted *item nonresponse* with each incentive variable.

Concurrent validity: This metric assessed the relationship between three criterion variables with three target variables each following equation 1. The three indicator pairs were selected due to their recognized theoretical correlation. OLS regression models were used to determine if there was a statistically significant difference in the expected correlation between the different incentive groups.

Eq. 1. yi Criterion item = β1 Target item + β2 Experimental treatment dummy +

β12 Target item*Experimental treatment dummy + ϵ

RESULTS

RESPONSE RATES

As expected, offering monetary incentives of higher value than lottery scratcher ticket incentives increased response propensities among 18-39-year-olds. The response rate among sample persons offered the cinema gift card was 32.8 percent, 33.1 percent among sample persons offered the grocery shop gift card, whereas it was 29.0 among the sample persons offered the lottery scratcher ticket (see Table 3).

Table 3. *Response Rate (RR1) in the 18-39 years old experiment.*

	Response rate	*n*	Standard error	95% CI lower	95% CI higher
Cinema gift card (retail value 149 SEK)	32.8%	4,444	0,01	31.4%	34.2%
Grocery shop gift card (retail value 75 SEK)	33.1%	4,319	0,01	31.7%	34.6%
Lottery scratcher ticket (retail value 30 SEK)	29.0%	4,308	0,01	27.7%	30.4%

Moreover, sample persons aged 18-39 offered any of the larger value incentives were statistically significantly more likely to complete the questionnaire ($b_{cinema/grocery}$ = 0.04, SE = 0.01, p < .001) than sample persons ages 18-39 who were offered the lower value incentive (see Table 4). The results in Table 4 also showed that the cinema gift card and the grocery shop gift card respectively yielded higher response rates than the lottery scratcher ticket (b_{cinema} = 0.04, SE = 0.01, p < .001) ($b_{grocery}$= 0.04, SE = 0.01, p < .001) in both cases. However, offering the cinema gift card, compared to the grocery shop gift card, did not affect the response rate (b_{cinema}= 0.00, SE = 0.01, p = .75).

Table 4. *Effect of different incentives on Response Rate (RR1) in the 18-39 years old experiment (OLS regression coefficients).*

	Completed the questionnaire			
Gift cards (reference: Lottery scratcher ticket)	0.04***			
	(0.01)			
Cinema gift card (reference: Lottery scratcher ticket)		0.04***		
		(0.01)		
Grocery shop gift card (reference: Lottery scratcher ticket)			0.04***	
			(0.01)	
Cinema gift card (reference: Grocery shop gift card)				-0.00
				(0.01)
Constant	0.29***	0.29***	0.29***	0.33***
	(0.01)	(0.01)	(0.01)	(0.01)
Observations	13,070	8,751	8,627	8,762
R^2	0.00	0.00	0.00	0.00

***Note*. Standard errors in parentheses.**

$^{+}p < 0.1$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Furthermore, the higher value incentives did not have a greater impact among males and younger sample persons. However, sample persons born outside Europe who were offered any of the cinema or grocery shop gift card incentives were more likely to submit the questionnaire than sample persons born in Europe but outside the Nordics ($b_{cinema/grocery}$= 0.06, SE = 0.03, p = .08) (see Appendix, Table A1).

In the experiment among those born outside the Nordics, the results of the higher value incentive were also in line with the expectations. Sample persons who were offered a café gift card incentive were more likely to complete the questionnaire than those who were offered the lottery scratcher incentive. The response rate among sample persons who were offered the café gift card was 28.3 percent, whereas 22.5 percent (see Table 5) completed the questionnaire among the sample persons who were offered the lottery scratcher ticket, a statistically significant difference ($b_{\text{café gift card}}$ = 0.06, SE = 0.02, p < .01) (see Table 6).

Table 5. *Response Rate (RR1) in the born outside the Nordics subgroup experiment (standard error, confidence interval).*

	Response rate	*n*	Standard error	95% CI lower	95% CI higher
Café gift card (retail value 100 SEK)	28.3%	1,319	0,01	25.9%	30.8%
Lottery scratcher ticket (retail value 30 SEK)	22.5%	1,329	0,01	20.3%	24.8%

Moreover, further analysis showed that women born outside the Nordics who were offered the café gift card were more likely to complete the questionnaire than men born outside the Nordics who were offered the same incentive (see Table 6, also illustrated in Figure 1). In fact, the results showed the difference in response rate between women and men among those offered the café gift card was as large as 7 percentage points compared to the difference of women and men among those offered the lottery scratch ticket, a statistically significant interaction effect ($b_{café\ gift\ card * female} = 0.07$, $SE = 0.03$, $p = .05$).

Additionally, the hypothesis that younger cohorts were more likely to complete the questionnaire when offered the café gift card incentive compared to older cohorts was confirmed. Among those born outside the Nordics, the age cohorts 18-29 ($b_{café\ gift\ card * 18\text{-}29} = 0.12$, $SE = 0.05$, $p = .03$), 39-39 ($b_{café\ gift\ card * 30\text{-}39} = 0.11$, $SE = 0.05$, $p = .02$), but also 50-64 ($b_{café\ gift\ card * 50\text{-}64} = 0.13$, $SE = 0.05$, $p = .01$) showed statistically significant positive effects on the response rate compared to those aged 40-49 (see Table 6). This means that sample persons younger than 40 and 50-64 years old who were offered the café gift card had an increased response propensity compared to sample persons aged 40-49 who were offered the same incentive. No statistical interaction on immigrant status was detected.

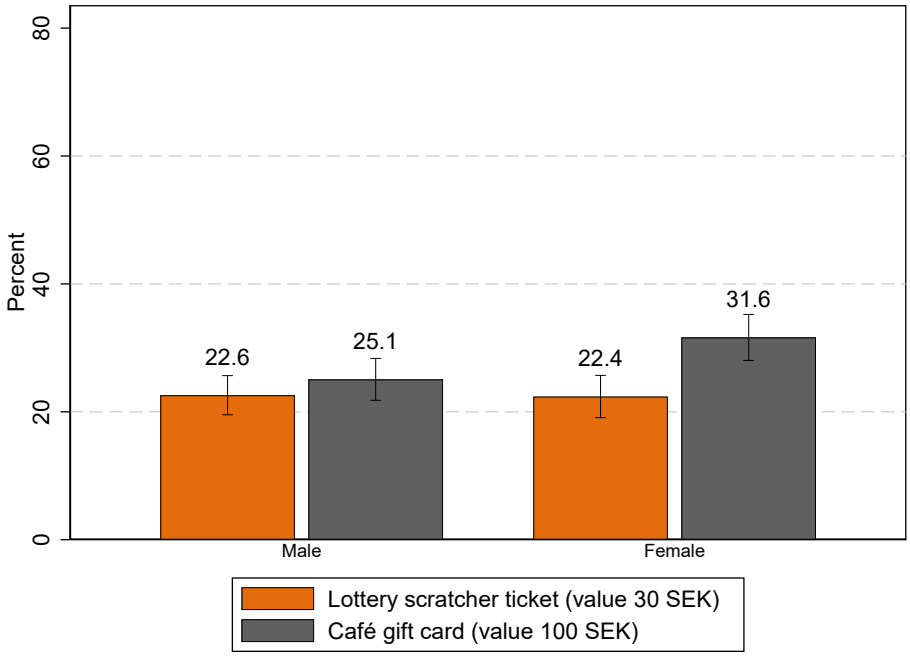
Table 6. *Effects of the monetary incentive on Response Rate in the born outside the Nordics subgroup experiment (Proportions, Difference of Proportions)*

	Completed the questionnaire			
	Base model	**Sex**	**Age**	**Immigrant status**
Café gift card (value 100 SEK) (reference: Lottery scratcher ticket)	0.06***	0.02	-0.03	0.08**
	(0.02)	(0.02)	(0.04)	(0.03)
Café gift card (value 100 SEK) * Female		0.07*		
		(0.03)		
Café gift card (value 100 SEK) * Age: 18-29 (reference: 40-49)			0.12*	
			(0.05)	
Café gift card (value 100 SEK) * Age: 30-39 (reference: 40-49)			0.11*	
			(0.05)	
Café gift card (value 100 SEK) * Age: 50-64 (reference: 40-49)			0.13*	
			(0.05)	
Café gift card (value 100 SEK) * Age: 65-74 (reference: 40-49)			0.07	
			(0.07)	
Café gift card (value 100 SEK) * Age: 75-90 (reference: 40-49)			0.01	
			(0.09)	
Café gift card (value 100 SEK) * Outside Europe (reference: Inside Europe outside the Nordics)				-0.04
				(0.04)
Constant	0.22***	0.23***	0.26***	0.29***
	(0.01)	(0.02)	(0.03)	(0.02)
Observations	2,648	2,648	2,648	2,648
R^2	0.00	0.01	0.03	0.02

Note. Standard errors in parentheses.

$^{+}p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Figure 1. *Effects of the café gift card incentive on response rate in the born outside the Nordics subgroup experiment over sample persons' sex (percentage).*



NONRESPONSE BIAS

Offering diversified incentives – a cinema gift card or a grocery shop gift card to sample persons aged 18-39 years, and a lottery scratch ticket to those aged 40-90 years – would not impact the nonresponse bias compared to providing a lottery scratch ticket to the entire sample group aged 18-90 years. The three R-indicators of the full samples when keeping only those incentive groups evaluated were not statistically significantly different from one another since the confidence interval overlap (see Table 7). Hence, an increase in response rate of 4 percentage points did not seem enough to decrease nonresponse bias for the overall sample. As the OLS interaction predictions above highlighted, not more than a marginal effect in migrant status of improving response rates among 18-39-year-olds was detected, which may explain the lack of effect of the overall nonresponse bias.

Table 7. *R-indicators and 95% CI with cinema gift card and grocery shop gift card to respondents aged 18-39 and lottery scratch ticket to remaining respondents versus lottery scratch ticket to all respondents.*

	Cinema Gift Card to respondents aged 18-39[1]	Grocery shop gift card to respondents aged 18-39[1]	Lottery Scratch Ticket to all respondents
R-indicator	0.71 (0.01)	0.71 (0.01)	0.70 (0.01)
Confidence interval	[0.71, 0.72]	[0.71, 0.72]	[0.70, 0.71]

Note. **The R-indicators are estimated on a model with sex, age, marital status, and immigrant status as independent variables. Standard errors in parenthesis. [1]The other respondents in the sample would receive the lottery scratch ticket.**

As opposed to the experiment among those aged 18-39, nonresponse bias was mitigated by offering persons born outside the Nordics the café gift cards and the remaining sample lottery scratch tickets compared to offering the full sample lottery scratch tickets (see Table 8). The R-indicators for the full sample groups were analysed in two separate scenarios: one where non-Nordic-born sample persons were offered a cafe gift card and the rest a lottery scratcher ticket, and another where the entire sample was offered the lottery scratcher ticket. The R-indicators showed statistically significant differences, as indicated by the non-overlapping confidence intervals. Hence a large response rate difference of 6 percentage points combined with higher response rates among the younger cohorts are probably the explanation behind these results.

Table 8. *R-indicators and 95% CI with café gift card to respondents born outside the Nordics and lottery scratch ticket to the remaining respondents versus lottery scratch tickets to all respondents.*

	Café Gift Card to respondents born outside the Nordics[1]	Lottery Scratch Ticket to all respondents
R-indicator	0.72 (0.01)	0.68 (0.01)
Confidence interval	[0.71, 0.73]	[0.68, 0.69]

Note. **The R-indicators are estimated on a model with sex, age, marital status, and immigrant status as independent variables. Standard errors in parenthesis. [1]The other respondents in the sample would receive the lottery scratch ticket.**

DATA QUALITY

ITEM NONRESPONSE

None of the higher value incentives were linked to a reduction of item nonresponse. The OLS regressions predicted that the proportion of missing answers was not statistically significantly different between the incentives of higher value in the experiment among those aged 18-39 (b_{cinema}= -.00, SE = 0.01, p = .81), ($b_{groceryshop}$= -.01, SE = 0.01 p = .11) or in the experiment among those born outside the Nordics ($b_{café}$= -.01, SE = 0.15 p = .68) compared to the lottery scratch ticket (see Table 9).

Table 9. ***Effects of item nonresponse in the experiment among persons aged 18-39 and in the experiment among persons born outside the Nordics (OLS regression coefficients)***

In the experiment among persons aged 18-39	**Completed at least one question-item**
Cinema gift card (ref: lottery scratch ticket)	-.00 (0.01)
Grocery shop gift card (ref: lottery scratch ticket)	-.01 (0.01)
Constant	.93*** (.00)
Observations	4,493
R^2	.00

In the experiment among persons born outside the Nordics	**Completed at least one question-item**
Café gift card (ref: lottery scratch ticket)	-.01 (0.15)
Constant	.88*** (.01)
Observations	805
R^2	.00

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

CONCURRENT VALIDITY

Concurrent validity was not found when any of the cinema gift card, grocery shop gift card or café gift card were offered compared to the lottery scratch ticket in any of the three pairs of criterion and target variables. The relationship between the criterion variable trust and the target variable satisfaction with democracy was not statistically significantly different among respondents receiving the cinema gift card ($b_{cinema*democracy}$= .04, SE = 0.03, p = .21), or

the grocery shop gift card ($b_{groceryshop*democracy}$= .00, *SE* = 0.03 p = .93), in the experiment among those aged 18-39 or among respondents receiving the café gift card ($b_{cafe*democracy}$= .05, *SE* = 0.06, p = .41), in the experiment targeting those born outside the Nordics, compared to the lottery scratch ticket. Nor in the second pair of criterion and target variables, income and life satisfaction, the relationship was statistically significantly different among respondents receiving the cinema gift card ($b_{cinema*lifesat}$= .00, *SE* = 0.04, p = .89), or the grocery shop gift card ($b_{grocery*lifesat}$= .00, *SE* = 0.04, p = .94), in the experiment among those aged 18-39 or among respondents receiving the café gift card ($b_{cafe*lifesat}$= -.05, *SE* = 0.09, p = .59), in the experiment targeting those born outside the Nordics, compared to the lottery scratch ticket. Lastly, the relationship between the criterion variable education and target variable political interest generated any statistically significantly difference among respondents receiving the cinema gift card ($b_{cinema*polint}$= -.02, *SE* = 0.04, p = .66), or the grocery shop gift card ($b_{groceryshop*polint}$= -.02, *SE* = 0.04, p = .63) in the experiment among those aged 18-39 or among respondents receiving the café gift card ($b_{cafe*polint}$= .01, *SE* = 0.08, p = .91), in the experiment targeting those born outside the Nordics, compared to the lottery scratch ticket. All tables with the results of concurrent validity are to be found in the Appendix.

CONCLUSION

Offering higher value monetary incentives to hard-to-reach subgroups increased response rates substantially compared to offering lottery scratch tickets (*Trisslotter, retail value 30 SEK*). In an experiment targeting those aged 18-39, a cinema gift card and a grocery shop gift card incentives generated a 4 percentage points higher response rate than the lottery scratcher incentive (32.8% and 33.1% vs. 29.0%), and in the experiment among those born outside the Nordics, a café gift card increased response rate by 6 percentage points compared to the lottery scratcher incentive (28.3% vs. 22.5%). However, the increase in response rate among those born outside the Nordics was mostly driven by female respondents becoming especially likely to complete the questionnaire when offered a café gift card. Moreover, the findings showed that the overall nonresponse bias (based on sex, age, marital status, and immigrant status) was decreased when implementing diversified incentives on the group born outside the Nordics. The increased response rate among the

group aged 18-39 did, however, not decrease nonresponse bias of the overall sample. The reason the nonresponse bias was mitigated with diversified incentives to those born outside the Nordics was probably the combination of a relatively large difference in response rate between the experimental groups and that the café gift card incentive was more appealing to the age cohorts 18—29 and 30—39, age groups with low response rate compared to older cohorts. Even though the gift card had a stronger effect among women (a group already more likely to complete questionnaires), nonresponse bias was reduced due to increasing the response rate among those not born in the Nordics (i.e., those that were treated diversely in the experiment). Why the nonresponse bias was not affected in the experiment targeting those aged 18-39 may be explained by a too small difference in the response rate, and that other subgroups within those aged 18-39 were not more affected than others. Only a weak positive effect on response rate among those aged 18-39 and born outside Europe compared to those born in Europe but outside the Nordic was found.

Hence, it appears that offering incentives in terms of relatively high value, usable, and easy to assess was positively associated with improved response propensity among the targeted subgroups. One main concern when offering conditional incentives in surveys' is the risk of reduced data quality as sample persons may become too eager to send in the questionnaire and thereby complete it with less diligence. However, no adverse impact on data quality was found for the higher value incentives compared to the lottery scratcher ticket incentive group.

This study aimed to follow up on two experiments that were conducted in 2021, targeting the same sub-groups (Sandelin and Falk, 2022) but where higher valued incentives (digital gift cards worth 50 SEK and 99 SEK respectively) did not increase response rates. That the earlier study failed to increase response rates may have been due to that the gift card was digital and required the respondent to report their email address at the end of the questionnaire. Offering an easier-to-redeem higher valued physical gift card instead of a difficult digital one seemed to properly incentivize questionnaire completion.

The main conclusion from this study is that diversifying the incentives for targeted subgroups associated with low and declining response rates may be an effective way of

generating higher response propensity and improving nonresponse bias for the full sample. However, factors such as the type, value, accessibility, and how the process is administrated seem to play a key role in achieving the sought-after results. Hence, elaborating on the types and values of the incentives with the effect on response propensity and nonresponse bias would be of great contribution.

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APPENDIX

Table A1. *Effect of different incentives on Response Rate (RR1) in the 18-39 subgroup experiment (OLS regression coefficients).*

	Completed the questionnaire					
	Base model	**Sex**	**Age**	**Immigrant status 1**	**Immigrant status 2**	**Immigrant status 3**
Gift cards (reference: Lottery scratcher ticket)	0.04*** (0.01)	0.04** (0.01)	0.04** (0.02)	-0.01 (0.03)	0.04*** (0.01)	0.04*** (0.01)
Gift cards * Female		0.01 (0.02)				
Gift cards * 25-29 (reference: 18-24)			0.00 (0.02)			
Gift cards * 30-39 (reference: 18-24)			-0.01 (0.02)			
Gift cards * Outside Europe (reference: Inside Europe outside the Nordics)				0.06+ (0.03)		
Gift cards * Outside Europe (reference: In the Nordics)					-0.00 (0.02)	
Gift cards * Inside Europe outside the Nordics (reference: In the Nordics)						-0.06 (0.04)
Constant	0.29*** (0.01)	0.26*** (0.01)	0.24*** (0.01)	0.24*** (0.02)	0.34*** (0.01)	0.34*** (0.01)
Observations	13,070	13,070	13,070	3,189	12,212	10,739
R^2	0.00	0.01	0.01	0.02	0.04	0.01

***Note*. Standard errors in parentheses.**

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A2. *Effects of concurrent validity on the target question satisfaction with democracy with the criterion question trust, in the experiment among persons aged 18-39 (OLS regression coefficients).*

	Completed at least one question-item
	Trust
Satisfaction with democracy	-.25***(.02)
Cinema gift card	-.03+ (.02)
Grocery shop gift card	-.01 (.02)
Cinema gift card * Satisfaction with democracy	.04 (.03)
Grocery shop gift card * Satisfaction with democracy	.00 (.03)
Constant	.71***(.01)
Observations	3,720
R^2	.09

Note. Satisfaction with democracy was measured with the question: "Generally speaking, how satisfied are you with the way democracy works in Sweden?" with four response options ranging from "Not at all satisfied" (coded 0) and "Very satisfied" (coded 1). Trust is measured with the question "In your opinion, to what extent can people generally be trusted?" with eleven response options with end-points labeled "People cannot be trusted in general" (coded 0) and "People can be trusted in general" (coded 1).

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A3. *Effects of concurrent validity on the target question life satisfaction with the criterion question income in the experiment among persons aged 18-39 (OLS regression coefficients).*

	Completed at least one question-item
	Income
Life satisfaction	-.20***(.03)
Cinema gift card	-.02 (.01)
Grocery shop gift card	-.02 (.01)
Cinema gift card * Life satisfaction	-.00 (.04)
Grocery shop gift card * Life satisfaction	.00 (.04)
Constant	.38***(.01)
Observations	4,070
R^2	.05

Note. Life satisfaction was measured with the question: "As a whole, how satisfied are you with the life you live?" with four response options ranging from "Not at all satisfied" (coded 0) and "Very satisfied" (coded 1). Income is measured with the question "What Is your own normal monthly income before taxes (including pension, student grants, allowances, etc.)?" with sixteen response options ranging from "Less than SEK 10 000" (coded 0) and "More than SEK 75 000" (coded 1).

$^{+}p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A4. *Effects of concurrent validity on the target question political interest with the criterion question education in the experiment among persons aged 18-39 (OLS regression coefficients).*

	Completed at least one question-item
	Education
Political interest	-.16***(.03)
Cinema gift card	-.00 (.02)
Grocery shop gift card	-.01 (.02)
Cinema gift card * Political interest	-.02 (.04)
Grocery shop gift card * Political interest	-.02 (.04)
Constant	.67***(.01)
Observations	4,144
R^2	.04

Note. Political interest was measured with the question: "How interested are you in politics in general? with four response options ranging from "Not at all interested" (coded 0) and "Very interested" (coded 1). Education is measured with the question "What Is your highest level of education?" with ten response options ranging from "Primary/lower secondary education or equivalent, less than 9 years" (coded 0) and "Postgraduate education" (coded 1).

$^{+}p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A5. *Effects of concurrent validity on the target question satisfaction with democracy with the criterion question trust, in the experiment among persons born outside the Nordics (OLS regression coefficients).*

	Completed at least one question-item
	Trust
Satisfaction with democracy	-.37***(.05)
Café gift card	-.03(.03)
Café gift card * Satisfaction with democracy	.05(.06)
Constant	.70***(.02)
Observations	695
R^2	.08

Note. Satisfaction with democracy was measured with the question: "Generally speaking, how satisfied are you with the way democracy works in Sweden?" with four response options ranging from "Not at all satisfied" (coded 0) and "Very satisfied" (coded 1). Trust is measured with the question "In your opinion, to what extent can people generally be trusted?" with eleven response options with end-points labeled "People cannot be trusted in general" (coded 0) and "People can be trusted in general" (coded 1).

$^{+}p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A6. *Effects of concurrent validity on the target question life satisfaction with the criterion question income in the experiment among persons born outside the Nordics (OLS regression coefficients).*

	Completed at least one question-item
	Income
Life satisfaction	-.21**(.06)
Café gift card	-.04(.03)
Café gift card * Life satisfaction	-.05(.09)
Constant	.41***(.02)
Observations	676
R^2	.05

Note. Life satisfaction was measured with the question: "As a whole, how satisfied are you with the life you live?" with four response options ranging from "Not at all satisfied" (coded 0) and "Very satisfied" (coded 1). Income is measured with the question "What Is your own normal monthly income before

taxes (including pension, student grants, allowances, etc.)?" with sixteen response options ranging from "Less than SEK 10 000" (coded 0) and "More than SEK 75 000" (coded 1).

$^{+}p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A7. *Effects of concurrent validity on the target question political interest with the criterion question education in the experiment among persons born outside the Nordics (OLS regression coefficients).*

	Completed at least one question-item
	Education
Political interest	-.17**(.06)
Café gift card	.00(.04)
Café gift card * Political interest	.01(.08)
Constant	.67***(.03)
Observations	703
R^2	.02

Note. Political interest was measured with the question: "How interested are you in politics in general? with four response options ranging from "Not at all interested" (coded 0) and "Very interested" (coded 1). Education is measured with the question "What Is your highest level of education?" with ten response options ranging from "Primary/lower secondary education or equivalent, less than 9 years" (coded 0) and "Postgraduate education" (coded 1).

$^{+}p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

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