



# **LORE working paper 2014:2**

## **Long-term effects on data quality of different initial response rates in web panel recruitment.**

Martinsson, J  
Riedel, K

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**Series editor:** Johan Martinsson

**Authors:**

*Johan Martinsson, Ph.D.*

Research Director of LORE

Laboratory of Opinion Research (LORE)

Department of Political Science

University of Gothenburg

johan.martinsson@pol.gu.se

*Karolina Riedel, M.Sc.*

Research assistant

Laboratory of Opinion Research (LORE)

Department of Political Science

University of Gothenburg

karolina.riedel@gu.se

## **ABSTRACT**

This study analyzes the long term effects on survey response behavior among panelists recruited using different amount of effort, e.g. different number of follow-up contact attempts. The main questions in this working paper concern the participation rates and cumulative response rates in consecutive steps of a panel study. However, the habituality in response behavior and the data quality in terms of item non-response and straight-lining among panelists recruited by different amount of effort is also examined.

The data for this study is 310 panelists recruited from a random population sample of inhabitants aged between 18 and 70 years living in the Gothenburg region in Sweden. In the recruitment, different numbers of reminders were sent to three experimental groups, where Group A received no reminders, Group B received one reminder and Group C received several reminders. In the year following the recruitment the panelists received three consecutive surveys regarding the introduction of congestion charges in the city of Gothenburg. After these three surveys the panelists were also asked to sign up for continued regular participation in web surveys hosted by the Citizen Panel at the University of Gothenburg. The three different treatment groups display widely differing recruitment rates: 27 percent in the group who received several reminders, 17 percent among those who received one reminder, and 11 percent among those who only received an invitation and no follow-up contact attempts.

The results reveal, however, that there is a very high attrition rate among the recruits needing several reminders, and over time the difference in response rates compared to those receiving one reminder becomes quite small. Compared to those receiving no reminder at all, however, it is still substantially higher. The initial response behavior also seems to be repeated over time. Panelists needing several reminders in the recruitment phase continue to need more effort to participate in subsequent surveys too. Concerning data quality, only small differences are found.

# **LONG-TERM EFFECTS ON DATA QUALITY OF DIFFERENT INITIAL RESPONSE RATES IN WEB PANEL RECRUITMENT**

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There are many difficulties in recruiting a representative sample to an online panel study. Some groups are more prone to sign up to and remain in online-panels than others, and response rates tend to decrease over time as the response burden increases with multiple surveys. Most researchers demand high response rates to surveys as a way to minimize non-response bias. This is especially important in cross-sectional studies based on random population samples.

When recruiting panelists through postal invitations the use of several reminders has been found to result in a significantly higher recruitment rate. It may therefore be tempting for researchers to put an extra effort into raising the recruitment rate by using several contact attempts. A previous experiment on the effect of multiple reminders in postal invitations performed by the Laboratory of Opinion Research has shown that several follow-up contact attempts is efficient for increasing the rate of recruitment to on-line panels. However, despite the higher recruitment rate attained through multiple reminders, the cost *per recruited* panelist is also higher when several reminders are used than when only using one reminder (see Martinsson 2013). The cost per recruited panelist was almost twice as high in the group which achieved a recruitment rate of 27 percent compared to a group which achieved 11 percent.

Some researchers who have evaluated demographic characteristics of early and late responders in internet based surveys found that among other things age, education level and country of birth influences if a respondent answers the survey at all, and whether a respondent is an early or late responder (see for example Etter and Perneger 1997 and Rao and Pennington 2013). This implies that reminders are a useful tool to increase the representativeness of a survey as reminders might attract responses from groups who would otherwise not respond.

It is, however, less well known how the long run response burden and attrition rates are affected by multiple reminders in the recruitment stage. Schirmer (2009) argues that the use of multiple reminders may result in respondents feeling coerced to participate and that the voluntary aspect of answering the survey may be perceived as less true for respondents receiving multiple reminders. The use of reminders should therefore be used carefully and only when the scientific gains exceed the risk of being intrusive towards the respondents. Survey researchers conducting panel studies on random population samples therefore tend to walk the fine line between the financial and ethical costs it takes to send out multiple reminders, and the qualitative gains of doing so.

## Purpose and analytical framework

Building upon previous research and experiences this paper aims to deepen the understanding of the consequences of using different amount of efforts in the recruitment to a panel study.

There are several possible strategies for an analysis of the long term effect of using multiple reminders in panel recruitment. One obvious possibility is to use a randomized experimental design. For such a strategy respondents are randomly assigned to different groups, and receive different amounts of effort in the recruitment. However, one could also argue that much of the analysis can be conducted in a non-experimental setting with observational data where the panelists simply are analyzed according to the number of reminders they received prior to signing up. This is true in the sense that the respondents need to be analyzed according to the timing of the recruitment, and is therefore a fruitful approach for some of the analysis, but fails in capturing the full picture. For example, we can expect that some recruits, who do not receive any reminders, will anyway sign up several weeks after the invitation was sent out. Maybe the recruits received the invitation at a bad timing and put it aside only to find it and fill it in much later when there is available time. Based on experience from earlier recruitments to the Citizen Panel this seems to be a very common behavior where as many as 10 percent might sign up weeks, or even months after the last contact attempt. To capture the full picture it is therefore important to also include these respondents in the overall evaluation, which only is possible when using an experimental approach. Similarly would many recruits in the groups receiving several reminders most probably sign up prior to the reminders were received. Some of the respondents in these groups are therefore expected to display similar characteristics as those recruited without any reminders. In this study, both approaches will be used. Our data is based on randomized samples with three different treatment groups, but we will also analyze the recruited panelist according to *when* they signed up for the panel disregarding the treatment group they belong to.

This paper aims at looking at the broad picture of the long term behavioral and qualitative effects of using more or less effort in the recruitment to a panel study. To pursue this analysis we will look at the participation rates, and cumulative response rates in three consecutive panel steps and analyze whether the response behavior, i.e. the amount of effort needed to persuade the panelist to respond, and the data quality of the panelists differ depending on the amount of effort in the initial recruitment and how the response behavior develops over time. This is done by trying to answer these four questions:

- 1) What is the participation rate in the consecutive steps of a panel study for panelists recruited with different amount of effort and follow-up contacts?
- 2) What is the cumulative response rate in the different steps of the panel study depending on initial recruitment rate and recruitment effort?
- 3) What is the habituality in the panelists' response behavior, i.e. are late responders recurrently late to respond?
- 4) Does the quality of the data respondents provide differ depending on the initial mode of recruitment?

## Data and design of the study

This study examines the long term effects of postal recruitment using varying number of reminders to a random sample of the Swedish population, using the Swedish population register. The recruitment and the panel study were powered by the Laboratory of Opinion Research at the University of Gothenburg. The recruitment was aimed at people living in the Gothenburg region and concerned a three step panel study regarding congestion charges around the city of Gothenburg. The Gothenburg region comprises twelve surrounding municipalities and the city of Gothenburg. Since the 1st of January 2013 cars driving into and passing by the city of Gothenburg need to pay congestion charges during run hours. The year previous to the implementation of the congestion charges there was a wide public debate regarding this tax and most citizens who were to be affected by the charges had a strong opinion in either direction on the implementation. The recruitment to the panel was launched six month prior to the implementation of the congestion charges. The panel study then included three steps regarding the congestion charges, carried out in the year following the recruitment. In the end the panelists were also asked to sign up for regular postings within the frame of the Citizen Panel.

The postal recruitment followed an experimental design containing a random sample of 2000 people sampled from the Swedish population register, aged between 18 and 70 years and inhabitants of the Gothenburg region in western Sweden. The first group, Group A consisted of 1000 potential panelists who only received one invitation post card, and no reminders. Group B consisted of 500 people and received both the postal invitation and one postal reminder, while Group C, also consisting of 500 people, received first one postal reminder, then one telephone reminder and finally another postal reminder. In total, were 330 out of 2000 recruited out of which 310 panelists were invited to the panel study.

The recruitment opened the 19<sup>th</sup> of April 2012. In the following year the panelists were invited to three consecutive polls regarding the congestion charges. The first was launched on the 13<sup>th</sup> of June 2012, the second on the 5<sup>th</sup> of December 2012 and the last step on the 13<sup>th</sup> of May 2013. In the last step the panelists were asked if they wanted to join the Citizen Panel operated by the Laboratory of Opinion Research at the University of Gothenburg and continue to answer two to four surveys per year. In the first and second steps two reminders were sent out to non-responders within the first two weeks, and in the third step three reminders were sent out within the first three weeks of the survey.

To evaluate the effects of reminders in recruitment to a longitudinal panel this report first examines the participation rate in the different treatment groups, and tries to isolate the effect on being recruited through more or less effort. Further, the cumulative response rate is evaluated to see the long term effects of recruitment using different number of follow-up contacts. Next, we examine the habituality of response behavior, i.e. do panelists continue to require the same amount of reminders to answer a survey over time? Lastly, the data quality of the panelists in terms of item non-response and straight lining in the different steps is also analyzed.

## Results

The results from the panel study on congestion charges carried out in 2012–2013 are divided into four sections; participation rates, cumulative response rates, habituality in response behavior and data quality.

### Participation rates in the panel on congestion charges

When comparing the participation rates among recruited panelists it is interesting to see that there are no significant differences between the group that received no reminders and the group that received one reminder, Groups A and B. There is however a clear difference between the participation behavior of those groups and that of Group C, which overall has much lower participation rates.

**Table 1: Participation rates in the different panel waves depending on recruitment effort, percent**

	Group A no reminders	Group B one reminder	Group C several reminders
n	108	85	117
Step 1	78,7%	75,3%	71,8%
Step 2	72,2%	70,6%*	59,0% <sup>HH</sup>
Step 3	71,3%	65,9%	55,6% <sup>HH</sup>
Answered all 3 steps	59,3%	62,4%**	47,9% <sup>H</sup>
Signed up to the Citizen Panel	45,4%	38,8%	31,6% <sup>HH</sup>

**Comment:** \*\*, \* Variable significantly different at 95% and 90% respectively in Group B vs Group C.  
<sup>HH</sup>, <sup>H</sup> Variable significantly different at 95% and 90% respectively in Group A vs Group C.

When looking at the participation rates in the different steps of the panel one can see that Groups A and B have more than 10 percentage points higher participation rates than Group C in the last two steps. There is also a higher total attrition in Group C were less than half of those who answered the first step, and less than a third of the recruited panelists, decided to sign up to the Citizen Panel. That Group C has a lower participation rate than the other two groups could have been expected, but it is surprising to see that Group B, who received one reminder, has very similar participation rates as Group A.

To isolate the effect of the multiple reminders and the behavior of the panelists subgroups were created depending on the time when they signed up to the panel. The classification was early, intermediate and late panelists (as used by for example Rao and Pennington 2013 p. 656) where *early panelists* (Group 1) represent all panelists, from all three initial groups, who signed up prior to the first reminder. *Intermediate panelists* (Group 2) include all panelists from Groups B and C who signed up after the first reminder was received but before the telephone reminder; and finally *late panelists* (Group 3) consists of those in Group C who signed up after receiving the final telephone and postcard reminders. Further, a particular group of interest is a *Group A intermediate and late* which contains recruits from the initial Group A (no reminders) that signed up to the panel study after

the first reminder was received by Groups B and C. These are the recruits who signed up more than one week after the invitation postcard was received, but without receiving any reminder.

**Table 2: Participation rates in the different steps depending on the number of reminders used in the recruitment, percent**

	Group 1 early recruited	Group 2 intermediate recruited	Group 3 late recruited	Group A intermediate and late
n	153	90	29	36
Step 1	83,7% <sup>#</sup>	73,3%**	48,28% <sup>###</sup>	66,7% <sup>++</sup>
Step 2	78,4% <sup>###</sup>	60%**	31,03% <sup>###</sup>	61,1% <sup>++</sup>
Step 3	71,2%	61,1%**	37,9% <sup>###</sup>	61,1% <sup>++</sup>
Answered all 3 steps	66% <sup>##</sup>	52,2%**	27,6% <sup>###</sup>	44,4%
Signed up to the Citizen Panel	45,8% <sup>#</sup>	33,3%	20,7% <sup>##</sup>	33,3%

*Comment: ###, ##, # Variable significantly different at 99%, 95% and 90%, Group 1 vs Group 2. \*\*, \* Variable significantly different at 99% and 95% respectively in Group 2 vs Group 3. □□□, □□ Variable significantly different at 99% and 95% respectively in Group 1 vs Group 3. ++ Variable significantly different at 95% in Group A intermediate and late vs Group 1.*

When isolating the panelists depending on the amount of effort received in the recruitment the difference between them becomes more obvious. In table 1 did we not see any significant difference between Groups A and B, but in table 2 we can see a clear behavioral difference depending on the number of reminders the panelists received before signing up. Among those who signed up without any reminders the participation rate is more than 10 percentage points higher than among those who needed one reminder before signing up. When comparing the intermediate and late panelists on the other hand the participation rate among the late panelists is only around half of the intermediate panelists, overall indicating that the difference between the intermediate and late panelists is larger than the difference between the early and intermediate panelists.

Looking closer at the late panelists, who received several reminders before signing up; only 48 percent of the late panelists answered the first step. As could have been expected do the panelists who need a lot of effort to participate in the first place have very low participation rates also in the following steps where only 28 percent of them answered all three steps, and only 21 percent decided to join the Citizen Panel. The early panelists, who signed up without any reminders, on the other hand achieved almost 84 percent in step one and 71 percent in step three, and 66 percent of the early panelists answered all three steps. Also do the intermediate panelists, who signed up after receiving one reminder, retain to a larger extent and a majority of the intermediate panelists answered all three steps.

In this study one third of the recruits in Group A signed up more than one week after the postal invitation was received and the other groups started receiving reminders. The late recruits from Group A can therefore in a sense be seen as “free” as they sign up late without needing any reminders. We can therefore expect that some of the recruits from Groups B and C would have signed up regardless of receiving any reminders. As could

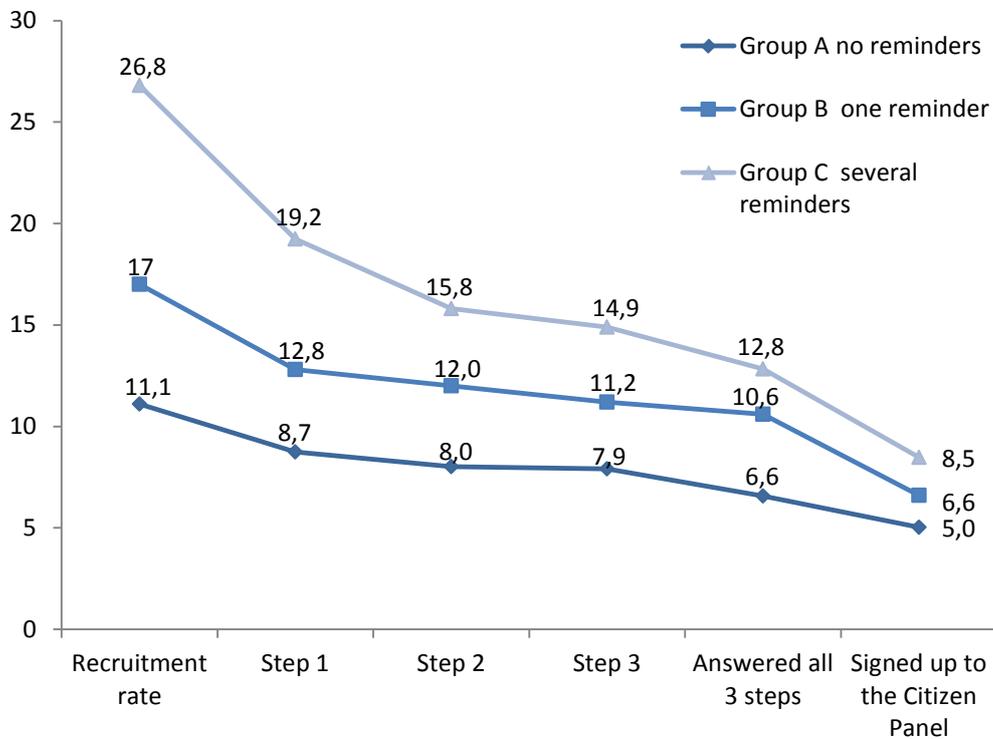
have been expected do the intermediate and late panelists from Group A seem to behave like a mixture of the intermediate and late panelists from the other two groups. Thus is there a similar behavior among late panelists, regardless if they receive any reminders.

There is a decreasing trend in participation rates encountered in all groups, were only 40 percent of those who answered the first survey also signed up to join the Citizen Panel. Interestingly are the participation rates among the intermediate and late panelists higher in step 3 than in step 2. This can probably be explained by the third reminder being sent in step 3, and indicates that the intermediate and late panelists continue to need more effort to answer the surveys.

## Cumulative response rates in the panel on congestion charges

As illustrated in figure 1 does more effort lead to a significantly higher recruitment rate, more than double that of no reminders. It is however interesting to note that the difference in cumulative response rates, as defined by Callegaro and Disogra (2008), between Group B and Group C decreases the longer the panel is running. Among those who answered all three survey waves there was in the end only a 2 percentage point difference in the cumulative response rate despite the ten percentage point difference in the recruitment phase.

**Figure 1: Cumulative response rate in the different steps depending on recruitment effort, in percent**



*Comment:* The cumulative response rate is calculated on all potential recruits in the respective group who received an invitation, regardless whether they joined the panel or not.

One can clearly see that the main attrition occurs already in the first step of the panel with an attrition rate around 25 percent in Groups A and B and an attrition rate of around 30 percent in Group C. The panel then remains fairly stable in the consecutive steps until the question whether the panelists would like to join the Citizen Panel arises where more than one third of the remaining panelists in Groups B and C, and a bit more than twenty percent in Group A, drop off.

From Figure 1 it seems like panelists who signed up after receiving one reminder, which resulted in an initial recruitment rate of 17 percent, continued to have a comparably high response rate in the consecutive steps. This means that one reminder results in a higher recruitment rate with panelists, who also to a large extent remain active in the panel, compared to using much effort in the recruitment which rather leads to a high recruitment rate, but a low participation rates in the following steps of the panel.

## Habituality in response behavior

In the first two steps of the panel on congestion charges two reminders were sent to those who had not yet answered the survey, and in the final step three reminders were sent along with the survey and an invitation to be transferred to the Citizen Panel. Table 3 displays the habituality in response behavior which is analyzed in terms of the number of reminders the panelists received prior to answering the different surveys, and whether their response behavior is the same in different steps.

If a panelist responds without any reminders in at least two steps, not including the recruitment, they are classified as *habitually early*, if they need one reminder in at least two surveys before responding they are classified as *habitually intermediate*, and if they need several reminders in at least two steps they are classified as *habitually late*. A similar way of analyzing response behavior is used by Rao and Pennington (2013), they however use a larger sample and analyze whether the response behavior is the same in all four steps of their panel study.

**Table 3: Habituality in effort needed for survey participation, respondents displaying the same response behavior in at least two surveys, percent**

	Group A no reminders	Group B one reminder	Group C several reminders	Group 1 Early	Group 2&3 Intermediate and late	Group A intermediate and late
n	84	59	72	122	67	26
Habitually early	60.7	57.6	44.4	59.0 <sup>#</sup>	50.8	42.3 <sup>+</sup>
Habitually intermediate	15.5	13.6	26.4	18.9	16.4	23.1
Habitually late	13.1	15.2	16.7	14.7	14.9	15.4
mixed	10.7	13.6	12.5	7.4	17.9	19.2

*Comment:* Analysis is based on panelists responding to two or three surveys, and thus excludes panelists that did not answer at least two surveys. # Variable significantly different at 90%, Group 1 vs Group 2&3. + Variable significantly different at 90% in Group A intermediate and late vs Group 1.

According to this data one can see that those who are hesitant to sign up in the first place also seem to be more reluctant to answer surveys later on. The effect that those who were easy to recruit will need less reminders in the panel to answer the surveys is not clearly displayed when comparing the treatment groups A-B-C, but is revealed when separated according to received number of reminders in the recruitment.

Among the early panelists 59 percent display a habitually early behavior where the panelists answer the surveys before receiving any reminders. The difference in response behavior is lower than what could have been expected, though, as a majority of the intermediate and late respondents also continuously respond before the first reminder is received. The habitually late seem to be close to 15 percent in all groups. The intermediate and late respondents do more frequently have a mixed behavior than the early respondents and are thus less likely to repeat their behavior over time. Interestingly, the intermediate and late respondents from Group A have a higher share of respondents habitually in need of one reminder.

Even in this analysis do the intermediate and late panelists from Group A behave similarly to the intermediate and late panelists from the other groups, and they are significantly more prone to repeatedly need reminders than the early respondents..

This statistic is further strengthening the results from the previous section where those who are initially difficult to attract to the panel are difficult to maintain, and continue to need much effort in order to answer the surveys.

## Data quality

Data quality can be measured in many different ways, and one commonly used indicator is item non-response, the share of question in a survey that a respondent has not answered.

**Table 4: Mean item non-response, percent**

	Group A no reminders	Group B one reminder	Group C several reminders	Group 1 Early	Group 2&3 Intermediate and late	Group A intermediate and late
Step 1 (114)	6.7	6.7	6.3	6.3	6.3	8.8++
Step 2 (45)	0.6	0.5	2.1	0.5	2.4	0.5
Step 3 (96)	6.3	5.5	4.7	5.2	4.9	9.1++

*Comment:* Number of included items in parenthesis. ++ Variable significantly different at 95% confidence level in Group A intermediate and late vs Group 1.

There is a lower prevalence of item missing in step 2, which can be explained by the lower occurrence of burdensome grid questions and the lack of repeated questions on mode of transportation which was skipped by more than 50 percent of the panelists in steps 1 and 3. Despite very differing results between the steps these items were included to give as complete a picture as possible of the behavior in the respective steps. The intent is not to

compare the three waves, but rather to compare the different groups of respondents in each wave.

When analyzing item non-response depending on mode of recruitment there was only one significant difference found between Group A intermediate and late and the early respondents in steps 1 and 3. This indicates that the intermediate and late respondents who are recruited without any extra effort are more prone to skip answering questions. Whether this depends on a speeding behavior or if these respondents are less used to answering surveys online is hard to tell.

That there is no stronger relationship found is probably due to the relatively straight forward survey covering a topic relevant for most panelists, in combination with the low number of panelists in the different groups.

**Table 5: Panelists straight-lining two or more question batteries, percent**

	Group A no reminders	Group B one reminder	Group C several reminders	Group 1 Early	Group 2&3 Intermediate and late	Group A intermediate and late
Step 1	1.2 <sup>#</sup>	6.3	2.4	1.6	5.0	4.2
Step 2	1.3	1.7	1.5	1.7	1.6	0.0
Step 3	0.0	3.6	1.5	2.8	0.0	0.0

<sup>#</sup> Variable significantly different at 90%, Group A vs Group B.

Another approach of analyzing data quality is to evaluate the prevalence of straight-lining. Straight-lining is sometimes referred to as non-differentiation, see for example Krosnick (1991) for a wider discussion. Straight-lining is here defined as panelists straight-lining two or more batteries in a survey, i.e. choosing the same response on all items in a matrix type question that contains at least four items. For the results to be comparable, five question batteries that occur in all three waves are chosen for this analysis.

There is only one significant difference found between Group A and Group B, where the panelists in the treatment group receiving one reminder straight line to a larger extent than the panelists receiving no reminder. However, our interpretation is that there is no systematic pattern here: reluctant recruits that eventually accept to be recruited into the panel study does not seem to yield data of lower quality when it comes to item-missing or non-differentiation.

## Concluding discussion

Using much effort to recruit members to a longitudinal panel leads to an initially significantly higher recruitment rate, more than twice that compared to recruitment without any reminders. When the consecutive surveys in a panel study are launched, however, panelists drop off to a larger extent if they needed much effort before signing up. In the longer term the positive effect on cumulative response rates from using several reminders in the recruitment phase is small compared to using one reminder. The use of

one reminder seems however feasible also in the long run as the higher recruitment rate is more or less maintained, even compared to those recruited without any reminders.

As shown by Martinsson (2013) the cost per recruited panel member is clearly higher when using several reminders than when using none. Although the cost per recruited panelist is lowest when using no reminders at all, the cost is only marginally higher when using one reminder than when using none. As the recruitment rate, participation rate and cumulative response rate increase quite substantially when adding one reminder to the invitation this seems like a reasonable choice. The gains seem to outweigh the small increase in financial costs.

What this report has shown in addition is that the gains of adding one reminder also seem to last in the longer term. The attrition rate is very high among those recruited with multiple reminders. The differences in cumulative response rates to those recruited with one reminder decreases over time. This study found that the main attrition occurs already in the first survey launched after the recruitment, with the highest attrition rate among the panelists recruited by several reminders. Panelists who need a lot of effort to be persuaded to join in the first place continue to need a lot of effort to answer subsequent surveys too. This is also shown in the habituality of response behavior where early panelists tend to be habitually early, and late panelists tend to be habitually late and more prone to display a mixed response behavior. When also considering the high attrition rates among the late panelists they can be described as difficult to attract, even more difficult to maintain and if they remain in the panel study they will continue to need a lot of effort before they answer. However, these reluctant panel recruits do not seem to, on average, yield data of lower quality if they agree to join the panel and participate in subsequent surveys.

To balance the fine line between the financial and ethical costs it takes to send out multiple reminders, and the quality gains of doing so, this study finds that one reminder is a feasible amount of effort for recruiting to an on-line panel study. The cost per respondent is much higher when using several reminders and the qualitative gains seem to be very small in the long-run. There are however some short term gains as the cumulative response rate after three steps in the panel study still is almost four percentage points higher among those who received several reminders compared to those who received one reminder. Multiple reminders can therefore be feasible if there is a significant qualitative gain in adding these extra percentage points participation rate to a research project despite the high cost of doing so.

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**Svensk titel:** Långsiktiga effekter på datakvaliteten vid olika initiala svarsfrekvenser i webbpanelsrekrytering.

LORE working paper 2014:2

**Seriens redaktör:** Johan Martinsson

**Författare:**

*Johan Martinsson*, Fil. Dr.  
Forskningsledare LORE  
Laboratory of Opinion Research (LORE)  
Statsvetenskapliga institutionen  
Göteborgs universitet  
johan.martinsson@pol.gu.se

*Karolina Riedel*, MSc  
Forskningsassistent  
Laboratory of Opinion Research (LORE)  
Statsvetenskapliga institutionen  
Göteborgs universitet  
karolina.riedel@gu.se

## **SAMMANFATTNING**

Denna studie analyserar de långsiktiga effekterna på svarsbeteende bland paneldeltagare som rekryterats genom olika mängd ansträngning, här definierat som antalet påminnelser vid rekrytering. Huvudfrågorna i denna studie rör deltagandefrekvenser och kumulativa svarsfrekvenser i ett antal på varandra följande steg i en panelstudie. Frågorna berör även vanemässigheten i svarsbeteendet och datakvalité i form av frågebortfall och icke-differentiering (straight-lining).

Analysen baseras på 310 rekryterade panelister från ett slumpmässigt befolkningsurval av människor mellan 18 och 70 år som är bosatta i Göteborgsregionen. I rekryteringen skickades olika antal påminnelser ut till tre experimentgrupper, där Grupp A inte fick någon påminnelse, Grupp B fick en påminnelse och Grupp C fick flera påminnelser. Under det följande året fick paneldeltagarna tre enkäter rörande trängselskatten i Göteborg, som infördes under studieåret. Efter dessa tre enkäter tillfrågades paneldeltagarna om de ville registrera sig för fortsatt deltagande i webbenkäter inom ramen för Medborgarpanelen vid Göteborgs universitet. De tre olika experimentgrupperna redovisar väldigt varierande rekryteringsfrekvenser: 27 procent i gruppen som fick flera påminnelser, 17 procent bland dem som fick en påminnelse, och 11 procent bland dem som enbart fick ett inbjudningsvykort och inga ytterligare kontaktförsök.

Resultaten visar dock på ett mycket högt panelbortfall bland de rekryterade som behövde många påminnelser. Över tid är skillnaden i deltagandefrekvens jämfört med dem som enbart behövde en påminnelse liten. Jämfört med dem som inte fick någon påminnelse alls är den kumulativa svarsfrekvensen dock fortfarande substantiellt högre. Det initiala svarsbeteendet verkar upprepas över tid. Paneldeltagare som behöver många påminnelser i rekryteringen fortsätter att kräva större ansträngning för att få delta även i andra enkäter. Vad gäller datakvaliteten hittades enbart små skillnader.

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:

[info@lore.gu.se](mailto:info@lore.gu.se)