

A more digitalized contact strategy: Experiences from sending digital invitations in population surveys

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Abstract

In recent years, we have seen a downward trend in the response rate in our surveys. In Sweden, most people get information from authorities through apps in their phones and quite recently, also from Statistics Sweden. This is a new, digital opportunity to reach out to the citizens and invite them to participate in our surveys. Therefore, Statistics Sweden has conducted several experiments to see if digital invitations affect the response rate and how. Experiments include different collection strategies and change structure in missives and reminders. The presentation shows the results of several experiments, how we proceeded after that and what is in the pipeline for the closest future.

A more digitalized contact strategy

**Experiences from sending digital
invitations in population surveys**

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Abstract

In recent years we have seen a trend of decreasing response rates in Statistics Sweden's population surveys. Aiming to stop that trend, as well as reduce the impact on the environment and the costs of data collection, we have conducted several experiments.

Digital mailboxes are a new, digital opportunity to reach out to citizens and invite them to participate in our surveys.

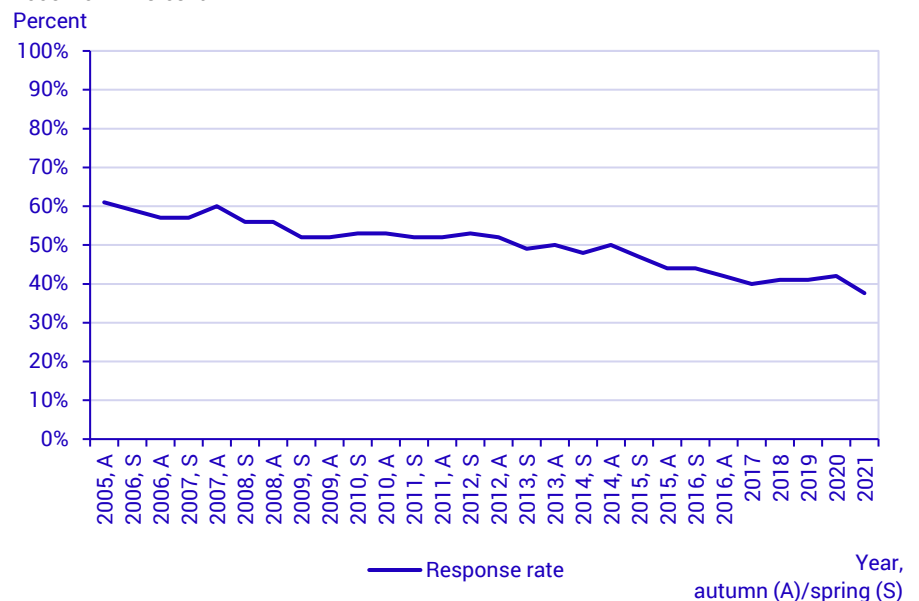
This paper reports on the results from two experiments and experiences of introducing digital mailboxes and a less paper-intensive data collection strategy in our surveys.

Introduction

In recent years we have seen a trend of decreasing response rates in Statistics Sweden's population surveys. Other actors in the survey field in Sweden experience the same trend.

Figure 1 below shows the unweighted response rates in one of Statistics Sweden's largest population surveys (the sample size 2021 was 200 000 persons). The population consists of persons 18 years old and above and the survey asks about opinions on different aspects of the respondent's municipality. This survey has been conducted since 2005 and the response rate has decreased from 61 percent 2005 to 38 percent 2021. The design of the survey has changed somewhat over the years, but the survey population has been the same.

Figure 1 Response rates (unweighted) in Statistics Sweden's Municipality survey 2005-2021. Percent



This development is worrying for several reasons. In addition to a negative impact on the quality of the survey results, it leads to increased costs as larger sample sizes are needed and/or we have to put more effort into getting answers, i.e., more contacts to the sample units are needed. Furthermore, as we wish to reduce the environmental impact of our surveys, we would of course rather reduce the number of paper surveys. In this respect, larger sample sizes have the opposite effect as they generate more paper invitations and paper questionnaires. Although it is evident that paper questionnaires still are crucial to get representative results from our surveys, this paper reports on our experiences from reducing the use of paper in survey designs.

In addition to what is mentioned above, digital advances faced for our society as a whole also put us in a situation where we have expectations to modernize and digitalize data collection methods in statistical surveys.

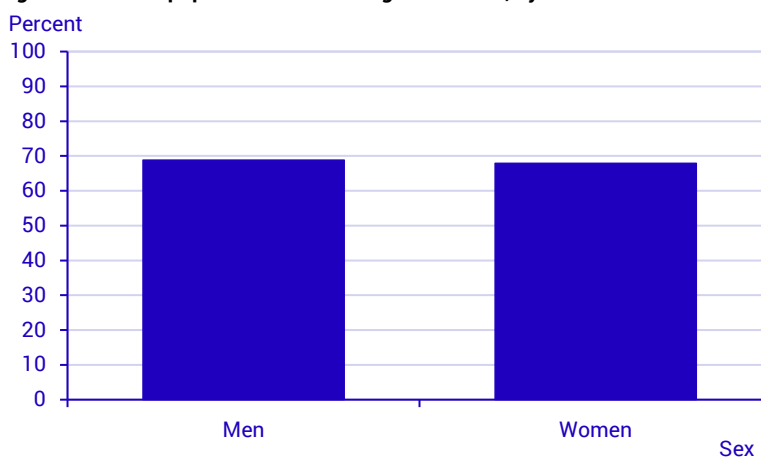
Digital mailboxes – what is it and who has it?

In recent years, more and more people in Sweden have gotten a digital mailbox. Digital mailboxes were launched in Sweden 2012. With a digital mailbox, you receive mail from the authorities digitally, through your cellphone or computer, instead of via postal mail. This means that, with a connected device and e-identification, you always have access to your digital mail. You receive your mail quickly, safely, and with a smaller environmental impact compared to postal mail.

With a digital mailbox you receive digital mail from the authorities, municipalities, and regions that are assigned as senders to the authority-joint infrastructure for secure digital mail, called My Messages. Some authorities send all their mail digitally, others only send certain types of messages digitally.

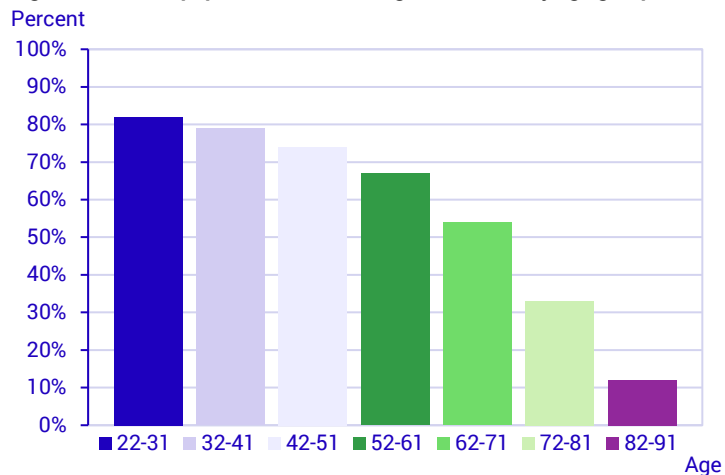
Around 68 percent of the adult population in Sweden has a digital mailbox and that share is steadily increasing. As shown in Figure 2, the proportion is similar among men and women.

Figure 2 Share of population 18+ with digital mailbox, by sex. Percent



Most of the people that have a digital mailbox are of working age, between 22 and 61 years old. As shown in figure 3, the proportion within different age groups varies but is well above 60 percent among people younger than 61. It is also evident that the proportion decreases with age. Unfortunately, there are no official statistics on access to a digital mailbox for background variables other than gender and age but from our surveys we can see that access clearly relates to level of education. People with a higher level of education have a digital mailbox to a greater extent than people with a low level of education.

Figure 3 Share of population 18+ with digital mailbox, by age groups. Percent



The digital mailbox is a new, digital opportunity to reach out to citizens and invite them to participate in our surveys. In 2020, Statistics Sweden joined the infrastructure for secure digital mail.

Since not everyone in the Swedish population has got a digital mailbox, traditional postal invitations are still necessary in order to reach all our sample units. There are further information about Statistics Sweden's contact strategies in the next section.

Conducted experiments

For several years, the standard contact strategy for surveys conducted by Statistics Sweden has involved four send-outs, all by postal mail;

1. Invitation with login to the web survey
2. Reminder, including a paper questionnaire
3. Reminder pushing for the web survey
4. Reminder, including a paper questionnaire

Normally, a data collection period lasts for about 10 weeks.

Currently, two interrelated aims coincide in the survey data collections at Statistics Sweden. The overarching aim for the agency is to minimize the use of paper with at least similar quality in the data. To be able to reach this, several experiments have been conducted during the last two years, with the aim to assess the effects of

- i) using digital invitations to participate in our surveys
- ii) using a less paper-intensive strategy in our data collections (e.g., fewer paper questionnaire send-outs)

The aims with a more digital data collection strategy were to

- i) reduce the cost of data collection
- ii) reduce the impact on the environment
- iii) increase the response rates in our surveys
- iv) fulfill expectations from respondents regarding a modern data collection

The experiments have had different approaches. All of them have included digital invitations, and some have also evaluated the effects of decreasing the number of send-outs that include a paper questionnaire.

In the following sections, we present the results from two experiments conducted in 2021.

Experiment 1

The first experiment was conducted in a national health survey to the Swedish population, age 16-84. In this experiment we compared four different contact strategies, explained below. All groups used four send-outs, but the content of the send-outs differ, as well as whether digital invitations were used, or not.

Web intensive (WI) (sample size, n=35 000)

1. Invitation with login to the web survey
2. Reminder, including a paper questionnaire
3. Reminder pushing to the web survey
4. Reminder, including a paper questionnaire

Extra web intensive (EWI) (n=5 000)

1. Invitation with login to the web survey
2. Reminder pushing to the web survey
3. Reminder, including a paper questionnaire
4. Reminder pushing to the web survey

Super extra web intensive (SEWI) (n=5 000)

1. Invitation with login to the web survey
2. Reminder pushing to the web survey (and information that you can contact Statistics Sweden to receive a paper questionnaire)
3. Same as send-out 2
4. Same as send-out 2

Digital super extra web intensive (DSEWI) (n=5 000)

Same send-outs as in SEWI, but persons with a digital mailbox received send-out 1, 2 and 4 to their digital mailbox and send out 3 by paper. Persons without a digital mailbox were treated the same way as SEWI.

Whereas WI was the standard when the experiment took place, EWI was the strategy we thought could become the new standard. SEWI and DSEWI were included to see how far we could stretch the digitalization approach.

As illustrated in table 1, compared to the SEWI- and DSEWI-groups, where no paper questionnaires were sent out, the response rate was higher in the WI-group, where two send-outs included paper questionnaires.

Table 1 Response rates (%) with 95 % CI by contact strategy and background variables. Health in Sweden 2021. Percent

Background variable	Contact strategy							
	WI		EWI		SEWI		DSEWI	
<i>Sex</i>								
Men	40,4	± 0,7	39,4	± 2,0	36,6	± 1,9	36,8	± 1,9
Women	48,3	± 0,8	45,9	± 2,0	41,3	± 2,0	44,2	± 2,0
<i>Age group</i>								
16–29	27,9	± 1,1	28,2	± 2,9	26,0	± 2,8	26,6	± 2,9
30–44	31,4	± 1,0	31,6	± 2,6	31,2	± 2,6	34,0	± 2,6
45–64	47,4	± 0,9	46,6	± 2,5	43,2	± 2,5	44,9	± 2,5
65–84	67,9	± 1,0	62,4	± 2,9	53,6	± 3,0	52,9	± 2,9
<i>Level of education</i>								
Low	33,4	± 1,1	31,7	± 2,8	25,0	± 2,6	25,3	± 2,7
Medium	41,2	± 0,8	38,8	± 2,2	34,9	± 2,1	36,9	± 2,1
High	54,8	± 0,9	53,7	± 2,3	52,6	± 2,4	53,3	± 2,3
<i>Country of birth</i>								
Sweden	48,9	± 0,6	46,9	± 1,6	42,8	± 1,6	44,3	± 1,6
Outside Sweden	28,3	± 1,0	27,2	± 2,7	24,9	± 2,6	27,0	± 2,7
Total	44,3	± 0,5	42,7	± 1,4	38,9	± 1,4	40,5	± 1,4

If we compare SEWI with DSEWI, we can see that the usage of digital invitations, isolated from number of paper questionnaires, tends to give a slightly higher response rate overall. Although there are no statistically significant differences between the groups, the experiment shows that digital invitations do not seem to have a negative impact on the response rates, which is an important result.

The table indicates that a decreased usage of paper questionnaires leads to a slight decrease in response rates. But, the effect also seems dependent upon age. Compared to the more paper intensive strategies, in the DSEWI group we can see that the response rates of the two lower age groups, 16-29 and 30-44 years, are at similar levels. The same pattern can be seen among persons with high level of education.

The take home message from this experiment is that the use of digital invitations can be implemented as a standard in our surveys. We can also conclude that the use of paper questionnaires is still crucial for the response rates in total, but that there is room for decreasing the number of send-outs including a paper questionnaire in some age groups. Experiment 2 aimed to give us more such information.

Experiment 2

The second experiment reported on here was conducted on Statistics Sweden's Municipality survey. The population consists of persons 18 years old and above. In this experiment we used a control group in the form of the standard contact strategy (WI), without digital invitation, and compared it to an experimental group with digital invitations and with only one send-out of paper questionnaires (DEWI).

Web intensive (WI) (n=3 258)

1. Invitation with login to the web survey
2. Reminder, including a paper questionnaire
3. Reminder pushing to the web survey
4. Reminder, including a paper questionnaire

Digital extra web intensive (DEWI) (n=5 000)

1. Invitation with login to the web survey
2. Reminder pushing to the web survey
3. Reminder, including a paper questionnaire
4. Reminder pushing to the web survey

In the DEWI-group, persons with a digital mailbox received send-out 1, 2 and 4 to their digital mailbox and send-out 3 by paper. Persons without a digital mailbox got all send-outs by postal mail.

As seen in table 2, the response rate was a few percentage points lower in the experimental group compared to the control group.

Though, the results are more interesting if we look at the subgroups, and not least the age groups. In line with the findings from the first experiment in this paper, the negative effect by reducing the number of paper questionnaires can primarily be seen among older persons. In this experiment the response rate in the three lower age groups, 18-29, 30-49, and 50-64 years old were similar comparing the control group and the experimental group. The negative effect on the total can fully be explained by the lower response rate among persons 65+.

In table 2, the share of answers (among all answers) via web is also presented. In the control group, 54 percent of the answers were received by web, compared to 63 percent in the experimental group. This is a logical effect from the more web intensive strategy, and in line with the aim of reducing the environmental impact.

Table 2 Response rates (%) and web response rates with 95 % CI by contact strategy and background variables. Statistics Sweden's Municipality survey 2021. Percent

Background variable	Control group				Experimental group			
	Total response rate (%)		Web answers out of total answers (%)		Total response rate (%)		Web answers out of total answers (%)	
<i>Sex</i>								
Men	33,0	± 2,6	60,1	± 4,7	30,7	± 2,0	64,4	± 3,7
Women	38,1	± 2,5	48,5	± 4,4	35,9	± 2,1	61,4	± 3,6
<i>Age group</i>								
18–29	15,4	± 3,4	83,4	± 8,3	17,5	± 2,9	84,3	± 6,7
30–49	27,4	± 3,0	70,5	± 6,0	25,1	± 2,3	80,8	± 4,2
50–64	39,8	± 3,9	55,8	± 6,4	40,9	± 3,1	66,0	± 4,8
65–	55,8	± 3,6	36,7	± 4,8	47,9	± 2,9	43,3	± 4,3
<i>Income group</i>								
Low	25,1	± 3,3	50,6	± 7,7	22,1	± 2,5	62,2	± 6,1
Medium	37,9	± 2,5	46,5	± 4,4	34,8	± 2,0	55,3	± 3,6
High	41,7	± 4,0	69,2	± 5,8	42,8	± 3,2	75,9	± 4,2
<i>Level of education</i>								
Low	27,8	± 3,6	38,7	± 7,8	22,9	± 2,7	36,4	± 6,2
Medium	33,0	± 2,6	46,4	± 4,9	31,1	± 2,1	59,0	± 4,1
High	43,5	± 3,3	66,3	± 4,9	42,0	± 2,6	74,2	± 3,6
Total	35,6	± 1,8	53,7	± 3,2	33,4	± 1,4	62,7	± 2,6

Outcome from the experiments

Based on the findings from these experiments, as well as gathered experience from other conducted surveys, Statistics Sweden has decided on a new standard contact strategy for population surveys. The new strategy includes digital invitations to the ones having a digital mailbox and a differentiated number of send-outs including a paper questionnaire depending on age. The new standard contact strategy is

18-64 years

1. Letter with an invitation to a web survey
2. Reminding letter pushing to the web survey
3. Reminding letter, including a paper questionnaire
4. Reminding letter pushing to the web survey

65+ years

1. Letter with an invitation to a web survey
2. Reminding letter, including a paper questionnaire
3. Reminding letter pushing to the web survey
4. Reminding letter, including a paper questionnaire.

Conclusion

Based on the results from the two experiments together with gathered experience from other conducted surveys we decided to change the standard contact strategy for surveys used at Statistics Sweden.

We have introduced digital send-outs as well as differentiated the contact strategy based on age where the data collection is more digital for individuals 18-64 years old.

As stated above in the section *Conducted experiments*, the aims with introducing digital invitations were to

- i) reduce the cost for data collection

Since the new standard contact strategy uses less paper invitations as well as less paper questionnaires, the costs for data collection are reduced compared to our former strategy.

- ii) reduce the impact on the environment

Since the new standard contact strategy uses less paper invitations as well as less paper questionnaires, the impact on the environment is reduced compared to the former strategy. The impact from the use of paper is reduced by approximately 30 percent.

- iii) increase the response rates in our surveys

The hope that an implementation of digital invitations could increase the response rates cannot be confirmed in the experiments. We cannot see any statistically significant increase, but at least it does not seem like it has a negative impact.

- iv) fulfill expectations from respondents regarding a modern data collection

We have no quantitative measures for evaluating whether the respondents perceive our data collection as modern or not, but the implementation of digital send outs is de facto a step toward a more modern design. Additionally, we have received positive feedback on the digitalization from several respondents in our surveys. Important to note is also that since people sign up to a digital mailbox by themselves, we can assume that most people that has a digital mailbox prefer to have their mail from authorities digitally, a request which we now can fulfill within surveys conducted by Statistics Sweden.

Further work

The implementation of digital invitations into these experiments was for the most part a secondary exercise. Due to the fact that these experiments had a broader scope, and were not designed with the isolated purpose of evaluating effects of digital invitations, we might be able to find more clear findings should future experiments have digital invitations as their sole purpose.

A more upscale experiment with digital invitations is ongoing during the fall 2022.

Due to technical reasons, today we do not know which individuals in a sample that has got a digital mailbox prior to the send-out. We get that information the very second we send out the digital mails. Hence, persons with a digital mailbox receive their invitation to the survey some days before the ones that we reach by postal mail. In the near future we will have the possibility to get that information before the send-out. This technical development will help to facilitate the planning of our surveys which for instance means that we will be able to plan the send-outs so that all the sample units receive their invitations the same day (regardless of if they get the invitation through a digital mailbox or postal mail).

Another upcoming improvement is the possibility to schedule the send-outs, giving us the opportunity to make further experiments on optimal timing for digital send-outs.