

Norwegian Citizen Panel

2018, Eleventh Wave

Methodology report

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BACKGROUND

This report describes the procedures of data collection in the eleventh wave of The Norwegian Citizen Panel, including the recruitment of new panel members in this wave. Furthermore, the report discusses technical aspects of the data collection before turning to the representativity of the panel and how the weights are calculated.

The Norwegian Citizen Panel (NCP) is an established collaboration between several departments at the Faculty of Social Sciences at the University of Bergen and the UNI Research Rokkan Centre. NCP is a part of The Digital Social Science Core Facility (DIGSSCORE) organization.

ideas2evidence is responsible for the panel recruitment, the administration of the panel, and the technical solutions regarding data collection and computing.

TECHNICAL ASPECTS OF THE SURVEY

SOFTWARE

The web-based research software Conconfirmit administers the surveys and the panel. Conconfirmit is a "Software-as-a-Service" solution, where all software runs on Conconfirmit's continuously monitored server park, and where survey respondents and developers interact with the system through various web-based interfaces. This software provides very high data security and operational stability. The security measures are the most stringent in the industry, and Conconfirmit guarantees 99.7 percent uptime. ideas2evidence does the programming of the survey in Conconfirmit on behalf of The Norwegian Citizen Panel.

PILOT – PROCEDURE AND ASSESSMENT

The survey went through both large-N and small-N pilot testing before data collection. The large-N pilot was done in cooperation with Amalie Skram high school. In addition, the survey was tested extensively during the development phase by ideas2evidence and the researchers involved in the project.

The pilot testing was regarded as successful, and no major technical revisions were deemed necessary. On the same note, the field period is also regarded successful without any technical irregularities.

RANDOMIZATION PROCEDURES

Each wave of NCP has an extensive use of randomization procedures. The context of each randomization procedure may vary,¹ but they all share some common ground that will be described in the following.

All randomization procedures are executed live in the questionnaire. This means that the randomization takes place while the respondent is in the questionnaire, as opposed to pre-defined randomizations that are uploaded to the questionnaire. All randomizations are independent from another, unless the documentation states otherwise.

The randomization procedures are written in JavaScript. `Math.random()`² is a key function, in combination with `Math.floor()`³. These functions are used to achieve the following:

- Randomly select one value from a vector

¹ Some examples: sorting respondents in different thematic subsets, randomly allocate treatment value in experiments, randomize order of an answer list/array, order a sequence of questions by random, ask a given question to a subset of the respondents.

² Please see following resource (or other internet resources):https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Math/random

³ Please see following resource (or other internet resources):https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Math/floor

- Randomly shuffle the contents of an array

The first procedure is typically used to determine a random sample of respondents to i.e. a control group. Say for example we wish to create two groups of respondents: group 1 and group 2. All respondents are randomly assigned the value 1 or 2, where each randomization is independent from one another. When N is large enough these two groups will be of equal size (50/50).

Here is an example of the JavaScript code executed in Confirmit:

```
var form = f("x1");
if(!form.toBoolean()) // If no previous randomization on x1
{
  var precodes = x1.domainValues();// Copies the length of x1
  var randomNumber : float = Math.random()*precodes.length;
  var randomIndex : int = Math.floor(randomNumber);
  var code = precodes[randomIndex];
  form.set(code);
}
```

The second procedure is typically used when defining the order of an answer list as random. This can be useful for example when asking for the respondent's party preference or in a list experiment. However, since i.e. a party cannot be listed twice, the procedure must take into account that the array of parties is reduced by 1 for each randomization.

Here is an example of the JavaScript code executed in Confirmit⁴:

```
Function shuffle(array) {
  var currentIndex = array.length, temporaryValue, randomIndex;
  // While there remain elements to shuffle...
  while (0 !== currentIndex) {
    // Pick a remaining element...
    randomIndex = Math.floor(Math.random() * currentIndex);
    currentIndex -= 1;

    // And swap it with the current element.
    temporaryValue = array[currentIndex];
    array[currentIndex] = array[randomIndex];
    array[randomIndex] = temporaryValue;
  }
  return array;
}
```

⁴ Code collected from Mike Bostocks visualization: <https://bost.ocks.org/mike/shuffle/>

PANEL RECRUITMENT FIRST, THIRD AND EIGHT WAVE

In addition to the recruitment of new panel member in the eleventh wave, panel members were also recruited in wave 1, wave 3 and wave 8. All samples were drawn from the *National Population Registry* of Norway. This registry holds information on everyone born in Norway, as well as former and current inhabitants. The Norwegian Tax Administration holds the formal responsibility for this registry, but they have partly outsourced the administration to the private IT-company Evry. Evry drew the sample on behalf of the Norwegian Citizen Panel after relevant permissions were acquired from the Norwegian Tax Administration.

The samples consisted of people over the age of 18 that were randomly drawn from the register. The extracted information was a) last name, b) first name, c) address, d) gender, e) year of birth, and f) phone number (the latter was not included in wave 1). The sample excluded individuals without a current home address in Norway.

For a detailed description of the recruitment process in wave 1, wave 3 and wave 8, we refer to the respective methodology reports for each wave. Note, however, that there are some differences between the three recruitment processes. Please refer to table 1.

Table 1: Summary of recruitment processes

	Sample size	Mode	Returned letters	Response Rate (%)
Recruitment 1 (wave 1)	25 000	Postal	546	20.1 %
Recruitment 2 (wave 3)	25 000	Postal, phone/SMS	543	23.0 %
Recruitment 3 (wave 8)	22 000	Postal/SMS	479	19.4 %
Recruitment 4 (wave 11)	14 000	Postal/SMS	334	15.1 %

DATA COLLECTION WAVE 11

RECRUITING A NEW SET OF PANEL MEMBERS

As in the first, third and eight wave of recruitment a gross sample was drawn from the population registry. In wave eleven however, the gross sample consisted of 14,000 individuals compared to 25,000 in the first two recruitment waves, and 22,000 in wave eight. As before, Evry drew the sample on behalf of the Citizen Panel after the necessary permissions were acquired from the Norwegian Tax Administration.

14,000 people over the age of 18 were randomly drawn from the register. The extracted information was as before a) last name, b) first name, c) address, d) gender, e) telephone number(s) (if available) and, f) age. The sample excluded individuals without a current home address in Norway.

THE RECRUITMENT PROCESS

New panel members were recruited in two steps.

First, letters were sent to everyone in the sample. The letters contained the following information: a) a description of the project, b) the Citizen Panel's policy on privacy and measures taken to protect the anonymity of the participants, c) the time-frame of the project, d) the participants' rights to opt of the panel at any time in the future, e) contact information for the people responsible for the project, f) a unique log-in id and the web address to the panel's web site and g) the estimated time required to complete the survey (15 minutes).

In order to maximize the response rate, an incentive in the form of a travel gift card is included in the project. The value of the gift card is 25 000 NOK. To enter the lottery respondents were required to join the panel and provide their email addresses. Respondents were asked to register on the panel's web site and log into the survey using the unique ID-code provided in their personal letter. Information on the lottery was included in all correspondence with respondents.

The invitational letter was posted 6th of March 2018.

In earlier recruitment waves, the respondents have been contacted up to three times: First, via the aforementioned letter. Second, a reminder in form of a postcard. Third, via SMS or postcard, depending on whether they had a registered phone number or not.

Leading up to this wave of the Citizen Panel, the Norwegian Tax Administration have made regulatory changes which limit the number of contact points to two. Therefore, ideas2evidence and NCP decided to build an experiment into the recruitment process to get more information regarding the effectiveness of the different strategies for reminding the respondents.

Respondents without a phone number were sent a reminder post card (group a). Respondents with a phone number were randomly assigned to one of the following groups: b) recipients of a reminder post card, and c) recipients of a reminder SMS. These two groups were comparable in size.

The results of this experiment will be discussed under the heading “Response by method of data collection”.

The reminders were sent to those respondents who a) had not logged into the survey, or b) had neither completed the survey nor provided their email address. Respondents were encouraged to join the panel, with reference to the invitation letter. The unique log-in ID provided in the original letter was included in both the post card and the SMS. The SMS reminder also included a direct link to the survey.

The post card was sent on the 12th of March 2018, while the SMS was sent out on the 15th of March 2018.

RESULTS OF THE RECRUITMENT PROCESS - SURVEY RESPONDENTS AND PANEL MEMBERS

It is necessary to make a distinction between panel members and survey respondents. We define panel members as respondents who register their e-mail address, regardless of whether they have completed the questionnaire or not. Survey respondents are respondents who has completed a certain share of the questionnaire, regardless of whether they have entered their e-mail address or not.

Of the 14,000 letters that were sent out, 334 were returned, and 9 respondents opted out. 17.6 percent (2,409) of the remaining 13,657 logged on and accessed the survey. 2,040 individuals completed the questionnaire, and 369 exited the questionnaire before completion, though 7.8 percent of these responses are kept as a part of the survey data. The remaining 340 incomplete responses are excluded from the survey, due to lack of data. In sum, after subtracting a few cases where the credentials of the respondent did not match the credentials of the invited, the recruitment to the Norwegian Citizen Survey resulted in 2,059 new **survey respondents**, a recruitment rate of 15.1 percent. Wave eleven therefore had a lower recruitment rate than any of the previous recruitment waves.

99.1 percent of the respondents who completed the survey entered their e-mail address. Of the incomplete respondents, 94.2 percent entered their e-mail address. In sum, after subtracting respondents with mismatching credentials, 2,121 new **panel members** were recruited to the Norwegian Citizen Panel, resulting in a panel recruitment rate of 15.5 percent.

Further discussions in this report about new recruits in wave eleven are based on data on survey respondents. However, since there is an almost perfect overlap between survey respondents and panel members, the descriptions are also valid for the panel members.

RESPONSES BY METHOD OF DATA COLLECTION

Table 2: Number of responses and response rates for the new panel members by the various stages of data collection

	Response	Response rate (%)	Cumulative Responses	Cumulative Response Rate (%)
Invitation (6 th of March)	1,000	7.3 %	1,000	7.3 %
Postcard, reminder (12 th of March)	729	5.3 %	1,729	12.6 %
SMS, reminder (15 th of March)	330	2.4 %	2,059	15.1 %

Table 2 summarizes the effects of the various stages of data collection. The invitation letter accumulated 1,000 responses, the postcard accumulated 729 responses, and the SMS generated 330 responses: Resulting in a cumulative response rate of 15.1 percent. Compared to other waves of recruitment, 15.1 percent is the lowest response rate the Citizen Panel has experienced in a recruitment process. The most important explanation is the new restrictions enforced by the Norwegian Tax Administration with regards to how many times the Citizen Panel can contact persons in the net sample. At the most, respondents in this recruitment rate was contacted twice.

In order to evaluate which mode is more efficient, the Citizen Panel decided to do an experiment. In this experiment all respondents listed with a telephone number were randomly assigned into one of two groups (details above).

Table 3: response rates and cost per answer by contact method on the reminder-experiment

	Net	Response rate	Cost per answer
SMS	4,551	7.4 %	9.7 NOK
Postcard	4,568	9.1 %	84.8 NOK

The two groups consisted of roughly 4,500 respondents each. 9.1 percent of the postcard recipients answered the questionnaire, while the same is true for 7.4 percent of the SMS recipients. The postcard has a higher answer rate. However, the costs of sending out 4,500 postcards is substantially higher compared to SMS. After establishing these simple parameters, it is important to ask the following question: Do the two modes recruit the same types of respondents?



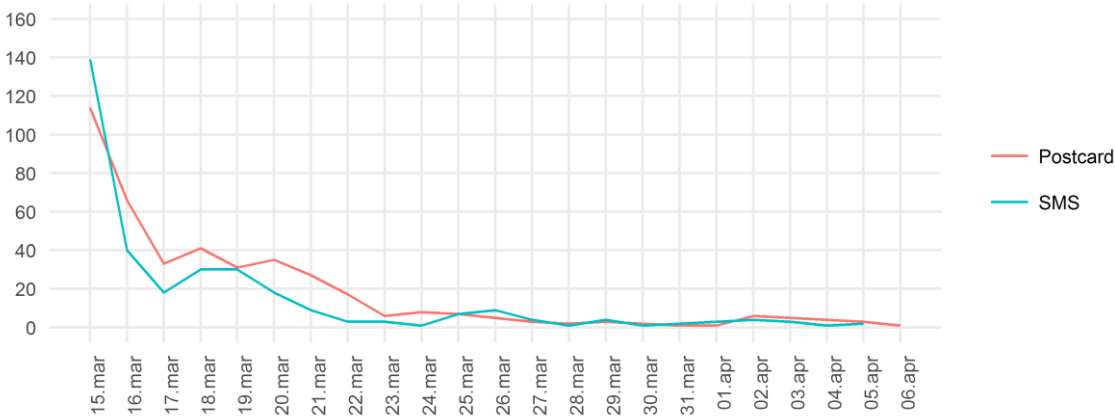
One hypothesis is that different modes may have a different impact on different demographics. For example: young respondents might be more inclined to answer if contacted by SMS compared to older respondents⁵. Figure 1 shows that this is not the case. Young respondents are just as inclined to answer if they are contacted by postcard as they are when contacted by SMS. On the other hand, respondents above 60 years or above are more inclined to answer when contacted by postcard, compared to SMS, and the difference is significant as indicated by the confidence intervals. Moreover, figure 2 show that women are more likely to participate if contacted by postcard, compared to SMS. The difference is significant.

We have also tested the way age and gender interact, in order to nuance the results in figure 1 and 2. However, the number of observations is insufficient and consequently the results are obscured by large confidence intervals (see figure 11 in appendix). In the future we should aim to further map out the interaction between age and gender with regards to recruitment mode. This would give a better picture of how the two recruitment modes plays out amongst the different demographics.

In sum, the SMS does recruit somewhat different demographics compared to the postcard. We have also controlled whether the two modes generate groups of respondents with different level of political interest – our results show no difference between the two modes regarding political interest (figure 12 in appendix).

The difference in respondent groups does not necessarily explain why the postcard recruits more respondents than the SMS. How the postcard recruits more respondents is shown in figure 3. The day-to-day decline of responses is not as steep in the case of the postcard, compared to the SMS. A possible explanation is that the postcard has a physical presence. Its presence functions as a reminder, while the digital text message is somewhat easier to ignore.

Figure 3: Number of answers by mode and day



RESPONSE OF EXISTING PANEL MEMBERS

Wave eleven of the NCP also included data collection from existing members of the panel, recruited in the first, the third, and the eight wave. Data collection among existing panel members was conducted in parallel with the recruitment of, and data collection among, new members.

RESPONSES BY METHOD OF DATA COLLECTION

The survey was launched on March 7th 2018. It was sent to the email accounts of the panel’s 14,154 members. In these e-mails, the basic information about the Norwegian Citizen Panel was repeated, and the individual panel members received unique URLs that led to the questionnaire.

⁵ We find below that this demographic has the highest use of smart phone when answering the questionnaire (figure 5)

In wave eleven, both the invitation and all three reminders were distributed via e-mail.

Table 4: Responses and response rates for panel members by the different stages of data collection

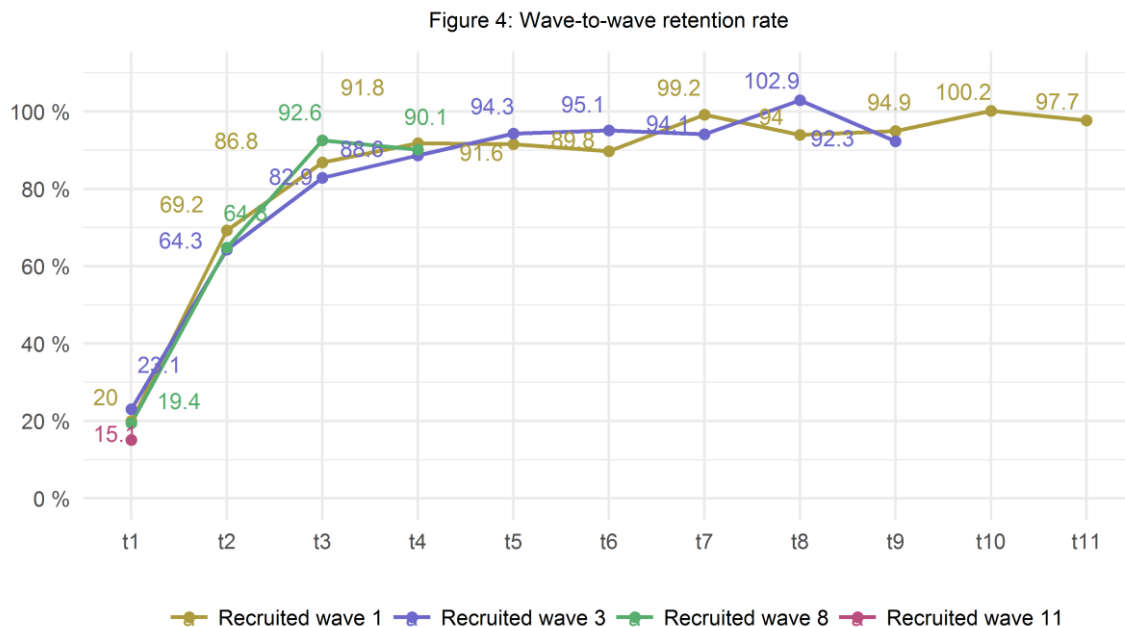
	Response	Response rate (%)	Cumulative Responses	Cumulative Response Rate (%)
Invitation (7 th of March)	3,172	36,7 %	3,172	36,7 %
1st reminder (12 th of March)	1,653	19,1 %	4,825	55,8 %
2nd reminder (16 th of March)	799	9,2 %	5,624	65,0 %
3rd reminder (21 st of March)	699	8,1 %	6,323	73,1 %

In total, the questionnaire received 6,323 answers from the existing panel member. 3,172 respondents completed the survey in the period between the invitation and the first reminder (7th of March – 12th of March), a response rate of 36.7 percent. The pattern is similar to earlier waves; the email invitation produces a higher number of respondents than the subsequent reminders. The reminders in total produce the same amount of responses as the invitation. For details on the number of respondents after each reminder, we refer you to table 4.

As before, we exclude respondents that have not participated in any of the last three waves when we calculate the response rate. This leaves us with 8,651 eligible respondents. The overall response rate, as reported in table 4, is **73.1 percent**.

RESPONSE OF EXISTING PANEL MEMBERS OVER TIME

The number of respondents in this last wave is 6,323 – compared to 6,765 in wave 10, an overall wave-to-wave retention rate of 93.5 percent. This is lower than the retention rate between wave 9 and 10 (98.1 percent), which was the highest retention rate we have seen until now in the Citizen Panel⁶. In wave eleven, the retention rate has returned to “normal” so to speak. The respondents recruited in wave 8 had a retention rate of 90.1 percent. (figure 2), which is more or less identical to the retention rate of the other recruitment waves in t4. The respondents recruited in wave 3 has a retention rate of 92.3 percent, on par with the rate for wave 1 recruits in t9.



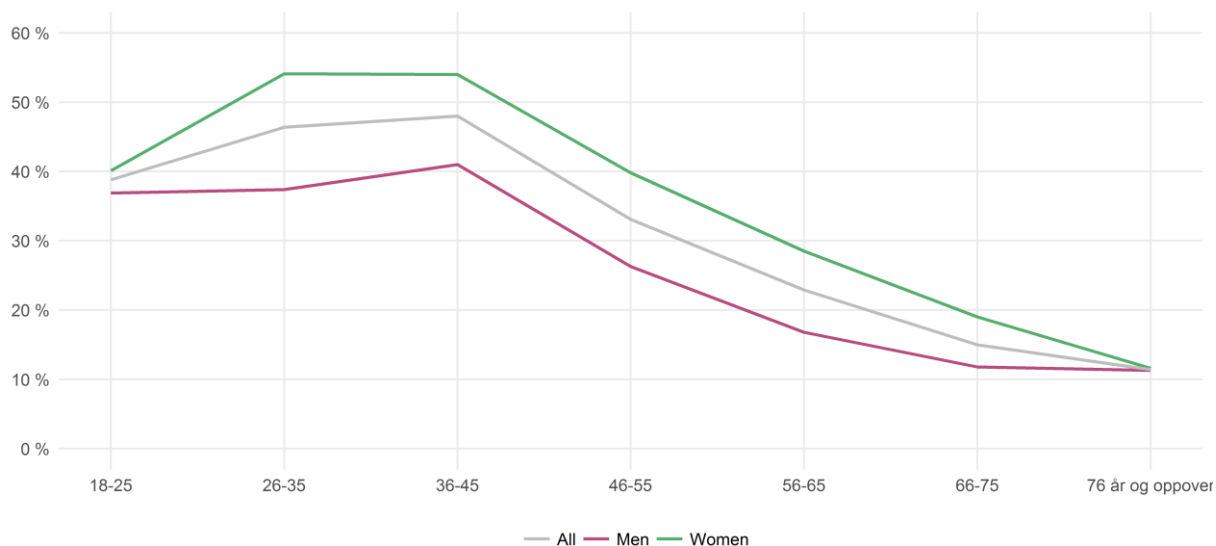
⁶ Wave 10 was conducted at the same time as the Norwegian parliamentary election. This is probably the main explanation for the high retention rate in this wave.

PLATFORMS

The questionnaire was prepared for data input via smart phones. In order to enhance the respondents' experience with the questionnaire, mobile users got a different visual representation of some questions.

24.8 percent of all survey respondents that opened the questionnaire used a mobile phone. 10 percent of the mobile users did not complete to such an extent that they were classified as respondents in wave 11. For non-mobile users the percentage was 5.9 percent. Mobile users were thus more likely to leave the questionnaire before completion. This was also the case in previous waves.

Figure 5: Share of mobile users by gender and age in wave 11



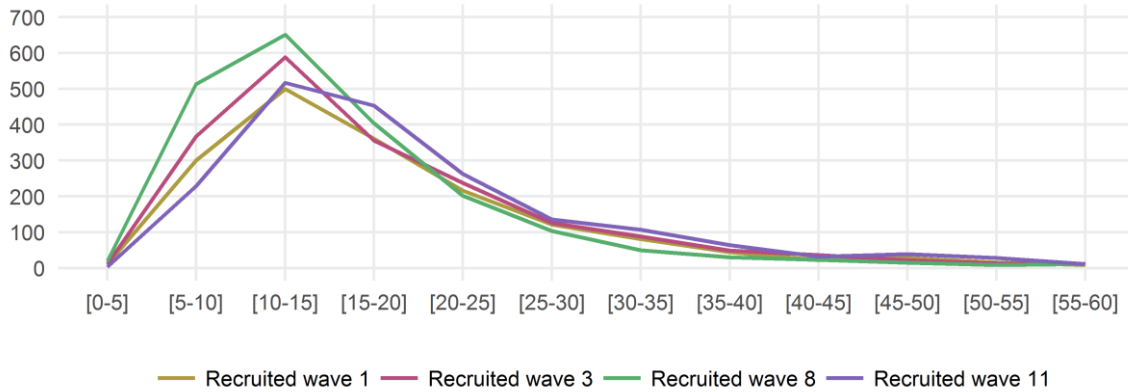
With the exception of respondents between the age of 18 and 25, the general tendency is that younger respondents are more inclined to use their mobile phone when answering the questionnaire (figure 5). Respondents between 25 and 45 years of age (both men and women) use their mobile most frequently.

As in previous waves, women are in general more inclined to use mobile phones to answer the questionnaire compared to men. 54 percent of women in the age group 26 - 35 use their mobile phones when filling out the questionnaire, compared to 41 percent of the men in the same age group.

TIME USAGE

The average respondent used 18.3 minutes to complete the questionnaire. This is three minutes above what respondents were told upon invitation. The challenge of measuring average time usage is that respondents may leave the questionnaire open in order to complete the survey later. This idle time causes an artificially high average for completing the survey. If we include only respondents that use 60 minutes or less, the average response time is 16 minutes.

Figure 6: Time usage of survey respondents in wave 11



Unlike earlier waves, the wave 11 questionnaire was for the most part similar for all respondents. The questionnaire was not divided into different thematic subgroups. However, figure 6 shows that respondents recruited in wave 11 used more time answering the questionnaire. This is mostly explained by procedures of registration, but experience and familiarity with NCP questionnaires might also influence the amount of time used.

Table 5: Average time usage (minutes) in wave 11

	All respondents	Recruited wave 1	Recruited wave 3	Recruited wave 8	Recruited wave 11
All users	18.3	18.6	18.3	16.3	20.2
Non-mobile users	19.1	19.4	19.0	17.1	20.6
Mobile users	16.4	16.8	16.4	14.8	18.6

As before, mobile users on average use substantially less time on the survey than non-mobile users. The documentation report from wave 7 showed that mobile users spend less time writing text on open text questions. Mobile users in wave 7 wrote on average 42 characters in the open text questions, while users answering on non-mobile platforms on average wrote 62 characters.

The same report also noted that mobile users spend considerable less time answering some of the more complex questions in the questionnaire (i.e. questions with long and/or high degree of complexity in the vignettes). This could imply that users on mobile platforms spend less time reading vignettes before answering the questions. 65 percent of the respondents answering “don’t know” on one specific, complex question in the wave 7 survey were mobile users, a significantly higher number than expected when we take into account that the percentage of respondents answering the survey on a mobile phone is 26 percent of the total sample. Our numbers show that mobile users on average spent less time than non-mobile users on 85 percent of the questions in the seventh wave.

REPRESENTATIVITY

In this section, we describe the representativity of the panel as a whole. First, we will discuss factors explaining representativity. Thereafter we apply demographic variables to present data on representativity by different strata. The data on representativity is the foundation for the section on weighting.

FACTORS EXPLAINING LACK OF REPRESENTATIVITY

There are two main points that can serve as explanations to non-response and lack of representativity:

- ◆ access to and familiarity with the internet (given that a web-based questionnaire was the only response mode made available)
- ◆ the motivation and interest of the respondents

The first challenge is strongly related to the age composition of the survey respondents. Although Norway has a very high computer and internet density, the probability of having an e-mail address, and the skills required to access and fill in an online questionnaire, normally decreases with increasing age. The second challenge, motivation and interest, is often explained by the respondents' level of education. In addition to age and education, we added the variables of geography and gender in order to test the representativity of the survey respondents. The variables have the following categories:

- ◆ Age: 19-29 years, 30-59 years, 60 and above.
- ◆ Highest completed education: no education/elementary school, upper secondary, university/university college.
- ◆ Geography: Oslo/Akershus, Eastern Norway, Southern Norway, Western Norway, Trøndelag, Northern Norway.

THE REPRESENTATIVITY OF THE NORWEGIAN CITIZEN PANEL

The sampling frame of the survey equals to the Norwegian population above the age of 18, comprising a population of approximately 4,1 million individuals. Earlier reports have documented a systematic underrepresentation of respondents belonging to the two lowest educational groups, independent of gender and age. The underrepresentation is particularly strong for young men. As expected, individuals with education from universities or university colleges are overrepresented. All of these observations are still true for wave 11.

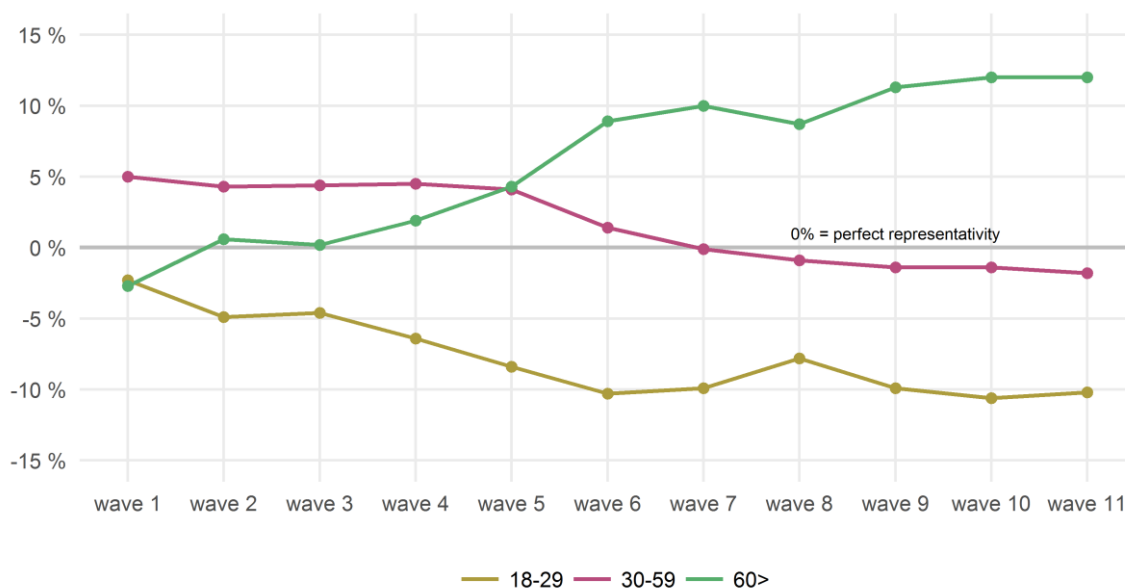
Table 6: Age distribution in the population and the net sample of wave 11

	18-29 years	30-59 years	60 years and above
Population	20.3 %	51.1 %	28.6 %
Net sample – w11	10.1 %	49.3 %	40.6 %

From the age distribution presented in table 6, we see that 18-29 year olds are underrepresented in the net sample of wave 11. The representation of the age group 30-59 years in the net sample is more or less on par with the age distribution in the population, while respondents aged 60 years and above are clearly overrepresented.

As a result of recruiting new panel members in wave 11, the representation of different age groups was marginally improved in wave 11 compared to wave 10 (figure 7). Loyalty to the panel explains the development of the oldest age group in figure 7; they started out as underrepresented in wave 1, but thereafter they have become increasingly overrepresented. A less sense of loyalty/interest explains the development of 18-29 years old as they have become increasingly underrepresented over time.

Figure 7: Representativity of age groups from wave 1- 11



New patterns emerge when adding gender in table 7; young men are more underrepresented than young women. In the oldest age group, men are clearly overrepresented, more so than women. Lastly, the middle-aged men in the net sample are underrepresented, while women in this age bracket are overrepresented.

Table 7: Combined distribution of age and gender in the population and the net sample of wave 11

	18-29 years		30-59 years		60 years and above	
	Men	Women	Men	Women	Men	Women
Population	10.4 %	9.9 %	26.3 %	24.8 %	13.4 %	15.2 %
Net sample – w11	4.2 %	5.9 %	23.3 %	26.0 %	22.3 %	18.3 %

The inclusion of educational level in table 8 reveals a systematic underrepresentation of respondents with little or no education, independent of age and gender. As discussed in relation to table 6, the underrepresentation is strong for young respondents. The underrepresentation is also strong for middle-aged respondents with little or no education. There is also some underrepresentation of respondents aged 60 and above with little or no education.

Table 8: Combined distribution of age, gender and education in the population and the net sample of wave 11

		Population		Net sample – w11	
		Men	Women	Men	Women
18-29 years	No education/elementary school	4.1 %	3.1 %	0.6 %	0.5 %
	Upper secondary education	4.1 %	3.2 %	2.2 %	2.2 %
	University/university college	2.3 %	3.6 %	3.1 %	1.6 %
30-59 years	No education/elementary school	5.5 %	4.7 %	0.8 %	1.1 %
	Upper secondary education	11.6 %	8.3 %	6.2 %	8.4 %
	University/university college	9.2 %	11.8 %	19.1 %	14.0 %
60 and above	No education/elementary school	3.2 %	4.6 %	2.3 %	2.5 %
	Upper secondary education	6.7 %	7.3 %	4.6 %	6.8 %
	University/university college	3.6 %	3.3 %	10.9 %	13.0 %

Respondents that have upper secondary education as their highest completed education are somewhat underrepresented in most groups. The exception is women aged 30-59 years and 60 years and above who is on par with the distribution in the population. Those who have university or university college education are clearly overrepresented in the two oldest age brackets, independent of gender.

Figure 8: Representativity of education groups from wave 1- 11

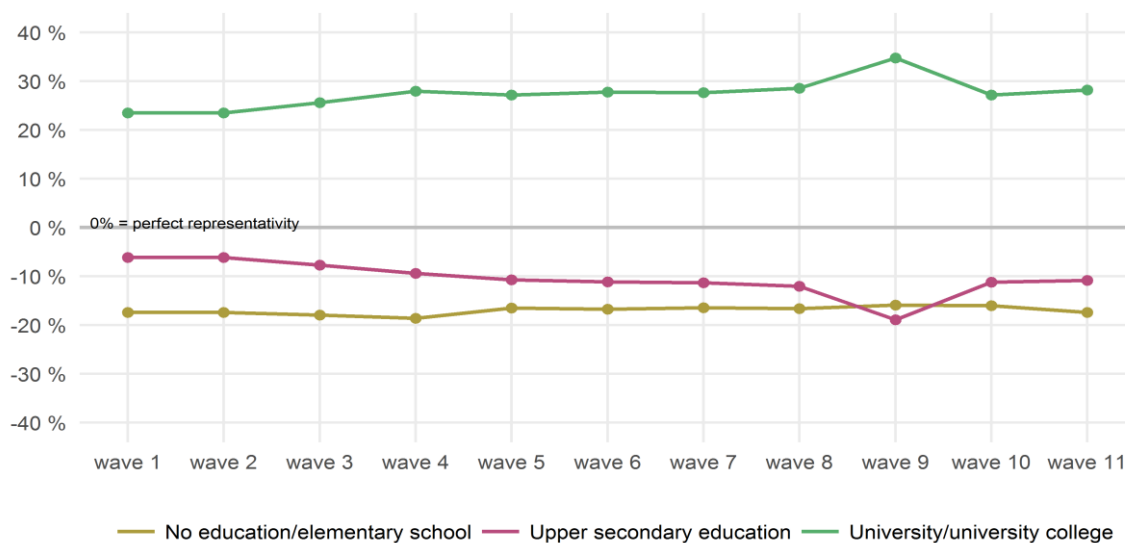


Figure 8 illustrates the representation of education groups since wave 1. The general trend is that the highly educated are overrepresented compared to those with less or no education. The share of respondents with upper secondary education decreased from wave 8 to 9. However, in wave 10 and 11 it seems that the Norwegian Citizen panel has retrieved these respondents and consequently improving the underrepresentation of respondents with upper secondary education

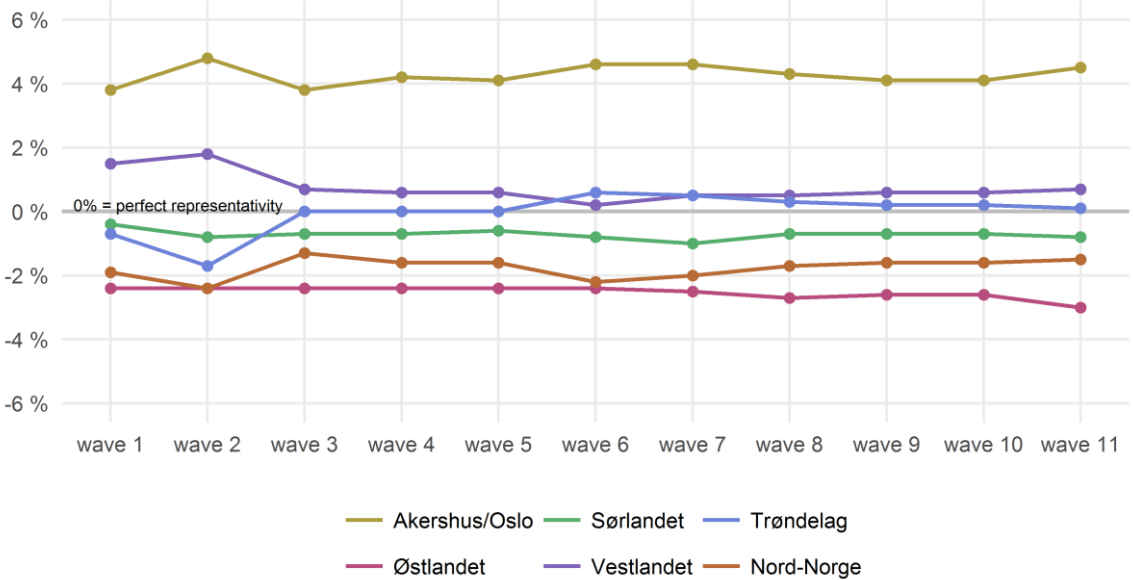
In regards to geography, (table 9) we observe that Western Norway, Trøndelag and Southern Norway are on level with the population, while the capital area – the counties of Oslo and Akershus – is clearly overrepresented. Northern Norway and Eastern Norway meanwhile are underrepresented among the respondents in the eleventh wave.

Table 9: Combined distribution of age, gender and geography in the population and the net sample of wave 11

		Population			Net sample – w11		
		Men	Women	Total	Men	Women	Total
Akershus/Oslo	18-29 years	2.5 %	2.6 %	5.2 %	1.9 %	1.3 %	3.2 %
	30-59 years	6.8 %	6.4 %	13.2 %	8.1 %	6.5 %	14.6 %
	60 and above	2.7 %	3.1 %	5.8 %	5.1 %	5.7 %	10.8 %
	In total	12.0 %	12.2 %	24.1 %	15.1 %	13.5 %	28.6 %
Eastern Norway	18-29 years	2.5 %	2.3 %	4.8 %	1.2 %	0.8 %	2.0 %
	30-59 years	6.7 %	6.5 %	13.2 %	5.8 %	4.9 %	10.7 %
	60 and above	4.0 %	4.6 %	8.6 %	4.7 %	6.2 %	10.9 %
	In total	13.2 %	13.4 %	26.5 %	11.7 %	11.9 %	23.6 %
Southern Norway	18-29 years	0.6 %	0.6 %	1.2 %	0.3 %	0.3 %	0.6 %
	30-59 years	1.4 %	1.4 %	2.8 %	1.2 %	1.2 %	2.4 %
	60 and above	0.8 %	0.9 %	1.6 %	0.8 %	1.1 %	1.9 %
	In total	2.8 %	2.8 %	5.6 %	2.3 %	2.6 %	4.9 %
Western Norway	18-29 years	2.8 %	2.6 %	5.4 %	1.5 %	1.0 %	2.5 %
	30-59 years	6.8 %	6.3 %	13.1 %	6.8 %	6.5 %	13.3 %
	60 and above	3.4 %	3.8 %	7.2 %	4.9 %	5.7 %	10.6 %
	In total	13.0 %	12.7 %	25.7 %	13.2 %	13.2 %	26.4 %
Trøndelag	18-29 years	1.0 %	0.9 %	1.9 %	0.6 %	0.5 %	1.1 %
	30-59 years	2.2 %	2.1 %	4.2 %	2.2 %	2.2 %	4.4 %
	60 and above	1.2 %	1.3 %	2.5 %	1.4 %	1.8 %	3.2 %
	In total	4.4 %	4.3 %	8.7 %	4.2 %	4.5 %	8.7 %
Northern Norway	18-29 years	1.0 %	0.9 %	1.9 %	0.5 %	0.3 %	0.8 %
	30-59 years	2.3 %	2.2 %	4.5 %	1.8 %	2.0 %	3.8 %
	60 and above	1.4 %	1.5 %	2.9 %	1.4 %	1.8 %	3.2 %
	In total	4.7 %	4.6 %	9.3 %	3.7 %	4.1 %	7.8 %

The clearly most overrepresented group are men and women aged 60 years and above living in the capital area. This group accounts for 5.8 percent of the population but 10.8 percent of the respondents in wave 11 belongs to this demography. The most underrepresented groups are middle aged men and women in Eastern Norway, in addition to young men and women in all regions.

Figure 9: Representativity of regions from wave 1- 11



The representativity of regions has for the most part gone unchanged from wave 1 through wave 11 (figure 9). The most notable change from wave 10 to 11 is that the underrepresentation of respondents from Østlandet has somewhat increased, which is also true for the overrepresentation of respondents from Akershus/Oslo. Once recruited, however, it does not seem that geography has an important role in determining the loyalty of the respondent. At least not at the same level as age and education.

WEIGHTING

To compensate for the observed biases, we have calculated a set of weights. The weights are equal to the relation between a given strata in the population and the total population, divided by the relation between a given strata in the net sample and the total net sample.⁷ This procedure returns values around 1, but above 0. Respondents belonging to a stratum that is underrepresented will receive a weight above 1 and respondents belonging to an overrepresented stratum will receive a weight below 1. We have listed the weights of the different strata in table 11 in the appendix.

When calculating the weights, information regarding the respondents' geographical location, gender and age is based on registry data. Information on these variables was included in the sample file we received from the Norwegian National Registry. Information regarding the level of education is from the survey. 3 percent of the tenth wave net sample have not answered the question about level of education. Because of this, two different weights have been calculated:

- ◆ **Weight 1** is based on demographic variables only (age, gender and geography)
- ◆ **Weight 2** combines the demographic variables with education. Respondents with missing data on the education variable are only weighted on demography (the education component of the weight is in these cases set to 1).

The variables have the following categories:

- ◆ **Age:** 19-29 years, 30-59 years, 60 and above.⁸
- ◆ **Highest completed education:** no education/elementary school, upper secondary, university/university college.
- ◆ **Geography:** Oslo/Akershus, Eastern Norway, Southern Norway, Western Norway, Trøndelag, Northern Norway.

The method for calculating weights is equal to that of previous waves.

When applied, both weights will provide a weighted N equal to the number of respondents in the dataset.

As shown in the discussion above, of the factors considered, level of education creates the most bias. We therefore strongly recommend using weight 2 in most statistical analyses, as this weight provides the most accurate compensation for the various sources of bias in the net sample. Table 10 shows the effects of weight 2 on the distribution of self-reported level of education in the net sample. As we can observe, the weight gives the sample a perfect distribution compared to the population. It is however important to stress that the distribution when not weighted is far from ideal, with a clear underrepresentation of the population with low levels of education.

Table 10: Effect of weight 2 on self-reported level of education

	Sample - not weighted	Sample - weighted	Population	Difference between sample and population	Difference between weighted sample and population
No education/elementary school	7.80 %	24.70 %	25.20 %	-17.40 %	-0.50 %
Upper secondary education	30.04 %	41.20 %	41.20 %	-11.16 %	-0.00 %
University/university college	61.80 %	34.10 %	33.60 %	28.20 %	0.50 %

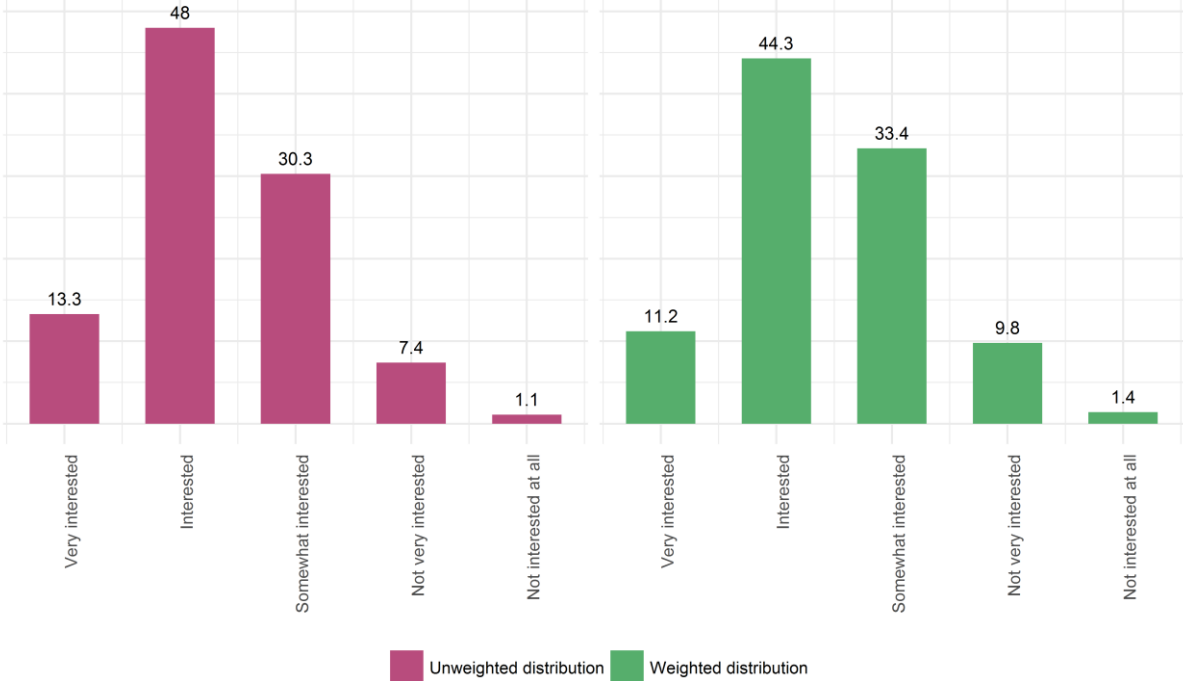
⁷ The applied formula for weight w_i for element i , in strata h is: $w_i = \frac{N_h/N}{n_h/n}$

⁸ Note: In 2018 NCP changed the age variables in the datasets in order to make the respondents less identifiable. The weights are calculated with the old age variables (19-29 years, 30-59 years, 60 and above), which no longer are publically available.

Furthermore, literature on surveys has shown that individuals who are interested in politics are more likely to participate in surveys than individuals who are not. This particularly holds true for surveys with politics as a topic.⁹

Figure 10 displays the distribution of level of political interest, weighted and not weighted. Respondents who self-identify as interested in politics (very interested and interested) make up 61.3 percent in the not weighted distribution. 30 percent are somewhat interested, meaning that 8.5 percent of the respondents report being somewhat or not interested in politics. In the weighted statistics, the share of respondents who self-identify as being interested in politics reaches 55.5 percent. Those who report not being interested (not very interested and not interested at all) in politics make up 11.2 percent.

Figure 10: Distribution of political interest - weighted and unweighted



⁹ Groves, Robert M., Stanley Presser and Sarah Dipko (2004): "The Role of Topic Interest in Survey Participation Decisions". Public Opinion Quarterly. Vol. 68, No. 1:2-31

APPENDIX

Table 11: Weights applied to different strata (weight 2)

			Men	Women				Men	Women
Oslo/Akershus	18-29 years	No education/elementary school	10.0	5.0	Western Norway	18-29 years	No education/elementary school	9.4	6.0
		Upper secondary education	2.4	1.7			Upper secondary education	1.8	1.7
		University/university college	1.0	1.0			University/university college	0.7	1.4
	30-59 years	No education/elementary school	3.3	3.1		30-59 years	No education/elementary school	2.0	3.2
		Upper secondary education	1.3	1.1			Upper secondary education	1.5	1.3
		University/university college	0.7	0.6			University/university college	0.6	0.6
	60 and above	No education/elementary school	1.4	2.6		60 and above	No education/elementary school	1.9	2.3
		Upper secondary education	0.8	1.1			Upper secondary education	0.9	1.4
		University/university college	0.3	0.2			University/university college	0.3	0.2
Eastern Norway	18-29 years	No education/elementary school	9.1	6.2	Trøndelag	18-29 years	No education/elementary school	4.9	5.4
		Upper secondary education	1.8	2.2			Upper secondary education	1.9	1.4
		University/university college	0.6	0.8			University/university college	0.8	0.8
	30-59 years	No education/elementary school	3.9	2.3		30-59 years	No education/elementary school	3.0	2.7
		Upper secondary education	1.4	1.7			Upper secondary education	1.1	1.5
		University/university college	0.6	0.7			University/university college	0.6	0.8
	60 and above	No education/elementary school	2.0	4.1		60 and above	No education/elementary school	2.4	3.4
		Upper secondary education	1.2	1.6			Upper secondary education	0.8	1.2
		University/university college	0.4	0.3			University/university college	0.4	0.3
Southern Norway	18-29 years	No education/elementary school	NA	3.9	Northern Norway	18-29 years	No education/elementary school	9.2	6.7
		Upper secondary education	4.1	2.3			Upper secondary education	2.0	2.2
		University/university college	2.1	0.8			University/university college	1.5	1.1
	30-59 years	No education/elementary school	2.9	3.3		30-59 years	No education/elementary school	2.7	2.7
		Upper secondary education	1.2	1.4			Upper secondary education	1.4	1.2
		University/university college	0.6	0.9			University/university college	0.7	0.8
	60 and above	No education/elementary school	1.9	3.9		60 and above	No education/elementary school	1.7	3.6
		Upper secondary education	1.2	2.6			Upper secondary education	1.1	2.0
		University/university college	0.4	0.3			University/university college	0.3	0.3

REPRESENTATIVITY MEMBERS RECRUITED IN THE ELEVENTH WAVE

Figure 11: Age and gender by mode of recruitment
Confidence level: 95 %

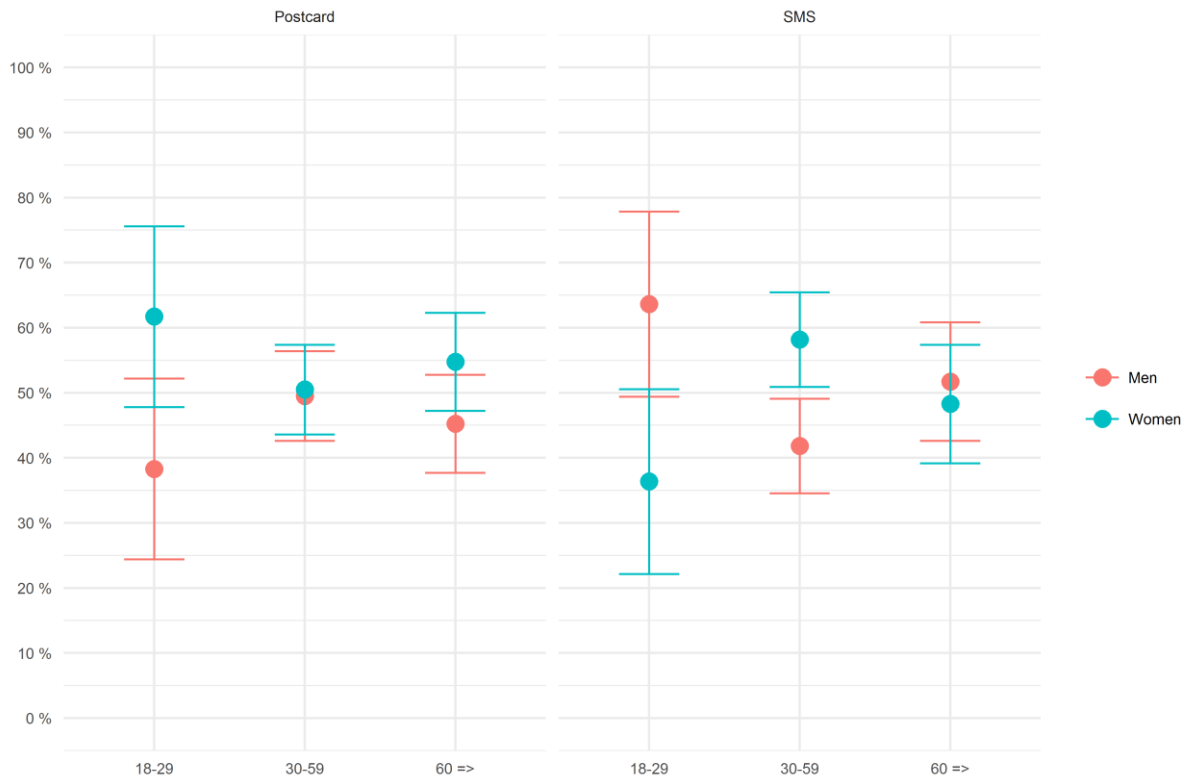


Figure 12: Political interest by recruitment mode

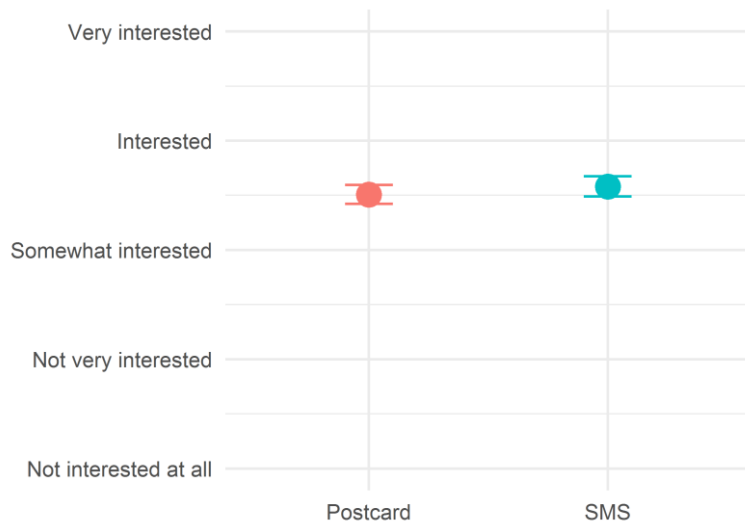


Table 12: Age distribution in the population and the members recruited in wave eleven

	18-29 years	30-59 years	60 years and above
Population	20.3 %	51.1 %	28.6 %
Net sample – w11	16.2 %	50.7 %	33.1 %

Table 13: Combined distribution of age and gender in the population and the members recruited in wave eleven

	18-29 years		30-59 years		60 years and above	
	Men	Women	Men	Women	Men	Women
Population	10.4 %	9.9 %	26.3 %	24.8 %	13.4 %	15.2 %
Net sample – w11	7.0 %	9.2 %	24.3 %	26.3 %	17.6 %	15.5 %

Table 14: Combined distribution of age, gender and education in the population and the members recruited in wave eleven

		Population		Net sample – w11	
		Men	Women	Men	Women
No education/elementary school	18-29 years	4.1 %	3.1 %	1.7 %	1.1 %
		4.1 %	3.2 %	4.0 %	3.8 %
		2.3 %	3.6 %	3.6 %	2.0 %
Upper secondary education	30-59 years	5.5 %	4.7 %	0.7 %	1.4 %
		11.6 %	8.3 %	6.9 %	9.2 %
		9.2 %	11.8 %	18.9 %	14.1 %
University/university college	60 and above	3.2 %	4.6 %	1.9 %	2.1 %
		6.7 %	7.3 %	4.4 %	5.4 %
		3.6 %	3.3 %	8.9 %	9.8 %

Table 15: Combined distribution of age, gender and geography in the population and the members recruited in wave eleven

		Population			Net sample – w11		
		Men	Women	Total	Men	Women	Total
Akershus/Oslo	18-29 years	2.5 %	2.6 %	5.2 %	2.8 %	1.9 %	4.7 %
	30-59 years	6.8 %	6.4 %	13.2 %	8.1 %	7.2 %	15.3 %
	60 and above	2.7 %	3.1 %	5.8 %	4.4 %	4.6 %	9.0 %
	In total	12.0 %	12.2 %	24.1 %	15.3 %	13.7 %	29.0 %
Eastern Norway	18-29 years	2.5 %	2.3 %	4.8 %	1.8 %	1.5 %	3.3 %
	30-59 years	6.7 %	6.5 %	13.2 %	6.1 %	5.2 %	11.3 %
	60 and above	4.0 %	4.6 %	8.6 %	4.0 %	4.5 %	8.5 %
	In total	13.2 %	13.4 %	26.5 %	11.9 %	11.2 %	23.1 %
Southern Norway	18-29 years	0.6 %	0.6 %	1.2 %	0.7 %	0.3 %	1.0 %
	30-59 years	1.4 %	1.4 %	2.8 %	1.0 %	1.4 %	2.4 %
	60 and above	0.8 %	0.9 %	1.6 %	0.7 %	1.3 %	2.0 %
	In total	2.8 %	2.8 %	5.6 %	2.4 %	3.0 %	5.4 %
Western Norway	18-29 years	2.8 %	2.6 %	5.4 %	2.2 %	1.8 %	4.0 %
	30-59 years	6.8 %	6.3 %	13.1 %	7.2 %	7.0 %	14.2 %
	60 and above	3.4 %	3.8 %	7.2 %	4.2 %	4.3 %	8.5 %
	In total	13.0 %	12.7 %	25.7 %	13.6 %	13.1 %	26.7 %
Trøndelag	18-29 years	1.0 %	0.9 %	1.9 %	1.1 %	0.8 %	1.9 %
	30-59 years	2.2 %	2.1 %	4.2 %	2.0 %	2.0 %	4.0 %
	60 and above	1.2 %	1.3 %	2.5 %	1.1 %	1.4 %	2.5 %
	In total	4.4 %	4.3 %	8.7 %	4.2 %	4.2 %	8.4 %
Northern Norway	18-29 years	1.0 %	0.9 %	1.9 %	0.6 %	0.7 %	1.3 %
	30-59 years	2.3 %	2.2 %	4.5 %	1.9 %	1.5 %	3.4 %
	60 and above	1.4 %	1.5 %	2.9 %	1.1 %	1.5 %	2.6 %
	In total	4.7 %	4.6 %	9.3 %	3.6 %	3.7 %	7.3 %