

Norwegian Citizen Panel

2019, Fourteenth Wave

Methodology report

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TABLE OF CONTENTS

Background	2
Technical Aspects of the Survey.....	2
Software	2
Pilot – Procedure and Assessment.....	2
Randomization Procedures	3
Panel Recruitment first, third, eight, and eleventh wave	4
Data Collection wave 14.....	5
Recruiting a New Set of Panel Members.....	5
The Recruitment Process	5
Results of the Recruitment Process - Survey Respondents and Panel Members	5
Results of the Recruitment Process - Survey Respondents and Panel Members	5
Responses by Method of Data Collection	6
Responses of existing panel members	7
Responses by Method of Data Collection	7
Response of Existing Panel Members Over Time	8
Platforms	8
Time Usage.....	9
Representativity	10
Factors Explaining Lack of Representativity	10
The Representativity of the Norwegian Citizen Panel	11
Weighting.....	14
Appendix	16

BACKGROUND

This report describes the procedures of data collection in the fourteenth wave of The Norwegian Citizen Panel. 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 one of the main components of Digital Social Science Core Facility (DIGSSCORE) at the University of Bergen. NCP was established as a collaboration between several departments at the Faculty of Social Sciences at the University of Bergen and Uni Research Rokkan Centre.

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 small-N pilot testing before data collection. 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.

The field period started by inviting a random sample of the respondents (soft launch). This was done in order to minimize the consequences if the questionnaire contained technical errors. No such errors were located/reported after two hours of data collection among the random sample. Remaining panel members was therefore invited.

During the data collection seven respondents reported having problems with the URL directing to the questionnaire due to TLS security settings. These issues were explained by the use of old browsers¹ that does not support TLS version 1.2.

In addition, three newly recruited respondents had problems accessing uib.no/medborger due to scheduled maintenance from the UiB IT-department. The maintenance caused a small time window where the website was inaccessible.

These problems however effected a low number of panel respondents (ten in all), the field period is thus regarded as successful.

¹ <https://qportal.atlassian.net/wiki/spaces/DOC/pages/3571715/TLSv1.2+Browser+Compatibility>

RANDOMIZATION PROCEDURES

Each wave of NCP has an extensive use of randomization procedures. The context of each randomization procedure may vary,² 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()`³ is a key function, in combination with `Math.floor()`⁴. These functions are used to achieve the following:

- Randomly select one value from a vector
- 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 Confirmit⁵:

² 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.

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

⁴ Please see following resource (or other internet resources):https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Math/floor

⁵ Code collected from Mike Bostocks visualization: <https://bost.ocks.org/mike/shuffle/>

```

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;
}

```

PANEL RECRUITMENT FIRST, THIRD, EIGHT, AND ELEVENTH WAVE

Existing panel members were recruited in wave 1, wave 3, wave 8, and wave 11. 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 formal responsibility for this registry is held by the Norwegian Tax Administration but the administration is partly outsourced 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 persons without a current home address in Norway.

For a detailed description of the recruitment process in wave 1, wave 3, wave 8 and wave 11, we refer to the respective methodology reports for each wave. Note, however, that there are some differences between the recruitment processes. Please refer to table 1.

Table 1: Summary of recruitment processes

	Sample size	Mode	Contacts	Returned letters	Response Rate (%)
Recruitment 1 (wave 1)	25 000	Postal	2	546	20.1 %
Recruitment 2 (wave 3)	25 000	Postal, phone/SMS	4	543	23.0 %
Recruitment 3 (wave 8)	22 000	Postal/SMS	3	479	19.4 %
Recruitment 4 (wave 11)	14 000	Postal/SMS	2	334	15.1 %
Recruitment 5 (wave 14)	14 000	Postal/SMS	2	389	15.0 %

THE RECRUITMENT PROCESS

As in the preceding waves of recruitment a gross sample was drawn from the population registry. 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) year of birth. The sample excluded individuals without a current home address in Norway.

RESULTS OF THE RECRUITMENT PROCESS - SURVEY RESPONDENTS AND PANEL MEMBERS

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 in to 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 15th of January 2019.

The second reminder was distributed by SMS or post card. Respondents below 60 years of age registered with a cell phone number received a SMS. Respondents that did not fit this description received a post card reminder. This is different from earlier waves of recruitment, apart from wave 11 where an experiment was conducted with the use of SMS and postcard. That experiment gave the panel more information regarding the effectiveness of different recruitment strategies, and thus gave the opportunity for a more cost-efficient use of reminders in wave 14.

Both 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 posted the 22nd of January, and the SMS was distributed January 24th.

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, 389 were returned, and 8 respondents opted out. 28.3 percent (3,851) of the remaining 13,603 logged on and accessed the survey. 2,020 individuals completed the questionnaire, and 835 exited the questionnaire before completion, though 6.9 percent of these responses are kept as a part of the survey data. The remaining 777 incomplete responses are excluded from the survey, due to lack of data. The share of incomplete questionnaires is higher than in any of the previous recruitment waves. Please refer to the heading “Responses by method of data collection” for a detailed discussion.

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 2,036 new survey respondents, a recruitment rate of 15.0 percent. Wave fourteen therefore reproduced the response rate of wave eleven.

99.3 percent of the respondents who completed the survey entered their e-mail address. Of the incomplete respondents, 96.9 percent entered their e-mail address. In sum, after subtracting respondents with mismatching credentials, 2,120 new **panel members** were recruited to the Norwegian Citizen Panel, resulting in a panel recruitment rate of 15.6 percent.

Further discussions in this report about new recruits in wave fourteen 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

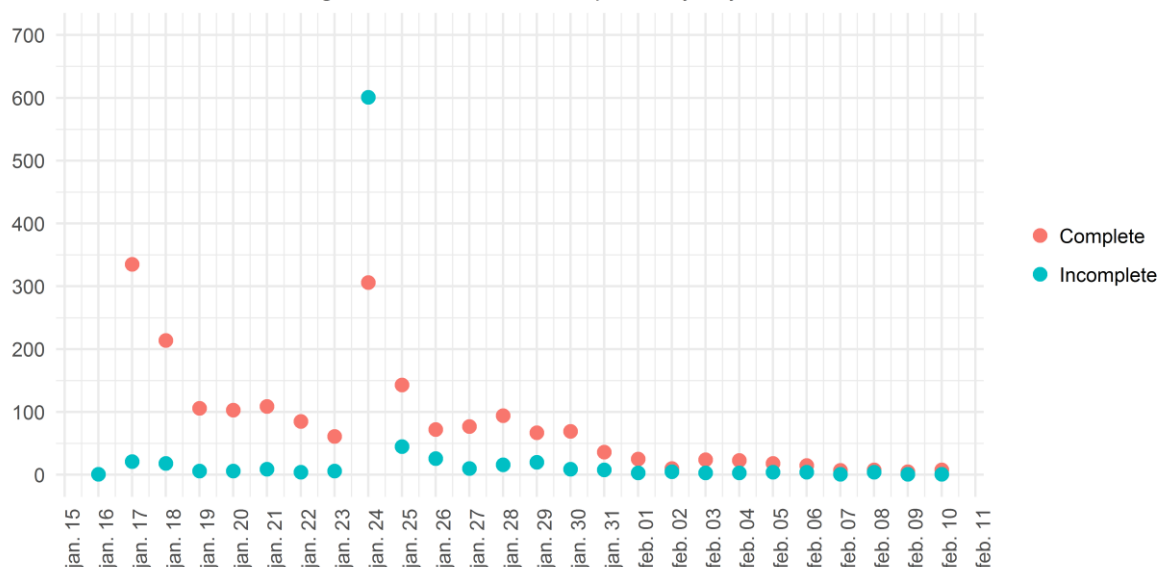
	Response	Response rate (%)	Cumulative Responses	Cumulative Response Rate (%)
Invitation (15 th of January)	870	6.4 %	870	6.4 %
Postcard, reminder (22 nd of January)	657	4.8 %	1 527	11.2 %
SMS, reminder (24 th of January)	509	3.7 %	2 036	15.0 %

Table 2 summarizes the effects of the various stages of data collection. The invitation letter accumulated 870 responses, the postcard 657 responses, and the SMS generated 509 responses: Resulting in a cumulative response rate of 15.0 percent. Compared to other waves of recruitment, wave 11 and wave 14 has a substantially lower response rate. The most important explanation is 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.

As in all surveys, some respondents leave the questionnaire before completion. Historically, about 8-12 percent of the responses are incomplete. In this wave of recruitment however, the incomplete rates increased substantially after the SMS was distributed. More than 600 incomplete responses are generated on the 24th of January (figure 1). 99 percent of the incomplete responses is generated by SMS-recipients, and the majority of them (524) are respondents who opens the survey and exits before answering any questions.

We received no reports from the respondents indicating that the increase in incomplete responses was due to technical issues. A plausible explanation for the high incomplete rate is that the SMS, compared to other modes, contains very limited information about the NCP. Since the respondents are not familiar with the NCP, the SMS-recipients seek more information before declining to participate.

Figure 1: Number of incompletes by day



In order to describe the “revolving door” respondents any further, we investigated what device they used to open the questionnaire. Interestingly, most of them used a PC to open the questionnaire, even though they received the reminder by SMS. This suggests that the recipients were situated close to a computer when they received the SMS, and preferred to use their desktop.

RESPONSES OF EXISTING PANEL MEMBERS

Wave fourteen of the NCP also included data collection from existing members of the panel, recruited in the first, the third, the eighth, and the eleventh 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 distributed to 16,081 existing panel members on January 15th 2019. 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.

The invitation, the first reminder and the second reminder were all distributed via e-mail. The third, and last reminder was, depending on whether the individual panel member had a registered mobile phone number or not, distributed via SMS and e-mail. Prior to wave 14, 30.4 percent of the panel was registered with a mobile phone number.

Table 3: Responses and response rate for panel members by the different stages of data collection

	Response	Cumulative Responses	Response Rate (%)	Cumulative Response Rate
Invitation (15 th of January)	3 966	43.6 %	3 966	43.6 %
1 st reminder (23 rd of January)	1 524	16.8 %	5 490	60.4 %
2 nd reminder (28 th of January)	765	8.4 %	6 255	68.8 %
3 rd reminder – email (1 th of February)	452	5.0 %	6 707	73.8 %
3 rd reminder – SMS (1 th of February)	236	2.6 %	6 943	76.3 %

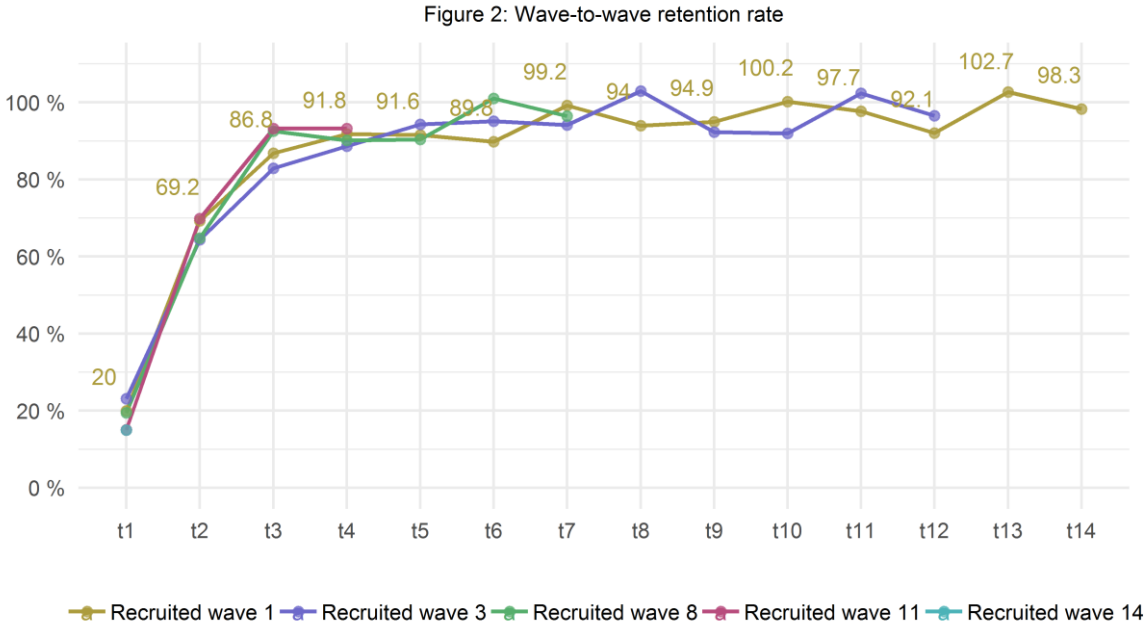
In total, the questionnaire received 6,943 answers from existing panel members. 3,966 respondents completed the survey in the period between the invitation and the first reminder (January 15th–January 23rd), a response rate of 43.6 percent. The pattern is similar to earlier waves; the email invitation produces a higher number of

respondents than the subsequent reminders. For details on the number of respondents after each reminder, we refer you to table 3.

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 9,094 eligible respondents. The overall response rate, as reported in table 3, is **76.3 percent**.

RESPONSE OF EXISTING PANEL MEMBERS OVER TIME

The number of respondents in this last wave is as already mentioned 6,943 – compared to 7,209 in wave 13. This gives us an overall wave-to-wave retention rate of 96.3 percent. This is lower than the retention rate between wave 12 and wave 13, but more aligned with what is considered normal as illustrated in figure 2. Figure 2 starts to suggest a seasonal trend where questionnaires fielded in the fall produces higher retention rates, compared to the questionnaires fielded in the winter and spring.

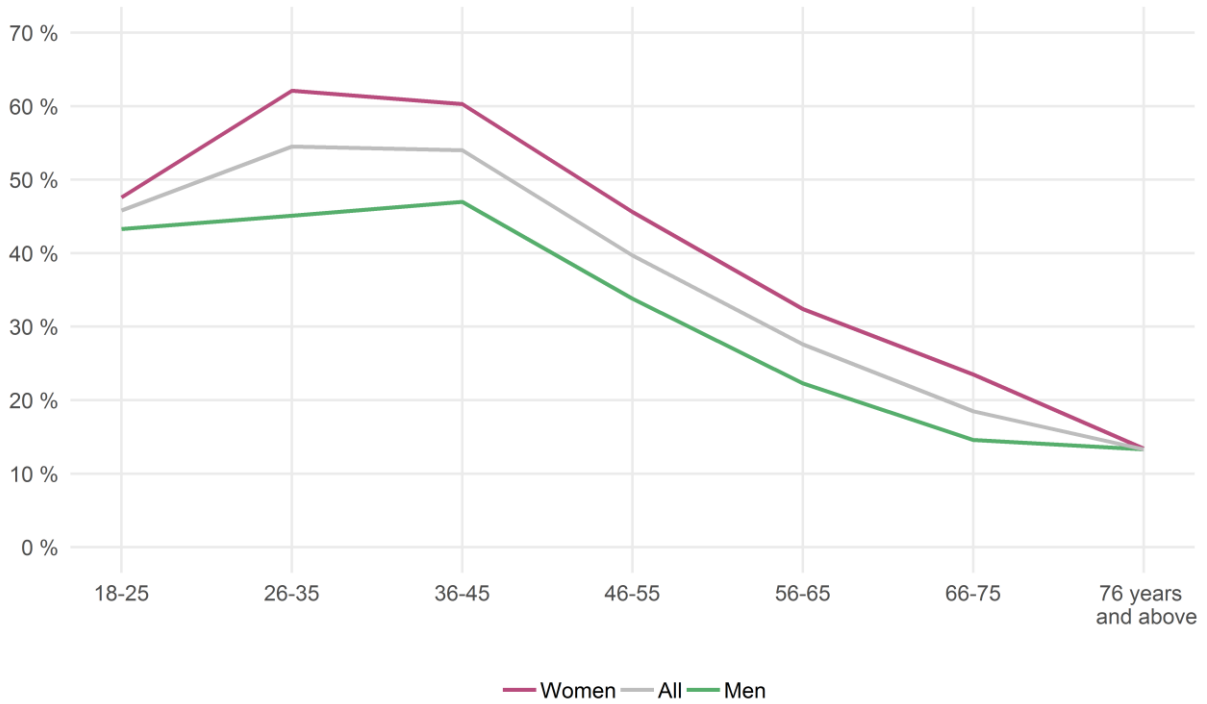


PLATFORMS

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.

34.3 percent of all survey respondents that opened the questionnaire used a mobile phone. 1.6 percent of the mobile users did not complete to such an extent that they were classified as respondents in the wave 14. For non-mobile users the percentage was 0.8 percent. Mobile users were thus somewhat likely to leave the questionnaire before completion. This was also the case in previous waves.

Figure 3: Share of mobile users by gender and age in wave 14

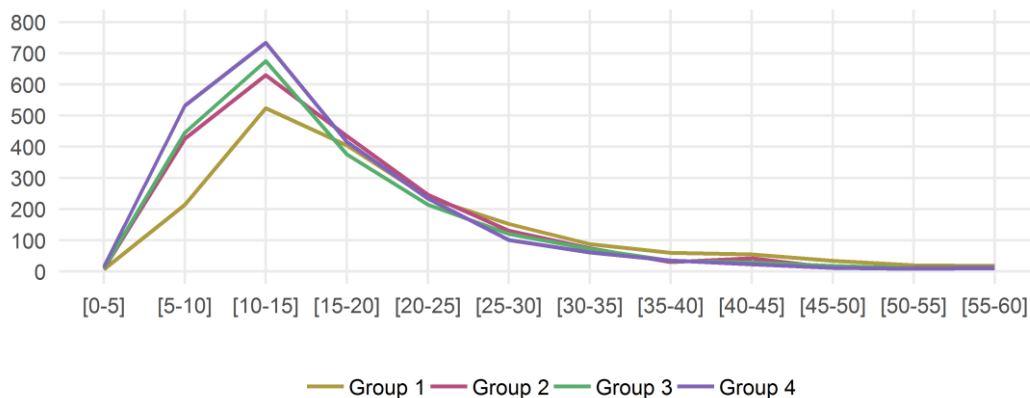


Respondents between 18 and 45 years old are more inclined than others to use their mobile phone when answering the questionnaire, as shown in figure 3. From 46 years and higher, the share of mobile users declines substantially. Overall, women are more inclined to use mobile to answer the questionnaire compared to men. Among the men, the age group 36-45 uses the mobile most frequent (47 percent), while the same is true for women between 26-35 years of age (60 percent).

TIME USAGE

The average respondent used 17.7 minutes to complete the questionnaire. This is close to three minutes more than the 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. The average of 17.7 minutes therefore only includes the respondents which used less than, or equal to, 60 minutes.

Figure 4: Time usage of survey respondents in wave 14



As in earlier waves, the NCP questionnaire is divided into different subsets. Wave 14 consisted of four subsets, group 1-4. The respondents recruited in wave 14 were assigned to group 1. The other panel members were assigned to a group by random, or based on answers in previous waves. Figure 4 and table 4 shows that the newly recruited respondents in group 1 spent on average more time completing the questionnaire than other respondents. This is partly explained by the fact that they are, unlike already recruited panel members, asked to register their email and that they are unfamiliar with the NCP.

Table 4: Average time usage (minutes) in each subset in wave 14

	All respondents	G1-respondents	G2-respondents	G3-respondents	G4-respondents
All users	17.7	20.3	17.6	17.1	16.2
Non-mobile users	18.5	21.1	18.5	17.7	17.0
Mobile users	16.1	18.4	16.0	16.0	14.6

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 was 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 when recruiting panel and maintaining panel members:

- ◆ 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 4,2 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 14.

Table 5: Age distribution in the population and the net sample of wave 14

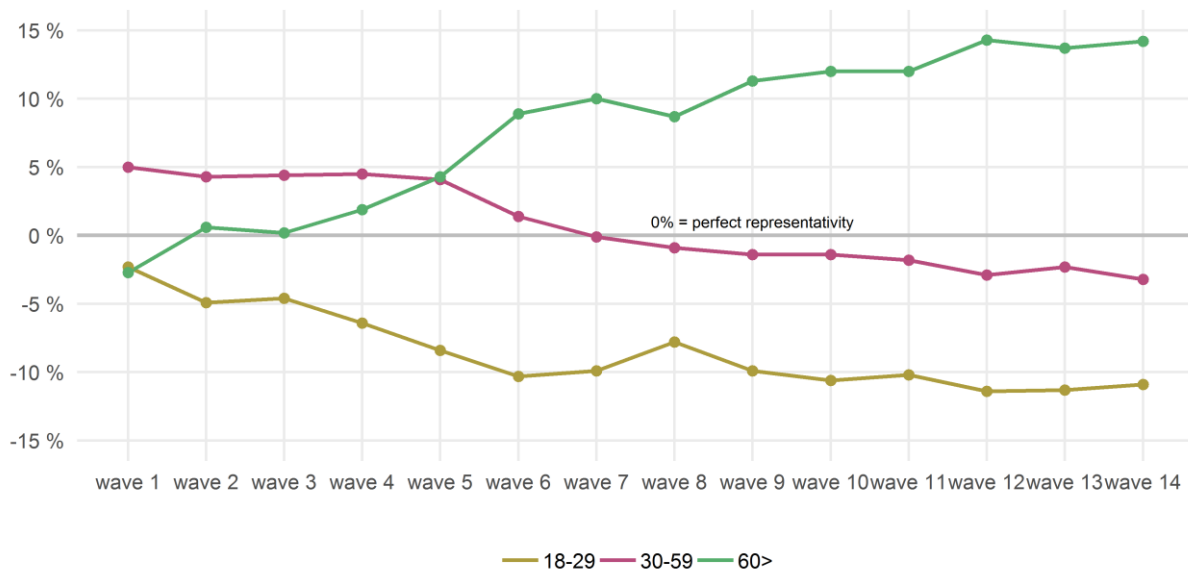
	18-29 years	30-59 years	60 years and above
Population	20.3 %	51.1 %	28.6 %
Net sample	9.4 %	47.9 %	42.8 %

From the age distribution presented in table 5, we see that 18-29 year olds are underrepresented in the net sample of wave 14. The representation of the age group 30-59 years in the net sample is somewhat underrepresented compared to the distribution in the population, while respondents aged 60 years and above are clearly overrepresented.

The representativity of the youngest age bracket is marginally improved in wave 14 compared to wave 13, due to recruitment of new panel member (figure 5). But the age group is still underrepresented by more than 10 percentage points, as it has been the last five waves. The oldest age bracket is still largely overrepresented, and the overrepresentation has marginally increased in wave 14 compared to wave 13. The trend where respondents between 30-59 years of age become marginally more underrepresented from wave to wave continuous.

Loyalty to the panel explains the development of the oldest age group in figure 5; they started out as underrepresented in wave 1, but thereafter they have become increasingly overrepresented. A lesser sense of loyalty/interest explains the development of 18-29 years old as they started out as underrepresented - an underrepresentation that has only increased.

Figure 5: Representativity of age groups from wave 1-14



New patterns emerge when adding gender in table 6; 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 is more or less on par with the population.

Table 6: Combined distribution of age and gender in the population and the net sample of wave 14

	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	4.1 %	5.3 %	22.7 %	25.1 %	23.3 %	19.5 %

The inclusion of educational level in table 6 reveals a systematic underrepresentation of respondents with little or no education, independent of age and gender. As discussed in relation to table 5, 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 7: Combined distribution of age, gender and education in the population and the net sample of wave 14

		Population		Net sample – w14	
		Men	Women	Men	Women
No education/elementary school	18-29 years	4.1 %	3.1 %	0.4 %	0.5 %
Upper secondary education		4.1 %	3.2 %	2.2 %	2.3 %
University/university college		2.3 %	3.6 %	1.4 %	2.4 %
No education/elementary school	30-59 years	5.5 %	4.7 %	0.9 %	0.7 %
Upper secondary education		11.6 %	8.3 %	8.1 %	6.1 %
University/university college		9.2 %	11.8 %	14.0 %	18.6 %
No education/elementary school	60 and above	3.2 %	4.6 %	2.5 %	2.2 %
Upper secondary education		6.7 %	7.3 %	7.2 %	5.0 %
University/university college		3.6 %	3.3 %	13.8 %	11.7 %

Respondents that have upper secondary education as their highest completed education are underrepresented in all groups, except men with upper secondary education aged 60 years or above. Those who have university or university college education are clearly overrepresented in the two oldest age brackets, independent of gender.

Figure 6: Representativity of education groups from wave 1-14

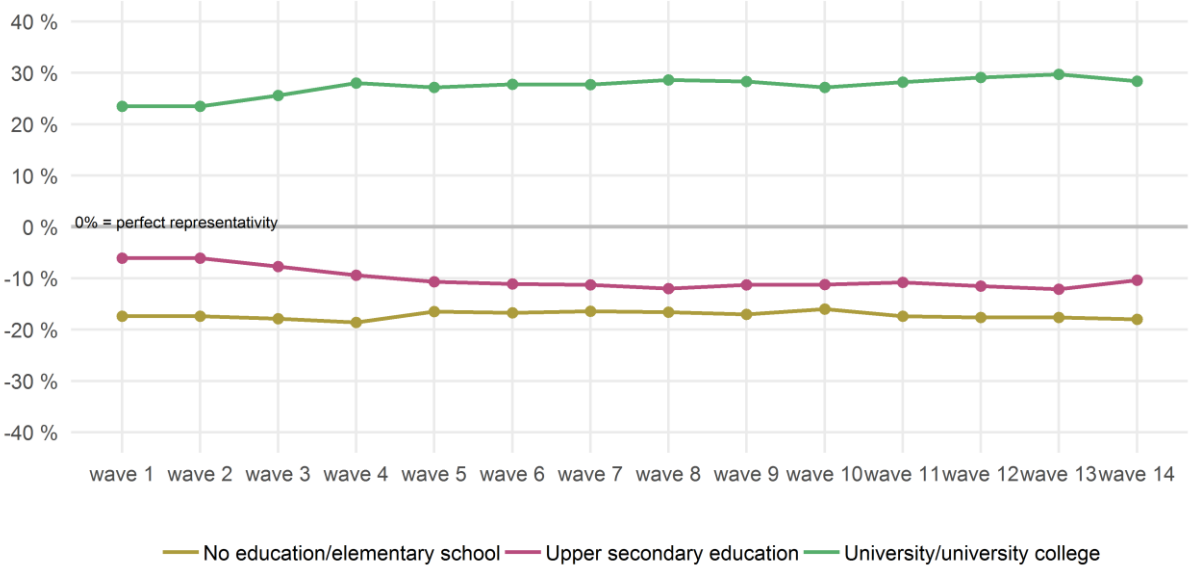


Figure 6 illustrates the representation of education groups since wave 1. The general trend is that the highly educated are overrepresented compared to those with less or no education. In wave 14, the

overrepresentation of the highly education is slightly reduced, with a corresponding decrease in the underrepresentation of respondents with upper secondary education. However, the overall picture is that there has been a slight increase in the overrepresentation of the highly educated respondents since wave 1 and a corresponding increase in the underrepresentation of respondents with less or no education.

In regards to geography, (table 8) we observe that Trøndelag and Southern Norway are on level with the population, while the capital region (the counties of Oslo and Akershus) is clearly overrepresented. Western Norway is also overrepresented, but not as prominent as the capital region. Northern Norway and Eastern Norway meanwhile are underrepresented among the respondents in the fourteenth wave.

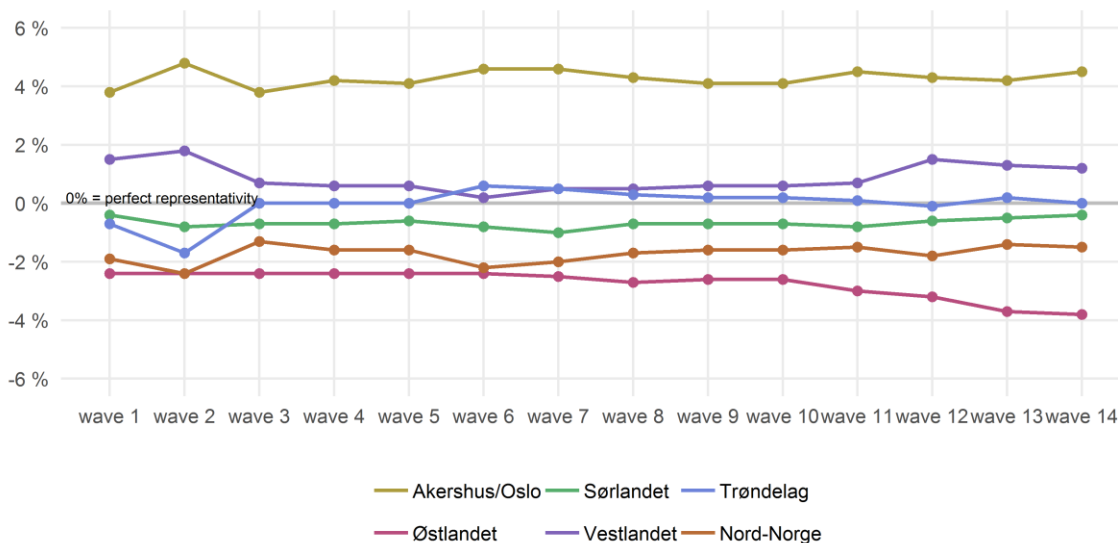
Table 8: Combined distribution of age, gender and geography in the population and the net sample of wave 14

		Population			Net sample – w14		
		Men	Women	Total	Men	Women	Total
Akershus/Oslo	18-29 years	2.5 %	2.6 %	5.2 %	1.2 %	1.7 %	2.9 %
	30-59 years	6.8 %	6.4 %	13.2 %	6.4 %	7.9 %	14.3 %
	60 and above	2.7 %	3.1 %	5.8 %	6.0 %	5.3 %	11.3 %
	In total	12.0 %	12.2 %	24.1 %	13.6 %	14.9 %	28.5 %
Eastern Norway	18-29 years	2.5 %	2.3 %	4.8 %	0.8 %	0.9 %	1.7 %
	30-59 years	6.7 %	6.5 %	13.2 %	4.7 %	5.2 %	9.9 %
	60 and above	4.0 %	4.6 %	8.6 %	6.1 %	5.1 %	11.2 %
	In total	13.2 %	13.4 %	26.5 %	11.6 %	11.2 %	22.8 %
Southern Norway	18-29 years	0.6 %	0.6 %	1.2 %	0.2 %	0.2 %	0.4 %
	30-59 years	1.4 %	1.4 %	2.8 %	1.2 %	1.3 %	2.5 %
	60 and above	0.8 %	0.9 %	1.6 %	1.3 %	1.0 %	2.3 %
	In total	2.8 %	2.8 %	5.6 %	2.7 %	2.5 %	5.2 %
Western Norway	18-29 years	2.8 %	2.6 %	5.4 %	0.9 %	1.4 %	2.3 %
	30-59 years	6.8 %	6.3 %	13.1 %	6.4 %	6.9 %	13.3 %
	60 and above	3.4 %	3.8 %	7.2 %	6.1 %	5.2 %	11.3 %
	In total	13.0 %	12.7 %	25.7 %	13.4 %	13.5 %	26.9 %
Trøndelag	18-29 years	1.0 %	0.9 %	1.9 %	0.5 %	0.6 %	1.1 %
	30-59 years	2.2 %	2.1 %	4.2 %	2.2 %	2.0 %	4.2 %
	60 and above	1.2 %	1.3 %	2.5 %	1.8 %	1.5 %	3.3 %
	In total	4.4 %	4.3 %	8.7 %	4.5 %	4.1 %	8.6 %
Northern Norway	18-29 years	1.0 %	0.9 %	1.9 %	0.5 %	0.4 %	0.9 %
	30-59 years	2.3 %	2.2 %	4.5 %	1.7 %	1.8 %	3.5 %
	60 and above	1.4 %	1.5 %	2.9 %	2.0 %	1.4 %	3.4 %
	In total	4.7 %	4.6 %	9.3 %	4.2 %	3.6 %	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, while 11.3 percent of the respondents in wave 14 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.

The representativity of regions has more or less gone unchanged from wave 1 through wave 14 (figure 7 below). Once recruited 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.

Figure 7: Representativity of regions from wave 1-14



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.⁶ 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 10 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 twelfth 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.
- ◆ **Highest completed education:** no education/elementary school, upper secondary, university/university college.
- ◆ **Geography:** Oslo/Akershus, Eastern Norway, Southern Norway, Western Norway, Trøndelag, Northern Norway.

⁶ The applied formula for weight w_i for element i , in strata h is: $w_i = \frac{N_h/N}{n_h/n}$

The method for calculating weights is the same as in 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 9 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.

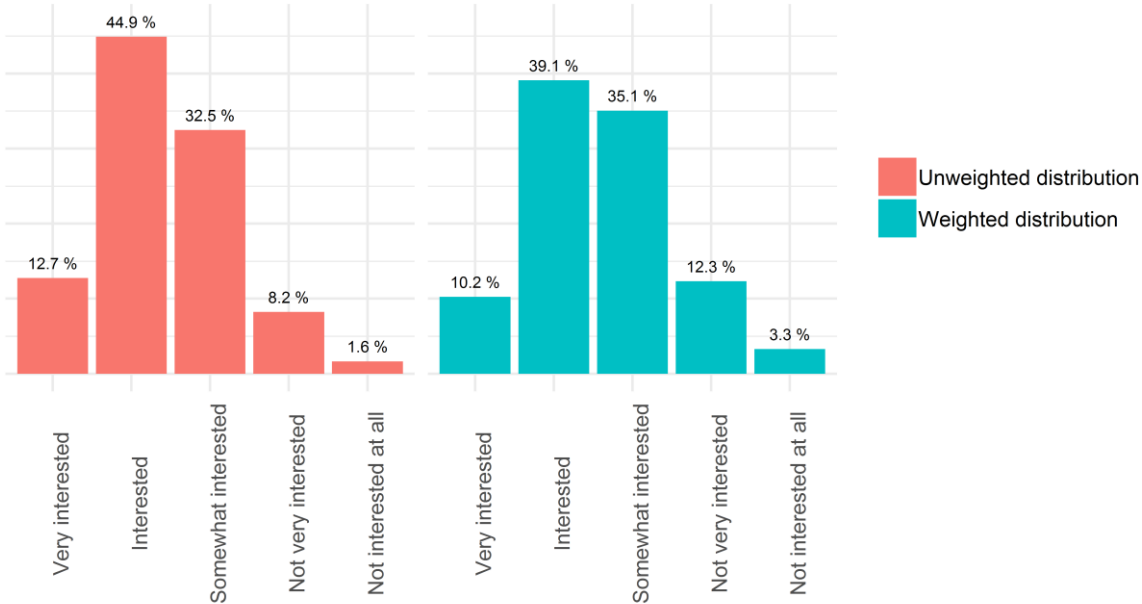
Table 9: Effect of weight 2 on self-reported level of education

	Sample - not weighted	Sample - weighted	Population	Difference between sample and population	Difference between weighted sample and population
No education/elementary school	7.2 %	25.0 %	25.2 %	-18.0 %	-0.2 %
Upper secondary education	30.8 %	41.3 %	41.2 %	-10.4 %	0.1 %
University/university college	62.0 %	33.7 %	33.6 %	28.4 %	0.1 %

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.

Figure 8 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 57.6 percent in the not weighted distribution. 32.5 percent are somewhat interested, meaning that 9.8 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 49.3 percent. Those who report not being interested (not very interested and not interested at all) in politics make up 15.6 percent.

Figure 8: Distribution of political interest - weighted and unweighted



APPENDIX

Table 10: Weights applied to different strata (weight 2)

		Men	Women			Men	Women		
Oslo/Akershus	18-29 years	No education/elementary school	12.4	4.5	Western Norway	18-29 years	No education/elementary school	8.2	5.0
		Upper secondary education	1.7	1.2			Upper secondary education	2.2	1.5
		University/university college	1.3	1.2			University/university college	2.4	1.4
	30-59 years	No education/elementary school	7.6	7.4		30-59 years	No education/elementary school	6.2	5.4
		Upper secondary education	1.4	1.3			Upper secondary education	1.3	1.2
		University/university college	0.7	0.6			University/university college	0.6	0.6
	60 and above	No education/elementary school	1.0	1.5		60 and above	No education/elementary school	1.1	1.8
		Upper secondary education	0.8	1.2			Upper secondary education	0.9	1.3
		University/university college	0.3	0.3			University/university college	0.2	0.3
Eastern Norway	18-29 years	No education/elementary school	16.1	8.1	Trøndelag	18-29 years	No education/elementary school	10.5	3.9
		Upper secondary education	2.2	1.5			Upper secondary education	1.4	0.9
		University/university college	1.9	2.1			University/university college	1.3	1.6
	30-59 years	No education/elementary school	6.7	7.7		30-59 years	No education/elementary school	4.3	9.6
		Upper secondary education	1.6	1.6			Upper secondary education	1.2	1.6
		University/university college	0.7	0.7			University/university college	0.6	0.6
	60 and above	No education/elementary school	1.8	2.3		60 and above	No education/elementary school	1.1	2.4
		Upper secondary education	1.0	1.7			Upper secondary education	1.0	1.5
		University/university college	0.3	0.3			University/university college	0.3	0.3
Southern Norway	18-29 years	No education/elementary school	10.6	-	Northern Norway	18-29 years	No education/elementary school	13.2	9.6
		Upper secondary education	1.8	1.5			Upper secondary education	1.6	1.8
		University/university college	3.0	1.6			University/university college	1.2	1.6
	30-59 years	No education/elementary school	4.9	24.4		30-59 years	No education/elementary school	6.2	3.7
		Upper secondary education	1.4	1.2			Upper secondary education	1.5	1.6
		University/university college	0.7	0.7			University/university college	0.7	0.8
	60 and above	No education/elementary school	1.3	2.6		60 and above	No education/elementary school	1.1	3.3
		Upper secondary education	1.1	1.9			Upper secondary education	1.1	1.7
		University/university college	0.3	0.3			University/university college	0.3	0.3