

# Norwegian Citizen Panel

2017, Tenth Wave

Methodology report

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## BACKGROUND

This report describes the procedures of data collection in the tenth 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 an established collaboration between several departments at the Faculty of Social Sciences at the University of Bergen and the 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 Confirmat administers the surveys and the panel. Confirmat is a "Software-as-a-Service" solution, where all software runs on Confirmat'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 Confirmat guarantees 99.7 percent uptime. ideas2evidence does the programming of the survey in Confirmat 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.

For the first time in the Norwegian Citizen Panel a video was displayed to some of the respondents. During the pilot a small group of test respondents were not able to play the video on smart phone. Most test respondents played the video successfully. We discuss the implementation of video in the survey below.

Other than that, 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,<sup>1</sup> 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.

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<sup>1</sup> 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.

The randomization procedures are written in JavaScript. `Math.random()`<sup>2</sup> is a key function, in combination with `Math.floor()`<sup>3</sup>. 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 Confrimit:

```
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 Confrimit<sup>4</sup>:

```
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;
}
```

---

<sup>2</sup> Please see following resource (or other internet resources): [https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global\\_Objects/Math/random](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Math/random)

<sup>3</sup> Please see following resource (or other internet resources): [https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global\\_Objects/Math/floor](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Math/floor)

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

## DISPLAYING VIDEO IN THE SURVEY

In wave 10 the Norwegian Citizen Panel displayed a video to its respondents. The video was shown at the end of the questionnaire so that potential errors would not inflict the data collection on other questions.

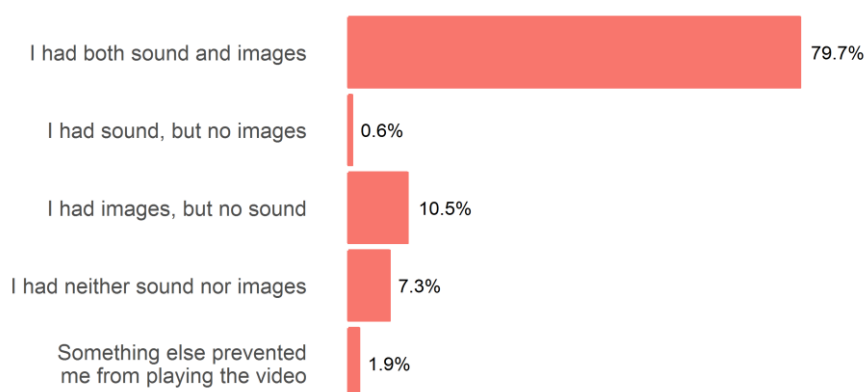
The video was implemented with HTML5 video element. The HTML5 video element does not depend on plug-ins (i.e. flash). According to caniuse.com<sup>5</sup> 94 percent of all browsers support the HTML5 elements. The information in table two tells us two things: firstly, most respondents in the panel use Chrome, Safari, Internet Explorer or Firefox. On mobile, respondents mainly use Chrome and Safari. Most panel members also have a recently updated version of their browser. In total, our detailed browser statistics show that 135 of 14,251 panel members have a browser version that does not support the HTML5 video element. Secondly, the two rightmost columns in table 1 show that the “typical” browser in the Norwegian Citizen Panel was launched long after the HTML5 video-element was supported by that same browser.

Table 1: Browser statistics from wave 9

Type	All	Desktop	Mobile	Most typical browser	Typical browser launched	<video> supported from
Chrome	44 %	45 %	42 %	v.57	03.2017	v.4. 01.2010
Safari	35 %	25 %	55 %	v.10	09.2016	v.4, 06.2009
Internet Explorer	13 %	19 %	0 %	v.11	10.2013	v.9, 03.2011
Firefox	7 %	11 %	1 %	v.53	04.2017	v.20, 02.2013
Other	1 %	0 %	2 %			

After displaying the video, the respondents were asked if the video played successfully. Figure 1 show that 9 percent of the respondents were not able to display the video. 80 percent had both sound and images, while 10 percent had images, but no sound (the video had subtitles). Most of those respondents who experiences issues with displaying the video used a browser that supports the video element. Consequently, local/user settings are the most common cause of problems with the video display.

Figure 1: Frequency of respondents assessment of video display



Overall, we consider the implementation of video in wave 10 of the Norwegian Citizen Panel to have been a (technical) success. We find the relatively modest amount of user-reported video playback issues to be within an acceptable range, especially when considering the wide variety of devices and software used by our respondents.

<sup>5</sup> <https://caniuse.com/#search=%3Cvideo%3E> (accessed 01.12.12)

## PANEL RECRUITMENT

Panel members were 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 formal responsibility for this registry is held by the Norwegian Tax Administration but has 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 only included in wave 3 and 8). The sample excluded persons 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 2.

**Table 2: 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 %

## DATA COLLECTION WAVE 10

### RESPONSES BY METHOD OF DATA COLLECTION

The survey was launched October 31<sup>th</sup> 2017. It was sent to the email accounts of the panel's 14,251 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.

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 has a registered mobile phone number or not, distributed via SMS and e-mail. Prior to wave 10, 9 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 (31 <sup>th</sup> of October)	3,473	35.5 %	3,473	35.5 %
1 <sup>st</sup> reminder (6 <sup>th</sup> of November)	1,681	17.2 %	5,154	52.7 %
2 <sup>nd</sup> reminder (10 <sup>th</sup> of November)	797	8.1 %	5,951	60.8 %
3 <sup>rd</sup> reminder – email (15 <sup>th</sup> of November)	64	0.7 %	6,015	61.5 %
3 <sup>rd</sup> reminder – SMS (15 <sup>th</sup> of November)	750	7.7 %	6,765	69.1 %

In total, the questionnaire received 6,765 answers. 3,473 respondents completed the survey in the period between the invitation and the first reminder (October 31<sup>th</sup> – November 6<sup>th</sup>), a response rate of 35.5 percent. The pattern is similar to earlier waves; the email invitation produces a higher number of respondents than the subsequent reminders. In total, the second and third reminder produces the same amount of responses as the invitation. The third reminder manages to produce a large number of respondents since it contacts them on a new platform. For details on the number of respondents after each reminder, we refer you to table 3.

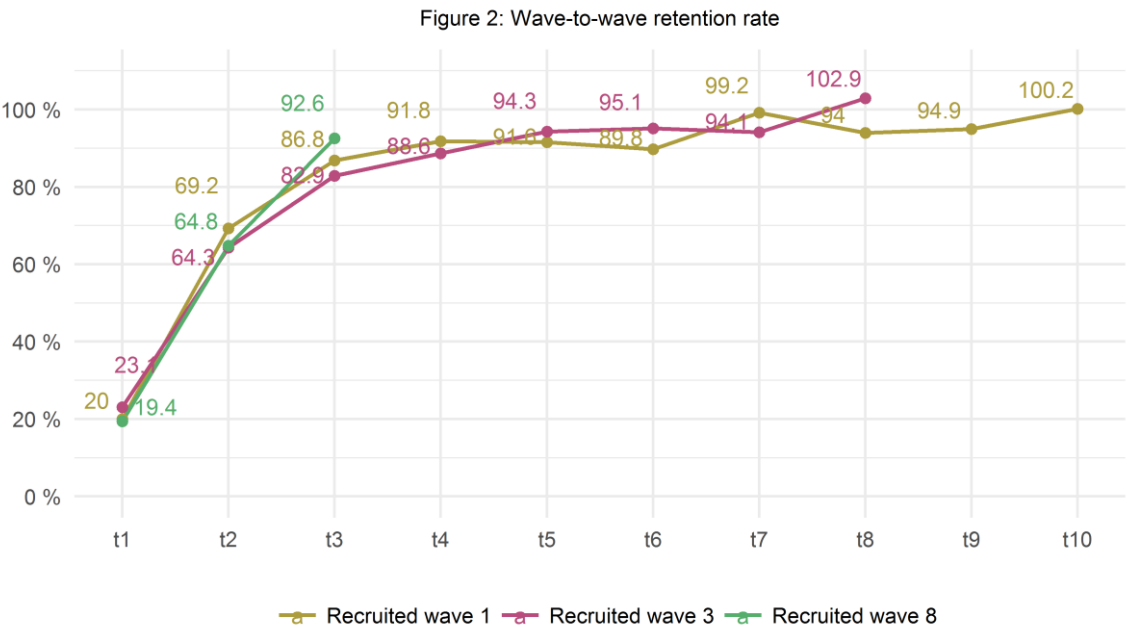
As before we exclude respondents that have not participated in any of the last three waves when we calculate the response rate. This leaves us with 9,788 eligible respondents. The overall response rate, as reported in table 3, is **69.1 percent**.

RESPONSE OF EXISTING PANEL MEMBERS OVER TIME

The number of respondents in this last wave is as already mentioned 6,765 – compared to 6,897 in wave 9. This gives us an overall wave-to-wave retention rate of 98.1 percent. The retention rate has never been higher between two waves of the Norwegian Citizen Panel. 81.4 percent of the 6,765 also answered the questionnaire in wave 9.

The respondents recruited in wave 8 has a retention rate of 92.6 percent (figure 2). This is substantially higher than the retention rate achieved at t3 for the other recruitments waves. Furthermore, there are more respondents recruited in wave 1 and 3 that participated in wave 10 compared to wave 9. Their retention rate is above 100%.

There are two factors that can help us explain the high retention rate between wave 9 and 10. Firstly, the 2017 parliamentary election raised interest for political topics and discussions. Therefore, we believe that parliamentary election had a positive effect on the response rate. This argument is supported by the findings in table 12 (at the end of the report), which show that 97 percent of the respondents reports that they voted in the election. Secondly, the Norwegian Citizen Panel engaged in a cooperation with the newspaper Bergens Tidende. This cooperation has given the Norwegian Citizen Panel more media attention in a variety of media outlets, and in the end might have contributed positively to the response rate.



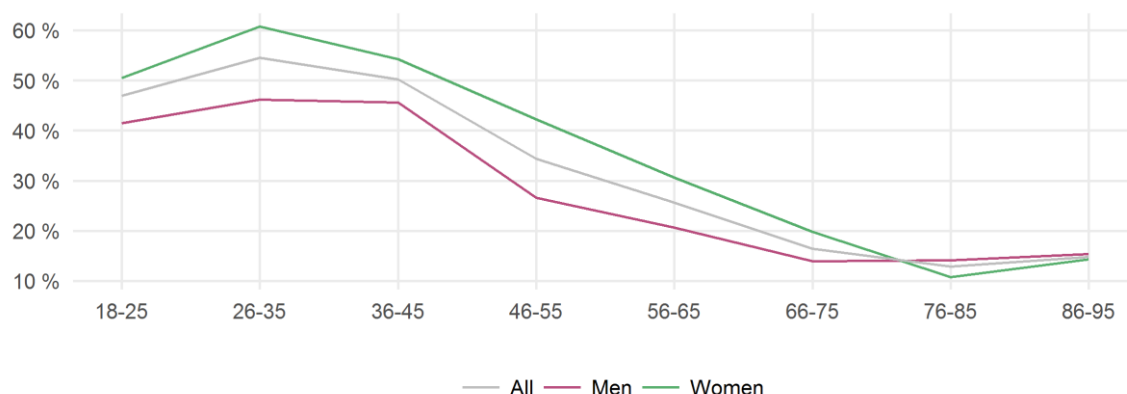
PLATFORMS

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.

32.6 percent of all survey respondents that opened the questionnaire used a mobile phone. 7 percent of the mobile users did not complete to such an extent that they were classified as respondents in the wave 10. For

non-mobile users the percentage was 5.3 percent. Mobile users were thus more 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 10



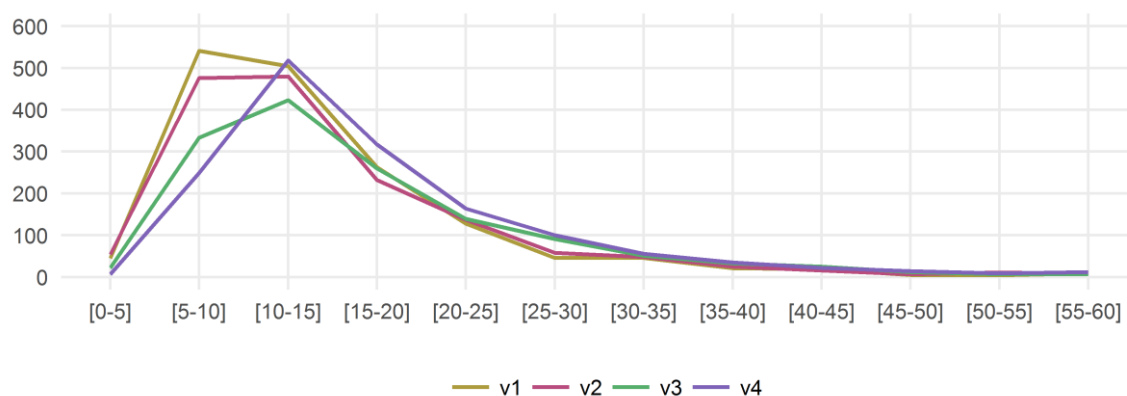
Respondents between 18 and 45 years are more inclined than others to use their mobile phone when answering the questionnaire, as shown in figure 3. Respondents from 26-35 years (both men and women) are the ones that uses their mobile most frequent. From 46 years and higher, the share of mobile users declines substantially.

As in previous waves, women are in general more inclined to use mobile to answer the questionnaire compared to men. 61 percent of women 26-35 years of age use their mobile when filling out the questionnaire, compared to 46 percent of the men in the same age group.

## TIME USAGE

The average respondent used 16.2 minutes to complete the questionnaire. This is one minute above what respondent 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 16 minutes therefore only includes the respondents which used less than, or equal to, 60 minutes.

Figure 4: Time usage of survey respondents in wave 10



As in earlier waves, the NCP questionnaire is divided into different subsets. Wave 10 consisted of four subsets (V1-V4). Figure 4 and table 4 shows that respondents that answered questions in the V4 subset spent more time on the questionnaire, compared to the other subsets.



**Table 4: Average time usage (minutes) in each subset in wave 10**

	All respondents	V1-respondents	V2-respondents	V3-respondents	V4-respondents
All users	16.2	14.7	15.3	17.2	17.9
Non-mobile users	16.8	15.1	16.0	17.9	18.6
Mobile users	14.9	14.0	13.8	15.6	16.5

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 10.

**Table 5: Age distribution in the population and the net sample of wave 10**

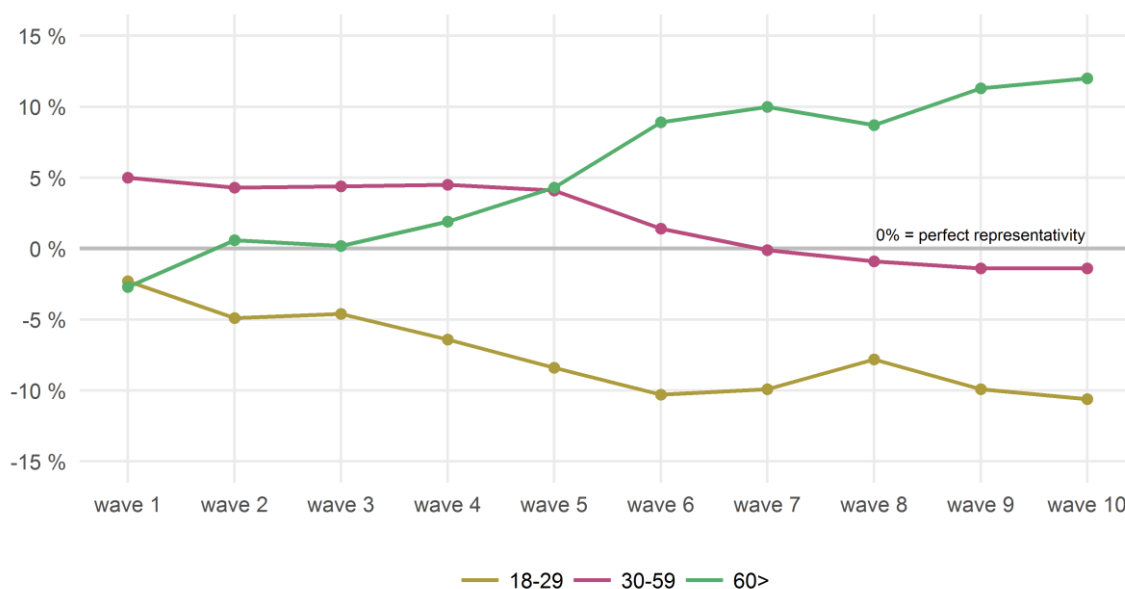
	18-29 years	30-59 years	60 years and above
Population	20.3 %	51.1 %	28.6 %
Net sample – w10	9.7 %	49.7 %	40.6 %

From the age distribution presented in table 5, we see that 18-29 year olds are underrepresented in the net sample of wave 10. 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 8, the representation of different age groups was marginally improved in wave 8 compared to wave 7 (figure 5). In wave 10 however, the underrepresentation of young respondents is somewhat more prominent and the overrepresentation of respondents above the age of 60 is higher than in any of the previous waves.

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 less 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- 10**



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 are overrepresented.

**Table 6: Combined distribution of age and gender in the population and the net sample of wave 10**

	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 – w10	3.9 %	5.8 %	23.8 %	25.9 %	22.6 %	18.0 %

The inclusion of educational level in table 7 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 10**

		Population		Net sample – w10	
		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 %	1.8 %	2.1 %
University/university college		2.3 %	3.6 %	1.6 %	3.1 %
No education/elementary school	30-59 years	5.5 %	4.7 %	1.1 %	1.1 %
Upper secondary education		11.6 %	8.3 %	8.5 %	6.8 %
University/university college		9.2 %	11.8 %	14.4 %	18.1 %
No education/elementary school	60 and above	3.2 %	4.6 %	3.3 %	2.7 %
Upper secondary education		6.7 %	7.3 %	6.3 %	4.5 %
University/university college		3.6 %	3.3 %	13.0 %	10.5 %

Respondents that have upper secondary education as their highest completed education are somewhat underrepresented in most groups. The exception is men aged 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 6: Representativity of education groups from wave 1- 10**

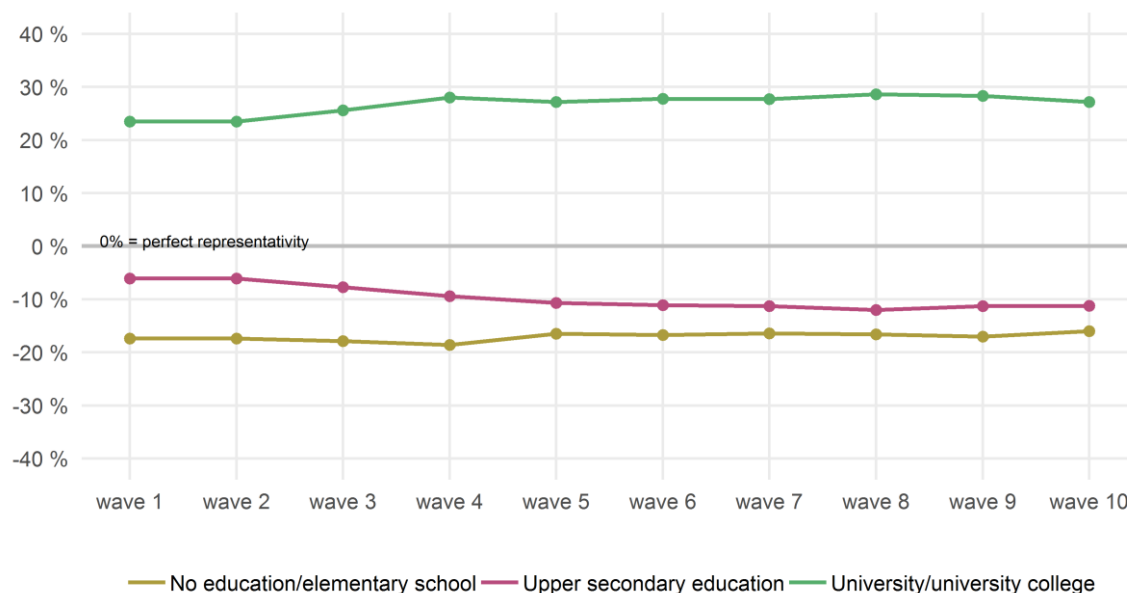


Figure 6 illustrates the representation of education groups since wave 1. The general trend is that the highly educated are overrepresented compared to those with less or no education. Overall, the level of representativity among the different education groups has remain stable over time, and wave 10 adds to that stability.

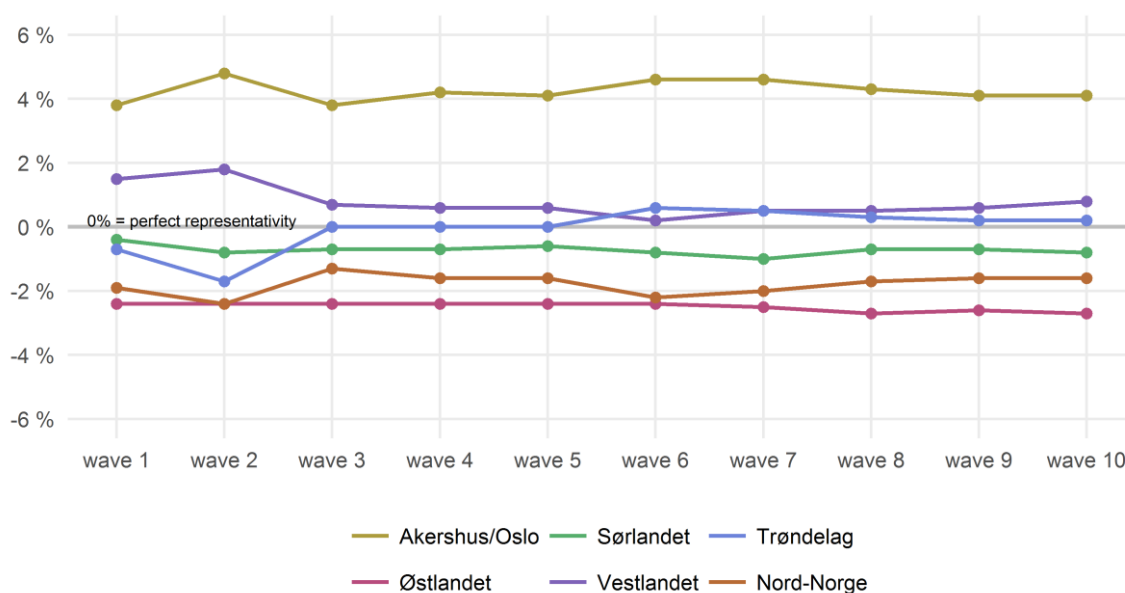
In regards to geography, (table 8) we observe that Western Norway, Trøndelag and Southern Norway are on level with the population, while the capital area – the counties of Oslo and Akershus – is clearly overrepresented. Northern Norway and Eastern Norway meanwhile are underrepresented among the respondents in the tenth wave.

Table 8: Combined distribution of age, gender and geography in the population and the net sample of wave 10

		Population			Net sample – w10		
		Men	Women	Total	Men	Women	Total
Akershus/Oslo	18-29 years	2.5 %	2.6 %	5.2 %	1.2 %	1.8 %	3.0 %
	30-59 years	6.8 %	6.4 %	13.2 %	6.4 %	7.9 %	14.3 %
	60 and above	2.7 %	3.1 %	5.8 %	5.6 %	5.1 %	10.7 %
	<b>In total</b>	<b>12.0 %</b>	<b>12.2 %</b>	<b>24.1 %</b>	<b>13.2 %</b>	<b>14.8 %</b>	<b>28.0 %</b>
Eastern Norway	18-29 years	2.5 %	2.3 %	4.8 %	0.8 %	1.3 %	2.1 %
	30-59 years	6.7 %	6.5 %	13.2 %	5.2 %	5.8 %	11.0 %
	60 and above	4.0 %	4.6 %	8.6 %	6.3 %	4.4 %	10.7 %
	<b>In total</b>	<b>13.2 %</b>	<b>13.4 %</b>	<b>26.5 %</b>	<b>12.3 %</b>	<b>11.5 %</b>	<b>23.8 %</b>
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 %	1.1 %	1.4 %	2.5 %
	60 and above	0.8 %	0.9 %	1.6 %	1.1 %	0.9 %	2.0 %
	<b>In total</b>	<b>2.8 %</b>	<b>2.8 %</b>	<b>5.6 %</b>	<b>2.4 %</b>	<b>2.5 %</b>	<b>4.9 %</b>
Western Norway	18-29 years	2.8 %	2.6 %	5.4 %	1.0 %	1.5 %	2.5 %
	30-59 years	6.8 %	6.3 %	13.1 %	6.5 %	6.9 %	13.4 %
	60 and above	3.4 %	3.8 %	7.2 %	5.8 %	4.7 %	10.5 %
	<b>In total</b>	<b>13.0 %</b>	<b>12.7 %</b>	<b>25.7 %</b>	<b>13.3 %</b>	<b>13.1 %</b>	<b>26.4 %</b>
Trøndelag	18-29 years	1.0 %	0.9 %	1.9 %	0.5 %	0.4 %	0.9 %
	30-59 years	2.2 %	2.1 %	4.2 %	2.4 %	2.1 %	4.5 %
	60 and above	1.2 %	1.3 %	2.5 %	2.0 %	1.5 %	3.5 %
	<b>In total</b>	<b>4.4 %</b>	<b>4.3 %</b>	<b>8.7 %</b>	<b>4.9 %</b>	<b>4.0 %</b>	<b>8.9 %</b>
Northern Norway	18-29 years	1.0 %	0.9 %	1.9 %	0.2 %	0.5 %	0.7 %
	30-59 years	2.3 %	2.2 %	4.5 %	2.1 %	1.7 %	3.8 %
	60 and above	1.4 %	1.5 %	2.9 %	1.8 %	1.4 %	3.2 %
	<b>In total</b>	<b>4.7 %</b>	<b>4.6 %</b>	<b>9.3 %</b>	<b>4.1 %</b>	<b>3.6 %</b>	<b>7.7 %</b>

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 10.7 percent of the respondents in wave 10 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 7: Representativity of regions from wave 1- 10



The representativity of regions has more or less gone unchanged from wave 1 through wave 10 (figure 7 above). 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.

## 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.<sup>6</sup> 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.
- ◆ **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
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<sup>6</sup> The applied formula for weight  $w_i$  for element  $i$ , in strata  $h$  is:  $w_i = \frac{N_h/N}{n_h/n}$

No education/elementary school	9.30 %	25.18 %	25.20 %	-15.90 %	-0.02 %
Upper secondary education	29.90 %	41.17 %	41.20 %	-11.30 %	-0.03 %
University/university college	60.80 %	33.64 %	33.60 %	27.20 %	0.04 %

Table 11 shows the effects of weight 2 on the distribution of party affiliation in the net sample. The survey was conducted a few weeks after the parliamentary election and the respondents were asked for which party they casted their vote. The Norwegian Citizen Panel has an overrepresentation of respondents affiliated with The Red Party, The Socialist Left Party, The Liberal Party and The Green Party. The Christian Democrats and The Conservative Party is more or less on par with the population. The Labour Party, The Centre Party and The Progress Party is underrepresented in the panel.

As we can observe, the weight gives the sample a better distribution compared to the population. However, since education also functions as a proxy for a more underlying motivation for participation, the weight does not correct the bias in the panel altogether. We also documented how the weight performed on party affiliation in wave 1 and wave 5. The overall performance of the weight in wave 1 and wave 5 was better. Therefore, it looks like the underlying bias of motivation for participation/political interest has been reinforced since then.

**Table 11: Effect of weight 2 on party affiliation**

	Sample - not weighted	Sample - weighted	Population	Difference between sample and population	Difference between weighted sample and population
The Centre Party	9.5%	10.2%	10.3%	-0.8	-0.1
The Christian Democrats	4.8%	4.3%	4.2%	0.6	0.1
The Conservative Party	25.3%	24%	25%	0.3	-1
The Green Party	4.9%	5.1%	3.2%	1.7	1.9
The Labour Party	24.9%	25%	27.4%	-2.5	-2.4
The Liberal Party	5.8%	5.6%	4.4%	1.4	1.2
The Progress Party	11.6%	13.7%	15.2%	-3.6	-1.5
The Red Party	3.9%	3.4%	2.4%	1.5	1
The Socialist Left Party	9.3%	8.5%	6%	3.3	2.5

As could be expected, the self-reported election turnout (see table 12) in the net sample is higher than the official turn-out in the parliamentary election (97.2 % compared to the official turnout of 78.2 %). This is partly due to the fact that in our net sample, individuals with higher education and an interest in politics are overrepresented. Moreover, as reported by the Norwegian Election Survey Program, Norwegians have a tendency to report that they voted even in cases where they abstained.<sup>7</sup>

**Table 12: Effect of weight 2 on self-reported level of education**

	<b>Sample - not weighted</b>	<b>Sample - weighted</b>	<b>Population</b>	<b>Difference between sample and population</b>	<b>Difference between weighted sample and population</b>
Turn-out	97.20 %	95.50 %	78.20 %	19.00 %	17.30 %

<sup>7</sup> Berglund, Frode, Ingvild S. Reymert og Bernt Aardal (2011). *Valgundersøkelsen 2009. Dokumentasjonsrapport*. Statistisk Sentralbyrå, Oslo – Kongsvinger.

## APPENDIX

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

			Men	Women				Men	Women
Oslo/Akershus	18-29 years	No education/elementary school	5.6	6.3	Western Norway	18-29 years	No education/elementary school	7.6	4.1
		Upper secondary education	2.0	1.4			Upper secondary education	3.4	1.9
		University/university college	1.3	1.0			University/university college	1.2	1.1
	30-59 years	No education/elementary school	7.2	4.8		30-59 years	No education/elementary school	4.2	5.3
		Upper secondary education	1.5	1.1			Upper secondary education	1.3	1.1
		University/university college	0.7	0.6			University/university college	0.6	0.6
	60 and above	No education/elementary school	0.8	1.3		60 and above	No education/elementary school	0.8	1.8
		Upper secondary education	0.9	1.0			Upper secondary education	1.0	1.6
		University/university college	0.3	0.3			University/university college	0.3	0.3
Eastern Norway	18-29 years	No education/elementary school	14.6	6.9	Trøndelag	18-29 years	No education/elementary school	11.9	5.9
		Upper secondary education	2.4	1.4			Upper secondary education	1.2	1.3
		University/university college	1.4	1.1			University/university college	1.2	2.1
	30-59 years	No education/elementary school	5.1	3.2		30-59 years	No education/elementary school	2.4	7.3
		Upper secondary education	1.5	1.5			Upper secondary education	1.2	1.2
		University/university college	0.7	0.7			University/university college	0.6	0.7
	60 and above	No education/elementary school	1.2	1.7		60 and above	No education/elementary school	0.8	2.1
		Upper secondary education	1.0	2.3			Upper secondary education	1.0	1.9
		University/university college	0.3	0.3			University/university college	0.3	0.3
Southern Norway	18-29 years	No education/elementary school	16.0	12.5	Northern Norway	18-29 years	No education/elementary school	14.9	21.7
		Upper secondary education	1.5	2.6			Upper secondary education	3.2	1.2
		University/university college	3.4	1.6			University/university college	5.3	1.3
	30-59 years	No education/elementary school	18.7	6.2		30-59 years	No education/elementary school	4.7	4.7
		Upper secondary education	1.4	1.0			Upper secondary education	1.2	1.4
		University/university college	0.7	0.7			University/university college	0.6	0.9
	60 and above	No education/elementary school	1.0	1.6		60 and above	No education/elementary school	1.2	2.0
		Upper secondary education	1.7	3.2			Upper secondary education	1.3	1.6
		University/university college	0.3	0.4			University/university college	0.3	0.4