Norwegian Panel of Public Administrators

2022, Second Wave

Methodology report

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BACKGROUND

In this report we describe the procedures of data collection in the second wave of The Norwegian Panel of Public Administrators. Furthermore, we describe technical aspects of the data collection as well as the representativity of the respondents as compared to the target population.

The Norwegian Panel of Public Administrators is an internet-based survey of public administrators. The panel includes administrators from ministries and their subordinate directorates and agencies[1].

The Norwegian Panel of Public Administrators (NFP) is a collaboration between the University of Bergen (UiB), the University of Oslo (UiO), the University of Agder (UiA), the Norwegian University of Technology and Science (NTNU), the Institute for Social Research (ISF) and the Norwegian Research Centre (NORCE). UiB is the data controller on behalf of the other institutions. NFP is a part of the Digital Social Science Core Facility (DIGSSCORE) at UiB. The panel The panel is affiliated with the Norwegian Citizen Panel (NCP), The Norwegian Panel of Elected Representatives (PER), and the Norwegian Panel of Journalists (NJP). ideas2evidence handles practical implementation of the survey, and is responsible for recruiting participants, as well as sending and receiving surveys to and from respondents.

The second wave was fielded in late 2021 and ran throughout the winter of 2022.

TECHNICAL ASPECTS OF THE SURVEY

SOFTWARE

The web-based research software Confirmit is used to administer the surveys and the panel. Confirmit is a "Software-as-a-Service" solution, where all software runs on Confirmit's continuously monitored servers, and where survey respondents and developers interact with the system through various web-based interfaces. The software provides very high data security and operational stability. The security measures are the most stringent in the industry, and Confirmit guarantees 99.7 percent uptime. ideas2evidence is responsible for the programming of the survey on behalf of The Norwegian Panel of Public Administrators.

PILOT AND OVERALL ASSESSMENT

The survey went through extensive small-N pilot testing before data collection. The pilot testing was done in collaboration between ideas2evidence and the involved researchers. Testing was regarded as success, and no major technical revisions were deemed necessary.

Due to low response rates the data collection went on for a longer time period than planned. There were also issues with email deliverability, a more detailed account of which is given in the chapter on panel recruitment and data collection.

RANDOMIZATION PROCEDURES

NFP has an extensive use of randomization procedures. The context of each randomization procedure may vary[2], but they all share some common characteristics that will be described in the following.

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[1] The term "agencies" includes what in Norwegian is called "tilsyn", "etat", "institutt" etc. Note that some directorates are called agencies in english

[2] Some examples: randomly allocate treatment value in experiments, randomize order of an answer list/array, order a sequence of questions by random.

All randomization procedures are executed live in the questionnaire. This means that the randomization takes place while the respondent is filling in the questionnaire, as opposed to pre-defined randomizations. Randomizations are mutually independent, 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 of values
- Randomly shuffle the contents of an array

The first procedure is typically used to determine a random sub-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. When N is sufficiently large, the two groups will be of equal size (50/50).

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

```javascript
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 Confirmit [5]:

```javascript
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;
}
```

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[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/

THE POPULATION

The target population was employees in Norwegian central government. Central government is understood as ministries (excluding political leadership) and their subordinate agencies (directorates and supervisory authorities). The target population excludes regional or local branches, or branches of the subordinate organization with extensive operational rather than administrative duties. According to The Norwegian Agency for Public and Financial Management, the central government consists of 86 entities, 16 of which are ministries, with a combined employee count of 22,968 in 2019[6]. While the long-term goal of the panel is to recruit bureaucrats/public administrators from all governmental levels (municipal, regional, and state), this was determined out of scope for the first and second wave.

Three ministries changed their names during the field period[7]. While the domain name for all associated email addresses were changed, the old email-addresses were valid on an interim basis throughout the field period, and the change posed no problem for the data collection.

PREVIOUS WAVES OF RECRUITMENT

Existing panel members were recruited in wave 1. Table 1 outlines a short summary of previous recruitment efforts. Note that there are some differences between the recruitment processes. For a detailed description of each recruitment process, please refer to the respective methodology reports. A detailed description of the recruitment in wave 2 follows in the next section.

Table 1: Information on recruitment

	Population size	Sample size	Mode	Contacts	Response Rate (%)
Recruitment 1 (wave 1)	≈23 000	≈25 000	Snowball recruitment by email and personal invitation by email	2	≈10 %
Recruitment 2 (wave 2)	≈23 000	≈7 700	Personal invitation by email	4	≈8.0 %

The sample size in wave 2 differs from previous recruitment as wave 1 used snowball recruitment, with the goal of reaching all public administrators. Wave 2 did only employ a mode of recruitment by personal invitation, and was therefore limited by the number of e-mail addresses collected by DIGSSCORE.

DATA COLLECTION

RECRUITING A NEW SET OF PANEL MEMBERS

The panel recruited new panel members in wave 2. This section gives a detailed description of the sample frame, recruitment process, and results of the recruitment effort.

THE RECRUITMENT PROCESS

In wave 2, personal invitations were sent by email to 7,658 public administrators. The addresses were collected by DIGSSCORE in wave 1, largely from publically available sources, such as the web page of ministries and agencies/directorates.

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[6]Utviklingen i antall arbeidsforhold I stats- og sentralforvaltningen 2018-2019. DFØ-notat 2020:1. Dfo.no/filer/Fagområder/Rapporter/2020/DFO-notat-2020-1-Utviklingen-i-antall-arbeidsforhold-i-stats-og-sentralforvaltningen-2018-2019.pdf

[7] Ministry of Labour and Social Inclusion, Ministry of Local Government and Regional Development, Ministry of Culture and equality.

The invitation emails contained relevant information, such as a description of the project, the privacy policy and contact information for relevant parties involved in the project. Lastly, a link to participate in the survey was included in the email.

The wave 1 and wave 2 recruitment pool overlapped[8]. Thus, invitees included public administrators who 1) are already registered as panel members, and 2) did not explicitly opt out from participation in wave 1. As many of the public administrators that are most interested in the survey, probably participated in wave 1, expectations in terms of the potential number of new panel members were lower in wave 2.

Invitations were distributed on the 24th of November 2021.

In surveys comparable to NFP, the number of complete responses are usually greater than the number of incomplete responses[9]. Furthermore, a majority of the incomplete responses are left by respondents briefly opening the questionnaire, before rejecting participation. While this type of behavior was also shown by some respondents in NFP, a new pattern of respondent interaction with the questionnaire was observed. Providing an example of this, one ministry alone accounted for approximately 900 of the incomplete questionnaires. As shown in figure 1, the respondents opened the questionnaire almost immediately upon the invitational emails being dispatched from our server. We find this to be unlikely human behavior and hypothesize that it can be attributed to automated information security systems in some of the ministries.

Figure 1: Cumulative incomplete rate at ministry

100 % = 933
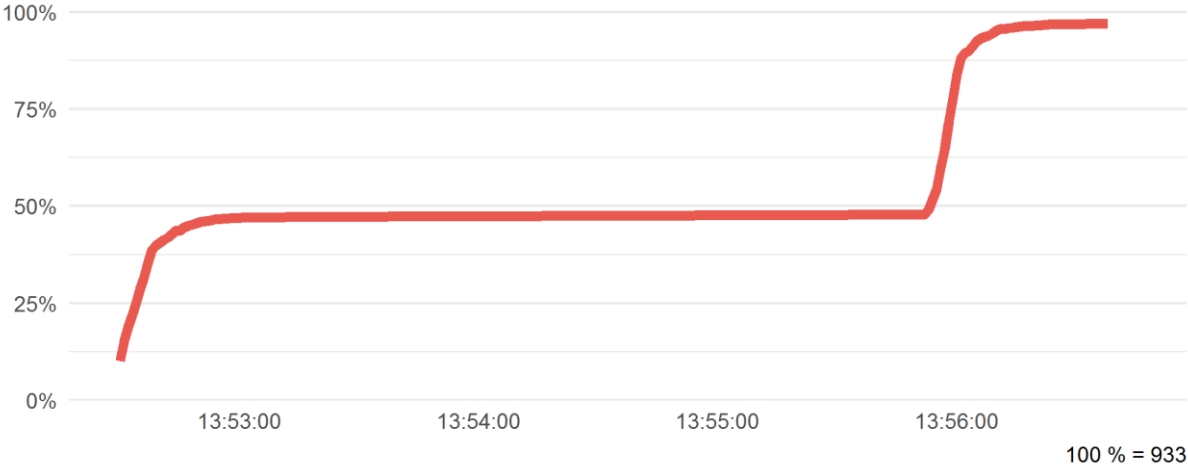
The first reminder were distributed by email on the 12th of December. They were sent to respondents who either had not accessed the link in the initial invitation, or had started the questionnaire without completing. Respondents were encouraged to join the panel.

Due to invalid e-mail addresses and issues with reaching some relevant ministries due to security settings at the receiving end, nearly 3000, or 40 percent, of the invitations to new panel members were unable to reach their recipient. Multiple attempts were made at contacting the separate ministries which exhibited the problem. This led us to contacting the Norwegian Government Security and Service Organization, the administrator of a common framework for the ministries' communications security. We currently believe that attempting to reach

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[8] The wave 1 was somewhat involved, and interested readers are referred to the wave 1 methodological report.

[9] See *Norwegian Citizen Panel Twentieth Wave Methodology Report* (Skjervheim, Høgestøl, Bjørnebekk, Eikrem and Wettergreen, 2021) or earlier NCP methodology reports for examples of this.

a large (unknown) number of invalid email addresses within a ministry/agency/directorate, and within a short period of time, triggers a security mechanism, turning away all requests from our server.

Without the possibility to identify the addresses which led to the disallowment across ministries, several workarounds were attempted to deliver the invitations. Firstly, randomising the order of e-mail addresses so that invitations would not be delivered in bulk was attempted, without a significant increase in successfully delivered invitations. Secondly[10], sending a discrete number of invitations in small bulk to each ministry was attempted rendering a non-linear increase in successfully delivered emails. There were increases in successfully delivered invitations at some ministries, but that effect was not present at all ministries. In general, small bulk delivery to a certain ministry was deemed most effective. A list showing the size of the effect can be found in appendix A.

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 have completed a certain share of the questionnaire, regardless of whether they have entered their e-mail address or not.

Of the 7 734 invites that were distributed, 76 opted out. 565 public administrators completed the questionnaire, while 38 incomplete responses are kept as part of the survey data as these respondents completed a certain amount of the questionnaire before exiting. 2 184 incomplete responses were excluded from the final data set due to lack of data, as discussed above.

In sum, recruitment in wave 2 resulted in 603 new survey respondents, a recruitment rate of 7.9 percent. When compared to a similar recruitment strategy such as wave 5 of Panel of Elected Representatives, where recruitment was directed to a pool of individuals who had been previously attempted recruited, the rate is somewhat comparable[11]. An additional 140 public administrators are recruited as panel members as they left a valid response in leaving their personal e-mail address or changing the current one, resulting in a panel recruitment rate of 9.7 percent.

Further discussions in this report which concerns new recruits in wave 2 are based on survey respondents.

RESPONSES BY METHOD OF DATA COLLECTION

Table 2 summarises the effect of the various stages of data collection. The initial invitation yielded 171 responses, while the remaining contacts yielded approximately the same results. It is not an easy task to separate contacts after the first reminder was distributed, as they included the small bulk distribution system as well as the random bulk distribution discussed in the chapter above.

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

	Response	Cumulative Responses	Response Rate (%)	Cumulative Response Rate
Invitation (24th of November)	171	171	2.2 %	2.2 %
1st reminder (December 12th)	175	346	2.3 %	4.5 %
2nd and further reminders – email (2nd of February – 15th of February)	257	603	3.3 %	7.7 %

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[10] In table 2 and 3, the number of contacts is reduced to a maximum of four to decrease complexity and low N.

[11] Recruitment rate in PER wave 6 was 9.3 percent.

Table 2 above and table 3 below are different to similar tables found in the methodological reports for NCP and PER. Usually, response rate and cumulative response rate are calculated towards members that have participated in at least one of the last three waves. As we have completed two waves, the response rate her counts all potential participants, everyone who were attempted recruited in wave 2 (table 2) and everyone who participated in wave 1 (table 3).

RESPONSES OF EXISTING PANEL MEMBERS

Wave 2 of the NFP also included data collection from existing members of the panel, recruited in wave 1. Data collection among existing panel members was conducted in parallel with the recruitment of, and data collection among, new members.

Table 3: Number of responses and response rates for the new survey respondents by various stages of data collection

	Response	Cumulative Responses	Response Rate (%)	Cumulative Response Rate
Invitation (24th of November)	672	672	28.7 %	28.7 %
1st reminder (December 12th)	307	979	13.1 %	41.8 %
2nd and further reminders – email (2nd of February – 15th of February)	236	1215	10.1 %	51.9 %

RESPONSE OF EXISTING PANEL MEMBERS OVER TIME

Comparing the number of wave 2 respondents who also participated in wave 1, gives an overall retention rate of approximately 52 percent.

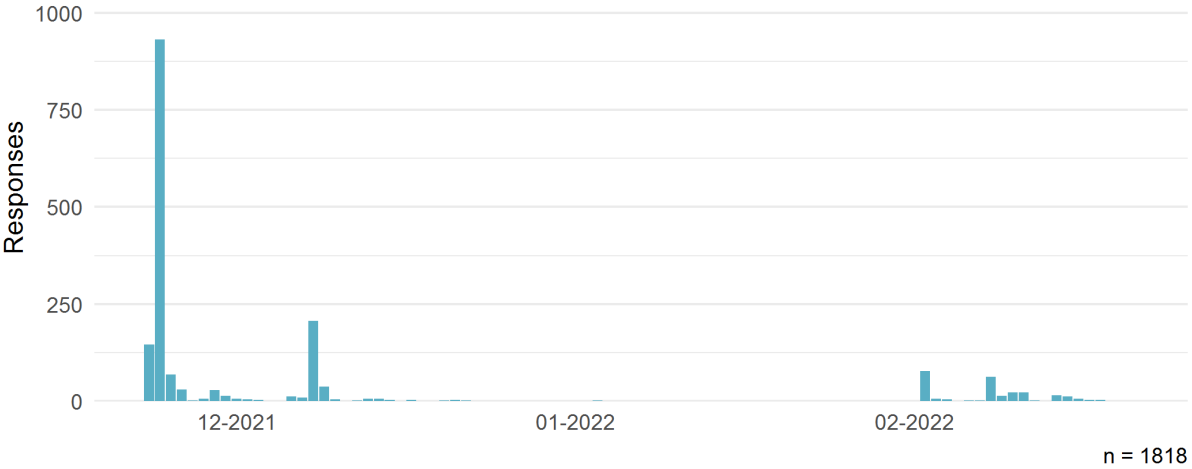**Figure 2: Wave-to-wave retention of wave 1 recruits**
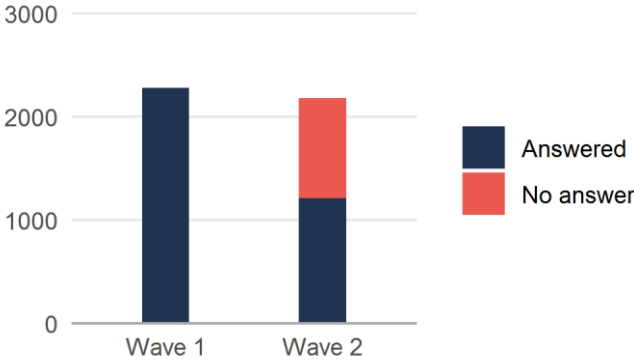
OVERALL RECRUITMENT AND RESPONSES

The overall recruitment attempts and data collection among public administrators resulted in 1 818 survey responses and panel members. The data collection period ran from November 2021, to February 2022, as shown in figure 3.

Figure 3: Responses by date

n = 1818

Due to the combination of two different recruitment strategies, calculating an overall response rate is complicated. We attempted to recruit 9 998 by individual email invitations, and 18 percent responded. However, our address list does not make up the whole population of public administrators. As noted above, approximately 23,000 persons were employed by central government in 2021. Therefore, roughly **8 percent** of public administrators in the central government participated in wave one of NFP.

PLATFORMS

The questionnaire was prepared for data input via smart phones. 8.5 percent of survey respondents who completed the questionnaire, used a mobile phone. This is a much lower number than is observed for the Norwegian Citizen Panel (46 percent in wave 23), and for the Panel of Elected Representatives (31 percent in wave 6). The low share of respondents using mobile devices is not surprising however, as much of the contact information is comprised of work e-mails and the panel is directed to respondents in their function as employees in the state administration.

TIME USAGE

In the survey invitation, the respondents were presented with an estimated time of 10 to 15 minutes for filling out the questionnaire. When calculating average time actually spent, we account for respondents leaving the questionnaire open to complete the survey later. This idle time causes an artificially high average for completing the survey. To reduce noise in the data, respondents using more than 60 minutes are excluded from the calculation. Doing so results in an average response time of 12.1 minutes (table 4).

The survey respondents were assigned to one of two groups, where group 1 consisted of participants who were recruited in wave 1, while group 2 consisted of participants recruited in wave 2. Distributed times are shown in figure 4.

Figure 4: Time usage of survey respondents

n = 1058
Excluded: minutes > 60
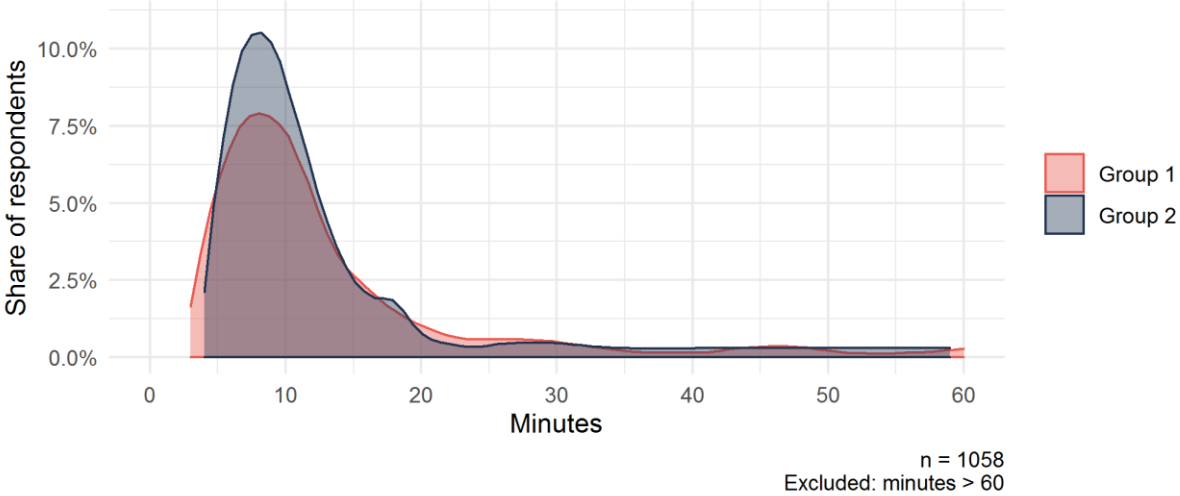
On average, mobile respondents spent less time than respondents using non-mobile devices. The difference between these groups is approximately the same as in the Norwegian Citizen Panel questionnaires, but an important difference is that the number of mobile users in NFP is significantly smaller. Therefore less emphasis should be put on the time difference in table 4.

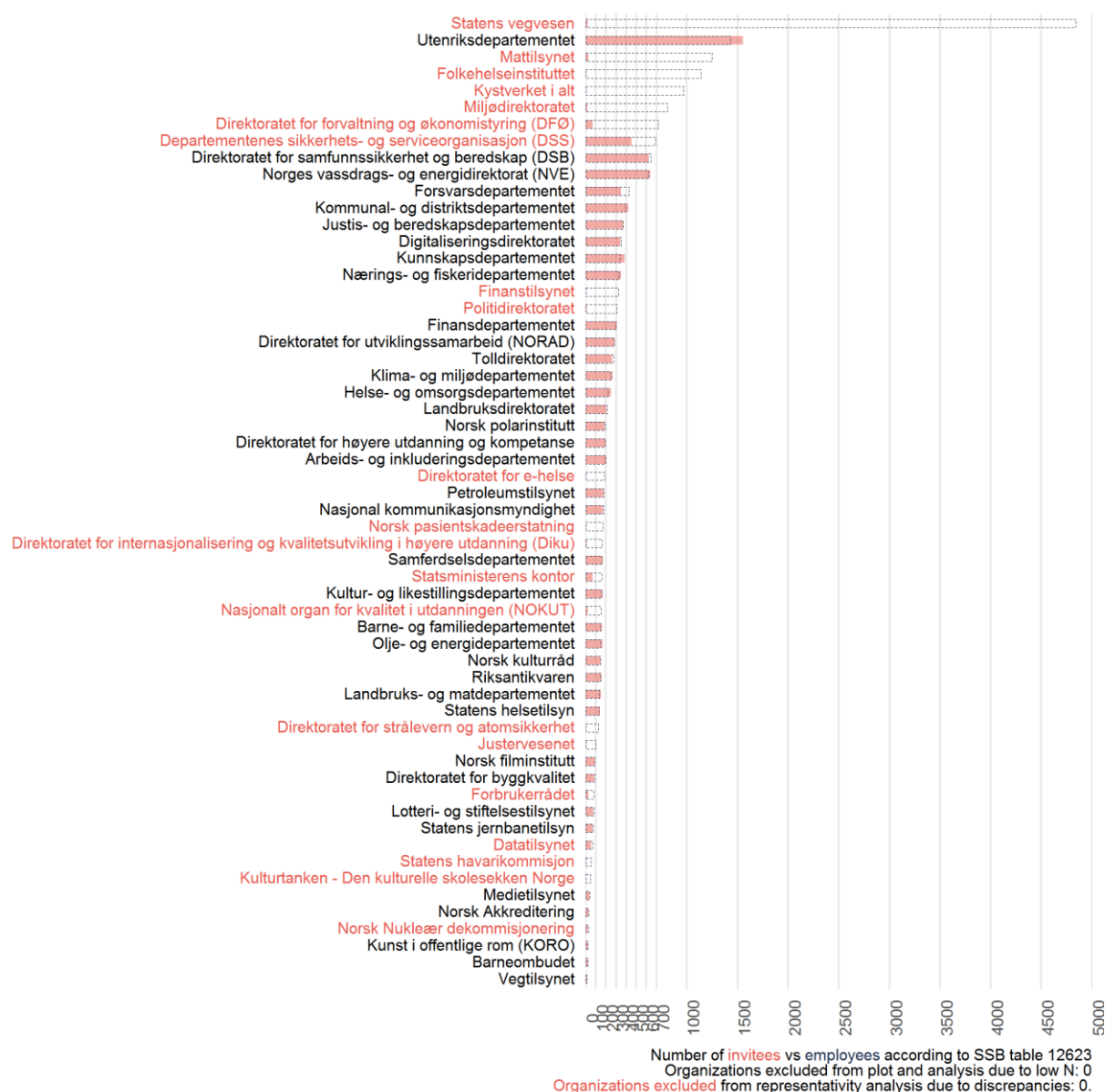**Table 4: Average time spent on questionnaire (minutes)**

	All	Group 1	Group 2
All users	12.1	12.5	11.3
Non-mobile users	12.2	12.6	11.3
Mobile users	10.9	11.2	10

REPRESENTATIVITY

In this section, we examine how well different demographics are represented in the panel, compared to their representation in the panel population (as defined in the chapter "The Population").

The gross sample of invited public administrators does not perfectly mirror the target population. In figure 5, we see that there are a few organizations with a large difference between number of employees and number of invitees. In some cases the discrepancy was intended. Some organizations have extensive operational duties, and rather small administrative duties, and were intentionally not targeted for recruitment. This includes agencies such as Tolletaten (customs), Mattilsynet (Norwegian Food Safety Authority), and Statens Vegvesen (The Norwegian Public Roads Administration). Other organizations, exemplified by NOKUT (Norwegian Agency for Quality Assurance in Education) have unintended discrepancies due to email addresses not being available on the internet.

Figure 5: Invited compared to number of employees by organization

Number of invitees vs employees according to SSB table 12623
Organizations excluded from plot and analysis due to low N: 0
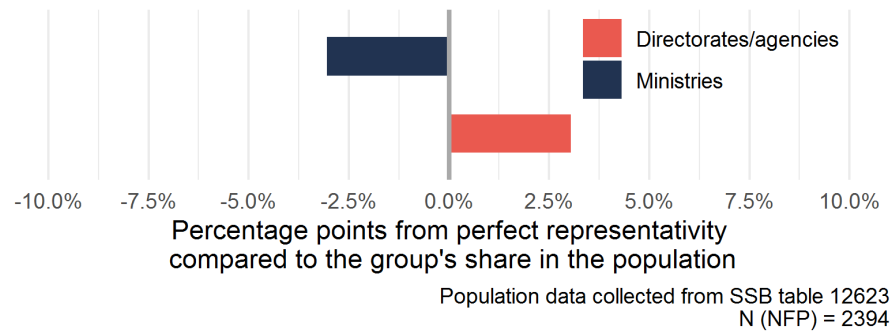Organizations excluded from representativity analysis due to discrepancies: 0.

In the analyses following, we include only organizations where our gross sample of central government employees matches the target population statistics published by Statistics Norway (figure 5). If the discrepancy is more than 20 percentage points, we exclude the organization when discussing representativity both from NFP data and population data. As such we can define the following exclusion criteria: 1) unintentional discrepancy between our gross sample and the population, 2) intentional discrepancy between gross sample and population due to extensive operational capacities in the organization, 3) low number of responses.

After applying the exclusion criteria, the target population has 4 984 employees at the ministry level and 3 994 employees at subordinate directories/agencies [12]. 55.5 percent of the target population were employed by ministries. In our net sample, 1 256 respondents (52.5 percent) were employed by ministries and 1 138 (47.5 percent) by directorates/agencies, which renders ministry employees 3 percentage points underrepresented (figure 6).

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[12] According to SSB table 12623

Figure 6: Representativity of administrative levels

Percentage points from perfect representativity
compared to the group's share in the population

Population data collected from SSB table 12623
N (NFP) = 2394

Both administrative levels, ministries and subordinate directorates/agencies have an overrepresentation of respondents above 50 years of age (figure 7). Public administrators employed at ministries aged 50-61 years are especially overrepresented. As a result of this, both levels have an underrepresentation of respondents aged 40 years or less. However, the underrepresentation of younger respondents is more prominent at the ministries. This is the same trend that was exhibited during wave 1 of the panel, although more accentuated in wave 2.

Figure 7: Representativity of administrative level by age

Percentage points from perfect representativity
compared to the groups share in the population

Population data collected from SSB table 12627
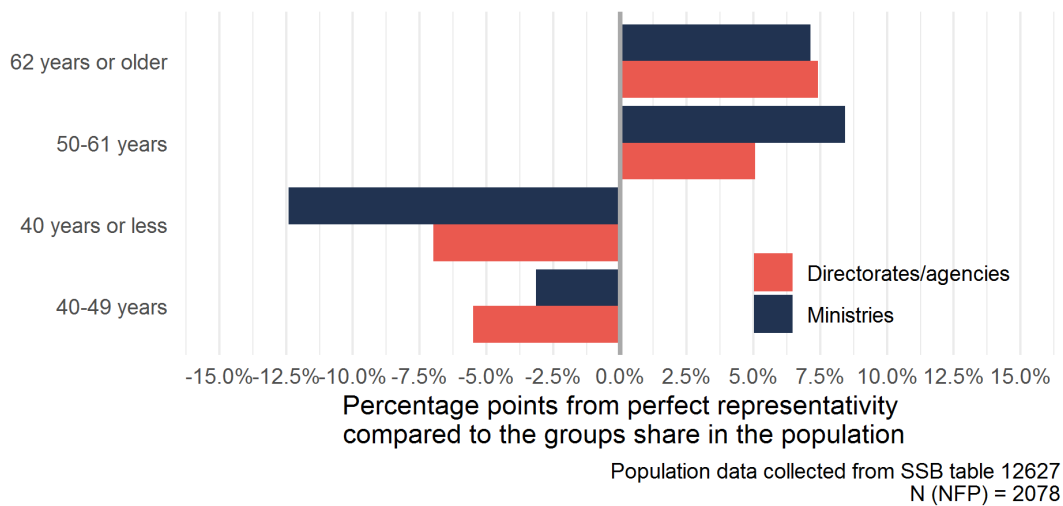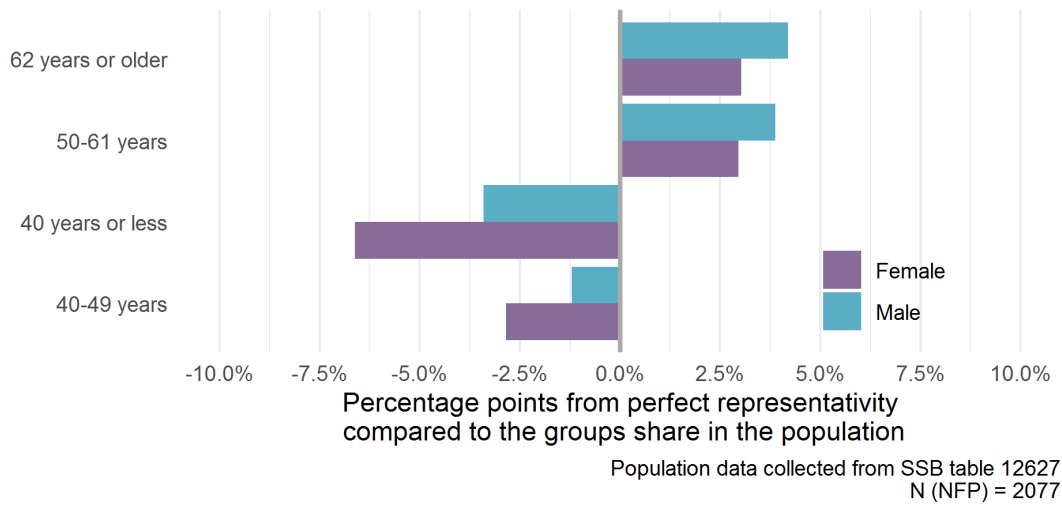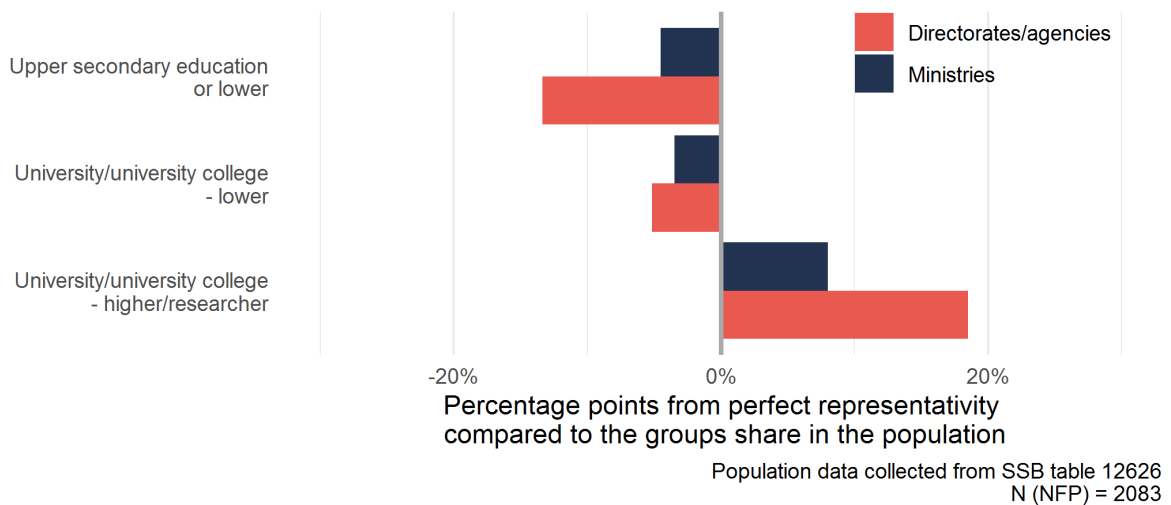N (NFP) = 2078

Figure 8 shows how the proportion of men and women in the panel compares to the proportion in the target population. There is a clear overrepresentation of respondents 50 years and above, regardless of gender. However, older male employees are more overrepresented than females. As we have already seen, younger employees are underrepresented. Female employees are more underrepresented than their male colleagues.

Figure 8: Representativity of men and women by age

Percentage points from perfect representativity
compared to the groups share in the population

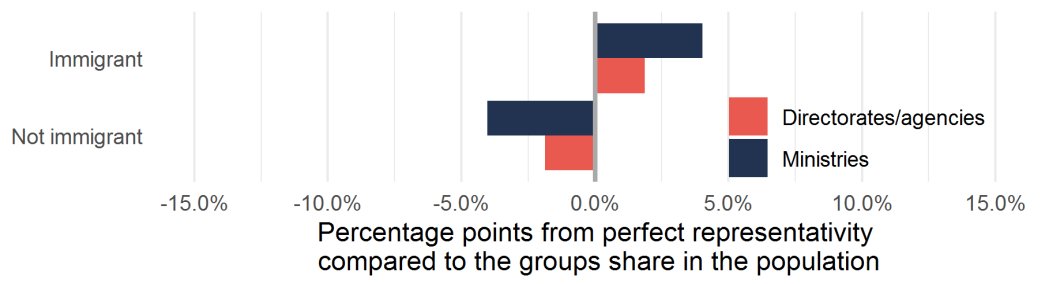Population data collected from SSB table 12627
N (NFP) = 2077

As in all DIGSSCOREs panels, higher education levels are overrepresented among the respondents. However, the education level among public administrators is generally, and naturally, higher than among the general public. Most public administrators at ministries and directorates/agencies have university/university college education of more than four years. This is true for 78 percent of public administrators at ministries in the target population, and 70 percent at directorates/agencies. In NFP, public administrators with the highest level of education is overrepresented by at both administrative levels.

Figure 9: Representativity of administrative level by education

Percentage points from perfect representativity
compared to the groups share in the population

Population data collected from SSB table 12626
N (NFP) = 2083

Lastly, figure 10 compares the share of immigrants (themselves or minimum one of the parents born outside of Norway) in the target population compared to NFP. Evidently, public administrators with background as immigrants are overrepresented at both administrative levels, but most prominently among respondents employed at ministries. In the target population, 5 percent of staff at ministries have immigrant backgrounds. In NFP, that is true for 9 percent of the respondents. Subordinate directorates/agencies have a higher share of immigrants, 11 percent, and are somewhat overrepresented in the panel as they make up 12.9 percent in the panel.

Figure 10: Representativity of administrative level by share of immigrants

Percentage points from perfect representativity
compared to the groups share in the population

Population data collected from SSB table 12827
N (NFP) = 2156

Appendix 1: List over the size of effect from small bulk distribution of invitations

Ministry/Agency/Directorate	Before	After
The Ministry of Local Government Regional Development	357	228
The Norwegian Government Security and Service Organisation	353	353
The Ministry of Education and Research	495	470
The Ministry of Trade, Industry and Fisheries	327	239
The Ministry of Climate and Environment	196	42
The Ministry of Health and Care Services	195	45
The Ministry of Transport	165	129
The Ministry of Petroleum and Energy	163	119
The Ministry of Culture and Equality	332	138
The Ministry of Agriculture and Food	130	20
The Ministry of Children and Families	81	42

Appendix 1: List over the size of effect from small bulk distribution of invitations