

Supplementary material
for
Knowledge and Support for Artificial Intelligence in the
Public Sector: A Deliberative Poll Experiment

August 29, 2024

Contents

A	Descriptive statistics	1
B	Knowledge about AI/ML – Population and sample distribution	3
B.1	Post-treatment preferences for use of AI/ML	4
C	Regression models and robustness checks	5
C.1	Estimates with post-stratification weights	6
D	Representativeness of the sample	8
E	Balance test	10
F	Survey items	11
F.1	Survey items for Figure 3	11
F.2	Survey items for Figure 4	11
G	The Day of Deliberation	12

List of Figures

1	Distribution of self-reported knowledge about AI in the deliberative poll	3
2	Distribution of self-reported knowledge about AI in the population	4
3	Distribution of self-reported support or opposition about AI in the post-treatment sample	4
4	Design weights used for post stratification weighting	6
5	Estimated with post-stratification weights: Support for the government’s use of AI	7
6	Estimated with post-stratification weights: Participants’ knowledge about AI and government services	7

List of Tables

1	Summary Statistics – Treatment group	2
2	Difference-in-difference model for Figure 3	5
3	Difference-in-difference model with wave control	5
4	Table Title	9
5	Balance test	10

A Descriptive statistics

Table 1: Summary Statistics – Treatment group

Group	Pre, treatment						Post, treatment					
Variable	NotNA	Mean	Sd	Min	Max	CountNA	NotNA	Mean	Sd	Min	Max	CountNA
Age	118	47.059	18.512	18	92	0	118	47.059	18.512	18	92	0
Gender	118						118					
... Female	58	49.2%					58	49.2%				
... Male	60	50.8%					60	50.8%				
Knowledge: AI	116	3.612	0.766	1	5	2	117	3.222	0.696	2	4	1
Knowledge: Refugee	117	3.932	0.868	1	5	1	117	3.436	0.932	1	5	1
Knowledge: NAV	116	3.888	0.911	1	5	2	117	3.521	0.877	1	5	1
Support AI: Refugees	115	4.278	1.26	1	7	3	116	5.224	1.127	1	7	2
Support AI: Parole	115	3.583	1.589	1	7	3	117	4.487	1.436	1	7	1
Support AI: NAV	111	4.315	1.465	1	7	7	115	5.174	1.126	1	7	3
Education	118						0					
... No education	0	0%					0	NaN%				
... Pre-school	2	1.7%					0	NaN%				
... High school	25	21.2%					0	NaN%				
... Vocational school	15	12.7%					0	NaN%				
... University or collage, up to 4 yearrs	43	36.4%					0	NaN%				
... University or collage, more than 4 yearrs	32	27.1%					0	NaN%				
... Other	1	0.8%					0	NaN%				
Party preference	117						0					
... Progress party	6	5.1%					0	NaN%				
... Conservative party	27	23.1%					0	NaN%				
... Liberal Party	14	12%					0	NaN%				
... Christian democrats	3	2.6%					0	NaN%				
... Center party	5	4.3%					0	NaN%				
... Labour party	15	12.8%					0	NaN%				
... Socialist party	11	9.4%					0	NaN%				
... Red party	10	8.5%					0	NaN%				
... Other	4	3.4%					0	NaN%				
... Could not vote	2	1.7%					0	NaN%				
... Would not vote	7	6%					0	NaN%				
... Green party	13	11.1%					0	NaN%				
Left-Right	117	5.393	2.729	0	11	1	0	NaN		Inf	-Inf	118
Group	Pre, control						Post, control					
Variable	NotNA	Mean	Sd	Min	Max	CountNA	NotNA	Mean	Sd	Min	Max	CountNA
Age	89	44.562	17.027	18	79	0	89	44.562	17.027	18	79	0
Gender	89						89					
... Female	50	56.2%					50	56.2%				
... Male	39	43.8%					39	43.8%				
Knowledge: AI	89	3.854	0.683	1	5	0	89	3.843	0.705	1	5	0
Knowledge: Refugee	88	4.091	0.942	1	5	1	87	4.115	0.813	2	5	2
Knowledge: NAV	87	3.966	1.176	1	5	2	88	4.08	0.847	1	5	1
Support AI: Refugees	85	4.188	1.16	2	7	4	86	4.256	1.18	1	6	3
Support AI: Parole	85	3.494	1.666	1	7	4	85	3.424	1.538	1	6	4
Support AI: NAV	85	4	1.439	1	6	4	83	4.06	1.347	1	6	6
Education	89						0					
... No education	0	0%					0	NaN%				
... Pre-school	2	2.2%					0	NaN%				
... High school	15	16.9%					0	NaN%				
... Vocational school	13	14.6%					0	NaN%				
... University or collage, up to 4 years	27	30.3%					0	NaN%				
... University or collage, more than 4 years	29	32.6%					0	NaN%				
... Other	3	3.4%					0	NaN%				
Party preference	89						0					
... Progress party	6	0%					0	NaN%				
... Conservative party	21	23.6%					0	NaN%				
... Liberal Party	6	6.7%					0	NaN%				
... Christian democrats	2	2.2%					0	NaN%				
... Center party	1	1.1%					0	NaN%				
... Labour party	12	13.5%					0	NaN%				
... Socialist party	15	16.9%					0	NaN%				
... Red party	10	11.2%					0	NaN%				
... Other	6	6.7%					0	NaN%				
... Could not vote	2	2.2%					0	NaN%				
... Would not vote	4	4.5%					0	NaN%				
... Green party	10	11.2%					0	NaN%				
Left-Right	89	4.865	2.873	0	11	0	0	NaN		Inf	-Inf	89

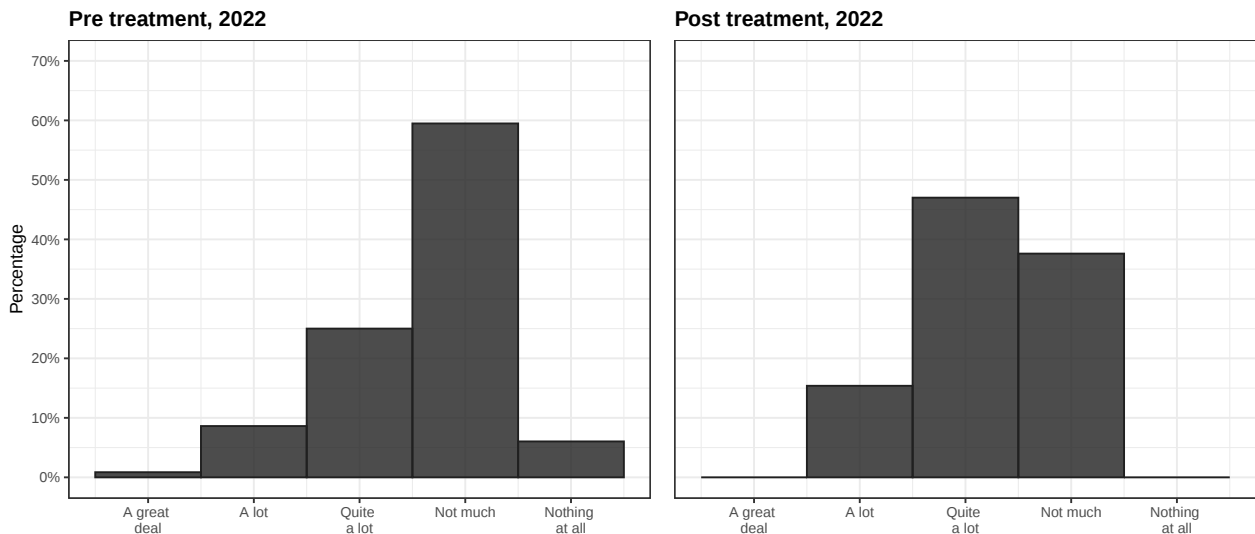
B Knowledge about AI/ML – Population and sample distribution

In Figure 1, we present the distribution of self-reported knowledge about AI in our sample, pre and post treatment. We observe how the participants report to have acquired more knowledge about artificial intelligence and machine learning after the deliberative event.

In Figure 2, the same question is posed to the a representative sample of the Norwegian population. These results are presented with post-stratified weights. We observe here that over the two years from 2021 to 2023, citizens report an increased knowledge about the topic.

A visual comparison of Figure 1 and 2 show similar distributions in the pre-treatment sample and the 2021 sample of the target population (citizens of Norway). The 2023 distribution varies somewhat, probably due to the salience of AI in the public discourse as a result of the popularity of ChatGPT-3.

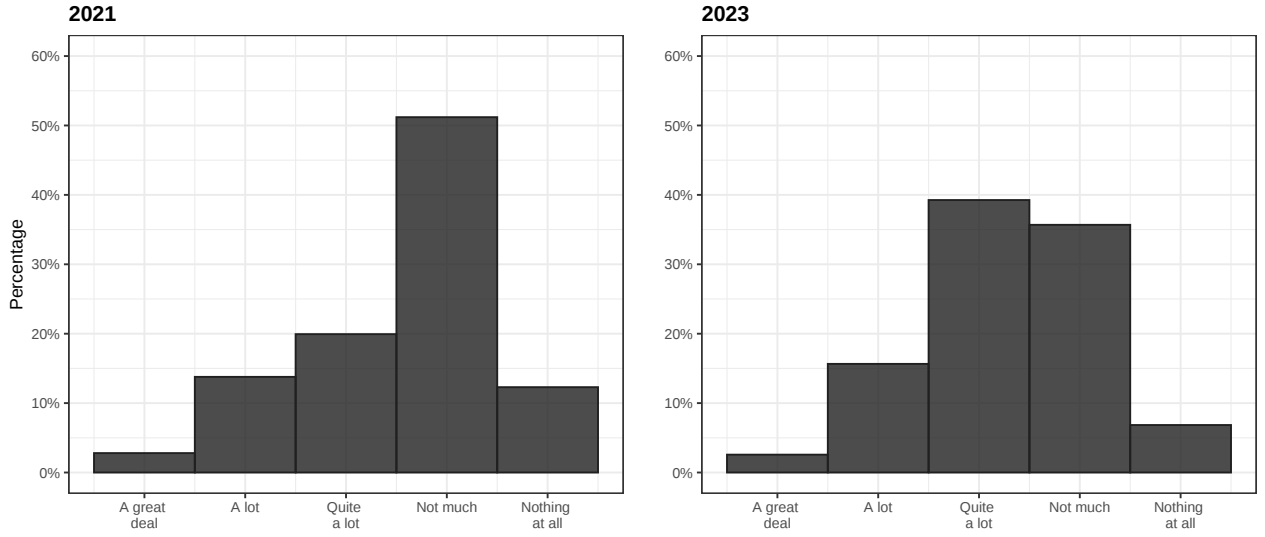
Knowledge of AI and machine learning among participants in the Deliberative Poll



Question formulation: How much would you say you know about machine learning and artificial intelligence?. Source: ANONYMIZED

Figure 1: Distribution of self-reported knowledge about AI in the deliberative poll

Knowledge of AI and machine learning in Norway



Question formulation: How much would you say you know about machine learning and artificial intelligence?. Source: ANONYMIZED

Figure 2: Distribution of self-reported knowledge about AI in the population

B.1 Post-treatment preferences for use of AI/ML

In Figure 3, we plot the distribution for support or opposition for the use of AI/ML in the public sector after the treatment, i.e., deliberation. As discussed in the main text, the majority of respondents “support somewhat” the use of AI/ML in the public sector. However, more so in refugee assignment and sick-leave dialogue meeting than on questions about parole.

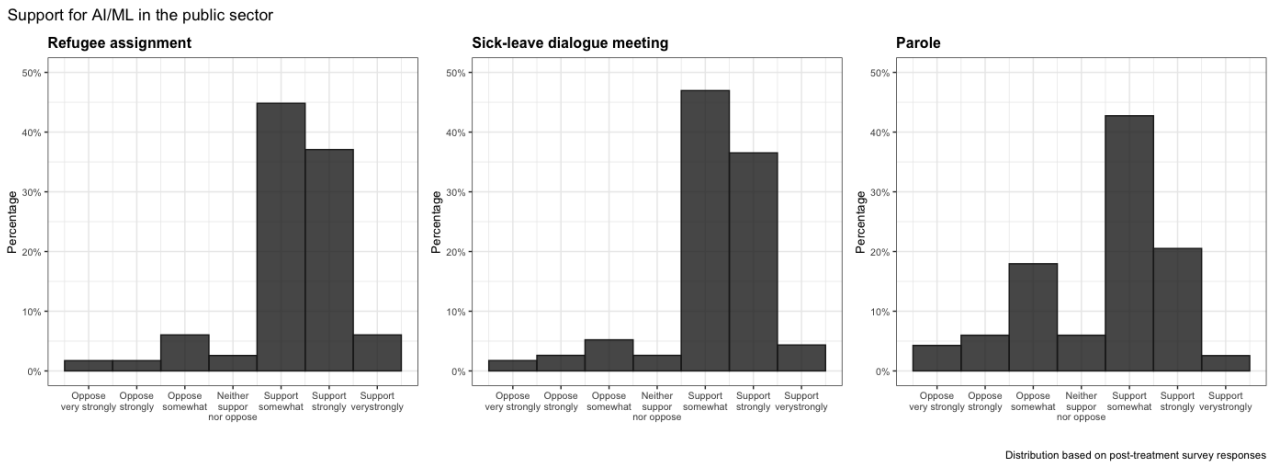


Figure 3: Distribution of self-reported support or opposition about AI in the post-treatment sample

C Regression models and robustness checks

In this section, we present two regression outputs. The first one, Table 2, shows our preferred model. This model is used to produce Figure 3 using Equation 2. The second model, shown in Table 3, also includes a control for which wave the respondent participated in. As is evident from comparing the two models, the results do not change substantively.

Table 2: Difference-in-difference model for Figure 3

	<i>Dependent variable:</i>		
	Sick leave	Refugee	Parloe
	(1)	(2)	(3)
Treatment	0.261 (0.200)	0.058 (0.230)	0.053 (0.177)
Time	0.035 (0.212)	−0.068 (0.244)	−0.015 (0.187)
Time x Treatment	0.854*** (0.278)	1.002*** (0.321)	0.938*** (0.246)
Constant	4.026*** (0.152)	3.526*** (0.176)	4.244*** (0.135)
Observations	383	383	383
R ²	0.116	0.080	0.121
Adjusted R ²	0.109	0.073	0.114
Residual Std. Error (df = 379)	1.343	1.550	1.188
F Statistic (df = 3; 379)	16.552***	10.980***	17.447***

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 3: Difference-in-difference model with wave control

	<i>Dependent variable:</i>		
	Sick leave	Refugee	Parloe
	(1)	(2)	(3)
Treatment	0.259 (0.200)	0.054 (0.230)	0.054 (0.177)
Time	0.037 (0.212)	−0.065 (0.245)	−0.016 (0.188)
Wave: 1 = 2nd wave	−0.105 (0.138)	−0.148 (0.160)	0.078 (0.123)
Time x Treatment	0.851*** (0.278)	0.998*** (0.321)	0.940*** (0.246)
Constant	4.073*** (0.164)	3.592*** (0.190)	4.208*** (0.145)
Observations	383	383	383
R ²	0.117	0.082	0.122
Adjusted R ²	0.108	0.072	0.113
Residual Std. Error (df = 378)	1.343	1.550	1.189
F Statistic (df = 4; 378)	12.543***	8.447***	13.167***

Note:

*p<0.1; **p<0.05; ***p<0.01

C.1 Estimates with post-stratification weights

To test whether demographic biases in the sample may affect the results we here re-estimate using post-stratification weights. The design weights are calculated based on official population data from *Statistics Norway* Table 07459. The design weights are calculated based on differences in proportion between the population and our sample within strata based on age (10-year age groups), gender, and county. The distribution of the design weights are shown in Figure 4. The sample is fairly demographically representative so the weights stays within reasonable bounds; the highest assigned weight is 2.4. Re-estimates using post-stratification weights are shown in Figures 5 and 6. Results are essentially identical.

Figure 4: Design weights used for post stratification weighting

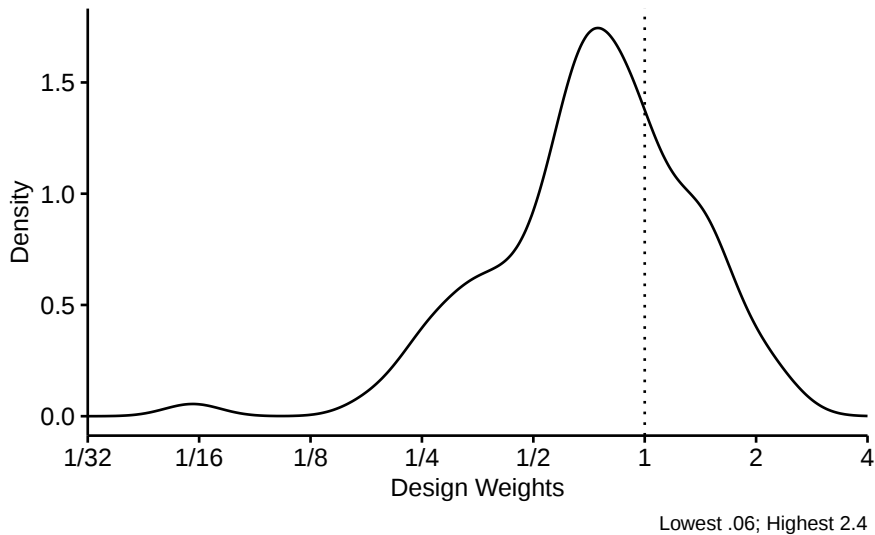
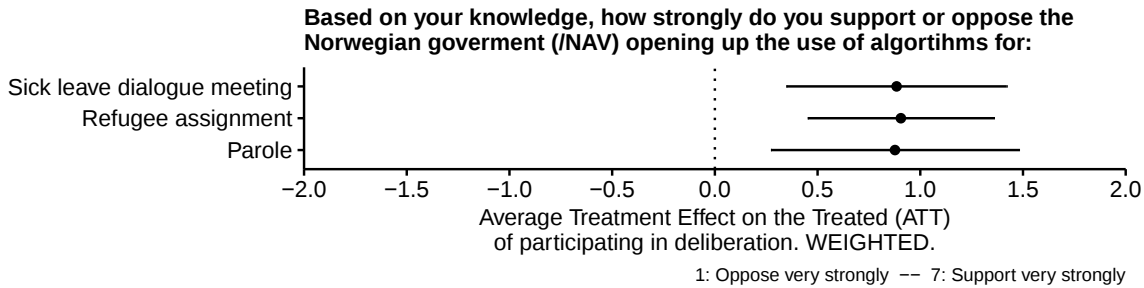
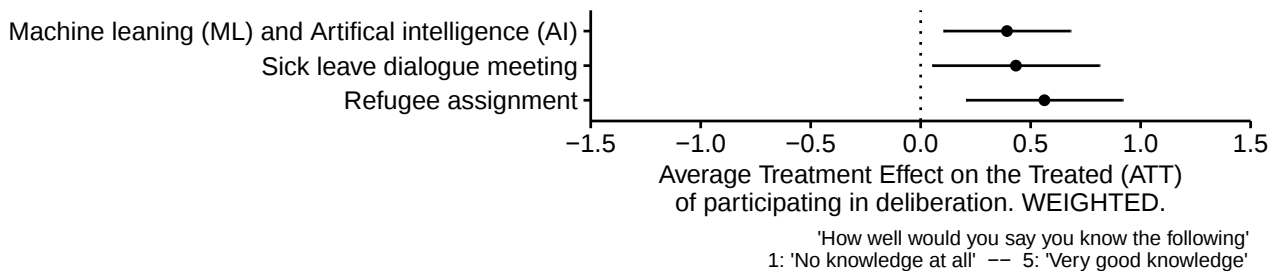


Figure 5: Estimated with post-stratification weights: Support for the government's use of AI



Note: The figure shows the average treatment effect for the treated units (ATT) after reading the information material, participating in the deliberation, and listening to the expert session. Estimated using post stratification weights. The Y-axis represents the wording of the question and the X-axis show the average change in participants answer to a specific question, post treatment. The horizontal bars show 95 % confidence intervals. N respondents = 207; N observations = 414.

Figure 6: Estimated with post-stratification weights: Participants' knowledge about AI and government services



Note: The figure shows the average treatment effect for the treated units (ATT) after reading the information material, participating in the deliberation, and listening to the expert session. Estimated using post stratification weights. The Y-axis represents the wording of the question and the X-axis show the average change in participants answer to a specific question, post treatment. The horizontal bars show 95 % confidence intervals. N respondents = 207; N observations = 414.

D Representativeness of the sample

Our sampling strategy includes a randomly drawn sample from the population, yielding a total of 24,001 possible respondents. From this full sample, we were able to recruit 207 respondents to participate in one of our two deliberative polls. To gauge the representativeness of our participants, we use register data from Statistics Norway and compare our respondents on key characteristics with the respondents who did not participate in the study. This yields a powerful test of whether respondents who participated in the study compares to the rest of the population.

In Table 4, we can see that our sample is very representative when it comes to key characteristics like age, gender, place of birth, civil status, and income. However, like many other surveys, the higher educated and politically engaged (measured via whether they voted in the 2021 national election) are over-represented. The proportion of people with higher education who participated in the study is 61 per cent compared to the full sample (36 per cent) and the proportion of voters who participated in the study (81 per cent) is higher than the full sample (69 per cent). Additionally, older citizens 71 years and older, are also under-represented (9 per cent in our sample compared to 16 per cent in the total sample).

Table 4: Table Title

Variable	Did not participate (N=23795)	Participated (N=206)	Total (N=24001)
Age			
18 – 45	10442 (43.9%)	90 (43.7%)	10532 (43.9%)
45 – 70	9584 (40.3%)	97 (47.1%)	9681 (40.3%)
71 – 97	3769 (15.8%)	19 (9.2%)	3788 (15.8%)
Gender			
Female	11791 (49.6%)	108 (52.4%)	11899 (49.6%)
Male	12004 (50.4%)	98 (47.6%)	12102 (50.4%)
Born			
N-Miss	270	0	270
Born in Norway	19125 (81.3%)	174 (84.5%)	19299 (81.3%)
Born outside of Norway	4400 (18.7%)	32 (15.5%)	4432 (18.7%)
Married			
Married	9662 (40.6%)	71 (34.5%)	9733 (40.6%)
Unmarried	14133 (59.4%)	135 (65.5%)	14268 (59.4%)
Income			
N-Miss	4450	23	4473
Mean (SD)	4.607 (2.813)	4.470 (3.045)	4.606 (2.815)
Range	0.000 - 9.000	0.000 - 9.000	0.000 - 9.000
Education			
Higher Education	8673 (36.4%)	126 (61.2%)	8799 (36.7%)
No higher education	14316 (60.2%)	79 (38.3%)	14395 (60.0%)
Not registered	806 (3.4%)	1 (0.5%)	807 (3.4%)
Vote			
Did not vote	7446 (31.3%)	39 (18.9%)	7485 (31.2%)
Vote	16349 (68.7%)	167 (81.1%)	16516 (68.8%)

Note: One respondent is not recorded as a participant in the register.

E Balance test

Table 5 shows the predicted probability of being selected into our treatment group estimated with a logistic regression. As is evident from the regression output, the treatment group has slightly higher knowledge of AI compared to the control group ($p < .05$). All other covariance remain statistically insignificant. Given our estimation strategy discussed in the paper, we do not consider this a major issue and substantially, the difference is quite small.

Table 5: Balance test

	<i>Dependent variable:</i>
	pr(Treatment group)
Age	0.010 (0.009)
Gender: Male	0.034 (0.319)
County: Innlandet	0.840 (1.047)
County: Møre og Romsdal	1.019 (1.058)
County: Nordland	1.033 (1.043)
County: Oslo	0.699 (0.837)
County: Rogaland	0.054 (0.920)
County: Troms og Finnmark	0.471 (1.084)
County: Trøndelag	0.823 (0.978)
County: Vestfold og Telemark	0.121 (0.892)
County: Vestland	0.437 (0.844)
County: Viken	0.788 (0.813)
Knowledge AI	−0.538** (0.232)
Knowledge Refugee	−0.005 (0.115)
Education	−0.149 (0.106)
Party	−0.025 (0.044)
Trust	0.081 (0.143)
LR Scale	0.029 (0.059)
Constant	1.884 (1.641)
Observations	203
Log Likelihood	−131.524
Akaike Inf. Crit.	301.048
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

F Survey items

F.1 Survey items for Figure 3

How well would you say you know the following:

- *Machine learning (ML) and Artificial intelligence (AI)*
- *How the Norwegian authorities currently decide where refugees will be settled once they have been granted residence in Norway*
- *How NAV currently decides which people on sick leave are to be invited to a dialogue meeting about how they can more easily return to work*
- **Answer scale**
- *Very good knowledge; Good knowledge; Somewhat good knowledge; Little knowledge; No knowledge at all; Do not know*

F.2 Survey items for Figure 4

Based on your knowledge:

- *What extent do you support that NAV should be open to using artificial intelligence when deciding who should be invited to a dialogue meeting?*
- *How strongly do you support or oppose the Norwegian authorities opening up the use of algorithms based on machine learning and artificial intelligence when settling refugees?*
- *How strongly do you support or oppose the Norwegian authorities opening up the use of artificial intelligence when deciding who should be paroled from prison?*
- **Answer scale**
- *Support very strongly; Support strongly; Support somewhat; Neither oppose nor support; Oppose somewhat; Oppose strongly; Oppose very strongly*

G The Day of Deliberation

The two events – in June and September 2022 – followed the same scheme: First, respondents were randomly assigned into deliberation groups. Second, post deliberation, participants were asked to pose questions for the plenary expert session. The group then decided – by popular majority – which two questions were posed to the experts. Third, the two most popular questions from all deliberation groups were asked to the experts by a moderator in the research team. Fourth, the process was repeated again with different points for discussion still related to AI/ML.

De-identified transcripts from the day of deliberation – including group deliberations as well as the plenary sessions – are available upon request. Transcripts are de-identified in accordance with instructions given in the data protection impact assessment of the event.