Survey data collection in the age of digital inequality

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Survey Futures Conference
London, 17 June 2026

The Survey Landscape Development

Dream

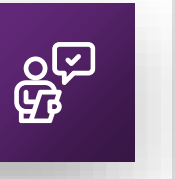
Face-to-face interviewing

Online self-completion surveys

Reality

Varying levels of **digital access, skills, and preferences** in the general population

Balancing costs and benefits in **mixed-mode** designs



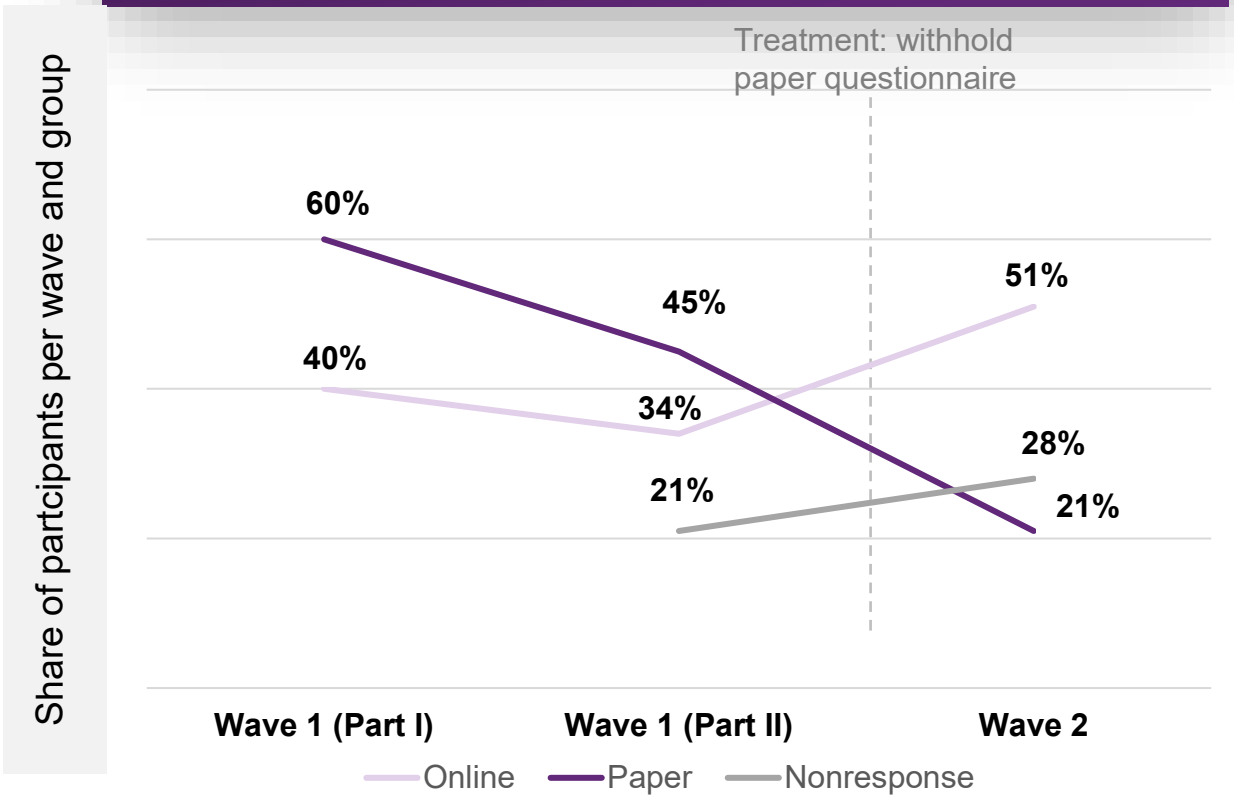
Decreasing **response rates** and increasing **biases**

Stein, A. et al. (2025). Education bias in probability-based surveys in Germany: Evidence and possible solutions. *International Journal of Social Research Methodology*, 1–18. https://doi.org/10.1080/13645579.2025.2508889

Cornesse, C. et al. (2022). From German Internet Panel to Mannheim Corona Study: Adaptable probability-based online panel infrastructures during the pandemic. *Journal of the Royal Statistical Society Series A: Statistics in Society*, *185*(3), 773–797. https://doi.org/10.1111/rssa.12749

Online and offline respondents

Pushing respondents to the web



If given a choice, many people choose offline survey options.

Some can be pushed to the web by design changes.

Cornesse, C., Witton, J., Axenfeld, J. B., Gerlitz, J., & Groh-Samberg, O. (2025). From Concurrent to Push-To-Web Mixed-Mode: Experimental Design Change in the German Social Cohesion Panel. https://doi.org/10.1177/08944393251403501

Online and offline respondents: synthesis

ONLINE PARTICIPANT

OFFLINE PARTICIPANT

Cornesse, C., Witton, J., Axenfeld, J. B., Gerlitz, J., & Groh-Samberg, O. (2025). From Concurrent to Push-To-Web Mixed-Mode: Experimental Design Change in the German Social Cohesion Panel.

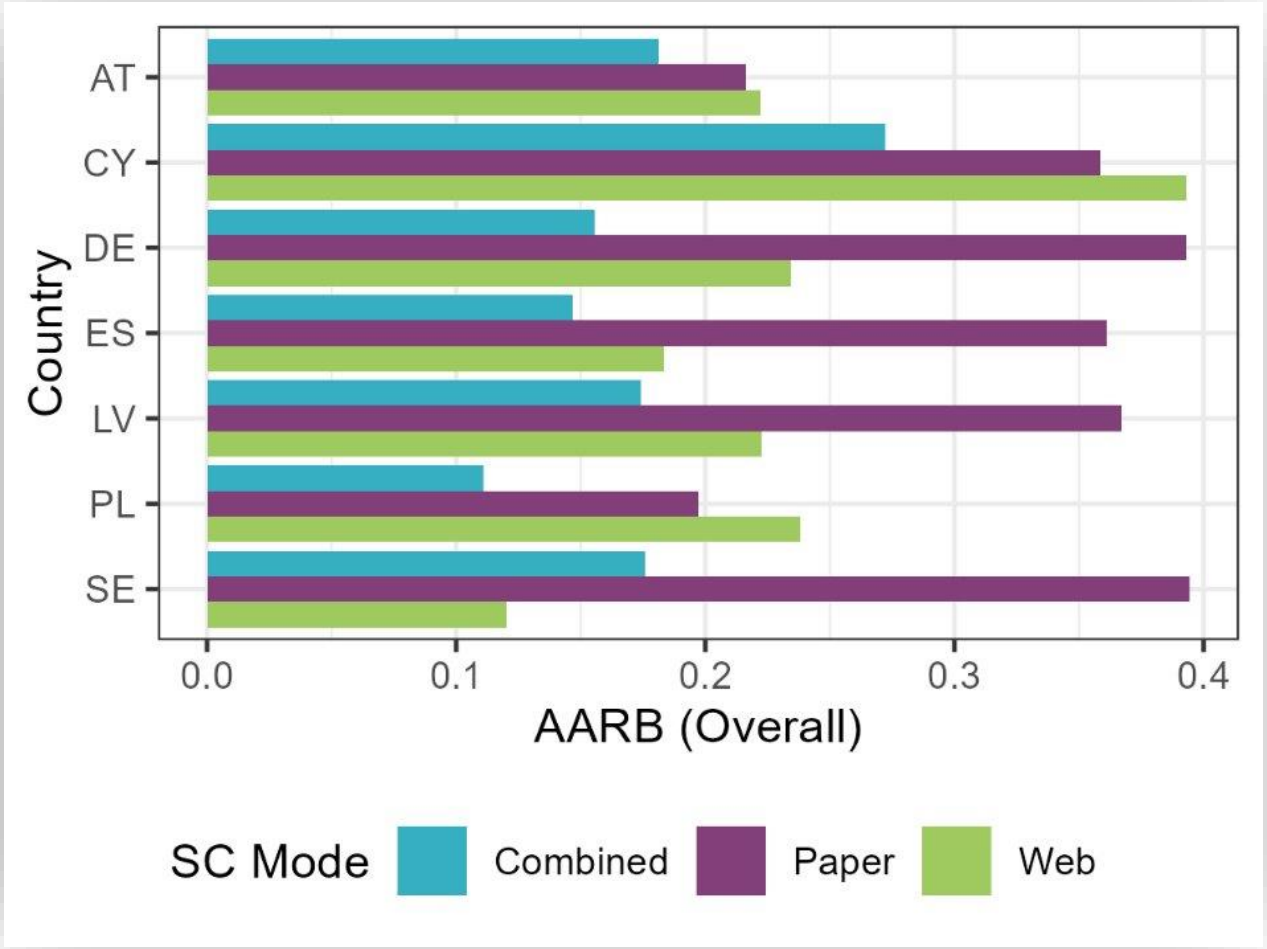
Bach, R. L., Cornesse, C., & Daikeler, J. (2024). Equipping the Offline Population with Internet Access in an Online Panel: Does It Make a Difference? Journal of Survey Statistics and Methodology, 12(1), 80–93.

Blom, A. G., Herzing, J. M. E., Cornesse, C., Sakshaug, J. W., Krieger, U., & Bossert, D. (2017). Does the Recruitment of Offline Households Increase the Sample Representativeness of Probability-Based Online Panels? Evidence From the German Internet Panel. Social Science Computer Review, 35(4), 498–520.

Cornesse, C., & Schaurer, I. (2021). The Long-Term Impact of Different Offline Population Inclusion Strategies in Probability-Based Online Panels: Evidence From the German Internet Panel and the GESIS Panel. Social Science Computer Review, 39(4), 687–704.

Cornesse, C., & Bosnjak, M. (2018). Is there an association between survey characteristics and representativeness? A meta-analysis. Survey Research Methods, 12(1), 1-18.

Combining online and offline respondents



Paper and web respondents represent different groups.

Combined, they lead to lower bias than by themselves.

Felderer, B., Seitz, A., Schneider, S., Cornesse, C., (2026). ESS Work Package on Nonresponse in Self-Completion Mode. Presented at the 21st meeting of the ESS ERIC Methodological Advisory Board.

Moving towards the Survey Future

We need to **understand our (non)respondents.**

We need to **motivate and enable them** through new methodologies.

We need to **target design features at them.**

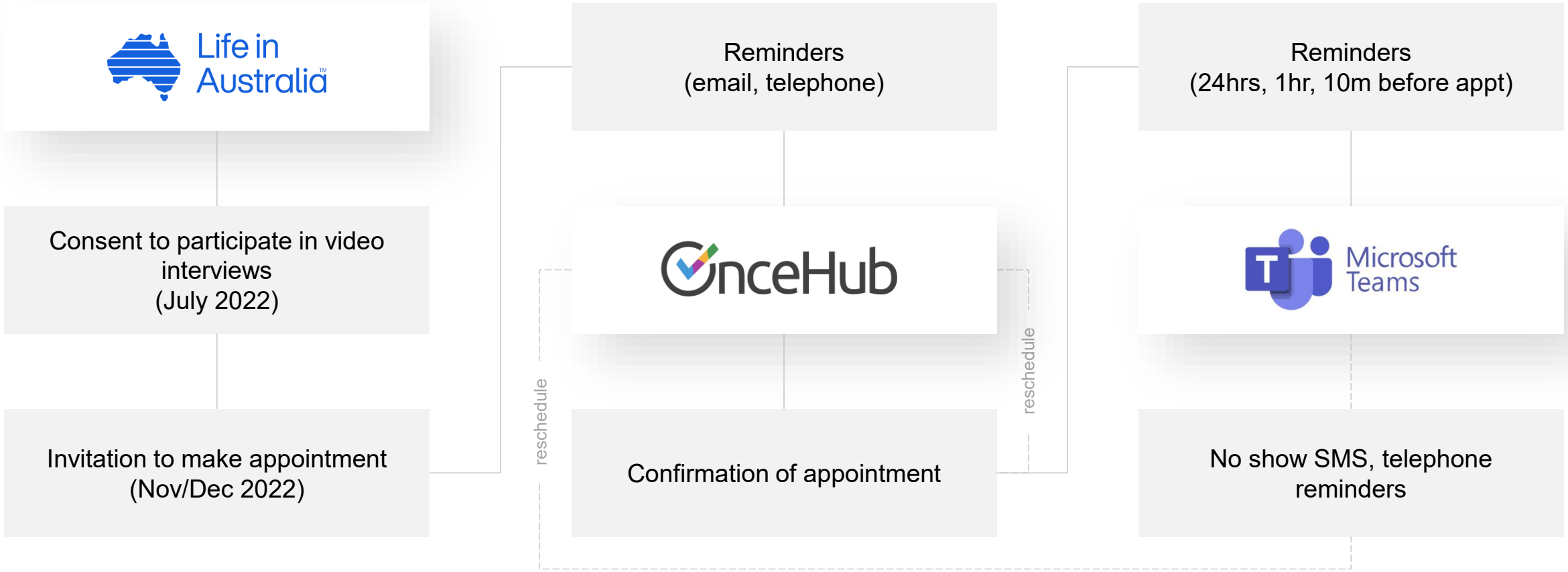
Witton, J., & Cornesse, C. (under review). *Identifying Optimizers, Extremists, and Indifferents: Latent Satisficing Patterns in Panel Surveys*. https://osf.io/f4cgz_v1

Jäckle, A., Cornesse, C., Wenz, A., & Couper, M. P. (2024). Measuring Expenditure with a Mobile App: Do Probability-Based and Nonprobability Panels Differ? *Journal of Survey Statistics and Methodology*, *12*(5), 1224–1253.

Friedel, S., Felderer, B., Krieger, U., Cornesse, C., & Blom, A. G. (2023). The Early Bird Catches the Worm! Setting a Deadline for Online Panel Recruitment Incentives. *Social Science Computer Review*, *41*(2), 370–389.

Cornesse, C., Felderer, B., Fikel, M., Krieger, U., & Blom, A. G. (2022). Recruiting a Probability-Based Online Panel via Postal Mail: Experimental Evidence. *Social Science Computer Review*, *40*(5), 1259–1284.

Video interviewing



Video interviewing

*note: interviewer and respondent consented to their picture being shared

Free video streaming services, such as:

- YouTube
- twitch
- tubi

> 20 hours per week
16-20 hours per week
11-15 hours per week
6-10 hours per week
1-5 hours per week
0 hours per week

Video interviewing

	Live video interviews	Online self-completion
Response rates	-	+
Representation	-	+
Data quality	=	=
Video recordings	+	
Respondent satisfaction	+	+
Interviewer satisfaction	+	

Multi-mode designs

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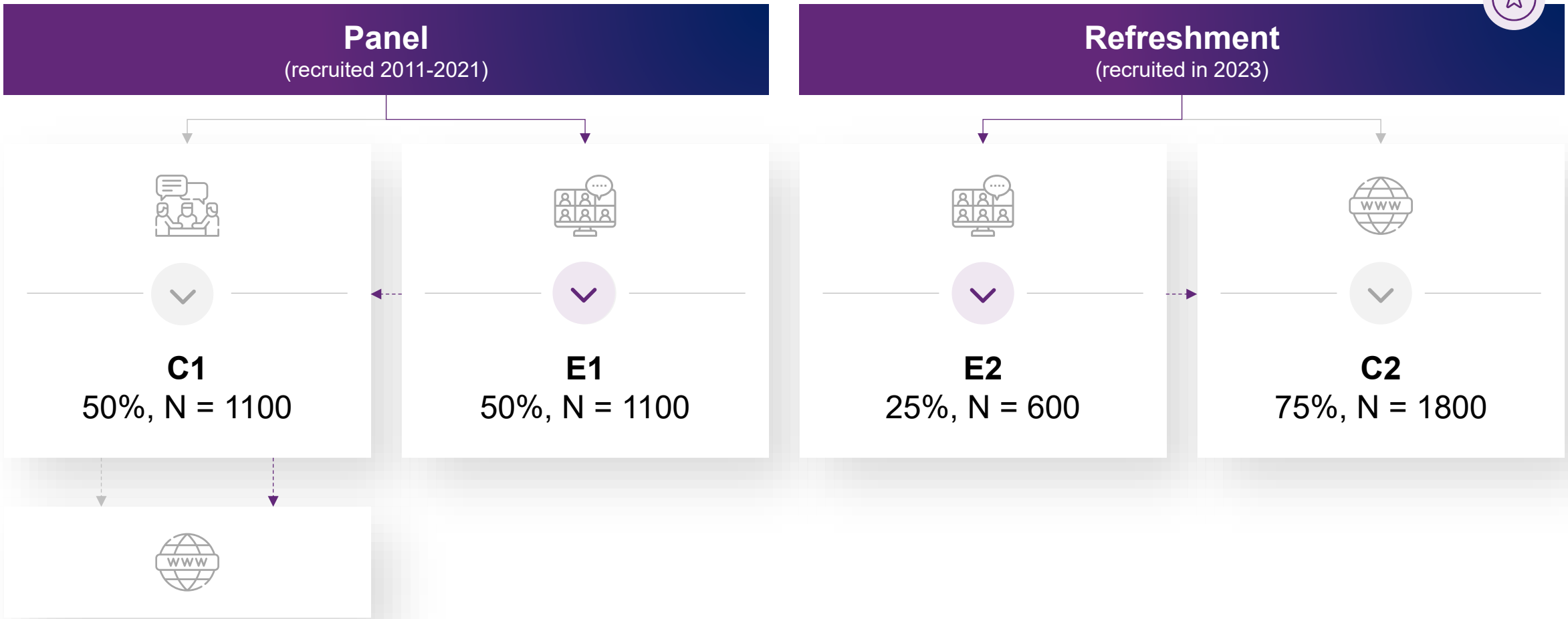
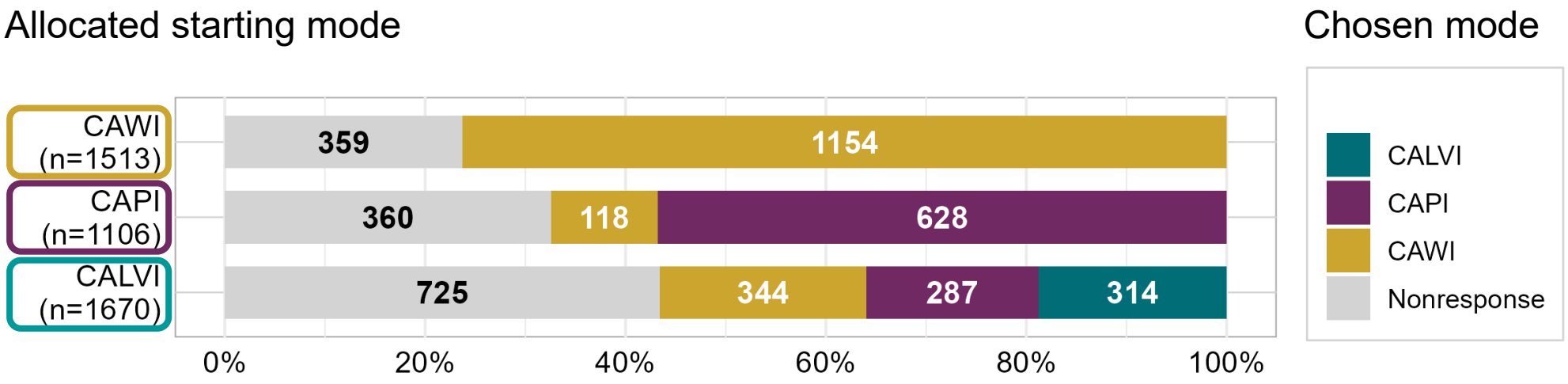


Witton, Cornesse, Grabka, Zinn (2026). Video-Interviews in Mixed-Mode Panel Surveys: Selective Feasibility and Data Quality Trade-offs.
https://surveyfutures.net/events/2026/02/02/survey-futures-workshop-video-interviewing/

Realization Mode by Allocated Mode



Mode choice predictors

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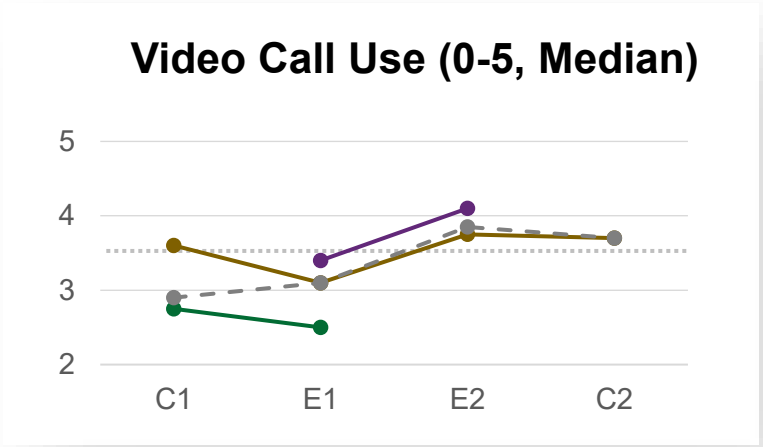
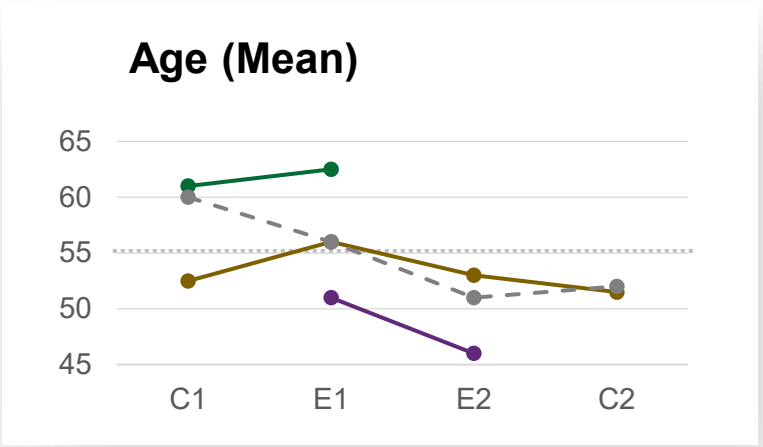
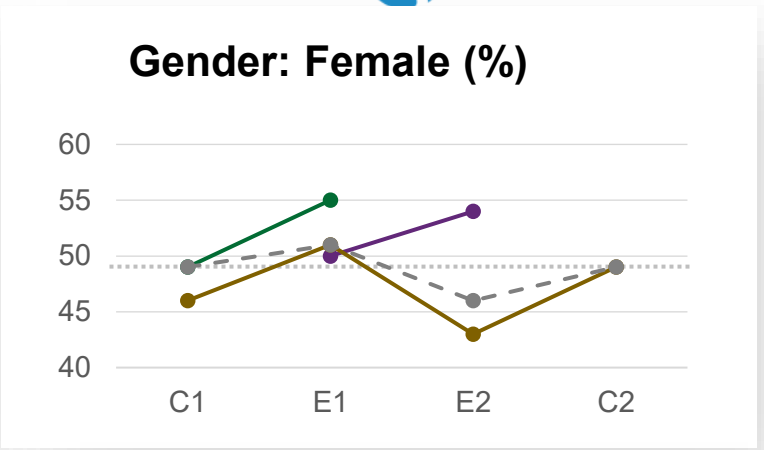
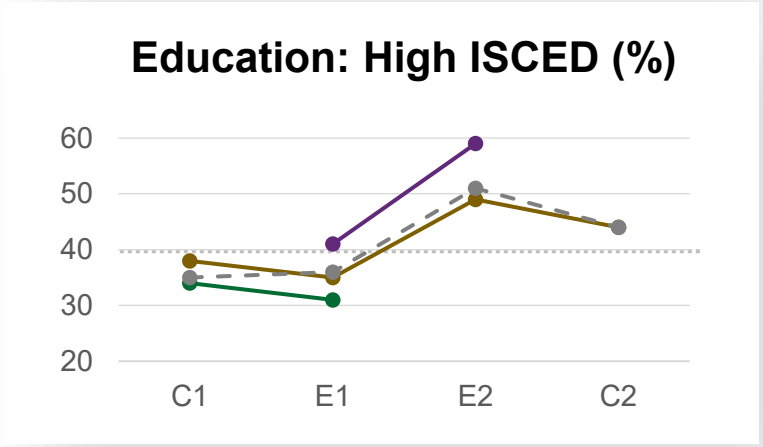
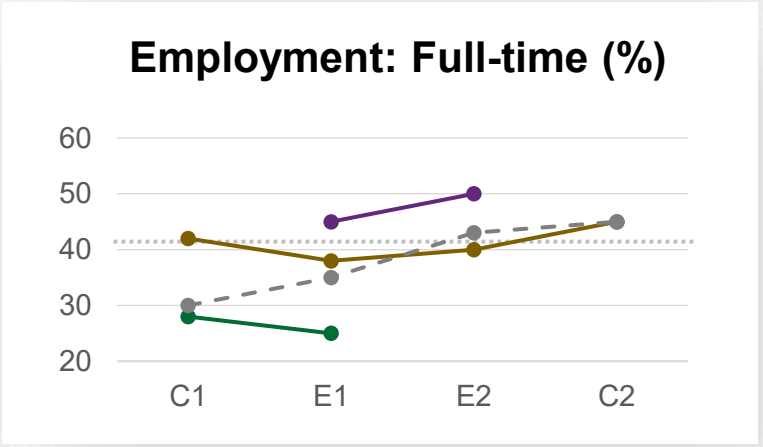
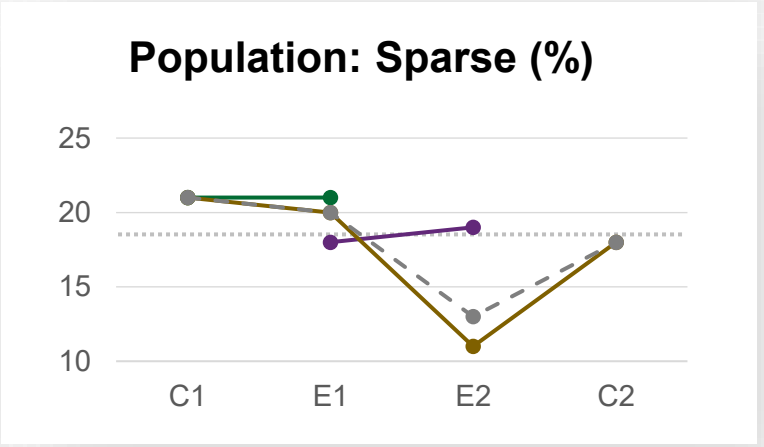








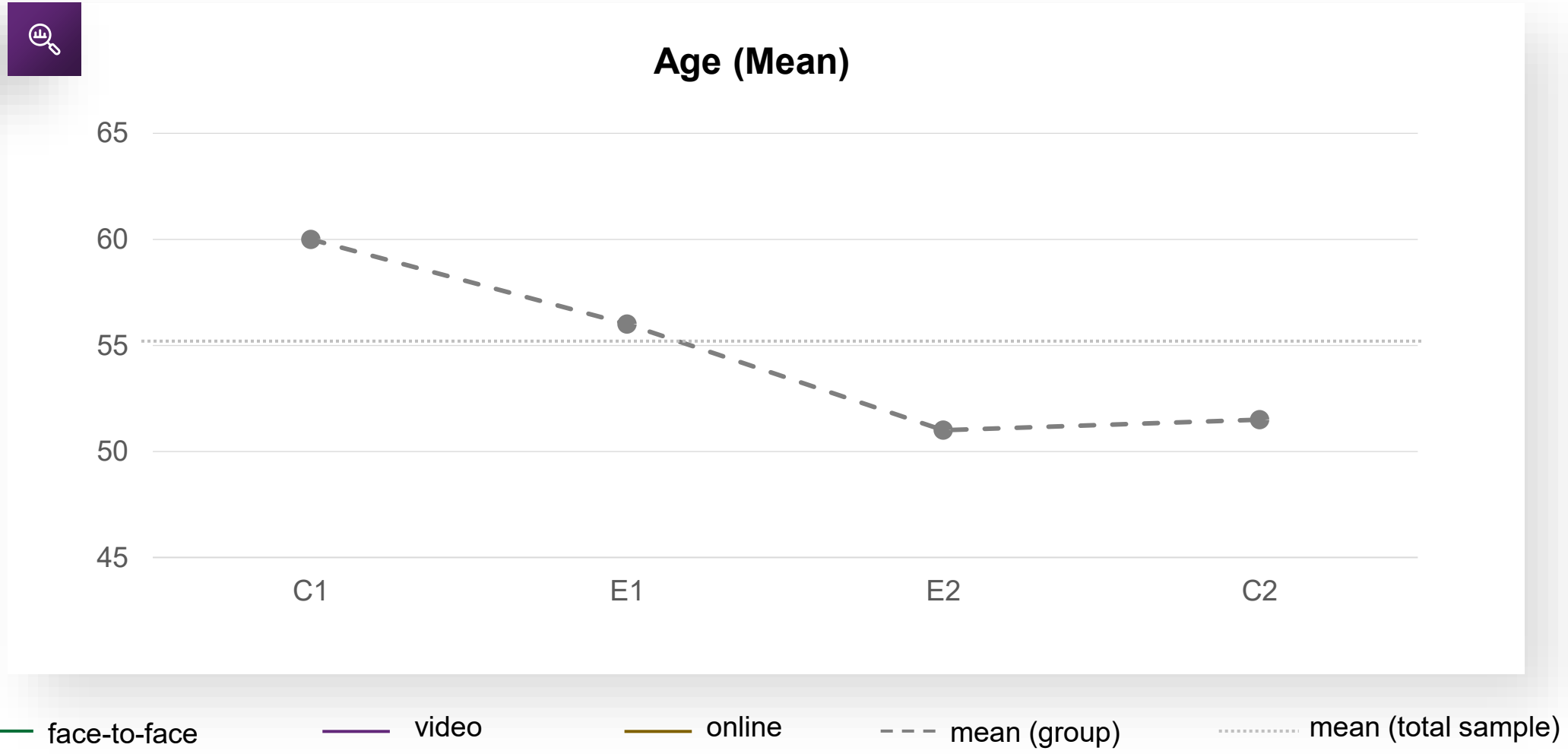




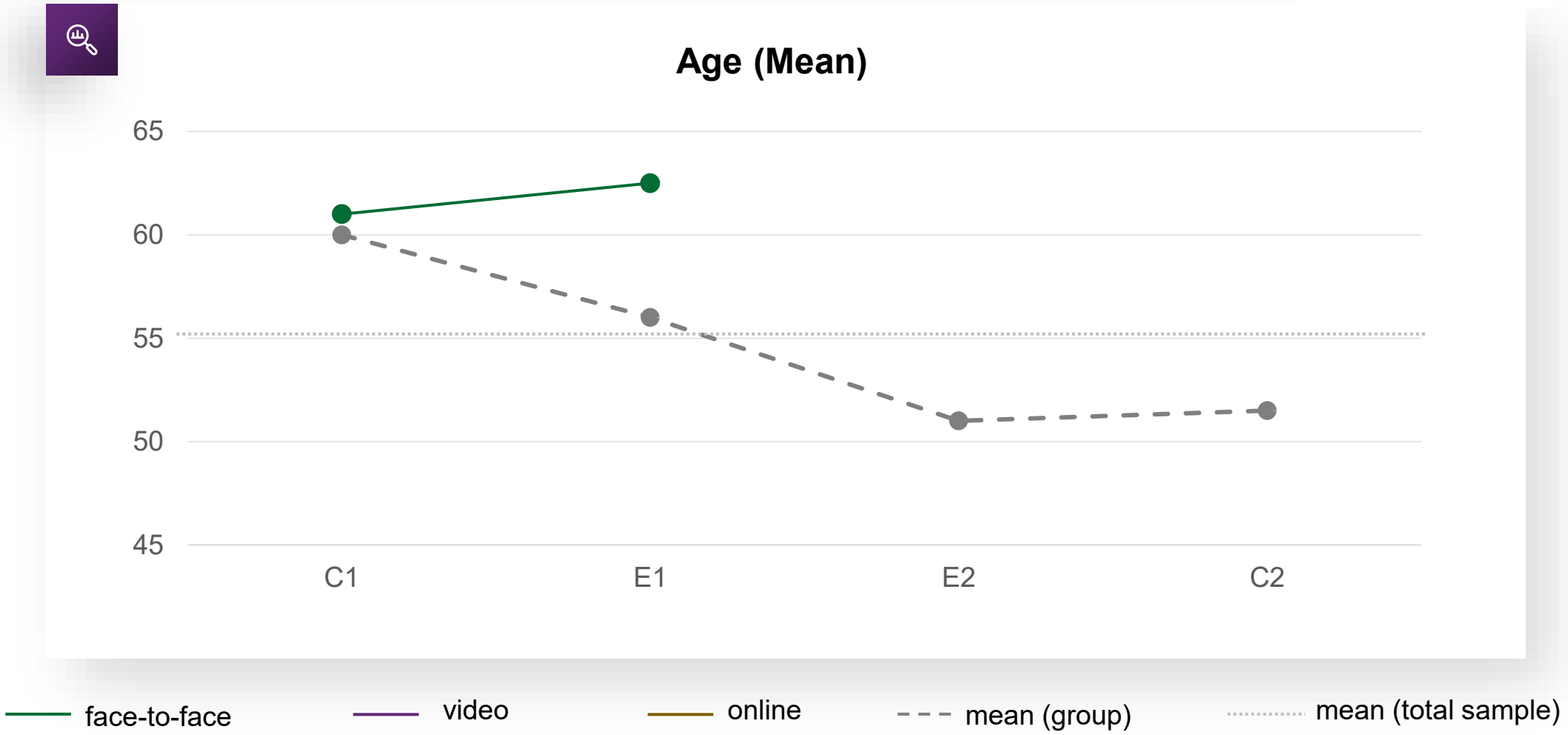
face-to-face video online mean (group) mean (total sample)

Witton, Cornesse, Grabka, Zinn (2026). Video-Interviews in Mixed-Mode Panel Surveys: Selective Feasibility and Data Quality Trade-offs.
https://surveyfutures.net/events/2026/02/02/survey-futures-workshop-video-interviewing/

Mode choice predictors



Mode choice predictors



Mode choice predictors

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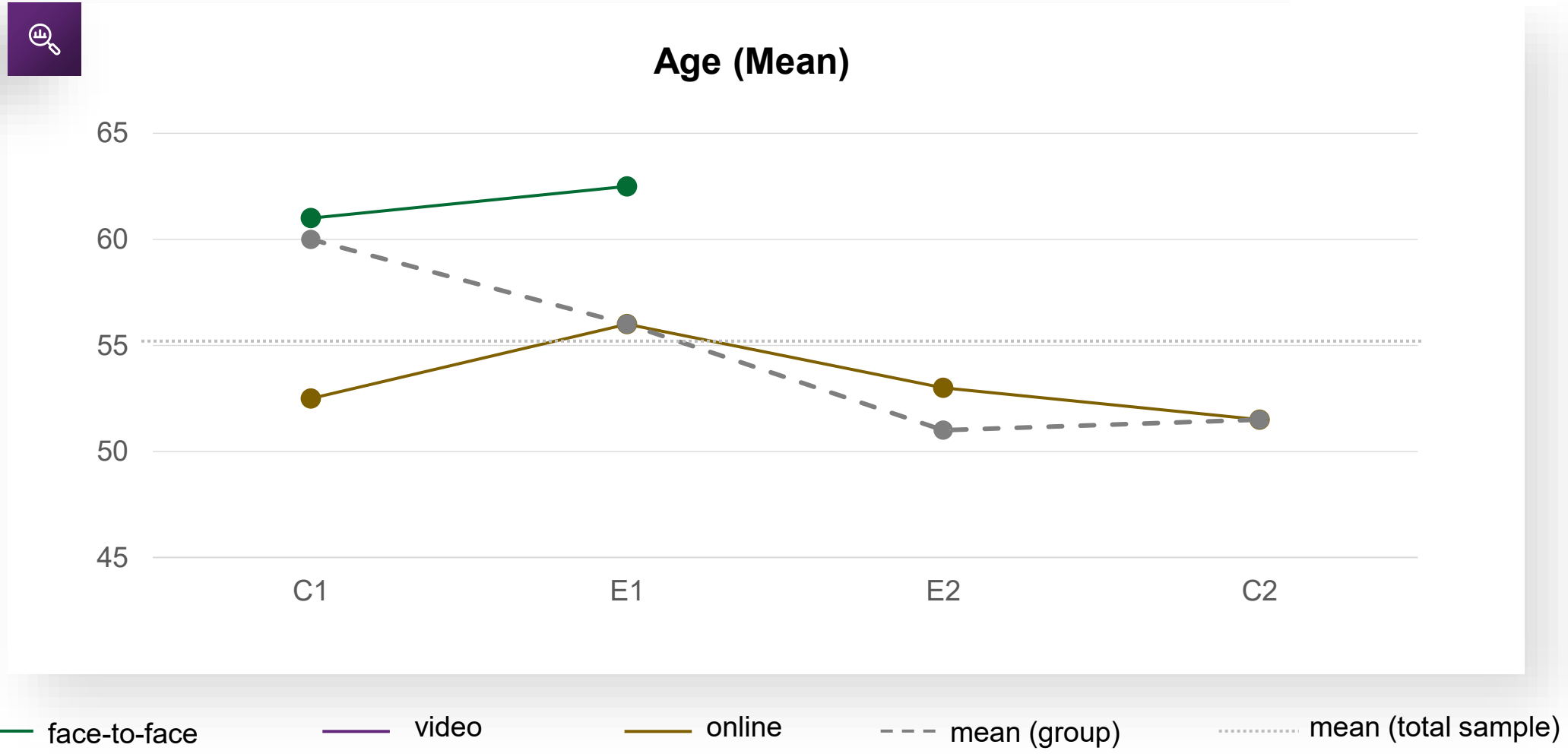

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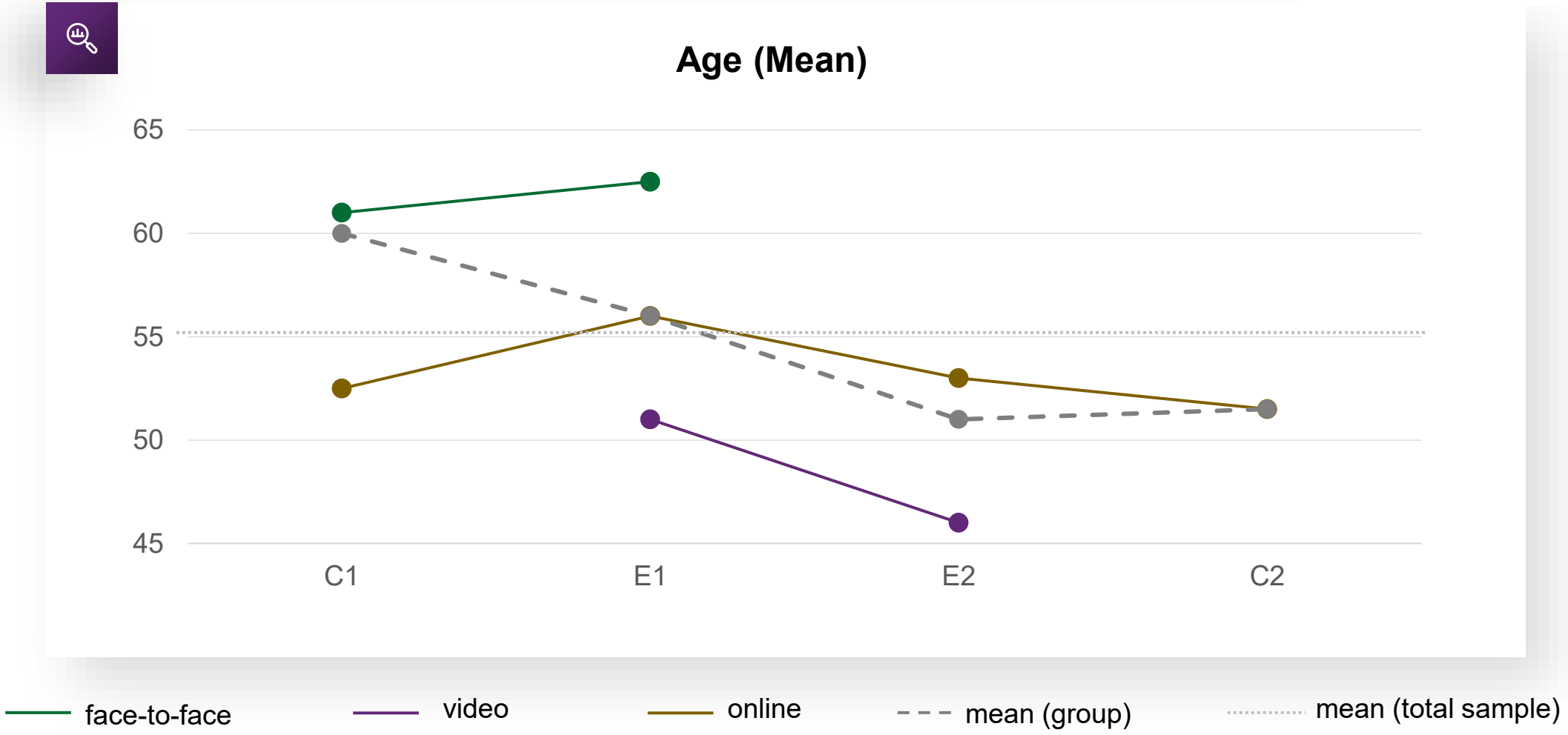

More modes, more differences

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ONLINE PARTICIPANT

VIDEO PARTICIPANT

OFFLINE PARTICIPANT

Witton, Cornesse, Grabka, Zinn (2026). Video-Interviews in Mixed-Mode Panel Surveys: Selective Feasibility and Data Quality Trade-offs. https://surveyfutures.net/events/2026/02/02/survey-futures-workshop-video-interviewing/
Brown M, Hanson T, Asensio M, Cornesse C, Wood M, Spencer S, Sanchez C, Koerber H & Durrant G (2025) 'Video interviewing', Survey Futures Survey Practice Guide no. 4. Colchester, UK: University of Essex. Available at https://surveyfutures.net/practice guides/.

Future Mode Preference

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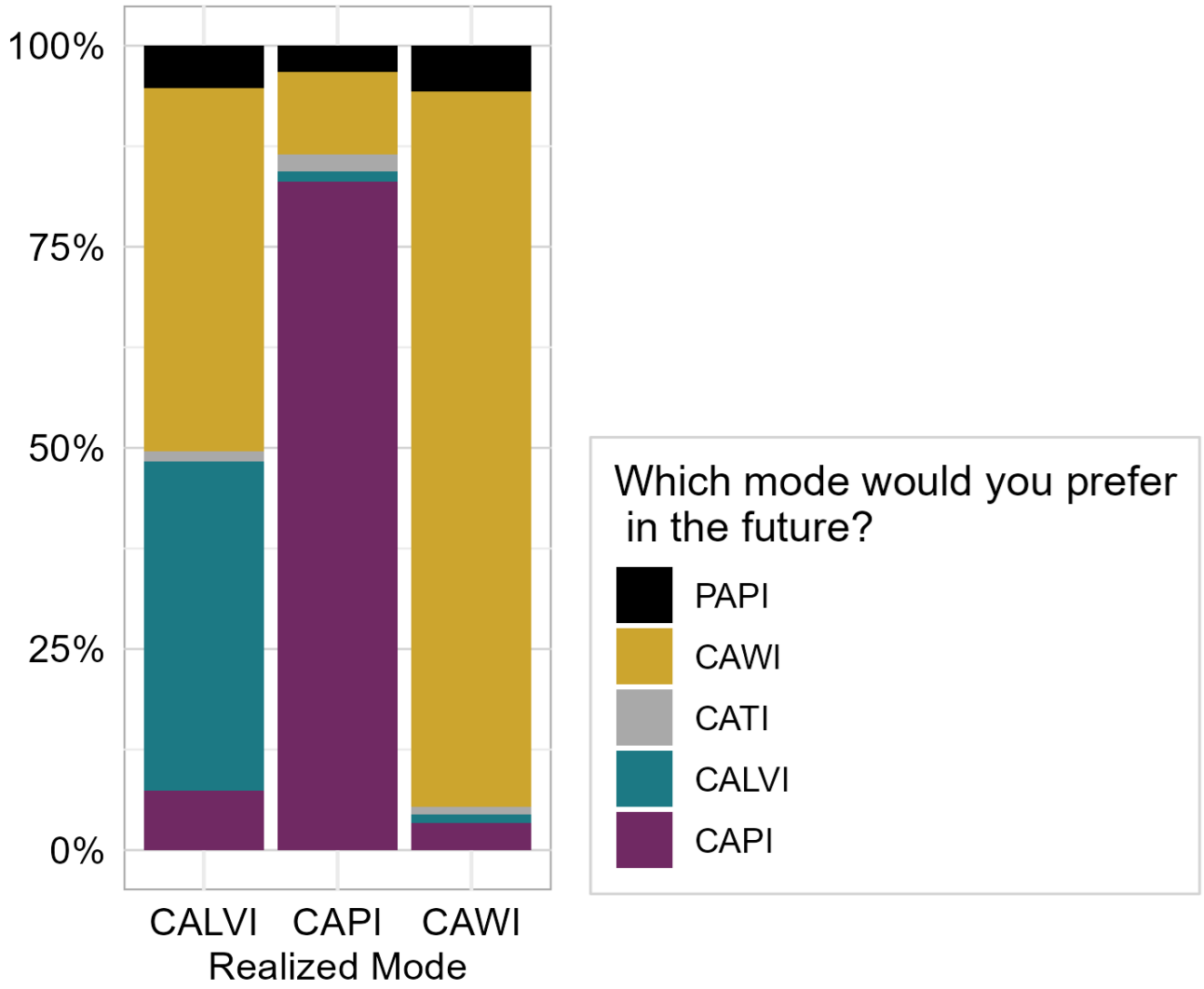
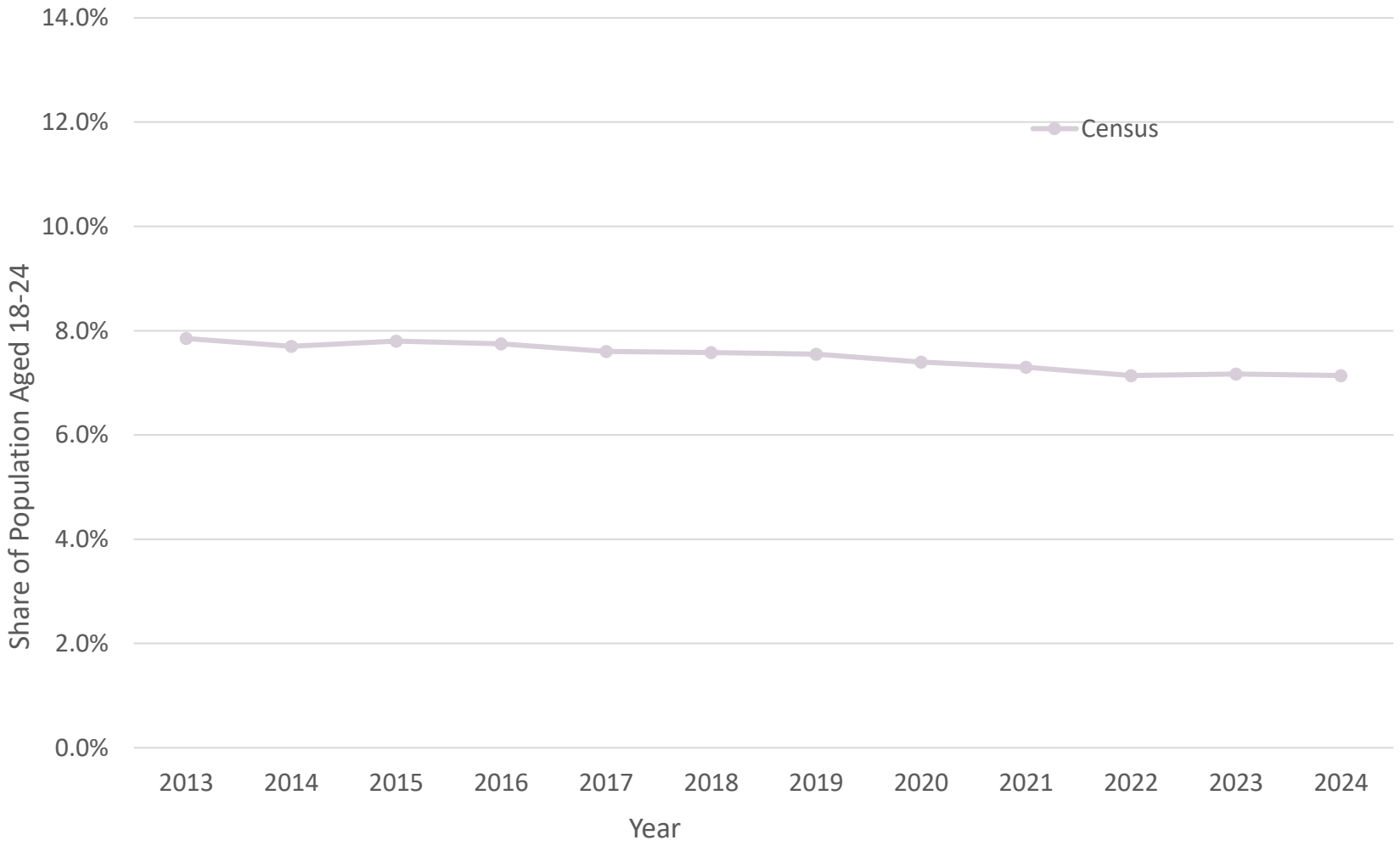


Witton, Cornesse, Grabka, Zinn (2026). Video-Interviews in Mixed-Mode Panel Surveys: Selective Feasibility and Data Quality Trade-offs.
https://surveyfutures.net/events/2026/02/02/survey-futures-workshop-video-interviewing/

No Survey Future without the Young

GESIS Panel.pop

GESIS Leibniz Institute for the Social Sciences



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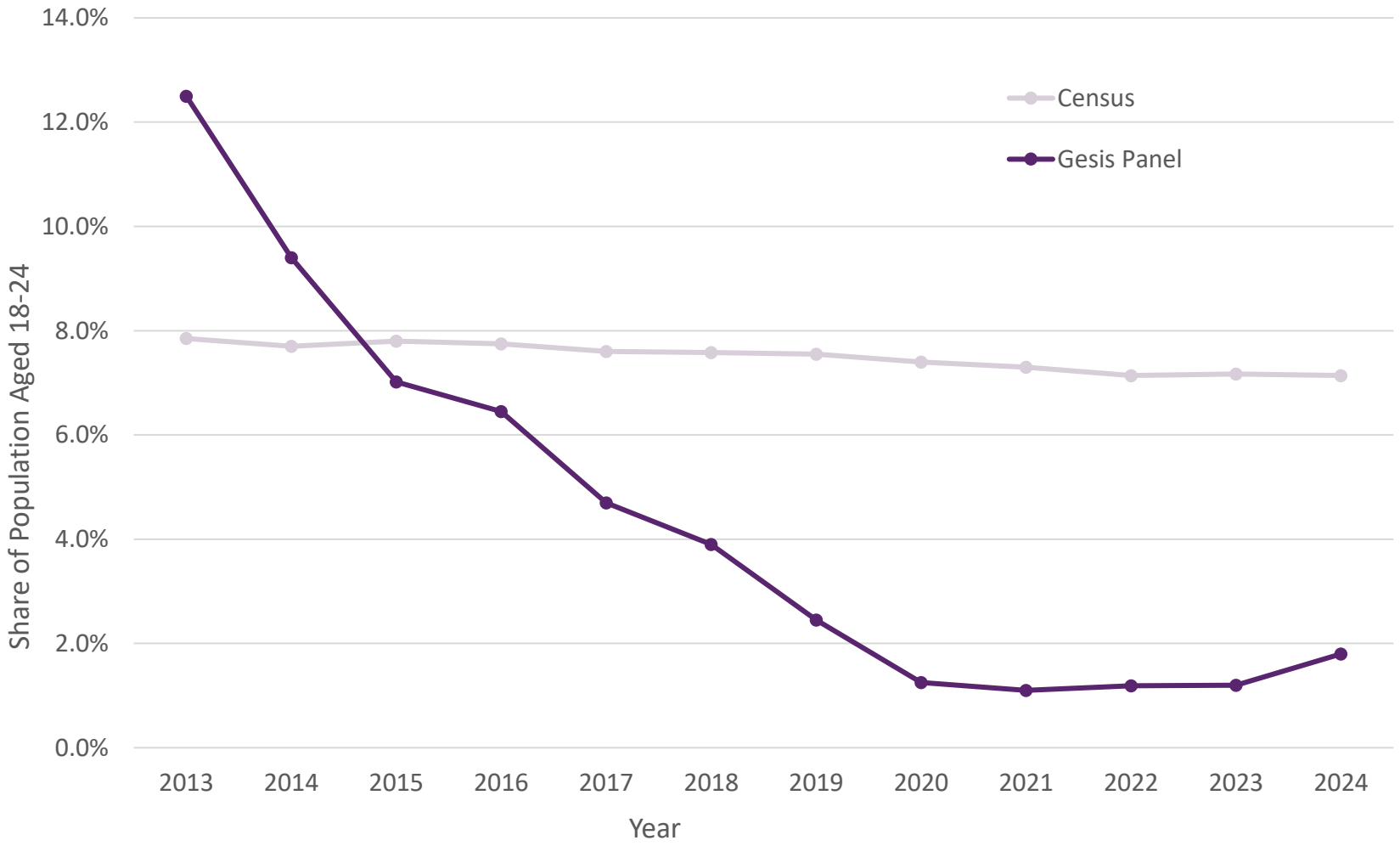
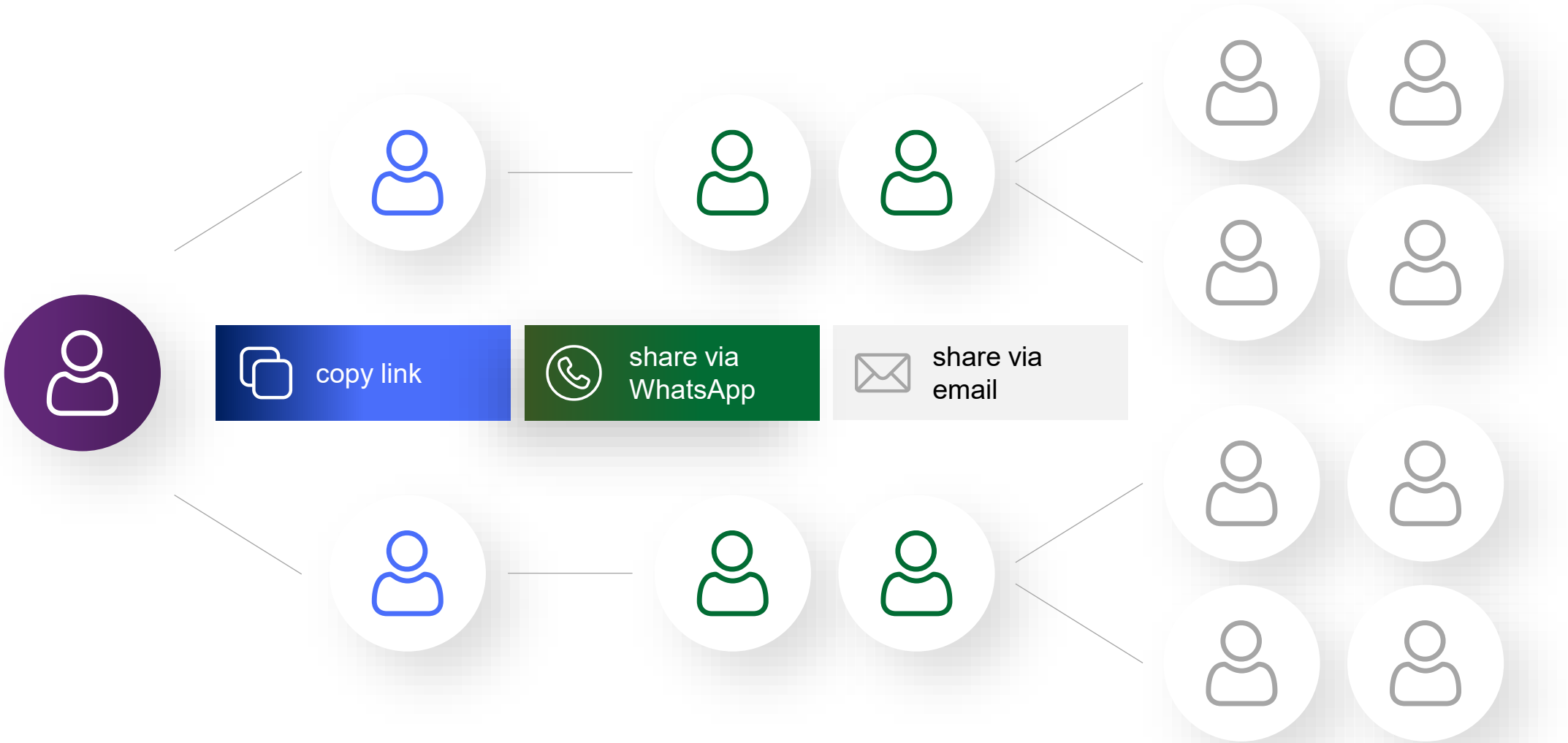


Respondent-driven sampling (RDS)



Todd M, Li T, Maslovskaya O, Cornesse C & Jessop C (2026) ‘Respondent driven sampling: evidence review’, Survey Futures Report no. 10. Colchester, UK: University of Essex. Available at https://surveyfutures.net/reports/.

Who does it work for?

Axenfeld, Cornesse et al. (forthcoming). Willingness to participate in Respondent-Driven Sampling: Findings from the German Social Cohesion Panel. *Journal of Survey Statistics and Methodology.*

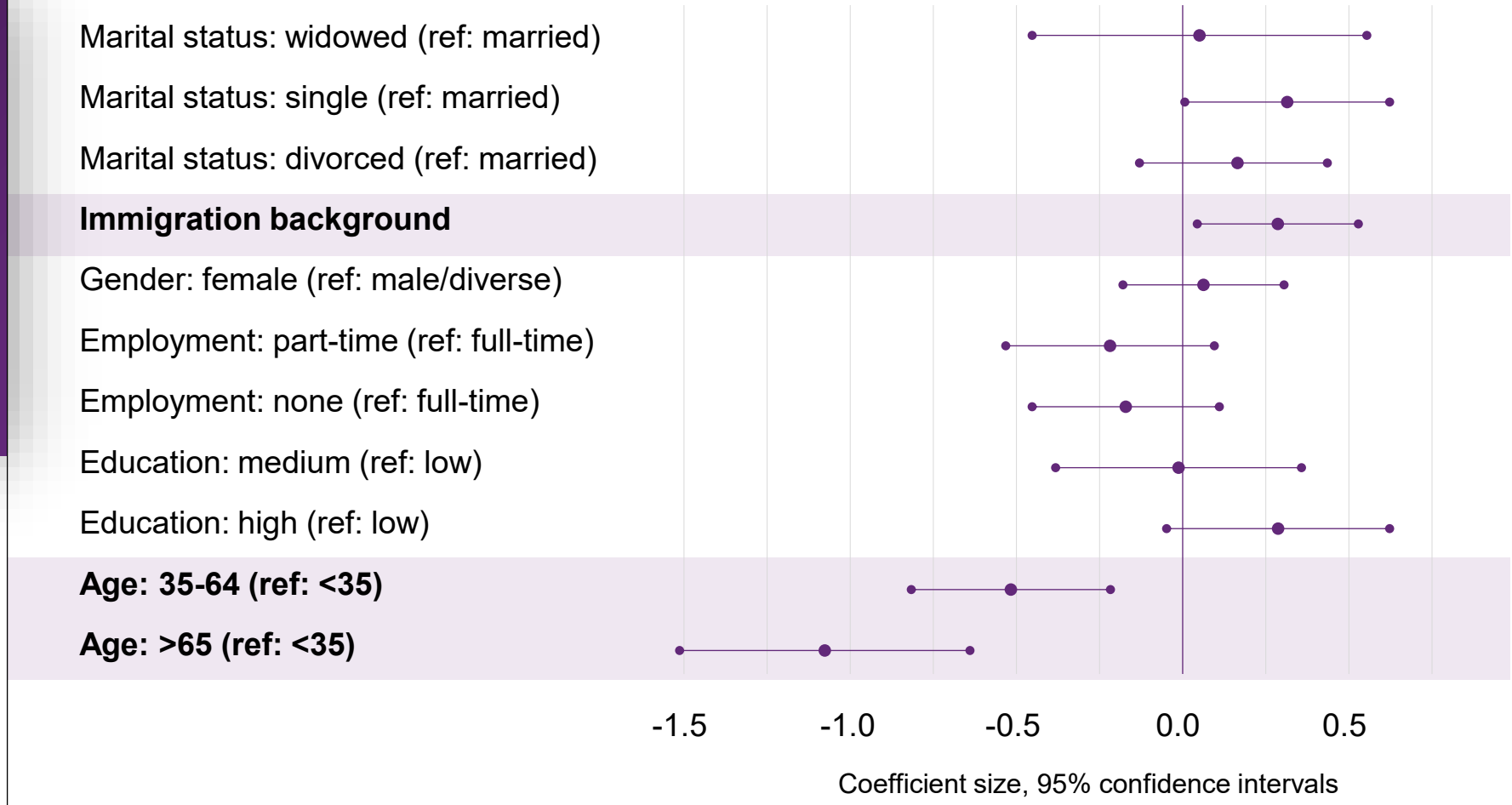
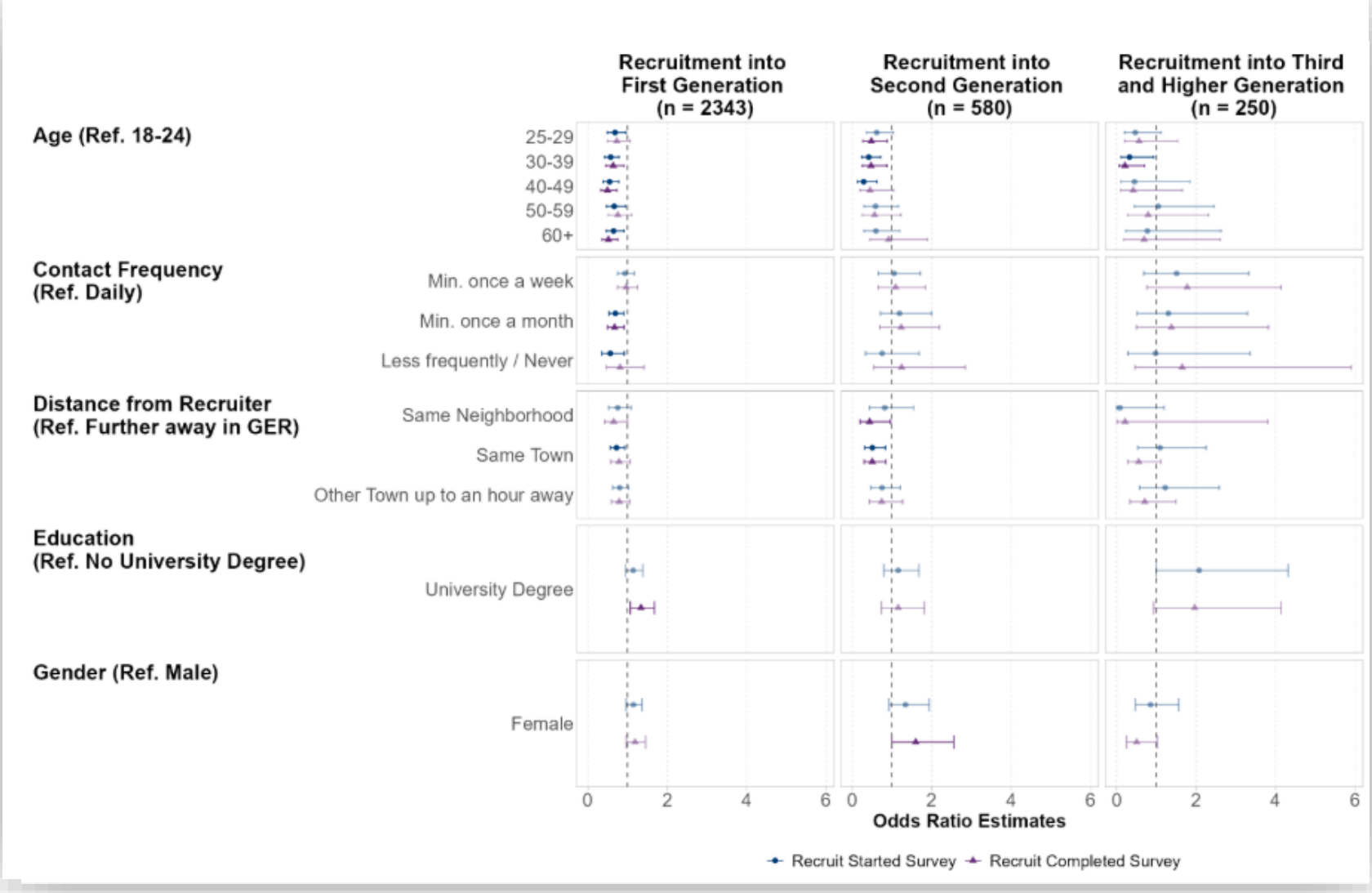


Figure 3: Model 1: ordinal logistic regression of willingness to recruit on sociodemographic characteristics (n=1,819, McFadden R2=0.042). Pooled coefficients from m=20 imputations.

Who does it work for?



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RDS is not great for gen pop surveys

	G0	G1	…	G6 +
Potential Recruits	-	2572		13
- Completed Survey	3,545	537 (21%)		2 (15%)
Potential Recruiters	3,633	543		2
- Agreed to Recruit	1,214 (33%)	315 (58%)		1 (50%)
- Successful Recruits / Recruiter	**0.4**	**0.4**		-

RDS for young adults

Jessop C, Maslovskaya O & Cornesse C (2026) 'Respondent Driven Sampling Feasibility Study: Technical Summary, Survey Futures Report no. 11. Colchester, UK: University of Essex. Available at https://surveyfutures.net/reports/.

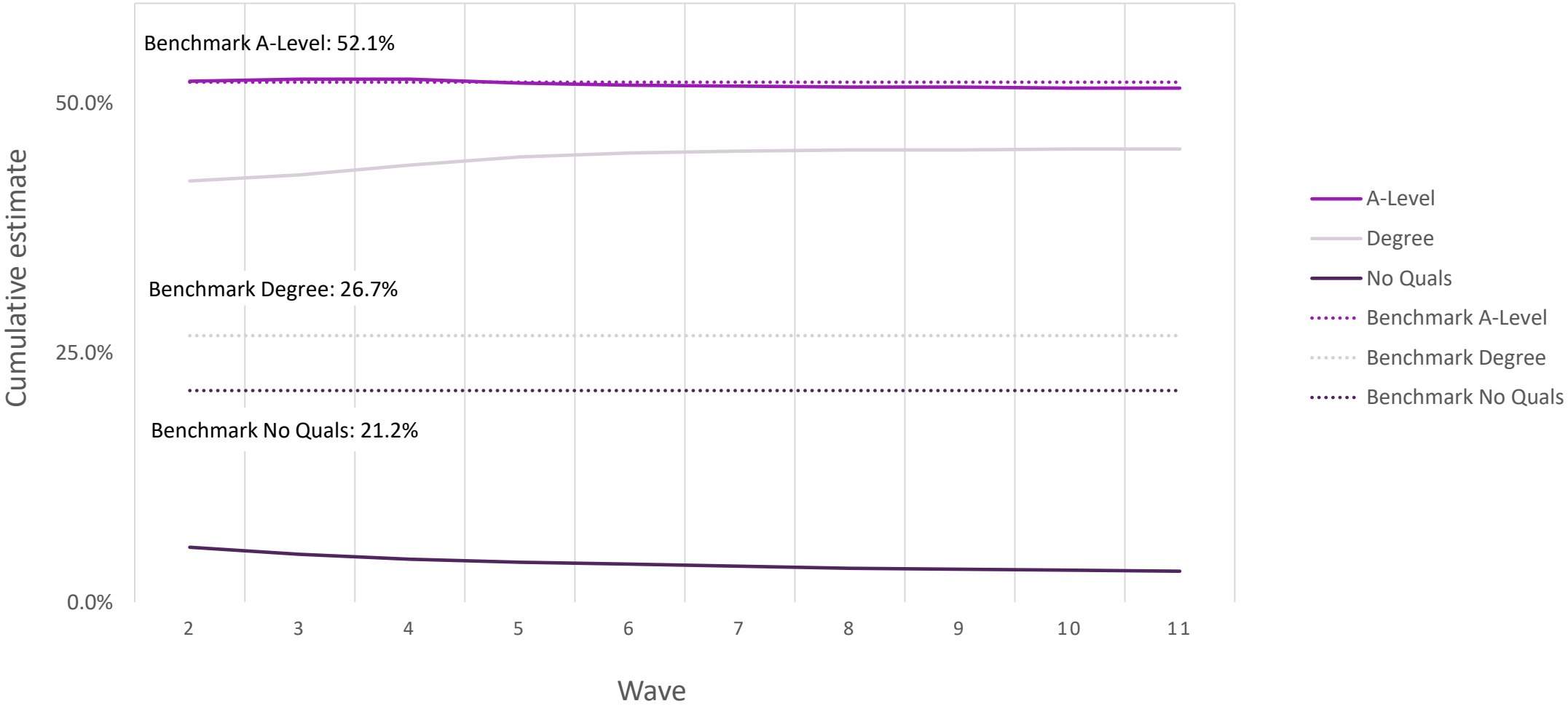
RDS for young adults

Participant Type	n
Seeds	317
Consenting seeds	183 (58%)
Recruits	1,396
Total	1,713

Note. Numbers refer to our analysis sample, for which cases flagged as implausible/likely fraudulent were removed.

Jessop C, Maslovskaya O & Cornesse C (2026) 'Respondent Driven Sampling Feasibility Study: Technical Summary, Survey Futures Report no. 11. Colchester, UK: University of Essex. Available at https://surveyfutures.net/reports/.
Maslovskaya, Perfetti Villa, Jessop, Cornesse (in preparation). Recruitment, Super-Seeds, and Non-Compliance in Probability-Based RDS.
Cornesse, Perfetti Villa, Maslovskaya, Jessop (in preparation). Respondent-Driven Sampling (RDS) for the Recruitment of Young Adults: A Total Survey Error Perspective.

RDS for young adults



Cornesse, Perfetti Villa, Maslovskaya, Jessop (in preparation). Respondent-Driven Sampling (RDS) for the Recruitment of Young Adults: A Total Survey Error Perspective.

Conclusion: One size does not fit all anymore

In times of digital inequality, respondents need different survey options to engage them.

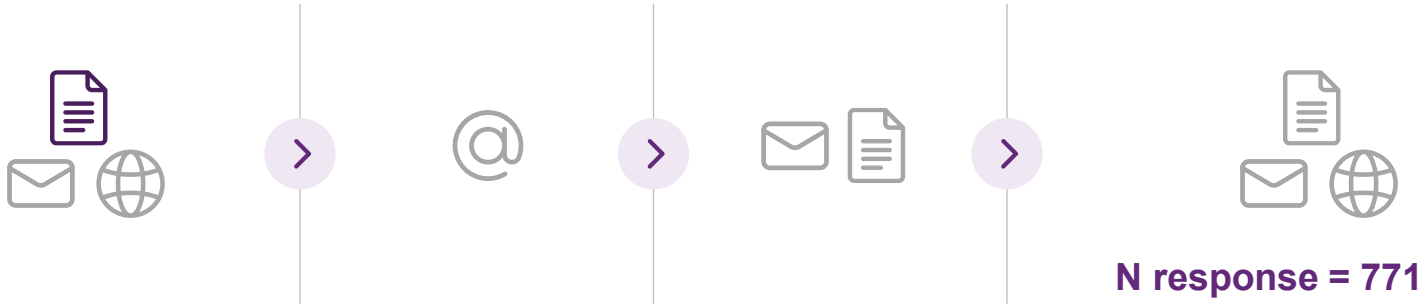
We need to continuously work on the toolbox of survey options.

We need to learn how to design features that **enhance engagement** among different subgroups and **target design solutions** at them.

Thank you for your attention!

Understanding our (non)respondents

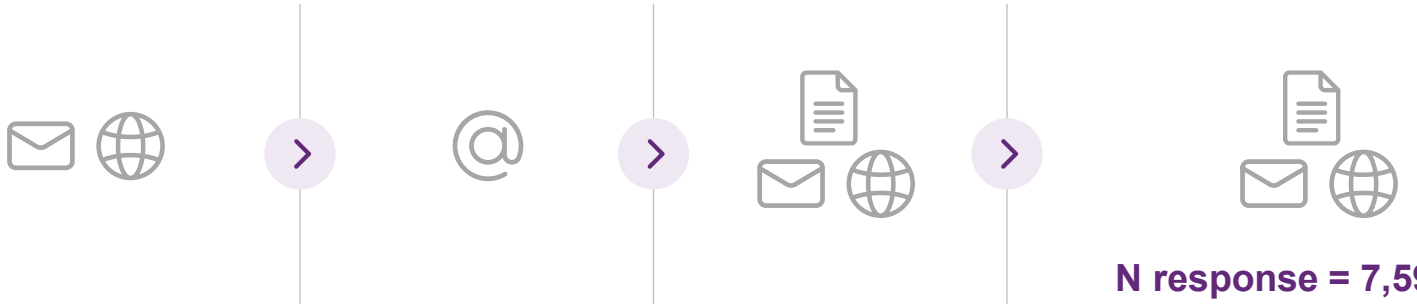
Control Group:
Concurrent Mode
N Invited = 1,042



N response = 771
(71.99%)

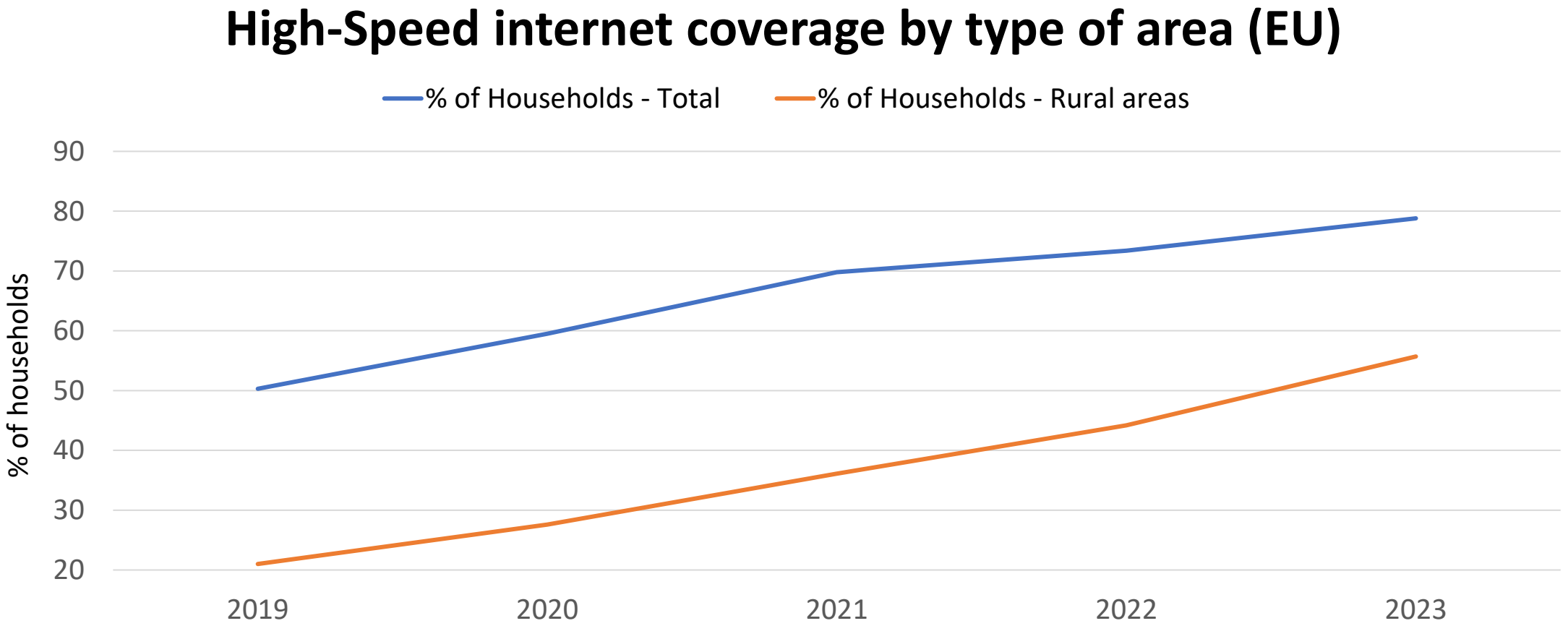
Experimental Group:
Sequential Push-to-Web Mode

N Invited = 10,551



N response = 7,596
(73.99%)

Digital Inequality & Why It Matters



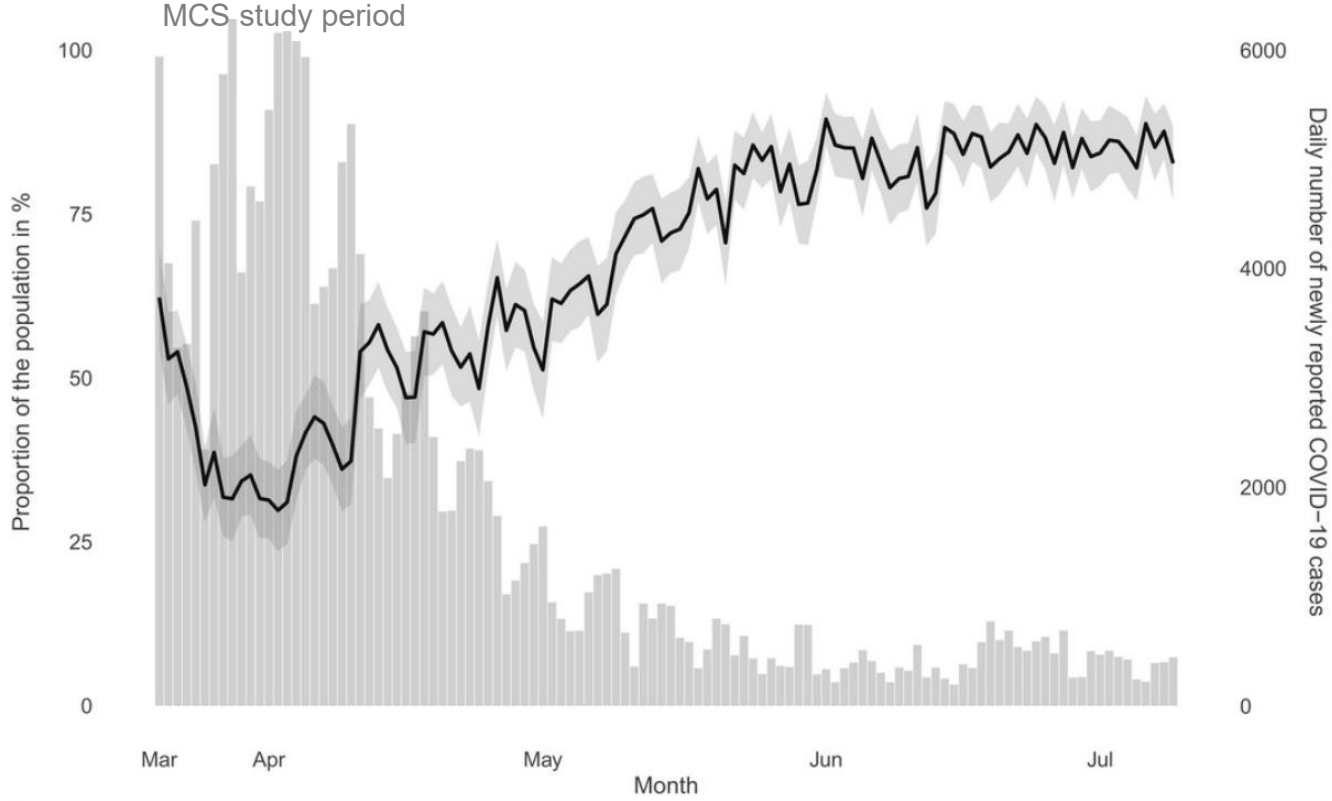
Data source: DG Communications Networks, Content and Technology and Eurostat
https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220822-1

Online-Only Survey Strategies

+ Benefit: Collect data fast, frequent, (relatively) cheap, flexible

− Challenge: What about the people
who do *not* use the internet (for participating in surveys)?

Share of Mannheim Corona Study (MCS) respondents meeting with other people from outside of their own household during the previous week across the MCS study period



Cornesse, C., Krieger, U., et al. (2021). From German Internet Panel to Mannheim Corona Study: Adaptable probability-based online panel infrastructures during the pandemic. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*.

Mixed-Mode Survey Strategies

- Benefit: Smaller biases
- Challenge: Slower data collection, mode effects, higher costs

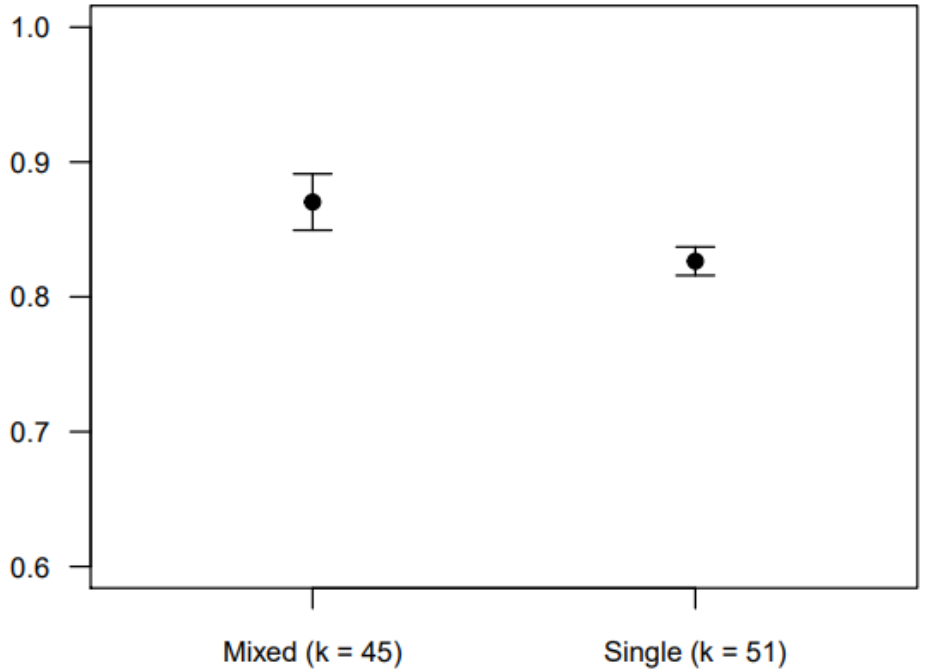


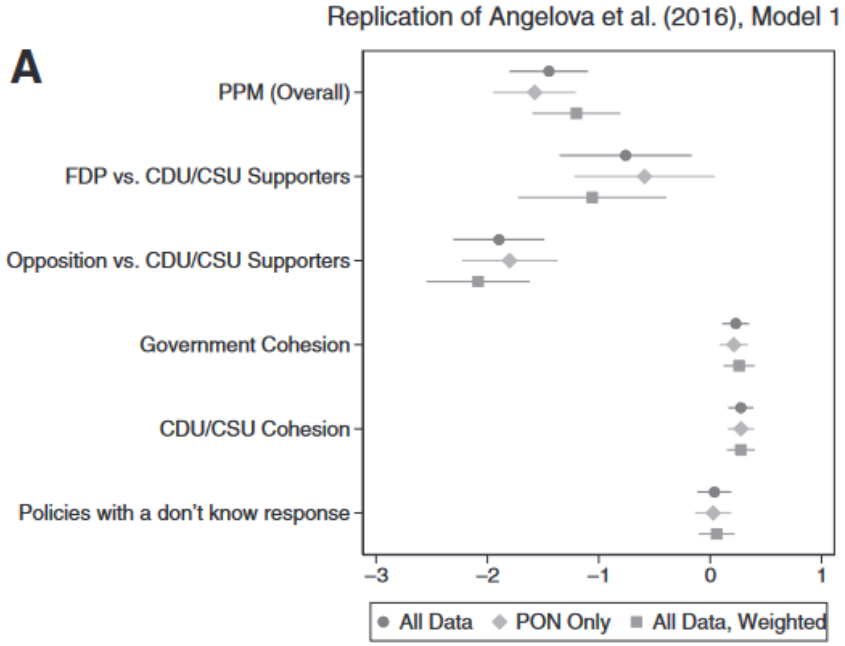
Figure 3. R-Indicator subgroup comparison results by mixed-mode versus single-mode surveys as a moderator

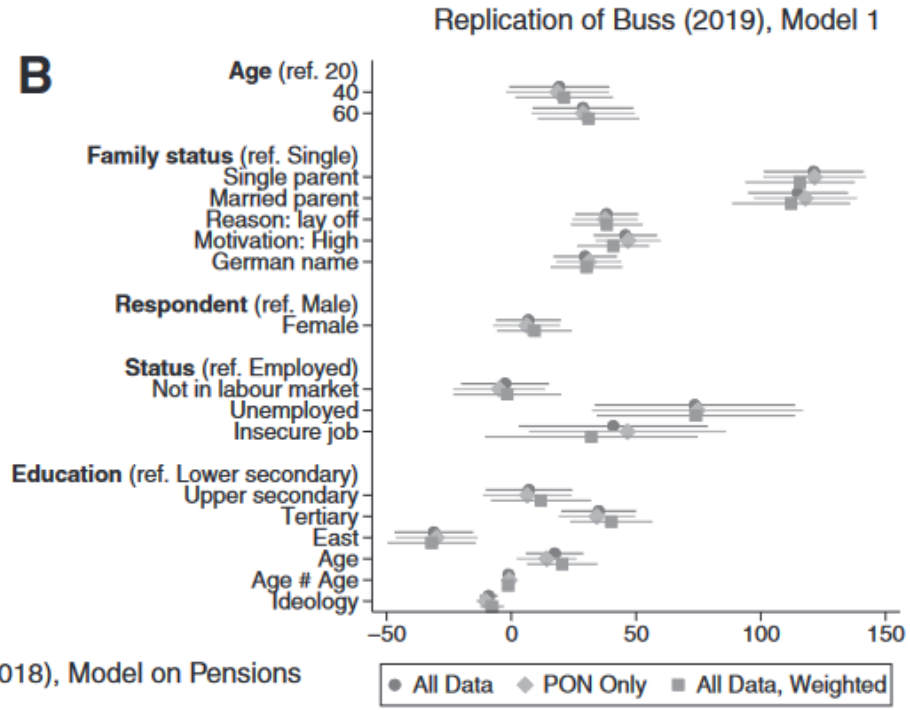
Cornesse, C., & Bosnjak, M. (2018). Is there an association between survey characteristics and representativeness? A meta-analysis. *Survey Research Methods*, *12*(1).

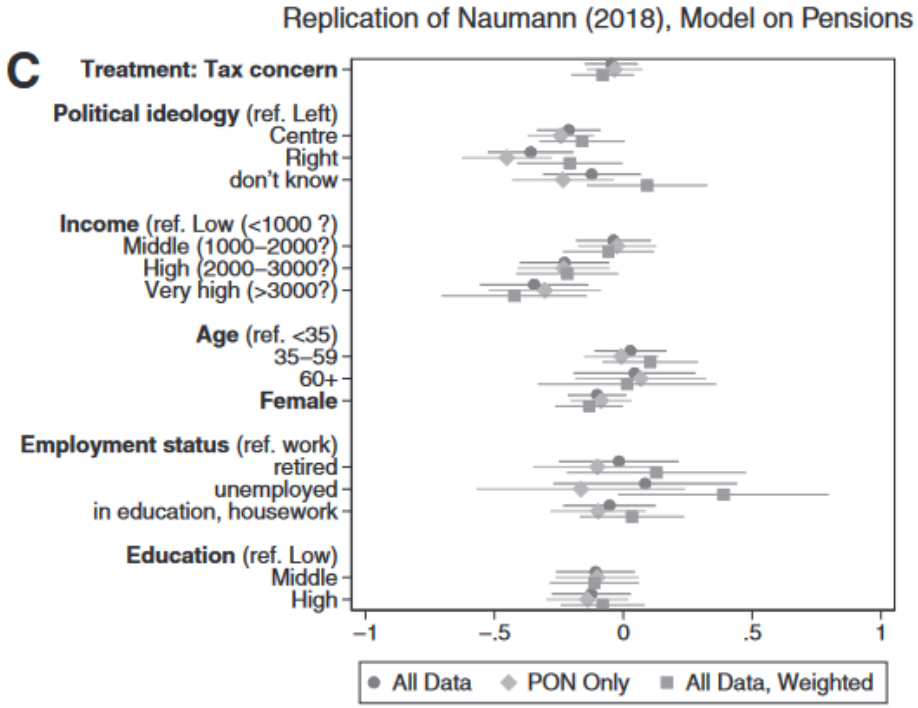
Online Panel With Offline Equipment

- Benefit: all data collection online
- Challenge: Can offline populations be given the tools and motivation to go online?
- Challenge: Even internet users may opt out of online surveys – access alone is not enough

Blom, A. G. et al. (2017). Does the Recruitment of Offline Households Increase the Sample Representativeness of Probability-Based Online Panels? Evidence From the German Internet Panel. *Social Science Computer Review*, *35*(4), 498–520.





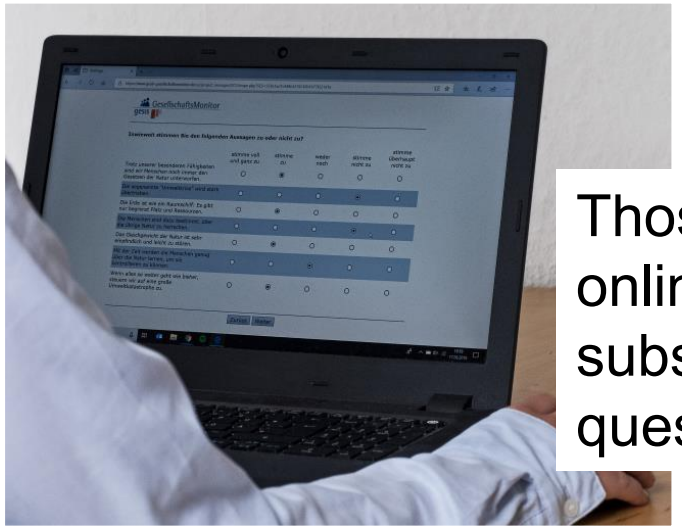


Bach, R. L., Cornesse, C., & Daikeler, J. (2023). Equipping the Offline Population with Internet Access in an Online Panel: Does It Make a Difference? *Journal of Survey Statistics and Methodology.*

Online Panel With Offline Option: GESIS Panel

During recruitment, respondents were asked whether they would be willing to be resurveyed.

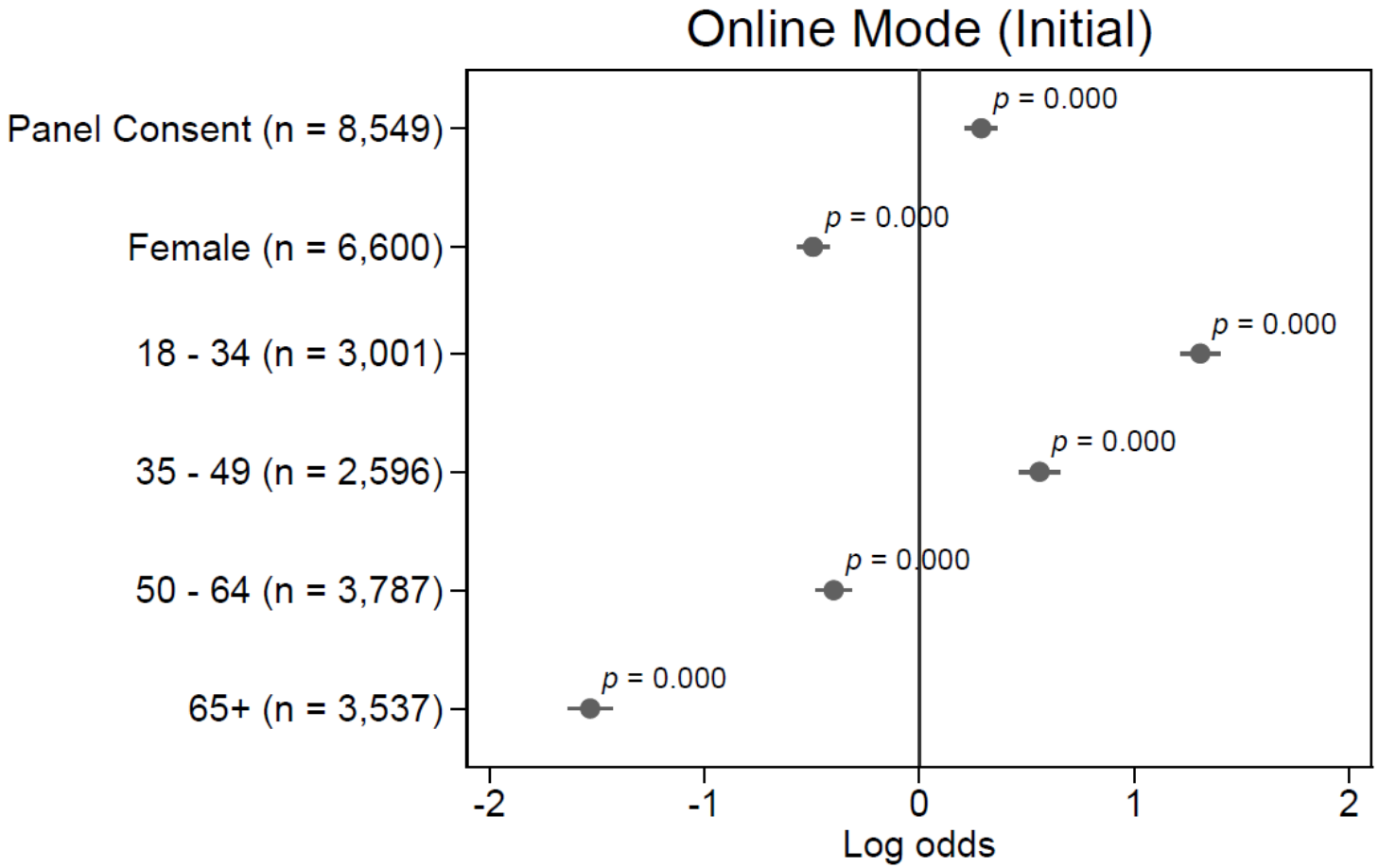
If they said yes, they were asked whether they would participate online.



Those unwilling to be surveyed online (38.6% in 2013) subsequently received paper questionnaires.

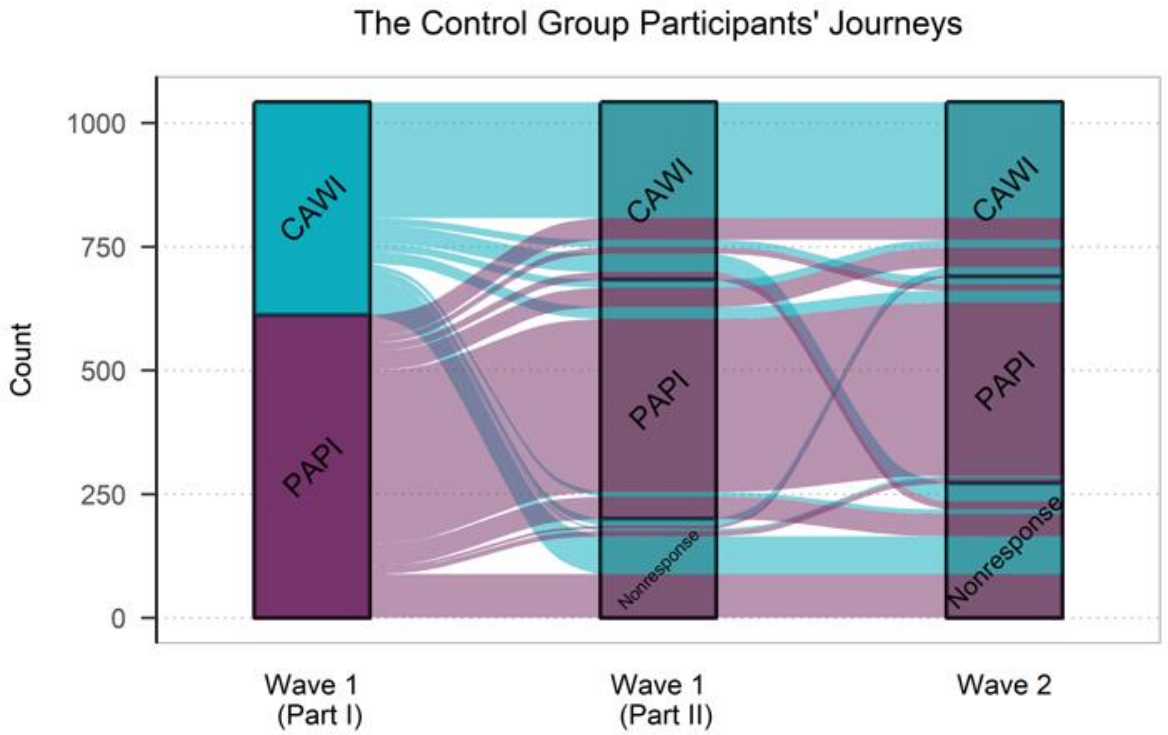
Cornesse, C., & Schaurer, I. (2021). The Long-Term Impact of Different Offline Population Inclusion Strategies in Probability-Based Online Panels: Evidence From the German Internet Panel and the GESIS Panel. *Social Science Computer Review*, 39(4), 687–704.

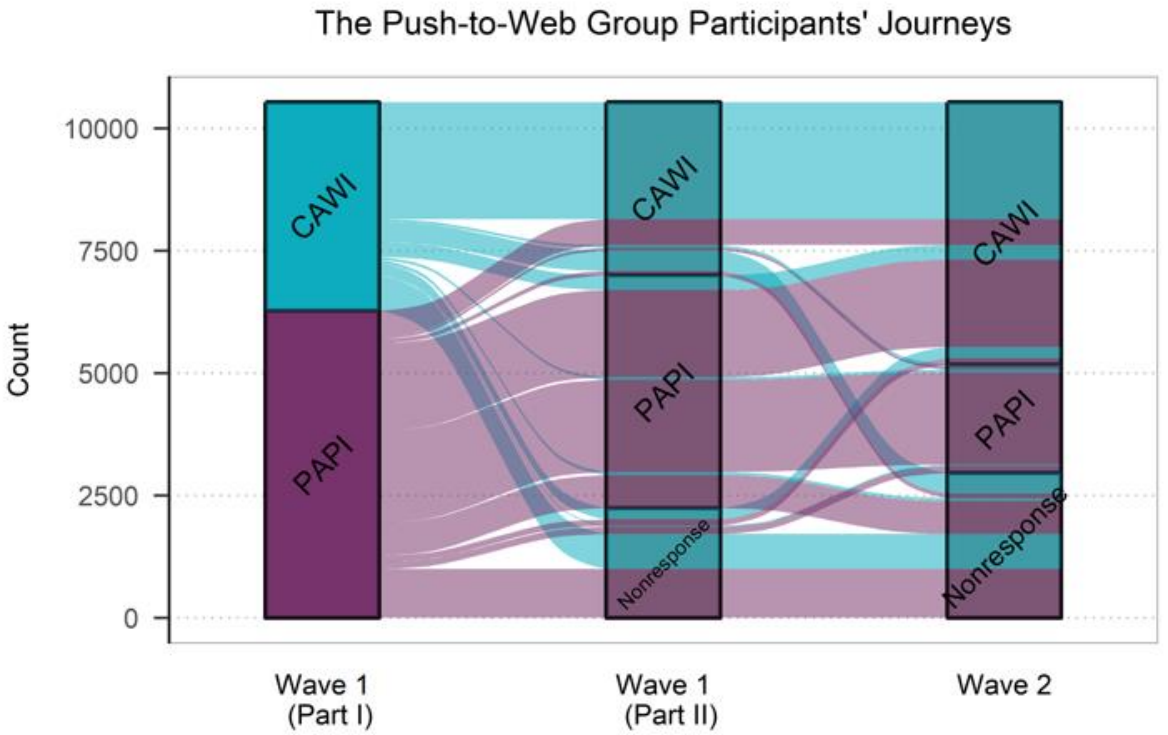
Social Cohesion Panel (SCP) Concurrent-Mode Recruitment (60% Paper)



Cornesse, C., Witton, J., Axenfeld, J. B., Gerlitz, J., & Groh-Samberg, O. (2025). From Concurrent to Push-To-Web Mixed-Mode: Experimental Design Change in the German Social Cohesion Panel.

Switching: Concurrent to Sequential Design





Cornesse, C., Witton, J., Axenfeld, J. B., Gerlitz, J., & Groh-Samberg, O. (2025). From Concurrent to Push-To-Web Mixed-Mode: Experimental Design Change in the German Social Cohesion Panel. https://doi.org/10.21035/osf.io/529vs_v1

Switching: Concurrent to Sequential Design

- Respondents who switch from paper to online due to being pushed online (W1T2 → W2 Exp.)…


are less urban


have higher incomes


are more healthy


have a higher education


are younger


are less likely to have a migration background

Video Interviewing

Table 3. Regression outcomes in multivariate analyses across video interviewing selection steps

Variable	M1: Hypothetical agreement				M2: Consent		M3: Appointment		M4: Completed	
Category	Yes		Maybe		Yes		Yes		Yes	
Reference category	No		No		No		No		No	
Estimate	RR	*SE*	RR	*SE*	OR	*SE*	OR	*SE*	OR	*SE*
Remoteness (reference = Major Cities)										
Inner Regional	0.94	*0.10*	1.09	*0.16*	0.98	*0.08*	1.13	*0.17*	1.34	*0.41*
Outer Regional	0.86	*0.14*	0.87	*0.20*	0.79	*0.10*	0.80	*0.20*	0.78	*0.35*
(Very) Remote	0.82	*0.35*	0.47	*0.36*	0.82	*0.27*	0.58	*0.39*	0.35	*0.40*
Age group (reference = 18–24 years)										
25–34 years	1.52	*0.34*	1.61	*0.61*	1.75**	*0.30*	1.11	*0.46*	2.07	*1.66*
35–44 years	1.46	*0.32*	2.10*	*0.77*	1.54*	*0.26*	1.16	*0.48*	1.14	*0.88*
45–54 years	1.72*	*0.39*	2.42*	*0.89*	1.58**	*0.27*	1.30	*0.54*	3.33	*2.70*
55–64 years	2.14**	*0.48*	1.95	*0.72*	2.06***	*0.35*	1.38	*0.57*	2.36	*1.86*
65–74 years	2.12**	*0.49*	2.24*	*0.84*	2.17***	*0.38*	1.65	*0.69*	2.77	*2.18*
75 or more years	1.79*	*0.45*	2.67*	*1.05*	2.37***	*0.45*	1.13	*0.50*	3.26	*2.78*
Highest educational attainment (reference = less than Year 12)										
Year 12	1.22	*0.22*	0.67	*0.15*	1.27	*0.16*	0.74	*0.21*	1.45	*0.79*
Advanced certificate	1.99***	*0.30*	0.92	*0.16*	1.71***	*0.19*	0.72	*0.18*	1.13	*0.49*
Bachelor's degree	2.36***	*0.37*	0.69	*0.13*	1.86***	*0.21*	0.91	*0.23*	1.51	*0.69*
Graduate degree	2.53***	*0.39*	0.61*	*0.12*	2.41**	*0.27*	0.90	*0.22*	1.58	*0.70*
Unable to establish	1.65	*0.49*	0.51	*0.20*	1.26*	*0.25*	0.95	*0.45*	0.92	*0.73*
Gender (reference = male)										
Female	0.71***	*0.06*	0.99	*0.12*	0.80***	*0.05*	0.82	*0.10*	0.74	*0.18*

Video Interviewing

Variable	M1: Hypothetical agreement				M2: Consent		M3: Appointment		M4: Completed	
Category	Yes		Maybe		Yes		Yes		Yes	
Reference category	No		No		No		No		No	
Estimate	RR	*SE*	RR	*SE*	OR	*SE*	OR	*SE*	OR	*SE*
Non-binary	0.89	*0.48*	1.27	*1.05*	1.01	*0.45*	0.27	*0.32*	-	-
Frequency of internet use (reference = less than once a day)										
About once a day	1.36	*0.38*	0.76	*0.23*	1.25	*0.25*	1.82	*0.79*	2.61	*1.91*
Several times a day	1.96**	*0.47*	0.89	*0.23*	1.64**	*0.27*	2.24*	*0.84*	4.12	*2.63*
Almost constantly	2.46***	*0.61*	0.81	*0.22*	1.90***	*0.33*	2.35*	*0.91*	8.15**	*5.53*
Amount of daily social media use (reference = Not at all)										
< 30 minutes	1.14	*0.13*	1.23	*0.19*	1.42***	*0.12*	1.03	*0.17*	1.04	*0.33*
30 to 59 minutes	1.29*	*0.16*	0.96	*0.18*	1.48***	*0.14*	0.72	*0.14*	0.98	*0.36*
1 to < 2 hours	1.12	*0.15*	1.05	*0.20*	1.31**	*0.13*	0.66*	*0.14*	1.45	*0.65*
2 to 4 hours	1.40*	*0.20*	1.03	*0.22*	1.43**	*0.16*	1.02	*0.22*	1.32	*0.57*
Over 4 hours	0.97	*0.17*	1.02	*0.26*	1.40*	*0.18*	1.01	*0.29*	0.40	*0.19*
Completion rate × 100	1.01**	*0.00*	1.01**	*0.01*	1.01**	*0.00*	1.03***	*0.00*	1.03**	*0.01*
N	3,420				5,523		1,388		710	
χ^2	270.27				233.87		127.10		69.23	
D.F.	76				38		33		37	
P	0.000				0.000		0.000		0.000	
Pseudo-R^2	0.04				0.03		0.07		0.11	
Log-likelihood	-3,232.67				-3,641.71		-898.17		-278.22	

Odds ratios (OR), relative risk ratios (RR), and standard errors (SE); controls and intercept not shown; * p < .05; ** p < .01; *** p < .001

Video Interviews

15/19 Respondents indicated Web as their mode preference, stating convenience as the most important factor

- 8/19 respondents recalled their VALI interview as a positive experience
- 19/19 respondents were positive about the booking process
- 10/19 felt the interviewer was sensitive to their needs
- 16/19 reported respondents reported no technical issues with their interview
- 18/19 respondents recalled the interviewer was visible to them throughout the entire VALI interview
- 15/19 respondents were at home for their interview
- 11/19 respondents felt the interviewer maintained rapport during the interview
- 2/19 reported technical issues, but only at the start and the VALI interview was completed
- 1/19 VALI interview was abandoned due to technical issues
- 12/19 respondents used a laptop for the VALI interview
- 13/19 respondents did not use a headset
- 5/19 respondents recalled flash cards shared during the VALI interview

Video Interviews: Social Desirability

Dependent variable of interest	Coefficient	Standard Error	n
Video mode (reference: online mode)			
M11: Support for multiculturalism	1.07***	0.12	1,174
M12: Square of life satisfaction	5.25***	1.30	1,176
M13: General health	0.39**	0.11	1,176
M14: Psychological distress	-0.89***	0.23	1,175
M15: Generalized trust	0.39**	0.12	1,176
M16: Smoking behavior	-0.25	0.26	1,14
M17: Alcohol consumption frequency	0.06	0.11	1,174
M18: Exercise frequency	0.41***	0.11	1,176
M19: Provides unpaid care	0.50**	0.17	1,143

* p < .05; ** p < .01; *** p < .001. Model type: ordinal logit (M11, M15, M17, M18), OLS (M12, M14), Poisson (M13), logit (M16, M19)

The RDS-ECN Project

- Start with seeds, who are panel respondents (SCP)
- Build referral chains
- At each step, we ask questions about a person‘s network, including
    - Network size
    - Network composition
    - Tie strength (globally)
- Along the referral chain, we assess
    - Relationship between recruiter and recruit (e.g. emotional and geographical proximity)
    - Network transitivity between recruiter and recruit

Pre-study 1: Hypothetical scenario in the SCP

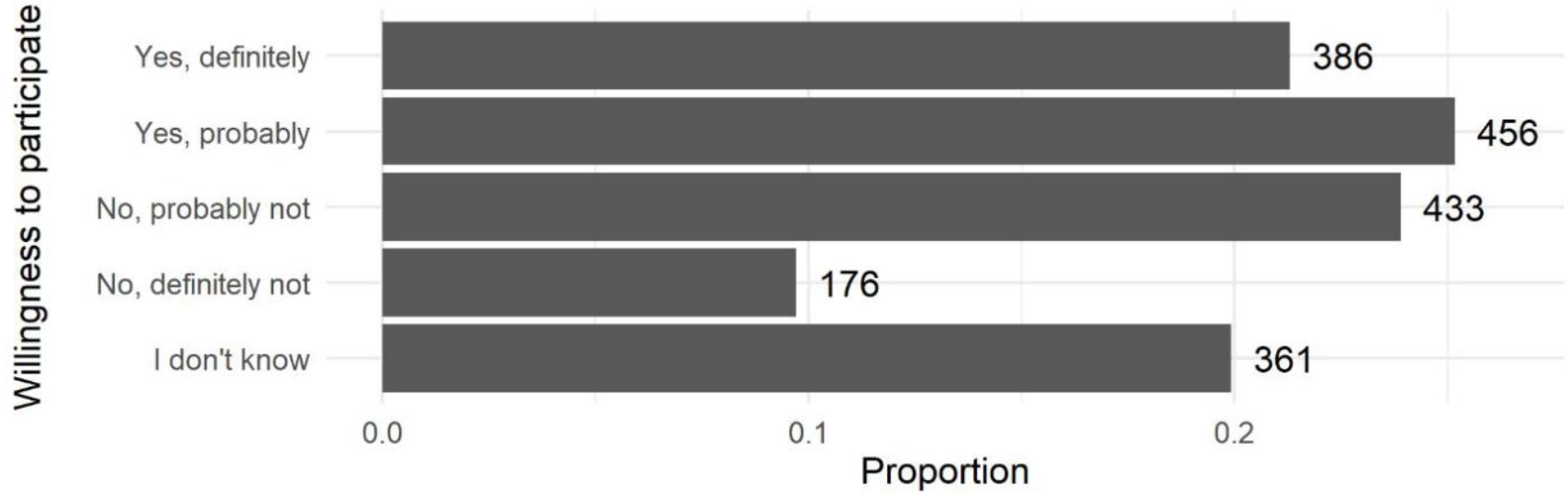
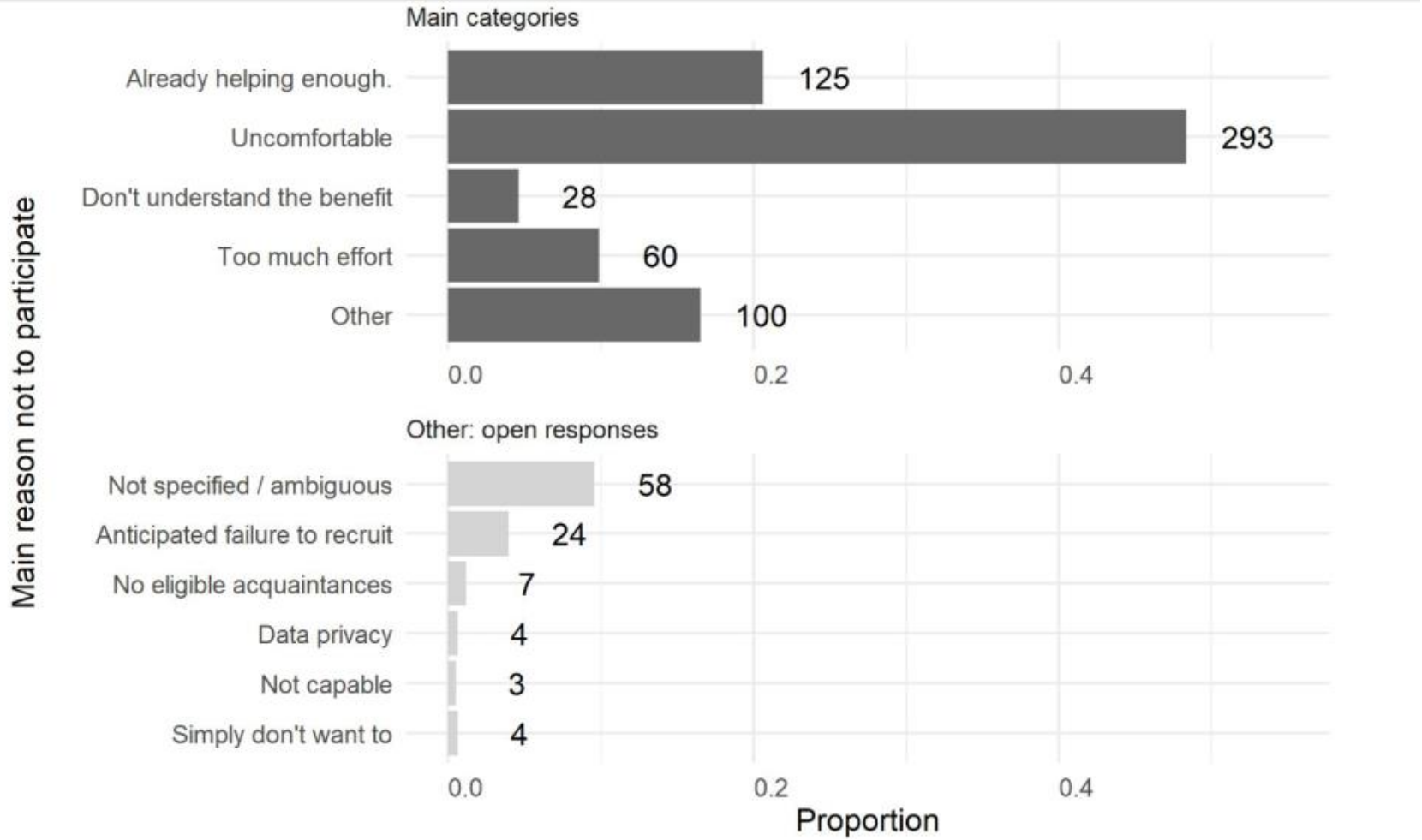


Figure 1: Willingness of online respondents to recruit network members to participate in the German Social Cohesion Panel survey (n=1,812). 7 respondents are excluded due to item nonresponse.

Axenfeld, Cornesse et al. (under review). Willingness to participate in Respondent-Driven Sampling: Findings from the German Social Cohesion Panel.

Pre-study 1: Hypothetical scenario in the SCP



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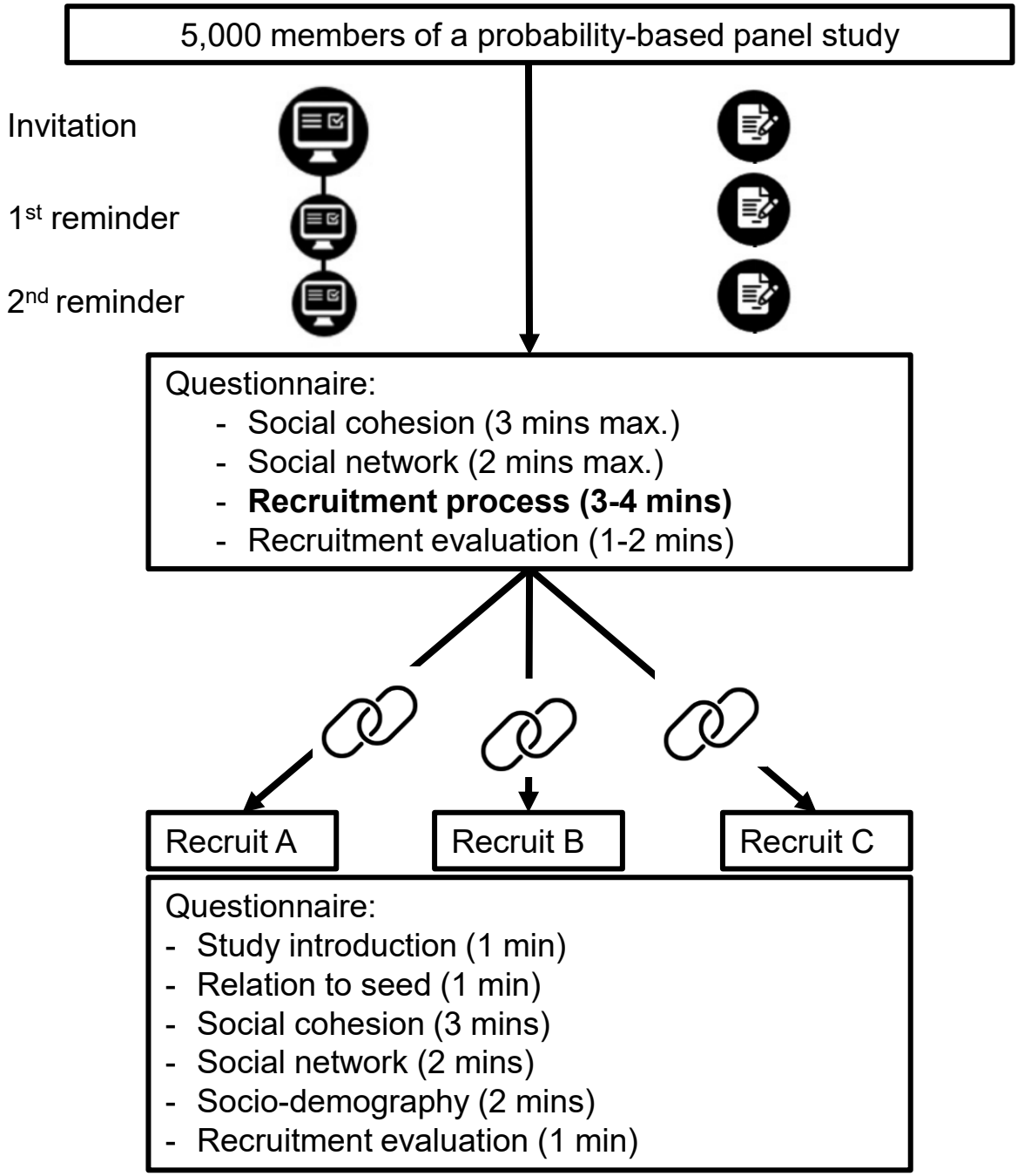
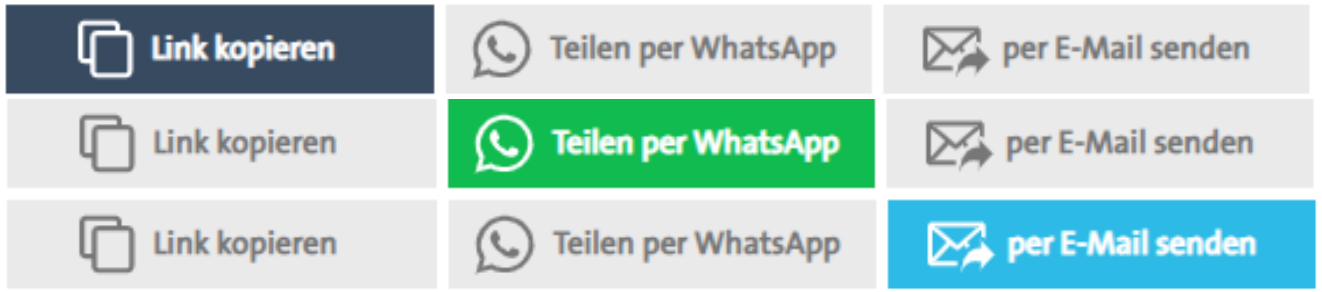

5,000 members of a probability-based panel study
Invitation
1st reminder
2nd reminder
Questionnaire:
- Social cohesion (3 mins max.)
- Social network (2 mins max.)
- Recruitment process (3-4 mins)
- Recruitment evaluation (1-2 mins)
Recruit A
Recruit B
Recruit C
Questionnaire:
- Study introduction (1 min)
- Relation to seed (1 min)
- Social cohesion (3 mins)
- Social network (2 mins)
- Socio-demography (2 mins)
- Recruitment evaluation (1 min)

Pilot Study: Methodological Goals

- See if we can get a reasonable number of participants (i.e. seeds & 1st generation recruits)
- Examine the data generating process:
    - E.g. hypotheses: Young people are more likely to…
        - try to recruit network members
        - recruit other young people (homophily hypothesis)
        - be recruited.
- Test different recruitment request wordings to maximize informed consent
- Program and test different technological survey link sharing options
    - Copy-paste
    - WhatsApp
    - Email



Leonard et al. (in preparation). Maximizing RDS recruitment.

Pilot Study: Design

- Dual incentive scheme
  - Survey participation incentive for seeds
  - Survey participation incentive for recruits
  - Recruitment incentive for seeds per successful recruit

- Experiments for improving recruitment consent & success
  - Recruitment consent wording (gain versus loss framing)
  - Offering data protection info in a dropdown or pop-up format
  - Sharing options (copy-paste link plus adding sharing buttons for email and WhatsApp)

Leonard et al. (in preparation). Maximizing RDS recruitment.

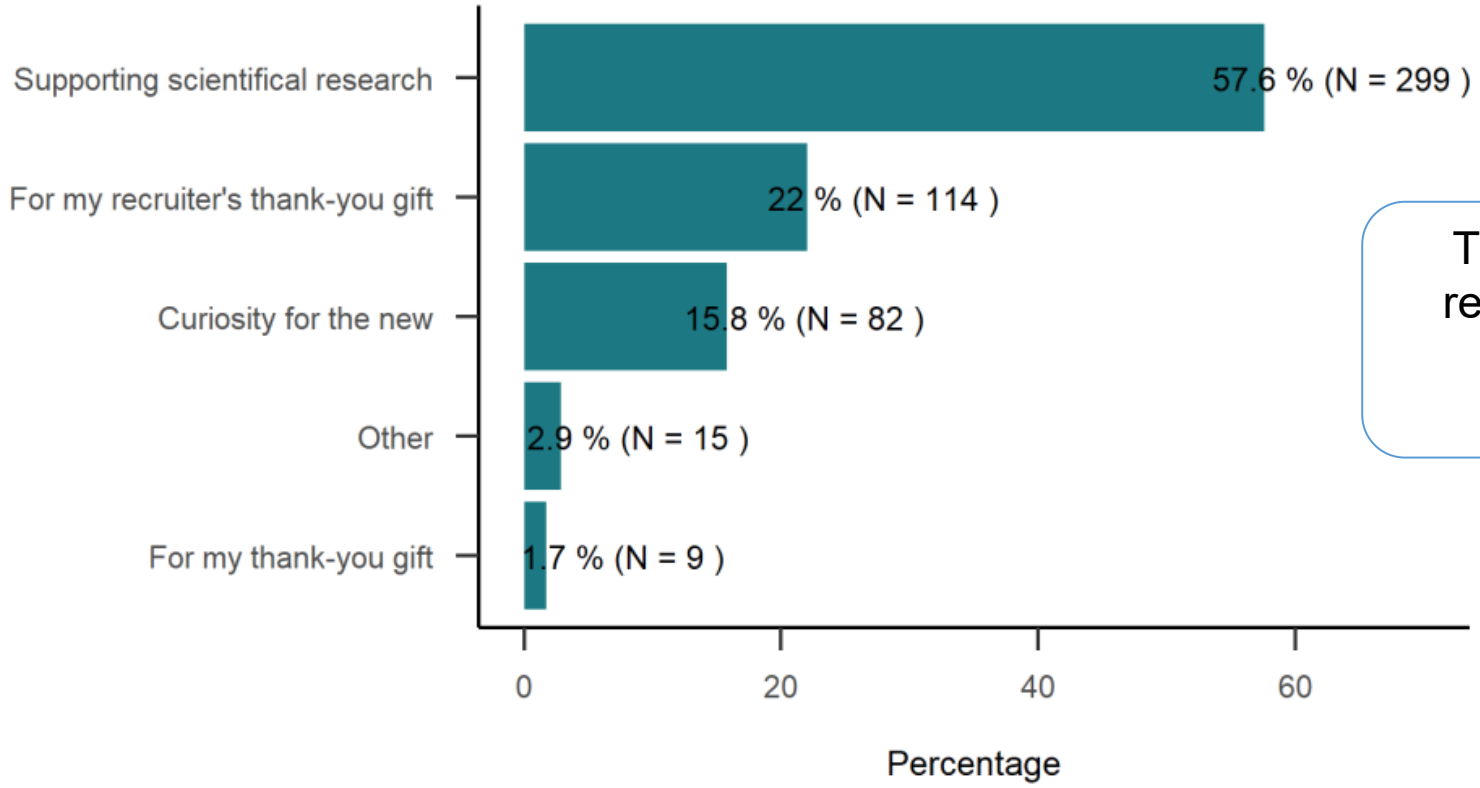
Did the RDS work? Seed perspective

Seeds	N	% of all participants
Participated	2328	46.6% of all invited
Consented to recruit	624	26.8%
Provided proxy info on at least one person	512	22.0%
Successful at recruiting…		
… in terms of getting at least **1 person** to click on the survey link	399	17.1%
… in terms of getting at least **1 person** to complete the survey	322	14.3%
… in terms of getting **3 people** to click on the survey link	307	5.6%
… in terms of getting **3 people** to complete the survey	40	1.7%

Did the RDS work? Recruit perspective

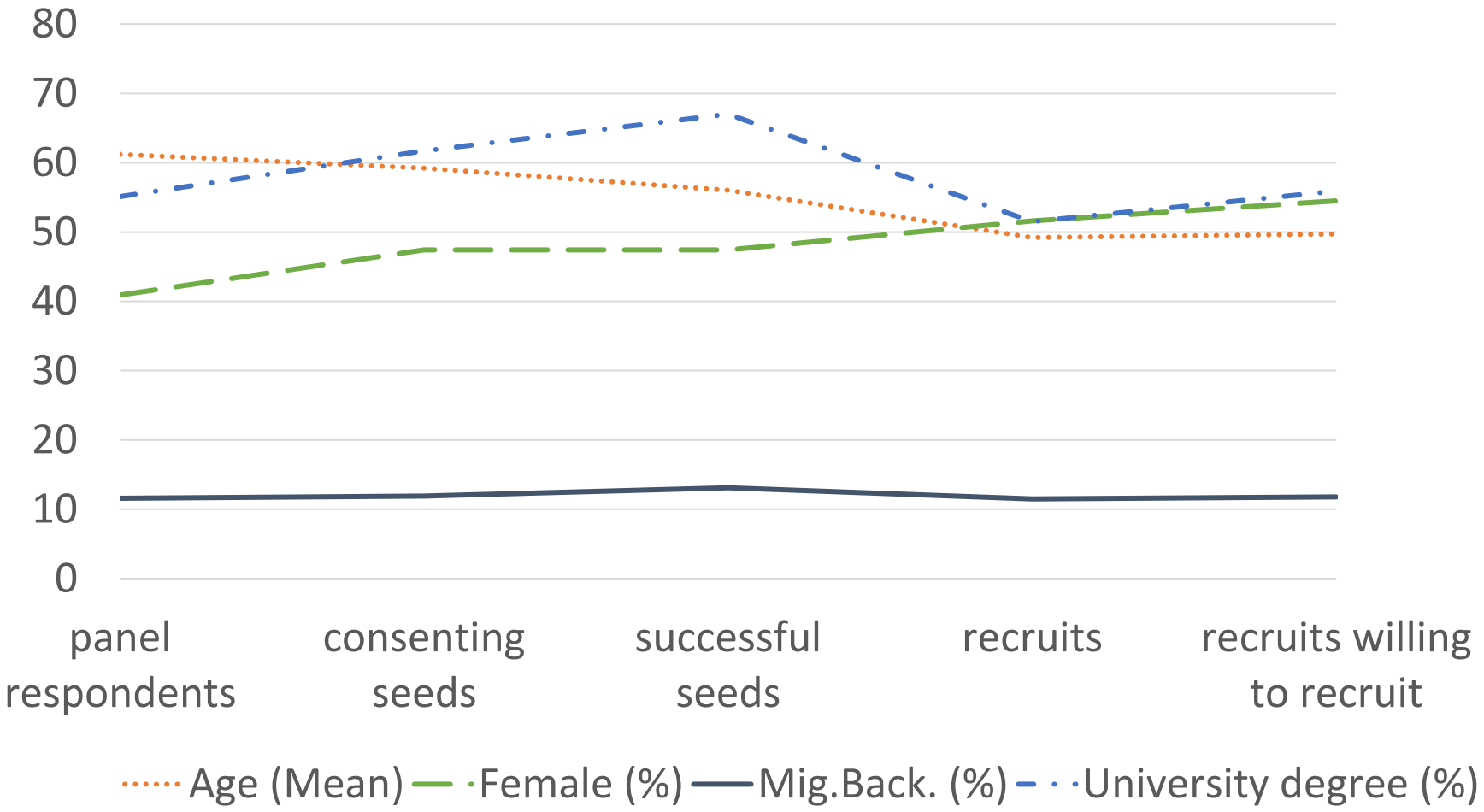
Recruits	N	% of all recruits
Reported by panelists	1223	
Clicked on invitation link	782	63.9%
Completed the survey	519	53.7%
Willing to continue recruiting	297	24.3%
Average no. of recruits per seed …		
… reported	2.0	
… clicked on link	1.3	
… completed survey	0.8	
… willing to continue recruiting	0.5	

What motivated recruits to participate?



The majority of recruits (54.4%) waived their incentive!

Sample Composition



Conclusion

- As expected, it is not trivial to get RDS to work
- Making the recruitment and participation experience enjoyable (e.g. less text) but still convincing seems to be essential
- It should be noted that the pilot study seed sample was rather old, so we expect more success in a younger sample
- More analyses on the pilot study are ongoing, e.g. in terms of bias and state transitions
- **In 2025, we will implement an improved procedure in the Social Cohesion Panel and build longer referral chains!**
- More features will be added, e.g.
    - Seeds passing on reminders along the referral chain
    - Early-bird recruitment bonus for successfully recruiting all intended recruits
    - Option to donate incentives
    - Ask a random subset to recruit 5 (rather than 3) network members

Analytic Procedure

identify behavioral *patterns* of satisficing strategies

LCA

1. Estimation of 6 models with 1-6 LC (Mplus7, R misty)
2. Class Enumeration
3. Replication of the best-fit model with doubled number of start values
4. Classification diagnostics for the final model
5. Substantive model interpretation
6. Apply procedure for all 6 conditions => 1 model per wave and mode
7. Sociodemographic correlates: **Multinomial logistic regressions** with bias-corrected three-step approach (Vermunt 2010)
8. Predict satisficing by previous-wave satisficing: **Bivariate logistic regressions**

Masyn 2013; McCutcheon 1987; Muthén and Muthén 1998-2015; Nagin 2005; Nylund et al. 2007; Nylund-Gibson and Choi 2018; Van Lissa et al. 2023; Yanagida 2024

Results

(1) Patterns of satisficing
- 3 latent satisficing patterns that replicate over 3 survey waves
- Mode effects

(2) Participant characteristics
- Several significant correlates that replicate over some models
- Some effects change direction

(3) Predicting satisificing over waves & modes
- Significant positive correlations (.1 < Spearman ρ. <.3)
- Significant logistic regression estimates (2 < OR < 10, 0.07 < Nagelkerke R^2 < 0.17)

One but not the same

Optimizer

Least satisficing behavior

A little nondifferentiation on multi-item scales

ExtreMist

The most answer-scale endpoint selection

The most item-skipping

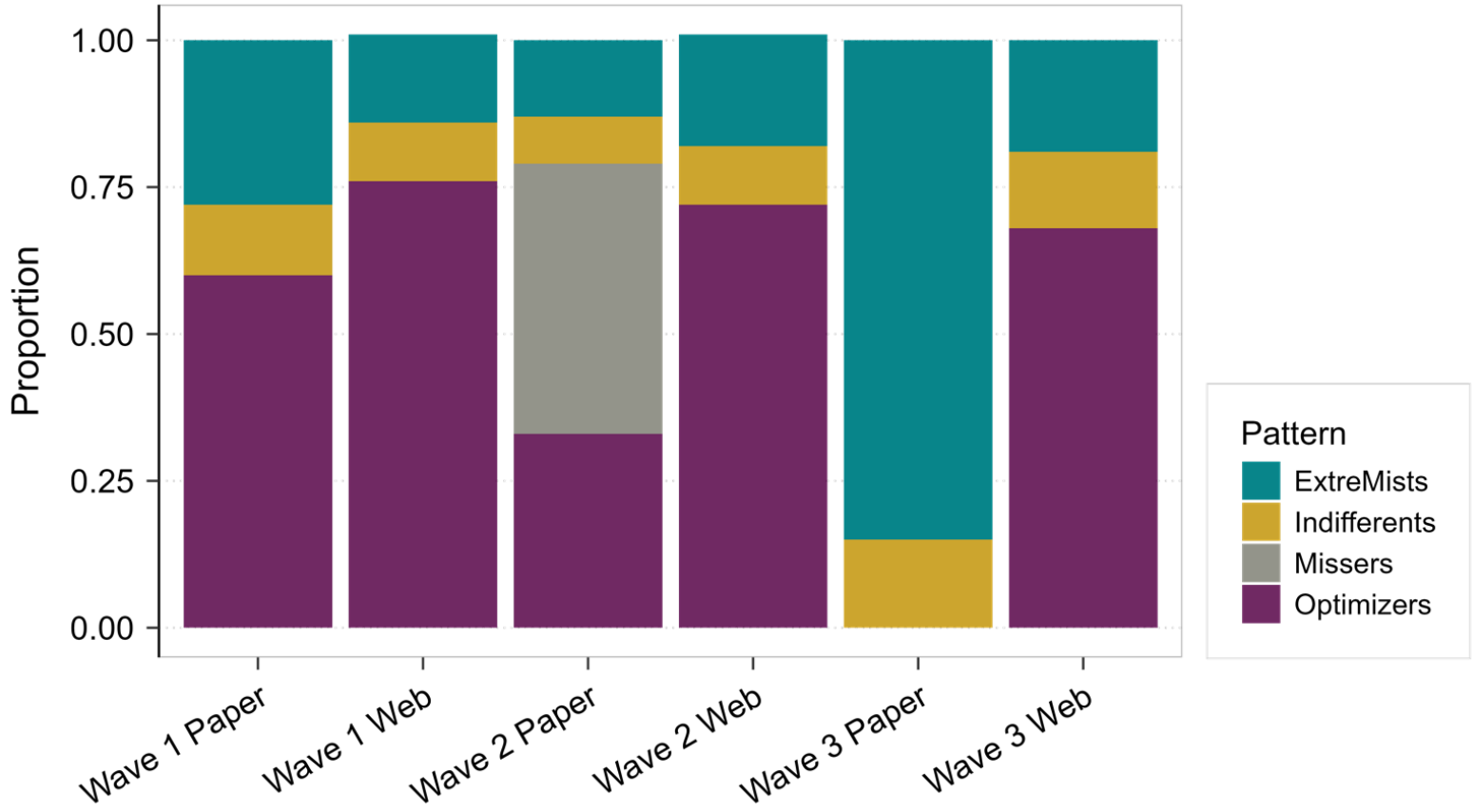
Indifferent

The most neutral/midpoint and „Don‘t know“ responses

The most speeding behavior

Witton, J., & Cornesse, C. (2025). Identifying Optimizers, Extremists, and Indifferents: Latent Satisficing Patterns in Panel Surveys. OSF. https://doi.org/10.31219/osf.io/f4cgz_v1

Patterns over Waves and Modes



Latent Class Analysis

1. **Estimation of models with 1-6 LC**
   - Mplus 7, MLR (clustered robust standard errors)
   - 1,000 initial random starts, 500 final stage optimizations, 100 start iterations
2. **Class Enumeration**:
   - discarded models with small LC
   - Information criteria (BIC, CAIC, SABIC)
   - approximate correct model probability (cmPk)
   - Elbow plots
3. **Replication of the selected model with doubled number of start values**

(Masyn 2013; Nagin 1999; Muthén and Muthén 1998-2015; Nagin 2005;Nylund-Gibson and Choi 2018; Van Lissa et al., 2023)

Latent Class Analysis

3) **Classification diagnostics for the final model**
   - Classification accuracy (comparison of posterior class probabilities $\hat{p}_{ik}$ and $\hat{c}_{modal(i)}$(
   - Entropy
   - Average posterior probability of assignment ($AvePP_k$(
   - Odds of correct classification ratio for each class (OCC_k(
4) **Substantial model interpretation**
   - Class homogeneity ($\widehat{\omega}_{m|k}$(
   - Class separation ($\widehat{OR}_{m|jk}$(
5) **Apply procedure for all 6 conditions** => 1 model per wave and mode

(Masyn 2013; Nagin 1999; Muthén and Muthén 1998-2015; Nagin 2005; Nylund-Gibson and Choi 2018; Van Lissa et al., 2023)

Data Basis for Indicators

Satisficing Indicator	Basis
Extremes, Midpoint Selection	Wave 1: 53 5-point, 17 7-point, 36 11-point scaled items; Wave 2: 126 5-point, 21 6-point, 17 11-point scaled items; Wave 3: 105 5-point, 63 11-point scaled items
Open Question Missingness	Wave 1: 14; Wave 2: 16; Wave 3: 18 items
Closed Question Missingness	Wave 1: 151; Wave 2: 217; Wave 3: 261 items
Nondifferentiation (Weak)	Wave 1: 4; Wave 2: 5; Wave 3: 10 item batteries [a]
Nondifferentiation (Strong)	Wave 1: 5; Wave 2: 9; Wave 3: 8 item batteries [a]

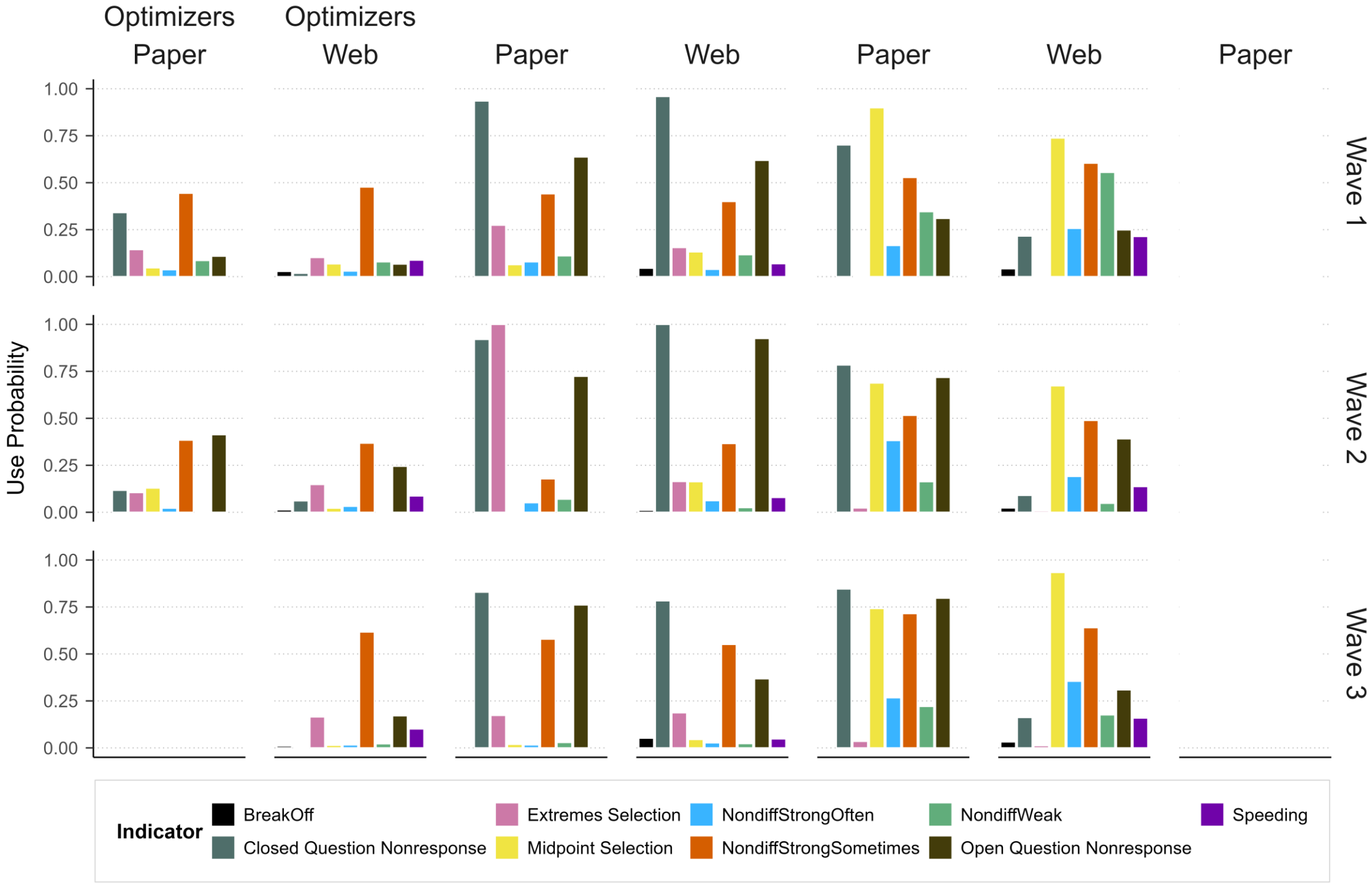
[a] All item batteries contain at least five items and 5- to 11-point scales.

Final Model Fits

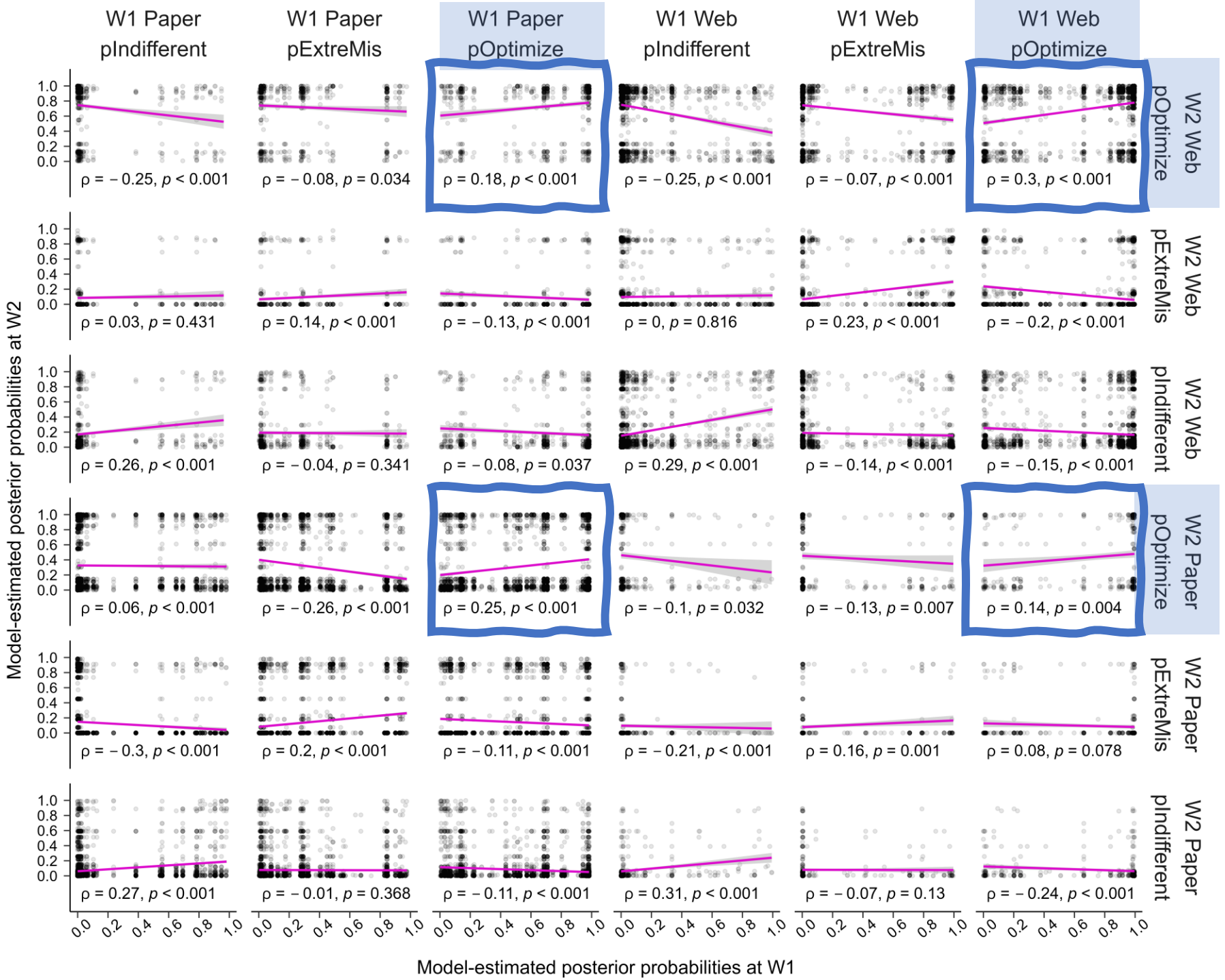
Model	npar	nLC	LL	BIC	SABIC	CAIC	aLMRp	$\hat{\pi}_{max}$	$\hat{\pi}_{min}$	E_K[a]
Wave 1 Web	29	3	-12102.911	24444.662	24352.514	24473.662	.291	0.758	0.095	0.811
Wave 1 Paper	23	3	-18839.071	37876.931	37803.843	37899.931	<.001	0.600	0.116	0.608
Wave 2 Web	29	3	-11848.973	23936.870	23844.722	23965.870	<.001	0.718	0.097	0.732
Wave 2 Paper	31	4	-15621.459	31507.595	31409.088	31538.595	<.001	0.458	0.076	0.762
Wave 3 Web	29	3	-17848.212	35946.543	35854.390	35975.543	<.001	0.625	0.132	0.775
Wave 3 Paper	15	2	-7215.115	14547.941	14500.282	14562.941	<.001	0.180	0.820	0.759

Note. npar = number of parameters; nLC = number of latent classes; LL = logLikelihood; BIC = Bayesian Information Criterion; SABIC = Sample-size adjusted Bayesian Information Criterion; CAIC = Consistent Akaike Information Criterion; aLMRp = Lo-Mendell-Rubin adjusted Likelihood Ratio Test (p-value); $\hat{\pi}_{max}$ = maximal final class proportion for the latent class patterns based on estimated posterior probabilities; $\hat{\pi}_{min}$ = minimal final class proportion for the latent class patterns based on estimated posterior probabilities; E_K = Entropy.

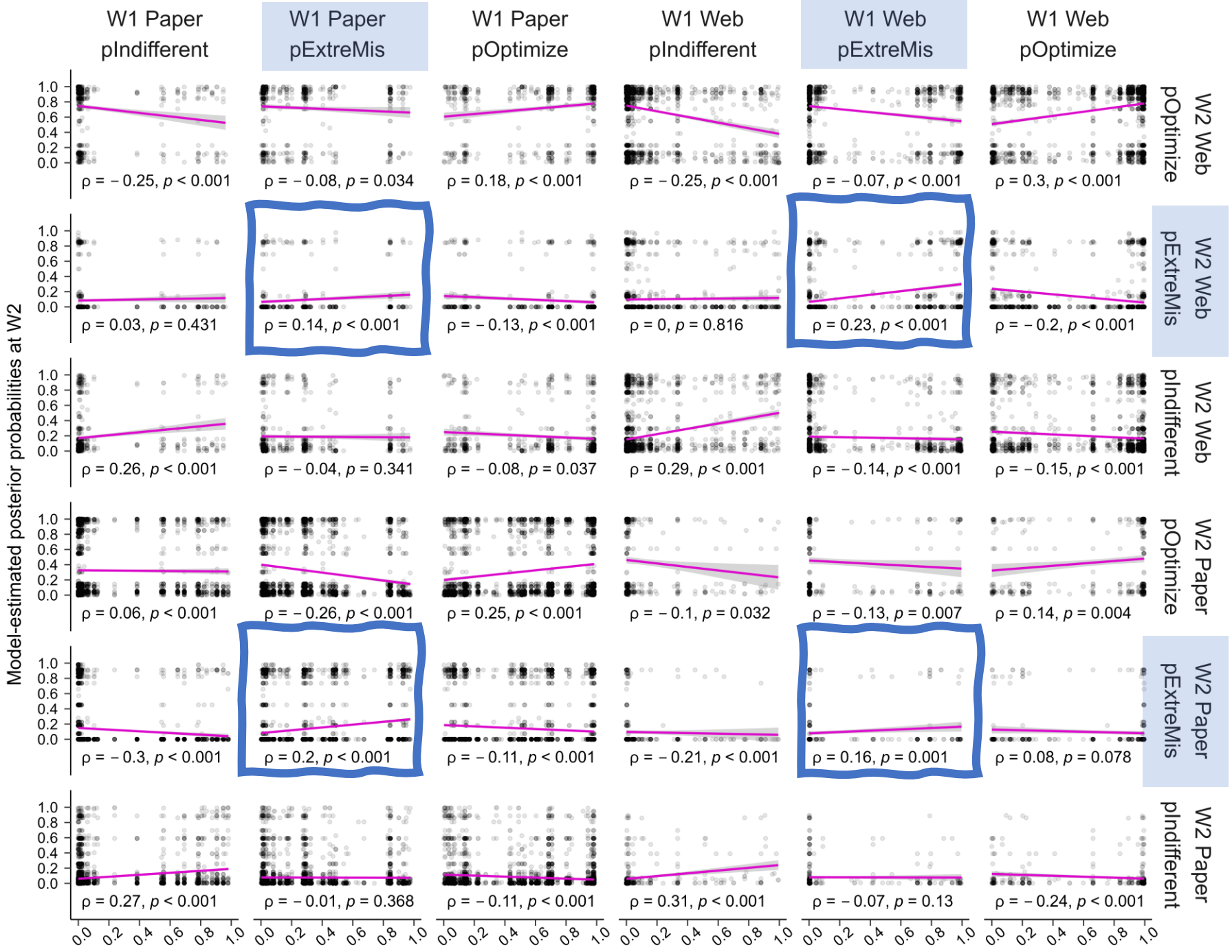
[a] Entropy is a measure of classification diagnostics and should not be considered for model selection (Masyn 2013).


Optimizers
Paper
Optimizers
Web
Paper
Web
Paper
Web
Paper
Wave 1
Wave 2
Wave 3
Use Probability
1.00
0.75
0.50
0.25
0.00
Indicator
BreakOff
Closed Question Nonresponse
Extremes Selection
Midpoint Selection
NondiffStrongOften
NondiffStrongSometimes
NondiffWeak
Open Question Nonresponse
Speeding

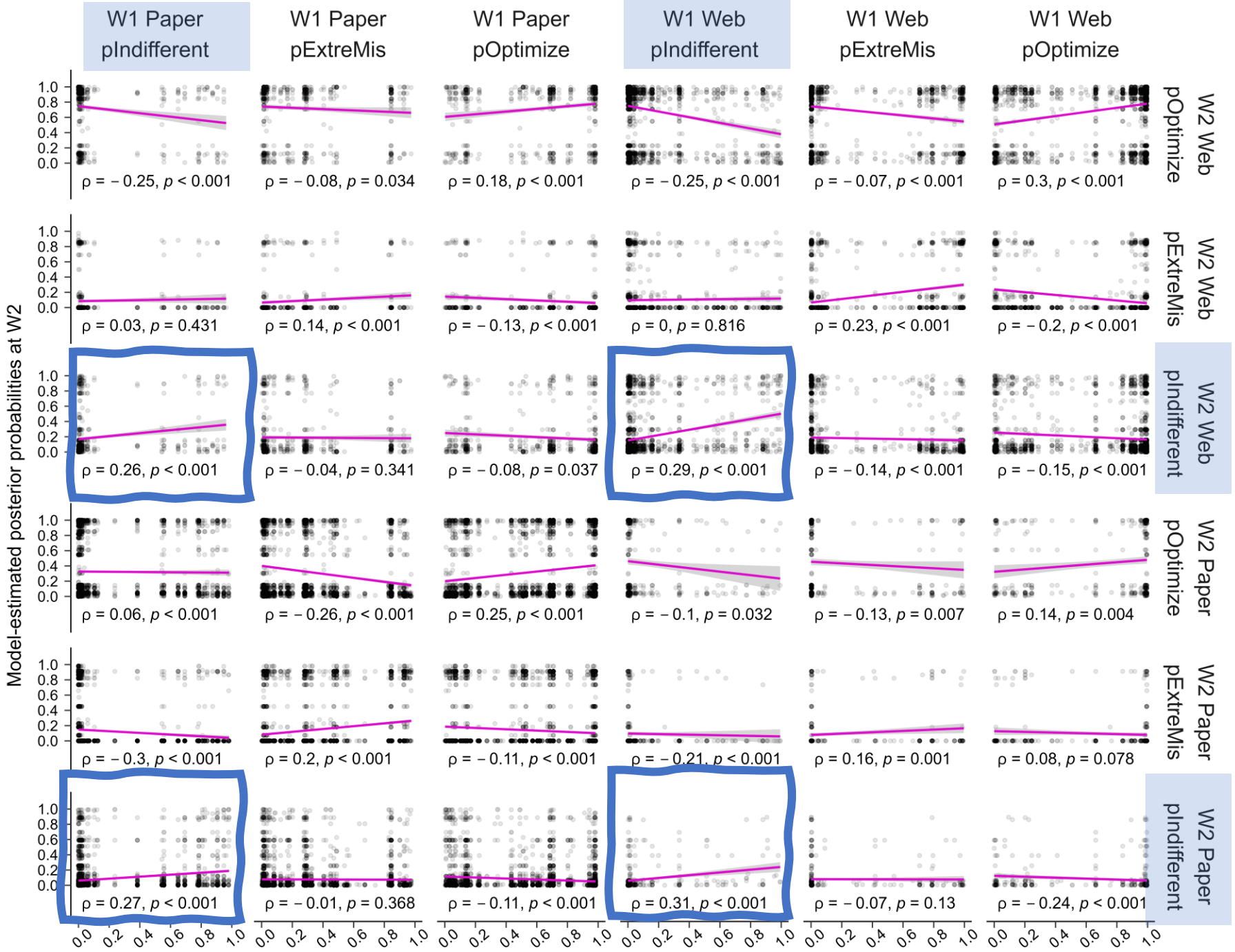
pOptimize: Wave 2 by Wave 1



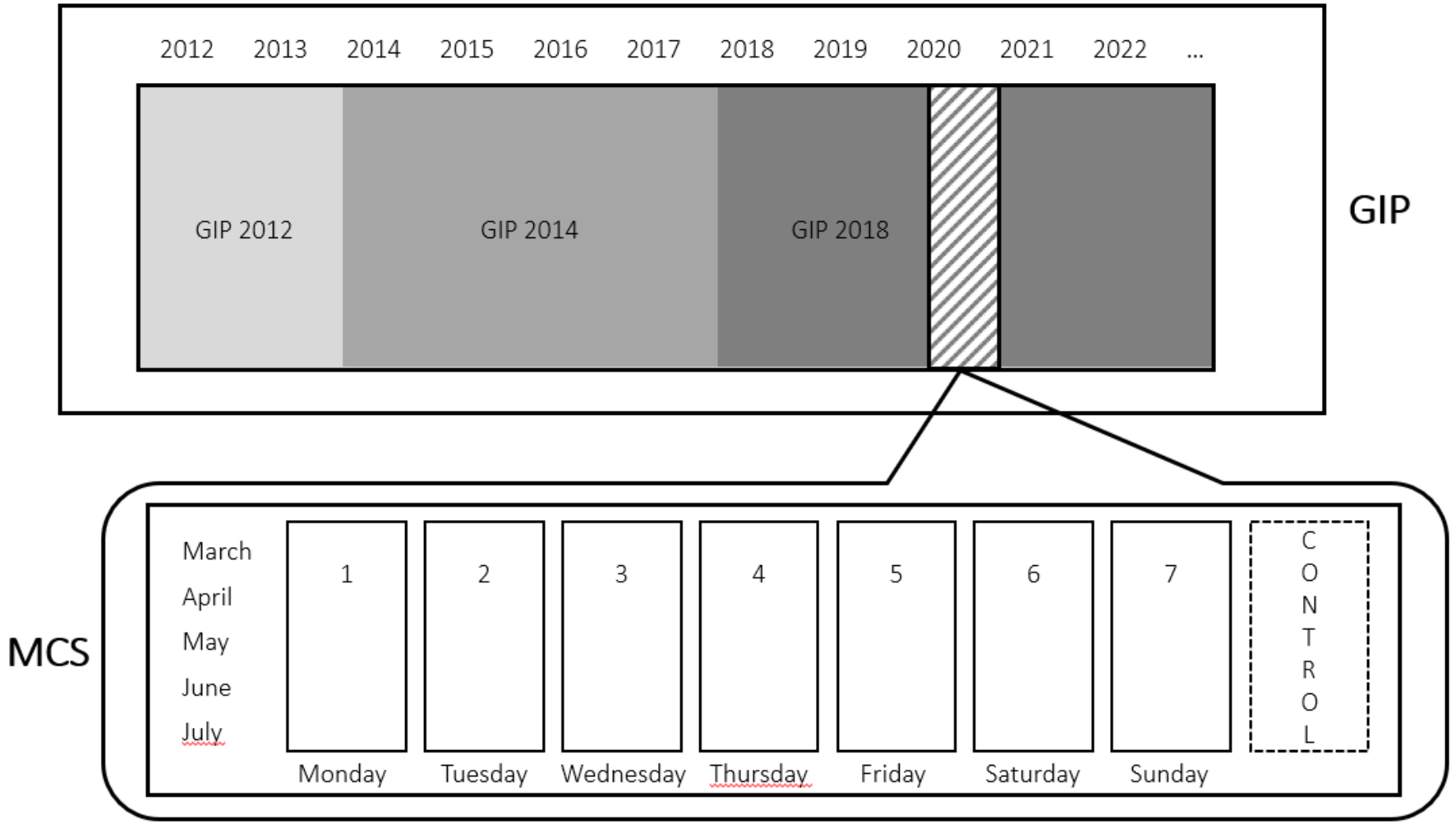
pExtreMist: Wave 2 by Wave 1



pIndifferent: Wave 2 by Wave 1

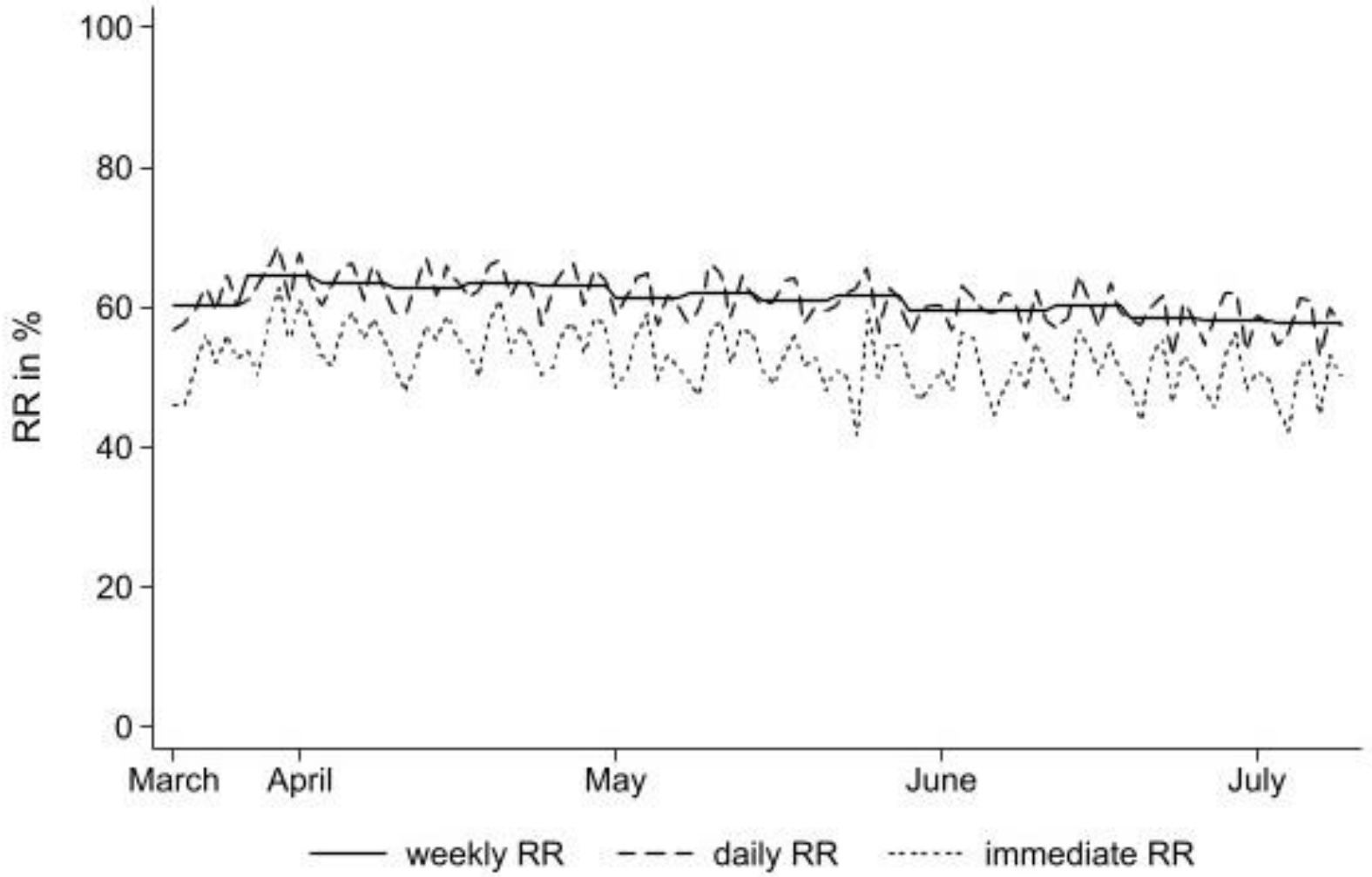


Mannheim Corona Study



Cornesse et al. (2022). From German Internet Panel to Mannheim Corona Study: Adaptable probability-based online panel infrastructures during the pandemic. Journal of the Royal Statistical Society Series A: Statistics in Society, 185(3), 773–797.

Mannheim Corona Study



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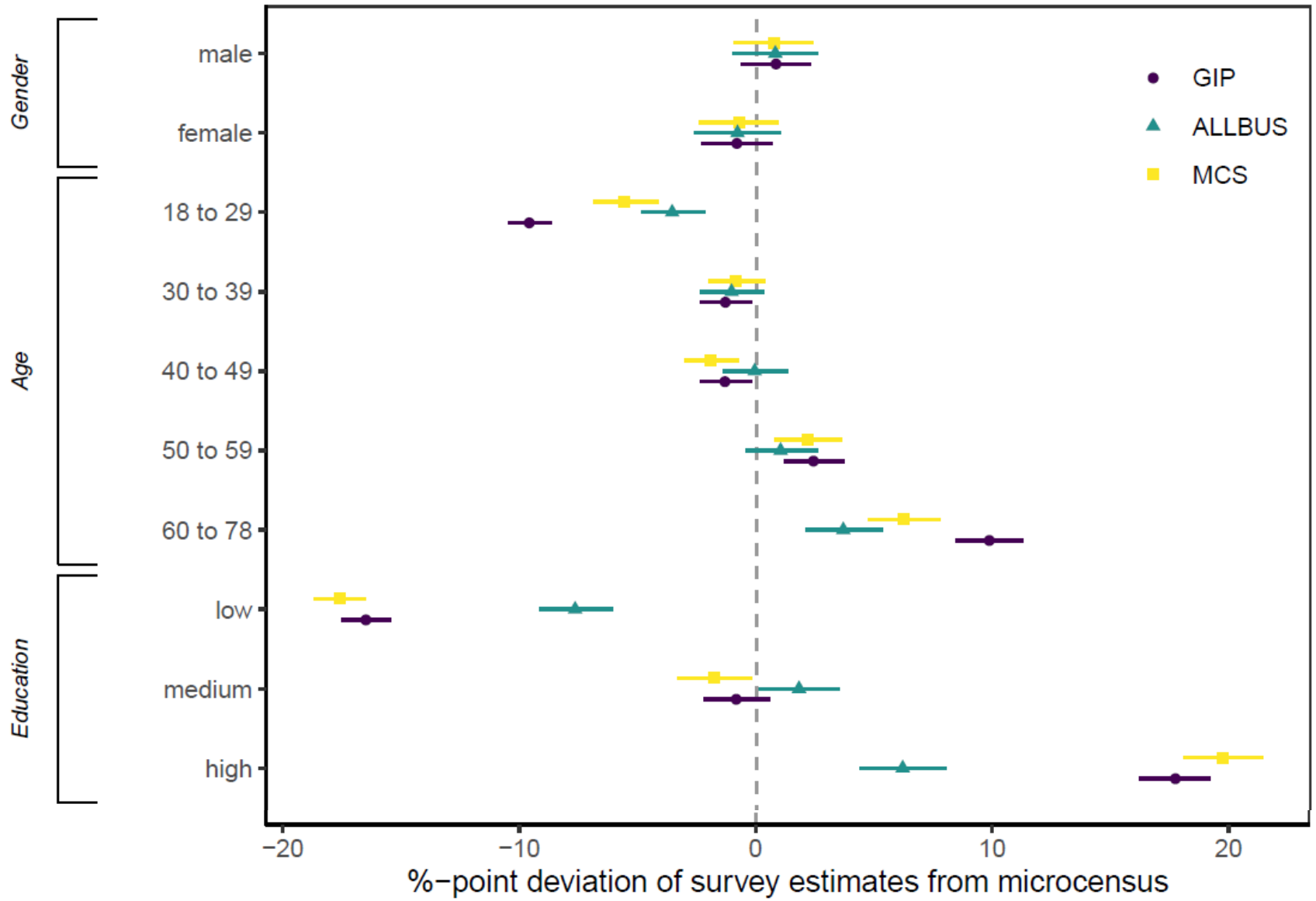

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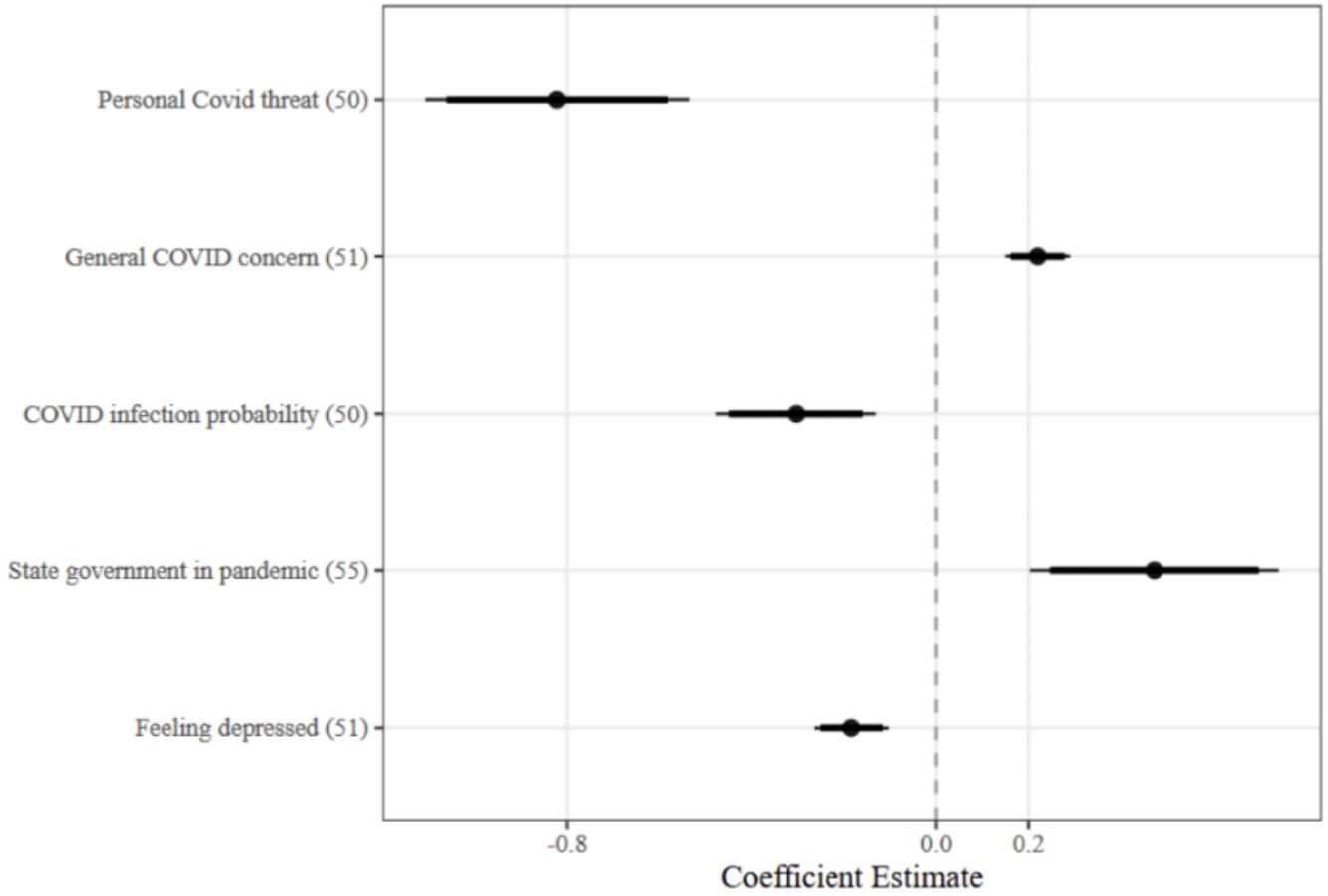


Figure 4: Significant conditioning effects with Bonferroni correction and inclusion of demographic controls

Cornesse et al. (2023). Experimental Evidence on Panel Conditioning Effects when Increasing the Surveying Frequency in a Probability-Based Online Panel. *Survey Research Methods*, *17(3)*, 323-339.

Mannheim Corona Study

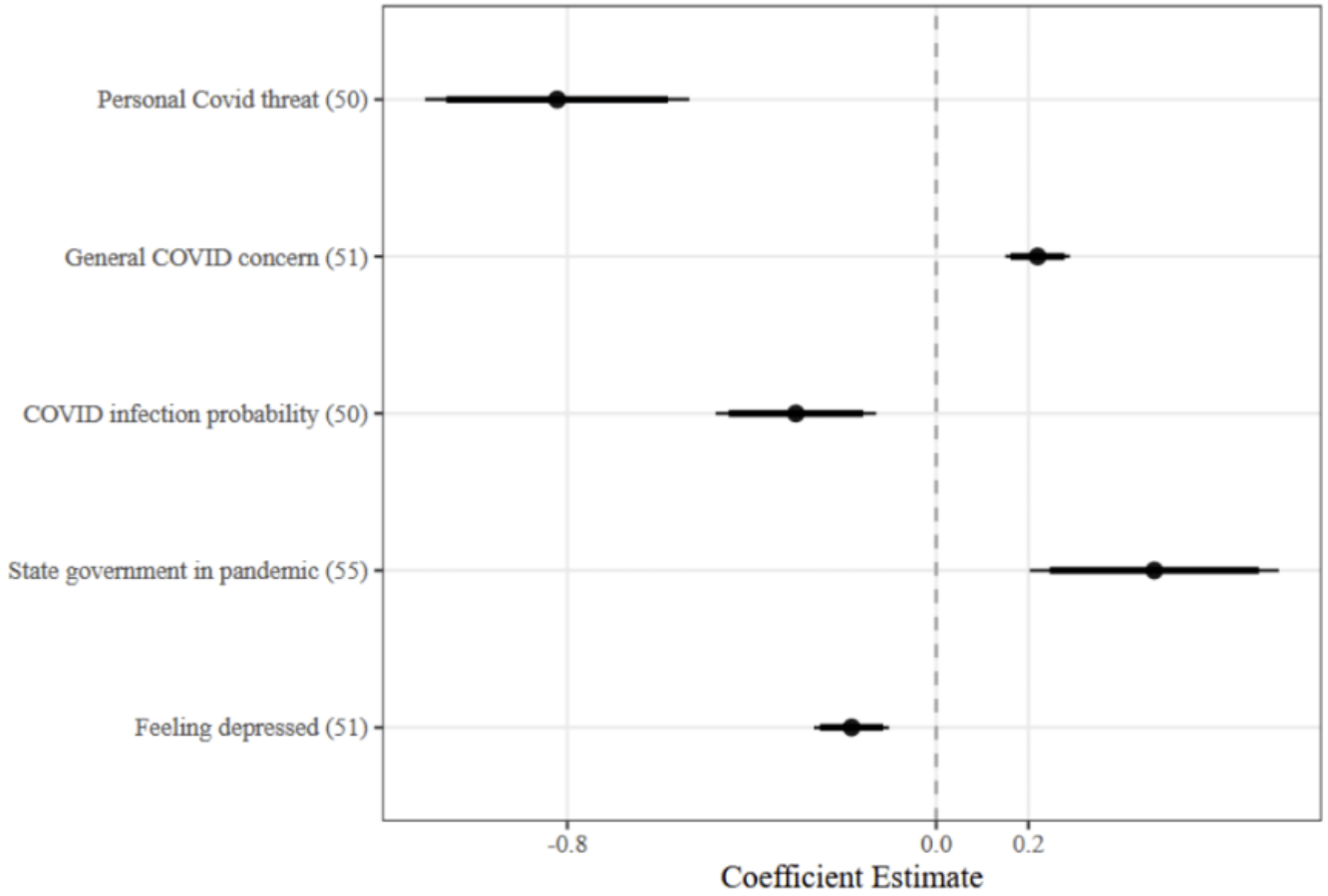


Figure 4: Significant conditioning effects with Bonferroni correction and inclusion of demographic controls

Cornesse et al. (2023). Experimental Evidence on Panel Conditioning Effects when Increasing the Surveying Frequency in a Probability-Based Online Panel. *Survey Research Methods*, *17(3)*, 323-339.

Recruiting GIP via postal mail

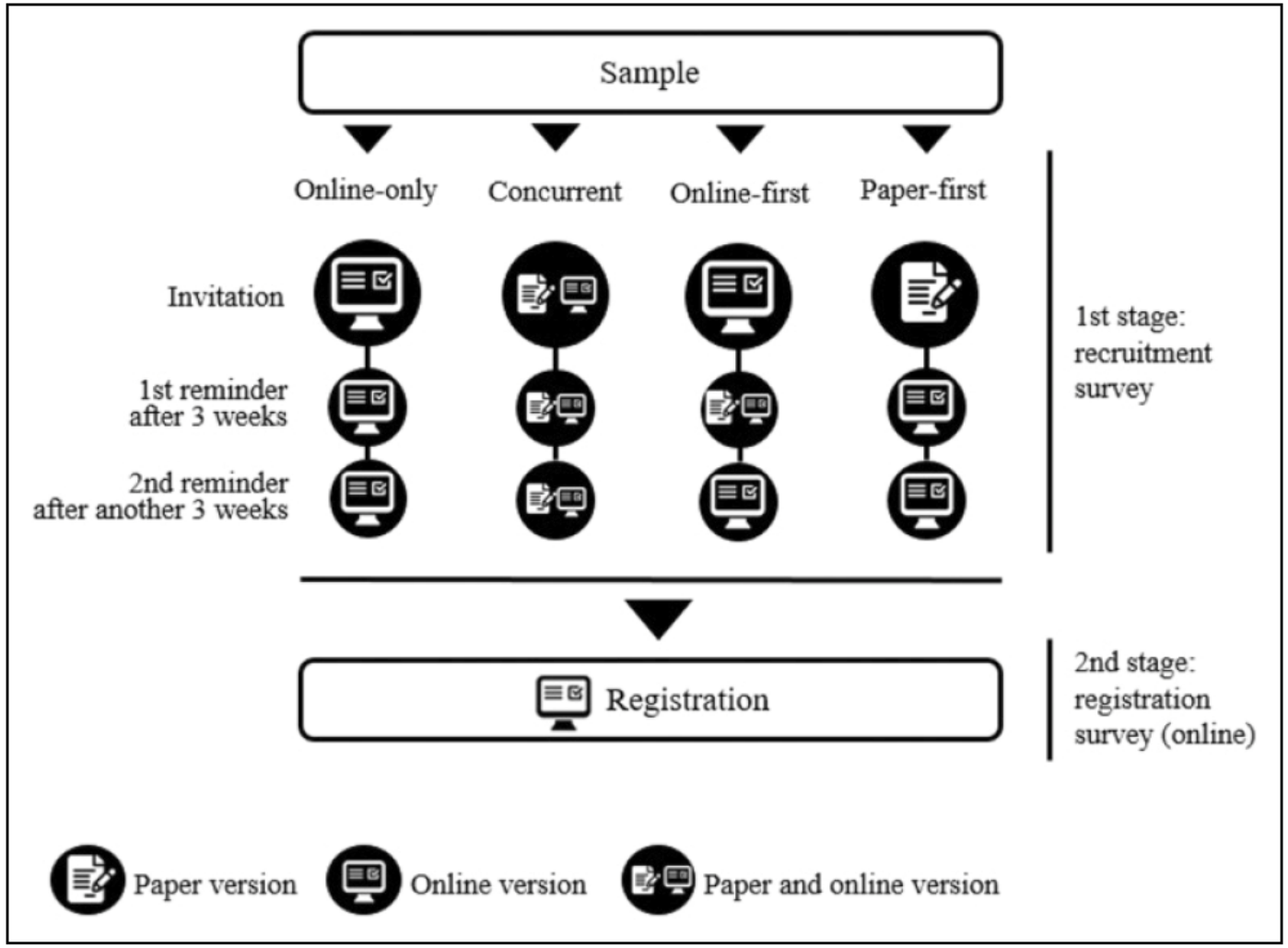
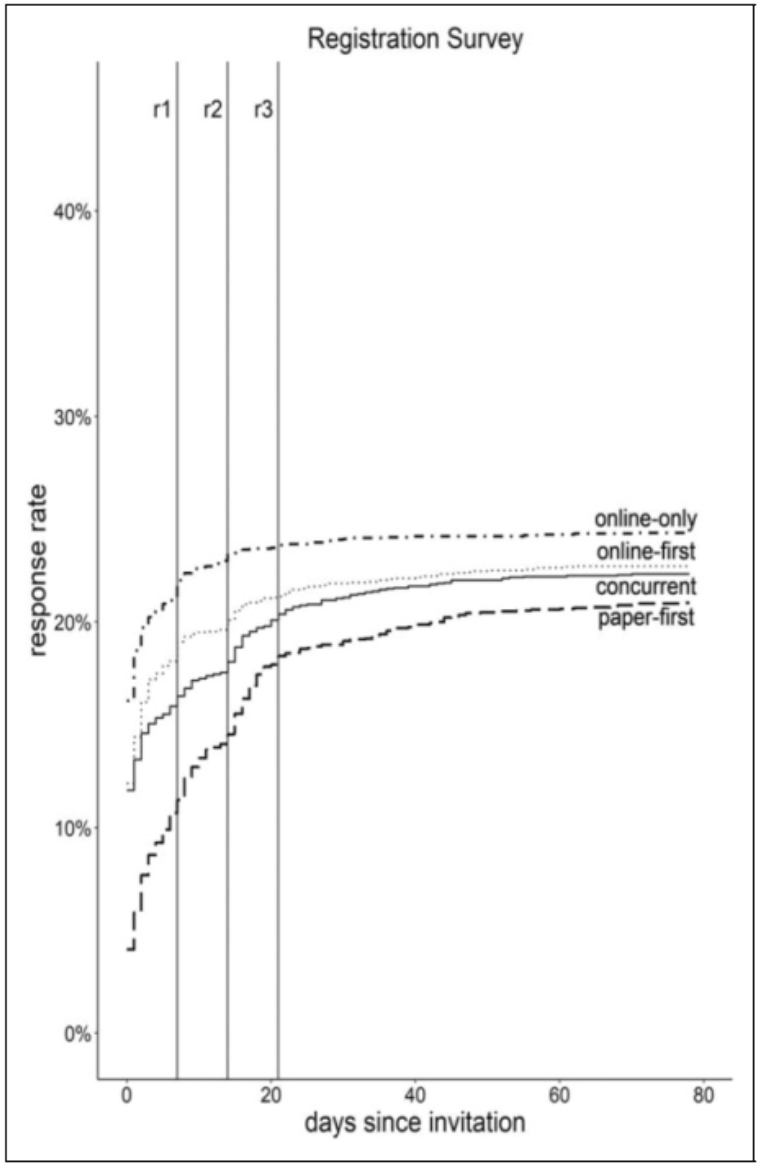
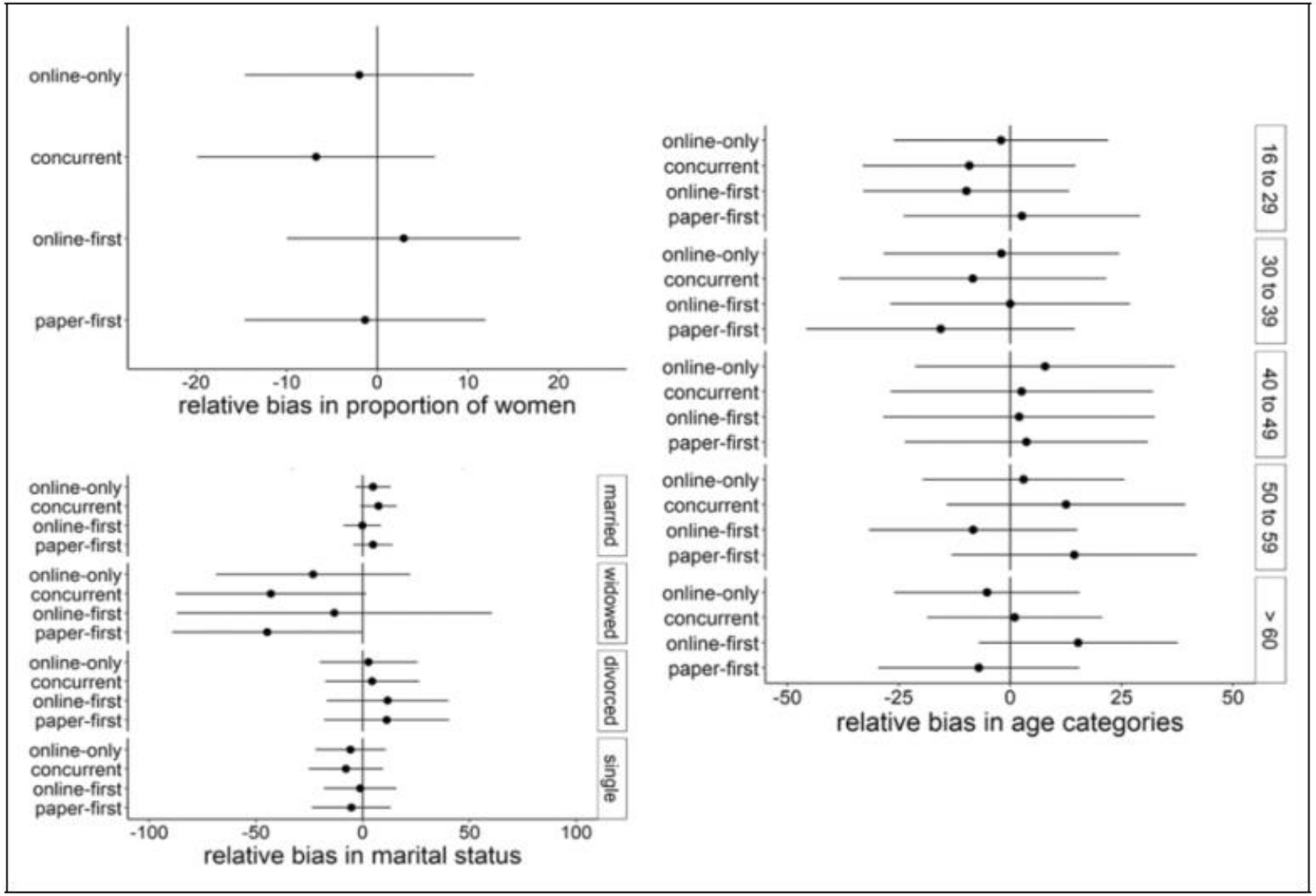


Figure 2. Overview of the recruitment process and experimental setup.

Recruiting GIP via postal mail



Recruiting GIP via postal mail



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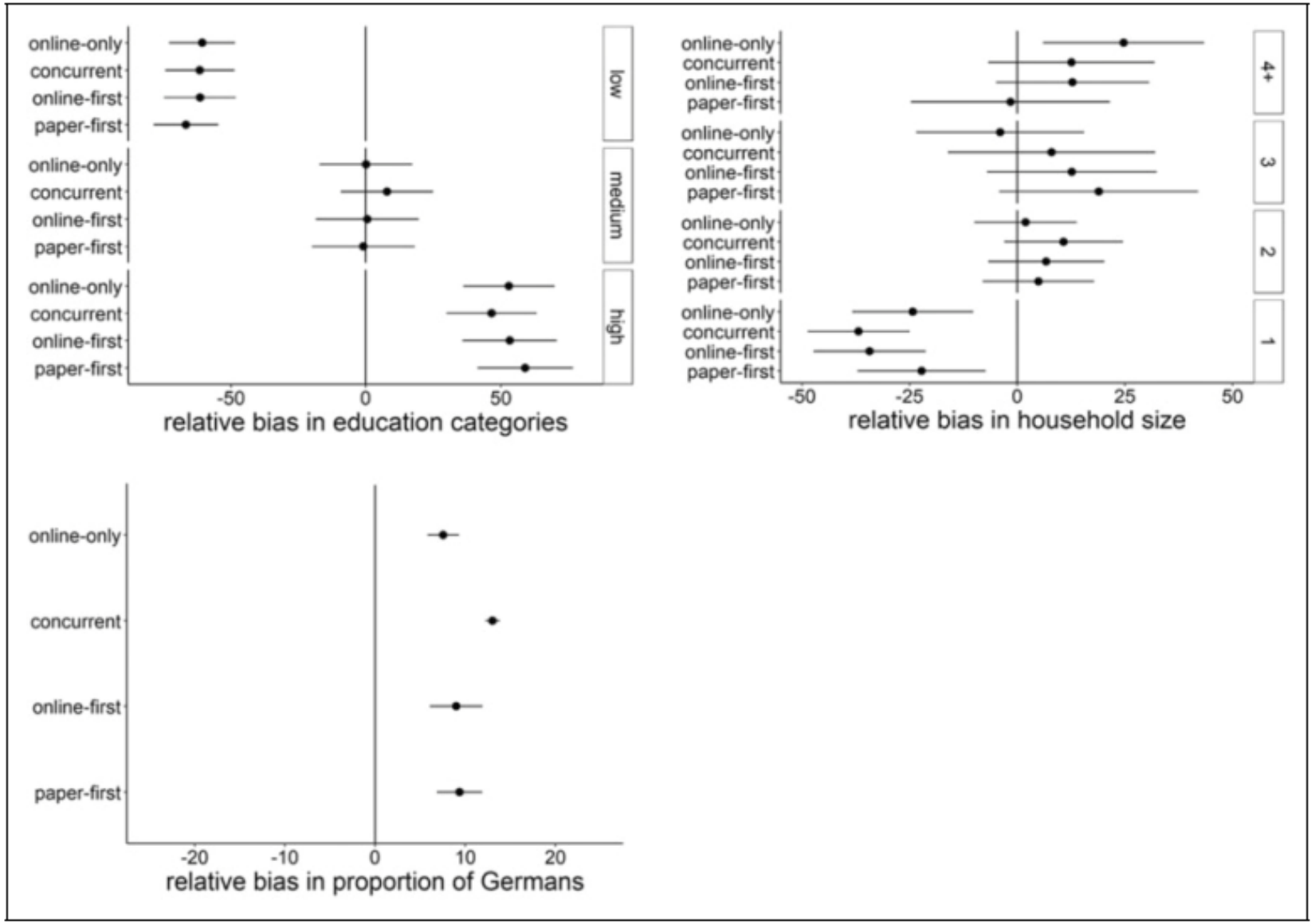


Offline population inclusion

Table 1. Recruitment Outcomes Across Panel Samples and Recruitment Steps.

Sample	*N*, Gross Sample	RR Recruitment (%)	Cum. RR Registration [a] (%)	*N*, Registration
GIP				
2012	4,878 Households	52.1 [b]	18.5 [c]	1,578 Individuals
2014	9,316 Households	47.5 [d]	21.0 [e]	3,386 Individuals
GESIS Panel	19,676 Individuals	38.6 [f]	25.1 [f]	4,938 Individuals

Note. German Internet Panel (GIP) recruitment outcomes are displayed by recruitment round, N = number; RR = response rate; Cum. RR = cumulative response rate.

[a] Computed as the number of registration survey respondents divided by the number of gross sample members. [b] American Association for Public Opinion Research (AAPOR) response rate 2 (RR2), including short recruitment interview as partial interviews. [c] AAPOR RR4 assuming 1.78 eligible persons per household for households in which the exact number of household members is unavailable. [d] AAPOR RR1. [e] AAPOR RR4 assuming 1.74 eligible persons per household for households in which the exact number of household members is unavailable. [f] AAPOR RR5.

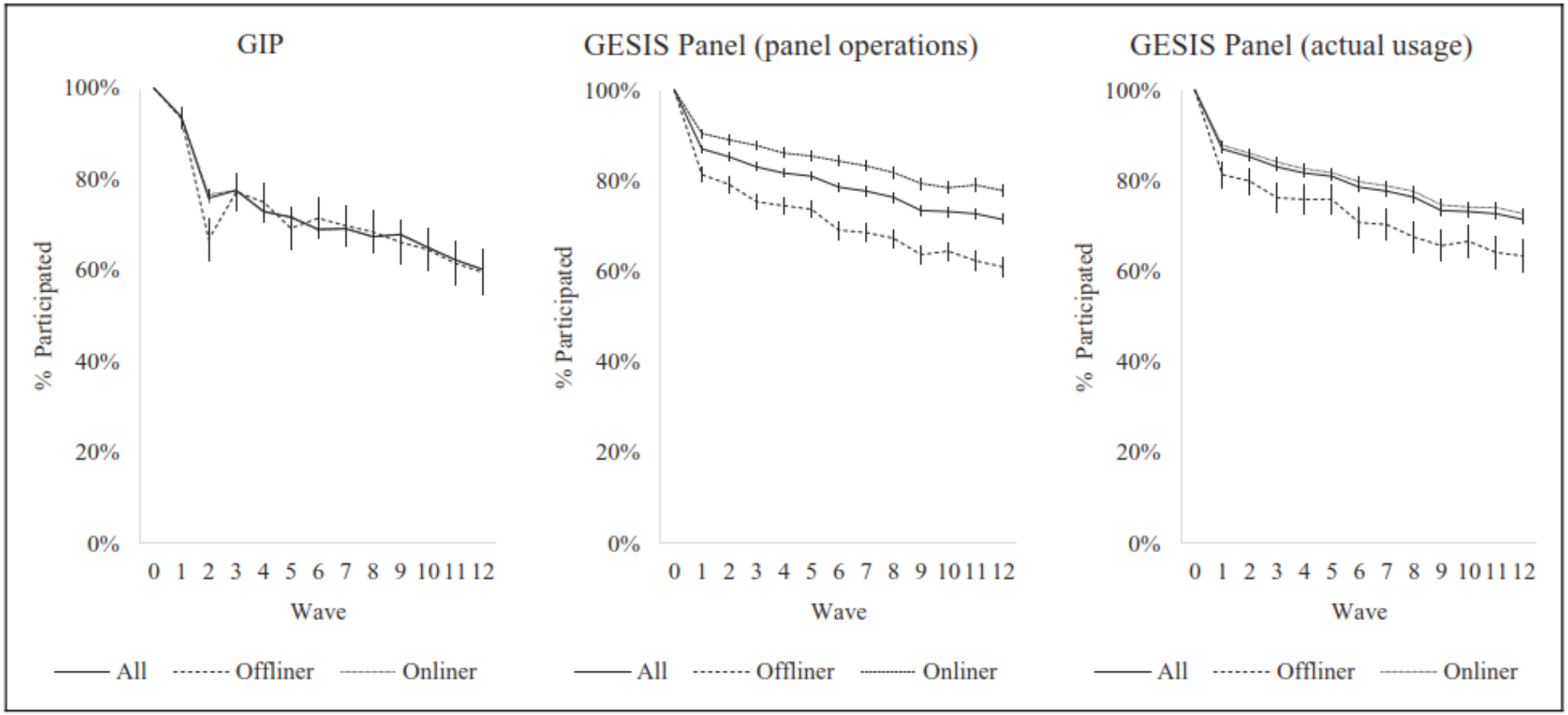
Offline population inclusion

Table 2. Absolute Number of Offliners and Share of Offliners in the Sample of All Registered Panel Members of the GIP and GESIS Panel.

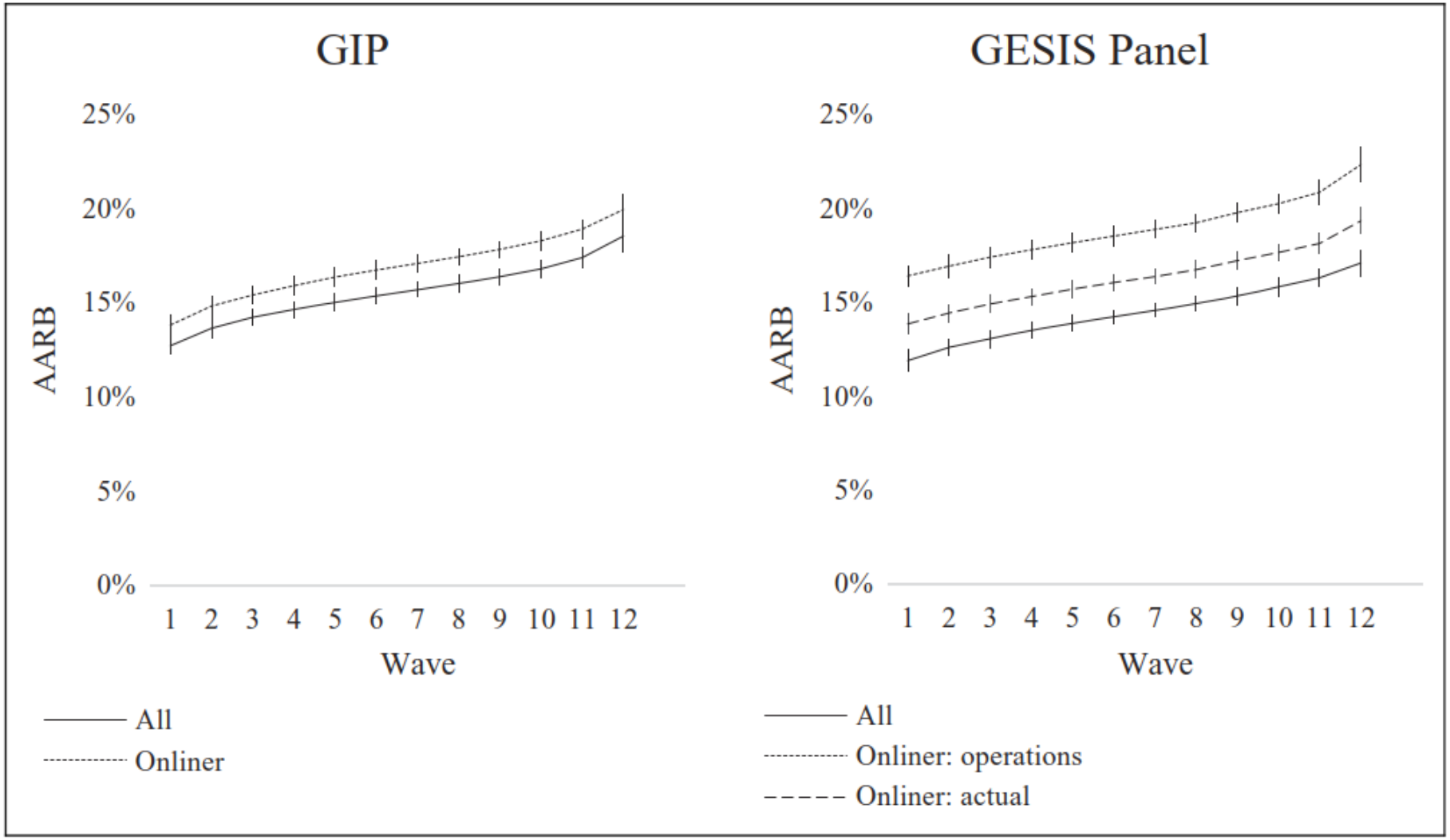
Panel	Number of Offliners	Share of Offliners (%)
GIP [a]	364 Individuals	7.8
GESIS Panel		
Panel operations definition	1,865 Individuals	37.8
Actual usage definition	654 Individuals	13.2

Note. German Internet Panel (GIP) samples are pooled across the 2012 and 2014 recruitment rounds; GESIS panel numbers and shares are displayed by offliner definition.
[a] GIP 2012 offliners: 110 individuals (7.5%); GIP 2014 offliners: 254 individuals (8.0%)

Offline population inclusion



Offline population inclusion



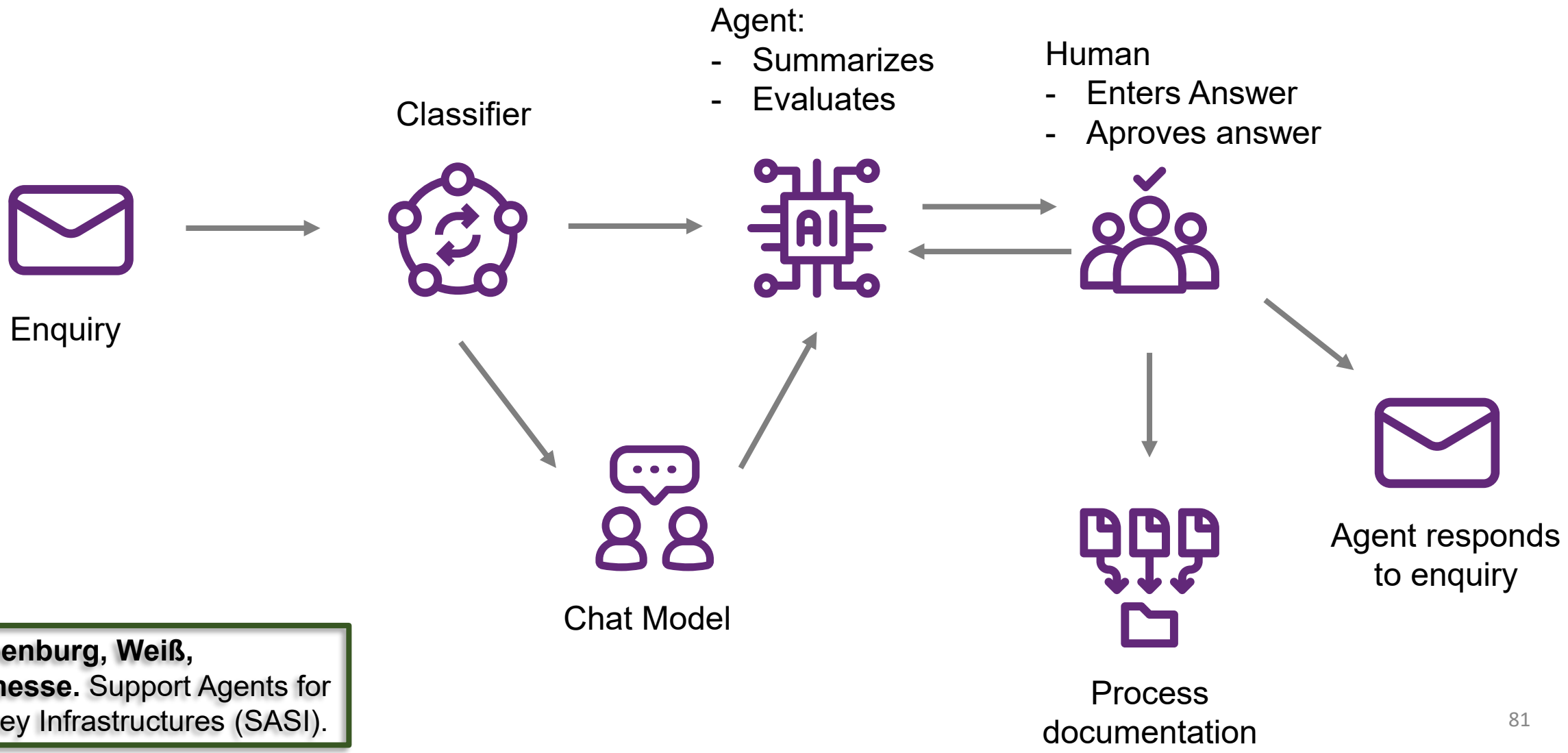
Offline population inclusion

Table 3. Relative Biases Averaged Across Panel Waves by Panel of Each Variable Included in the Calculation of the AARBs.

	GIP		GESIS Panel		
Characteristic	Full Sample	Onliner	Full Sample	Onliner (Operations)	Onliner (Actual)
Gender					
Female	−0.4 (0.2)	−1.7 (0.1)	4.5 (0.1)	−0.3 (0.2)	3.4 (0.1)
Male	0.4 (0.2)	1.7 (0.2)	−4.5 (0.1)	0.3 (0.2)	−3.4 (0.2)
Age					
18–30	2.2 (0.5)	6.5 (0.5)	−12.6 (1.4)	12.4 (1.6)	−2.2 (1.6)
31–40	−9.0 (0.6)	−6.5 (0.6)	−14.7 (0.3)	0.9 (0.4)	−5.9 (0.4)
41–50	0.6 (0.4)	1.2 (0.4)	6.9 (0.4)	9.7 (0.5)	12.7 (0.5)
51–60	11.6 (0.5)	10.0 (0.5)	10.0 (0.6)	−4.2 (0.7)	4.4 (0.6)
61–70	−8.9 (0.6)	−15.2 (0.7)	8.2 (0.7)	−23.3 (0.7)	−13.8 (0.8)
Education					
High	−42.1 (0.5)	−45.1 (0.5)	−29.4 (0.4)	−57.9 (0.2)	−44.8 (0.4)
Middle	−1.8 (0.3)	−3.8 (0.3)	0.1 (0.1)	−2.0 (0.2)	2.3 (0.2)
Low	42.8 (0.7)	47.8 (0.7)	28.5 (0.5)	58.4 (0.4)	41.2 (0.4)
Citizenship					
German	7.6 (0.1)	7.4 (0.1)	6.6 (0.1)	6.4 (0.1)	6.5 (0.1)
Non-German	−66.7 (0.7)	−65.3 (0.7)	−57.8 (0.9)	−56.6 (0.8)	−57.0 (0.8)
Household size					
One person	−25.0 (0.3)	−27.3 (0.3)	−23.4 (0.2)	−30.8 (0.2)	−28.8 (0.2)
Two persons	14.3 (0.5)	13.3 (0.5)	7.2 (0.3)	0.2 (0.2)	1.7 (0.3)
Three persons	−4.2 (0.6)	−4.0 (0.7)	4.6 (0.2)	8.3 (0.2)	9.7 (0.2)
Four persons	3.7 (0.6)	7.1 (0.7)	5.5 (0.3)	19.5 (0.4)	14.1 (0.4)

Note. In the GESIS Panel, using the panel operations definition of the offliner status and the actual usage definition; bootstrapped standard errors in parentheses. AARB = average absolute relative bias; GIP = German Internet Panel.

Support Agents for Survey Infrastructures



Piepenburg, Weiß, Cornesse. Support Agents for Survey Infrastructures (SASI).