Probability based mixed-mode surveys

Experimental evidence from the EVS-Germany

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Introduction

- In comparative survey programs the gold standard for data collection is the face-to-face (F2F) mode (coverage, literacy)

- **Challenge**: decreasing response rates in F2F surveys
  - Increased risk of nonresponse error
  - Longer field periods
  - Increasing costs

- Biases introduced by interviewers
  - Social desirability
  - Fraudulent interviews

- **Mixed-mode surveys (paper + web)** as part of the EVS in 5 countries: CH, DE, DK, IS, NL
Research questions

1. Which mixed-mode study design works best in Germany?
   - Monetary incentive
   - Contact mode

2. How does a self-administered mixed-mode survey (paper + web) perform compared to a F2F survey?
   - Response rate
   - Fieldwork
   - Survey costs
   - Representativeness
   - Data quality
Part I
Study design
Study design

- EVS: cross-national survey program on social attitudes, norms and values
- Probability based register sample has been **randomly assigned** to different modes

<table>
<thead>
<tr>
<th>European Values Study (EVS) sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Randomization</strong></td>
</tr>
<tr>
<td>Face-to-Face (Full Length)</td>
</tr>
<tr>
<td><em>Interviews</em> = 1500</td>
</tr>
<tr>
<td>Mixed-Mode (Matrix Design)</td>
</tr>
<tr>
<td><em>Interviews</em> = 3000</td>
</tr>
<tr>
<td>Mixed-Mode (Full Length)</td>
</tr>
<tr>
<td><em>Interviews</em> ≈ 700</td>
</tr>
<tr>
<td>Start: September</td>
</tr>
</tbody>
</table>
Mixed-mode matrix design

- Assumed challenge when turning F2F into web: **length** (~50 min for full survey in web mode)
- The questionnaire could be shortened (~30 min) following a matrix design
- Designed by Swiss EVS team at **FORS**

**EVS split questionnaires**
core module + 2 out of 4 modules (A to D)

**Randomization**

- Split 1: Core + A, B
- Split 2: Core + A, C
- Split 3: Core + A, D
- Split 4: Core + B, C
- Split 5: Core + B, D
- Split 6: Core + C, D
Responsive mixed-mode study design

Mixed-mode sample in 6 experimental groups

18–59 years
- contact mode sequential (web-push) vs. simultaneous
- incentive 5€ prepaid vs. 10€ postpaid

60+ years
- incentive 5€ prepaid vs. 10€ postpaid

Group 1 sequential prepaid
Group 2 sequential postpaid
Group 3 simultaneous prepaid
Group 4 simultaneous postpaid
Group 5 simultaneous prepaid
Group 6 simultaneous postpaid

Evaluate experimental groups

Completion in best evaluated design: simultaneous, 5€ prepaid
Contact mode

**Sequential contact mode ("push to web")**

1st contact
- invitation letter
- web link

2nd contact
- reminder letter
- link

3rd contact
- reminder letter
- web link
- mail questionnaire

4th contact
- reminder letter
- web link
- mail questionnaire

**Simultaneous contact mode**

1st contact
- invitation letter
- web link
- mail questionnaire

2nd contact
- reminder letter
- link

3rd contact
- reminder letter
- web link
- mail questionnaire

4th contact
- reminder letter
- web link
- mail questionnaire

*not in phase 2*
Part II
Mixed-mode experiments (matrix design)
Fieldwork: phase 1

Mixed Mode Phase 1 (end of fieldwork) EVS 2017
Response Rate and Interviews by Response Mode

Response Rate

<table>
<thead>
<tr>
<th></th>
<th>Mail Interviews</th>
<th>Web Interviews</th>
<th>Response Rate (AAPOR RR5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW48/'17</td>
<td>480</td>
<td>541</td>
<td>14%</td>
</tr>
<tr>
<td>CW49/'17</td>
<td>858</td>
<td>595</td>
<td>22%</td>
</tr>
<tr>
<td>CW50/'17</td>
<td>1157</td>
<td>622</td>
<td>25%</td>
</tr>
<tr>
<td>CW51/'17</td>
<td>1269</td>
<td>644</td>
<td>28%</td>
</tr>
<tr>
<td>CW1/'18</td>
<td>1293</td>
<td>645</td>
<td>31%</td>
</tr>
<tr>
<td>CW2/'18</td>
<td>1349</td>
<td>668</td>
<td>31%</td>
</tr>
<tr>
<td>CW5/'18</td>
<td>1400</td>
<td>677</td>
<td>32%</td>
</tr>
<tr>
<td>CW16/'18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interviews

0  250  500  750  1000  1250  1500  1750  2000  2250  2500

GESIS
Leibniz Institute for the Social Sciences
Response rates

Notes: AAPOR Response Rate 5.
Costs (matrix design)

**Notes:** For 3,000 realized interviews in a **mixed-mode matrix design.** Cost drivers: staff costs, sampling, programming & layout, data collection (incl. paper costs, postage), data preparation.
## Share of paper interviews

<table>
<thead>
<tr>
<th>Experimental Group</th>
<th>Mode</th>
<th>Interviews</th>
<th>Mail in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seq. * Prepaid: 18-59 years</td>
<td>Mail</td>
<td>86</td>
<td>24.6%</td>
</tr>
<tr>
<td></td>
<td>Web</td>
<td>263</td>
<td></td>
</tr>
<tr>
<td>Seq. * Postpaid: 18-59 years</td>
<td>Mail</td>
<td>76</td>
<td>31.8%</td>
</tr>
<tr>
<td></td>
<td>Web</td>
<td>163</td>
<td></td>
</tr>
<tr>
<td>Sim. * Prepaid: 18-59 years</td>
<td>Mail</td>
<td>303</td>
<td>76.3%</td>
</tr>
<tr>
<td></td>
<td>Web</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Sim. * Postpaid: 18-59 years</td>
<td>Mail</td>
<td>187</td>
<td>72.2%</td>
</tr>
<tr>
<td></td>
<td>Web</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Sim. * Prepaid: 60+ years</td>
<td>Mail</td>
<td>431</td>
<td>91.5%</td>
</tr>
<tr>
<td></td>
<td>Web</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Sim. * Postpaid: 60+ years</td>
<td>Mail</td>
<td>266</td>
<td>88.1%</td>
</tr>
<tr>
<td></td>
<td>Web</td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>
Part III
Face-to-face vs. mixed-mode
(matrix design, 5 € prepaid, simultaneous)
Fieldwork: face-to-face
Fieldwork: mixed-mode phase 2

Mixed Mode Phase 2 EVS 2017
Response Rate and Interviews by Response Mode

Response Rate

<table>
<thead>
<tr>
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<th>Mail Interviews</th>
<th>Web Interviews</th>
<th>Response Rate (AAPOR RR5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW6/’18</td>
<td>433</td>
<td>129</td>
<td>20%</td>
</tr>
<tr>
<td>CW7/’18</td>
<td>758</td>
<td>170</td>
<td>33%</td>
</tr>
<tr>
<td>CW8/’18</td>
<td>834</td>
<td>191</td>
<td>36%</td>
</tr>
<tr>
<td>CW9/’18</td>
<td>940</td>
<td>200</td>
<td>41%</td>
</tr>
<tr>
<td>CW10/’18</td>
<td>978</td>
<td>203</td>
<td>42%</td>
</tr>
<tr>
<td>CW16/’18</td>
<td>992</td>
<td>205</td>
<td>43%</td>
</tr>
</tbody>
</table>

Interviews

2500
2250
2000
1750
1500
1250
1000
750
500
250
0

CW6/’18  CW7/’18  CW8/’18  CW9/’18  CW10/’18  CW16/’18
Costs by mode

100 %  
(Reference)

Face-to-face full survey  
(10€ postpaid, 20€ after refusal/noncontact)

41 %

Mixed mode matrix design (30 min)  
simultaneous contact x 5€ prepaid

44 %

Mixed mode full survey  
simultaneous contact x 5€ prepaid

Notes: For 3,000 realized interviews. Cost drivers: staff costs, sampling, programming & layout, data collection (incl. paper costs, postage), data preparation.
Representativity

Notes: Adjusted Coefficient of Variation (CV) of predicted response propensities (logistic regression) dependent on age, gender, nationality, municipality size and East-/West Germany. N face-to-face= 10,667; N mixed-mode= 4,833. With 95%-CI.

NR-bias: sample composition by gender

- No sig. differences exist between the modes (95% CI)
- Both modes correctly represent the register sample (red line)
NR-bias: sample composition by age

- The young are underrepresented in the mixed-mode survey
- The old are overrepresented in the mixed-mode survey
NR-bias: sample comp. by nationality

- People without German citizenship are underrepresented
- Significant differences exist between the modes
NR-bias: sample composition by municipality size
Data quality: break-off/ missing values
Data quality: response styles

- Percentage Extreme Answers
- Percentage Acquiescence (Tendency to Agree)
- Percentage Middle Categories
- Percentage Straightlining
Data quality: interviewer bias (ICC)

- Interviewer bias only possible for face-to-face mode

\[ \phi = 0.049 \]
(Dis-)similarity of agreement items – 3pt scale

- Sig. differences between modes in 2/16 items
- But magnitude of differences are small
(Dis-)similarity of agreement items – 4pt scale

- Sig. differences in 32/66 items
- But magnitude of differences are mostly small
(Dis-)similarity of agreement items – 5pt scale

- Sig. differences between modes in 9/26 items
- But magnitude of differences are small
(Dis-)similarity of agreement items – 10pt scale

- Sig. differences in 3/30 items
- But magnitude of differences are small
Part IV
Conclusions
# Response Rates

## European Values Study

<table>
<thead>
<tr>
<th>Mode</th>
<th>CH</th>
<th>DE</th>
<th>DK</th>
<th>IS</th>
<th>NL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPI (F2F)</td>
<td>48%</td>
<td>28%</td>
<td>52%</td>
<td>41%</td>
<td>43%</td>
</tr>
<tr>
<td>MM matrix design</td>
<td>44%</td>
<td>43%</td>
<td></td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td>(follow up)</td>
<td></td>
<td></td>
<td>34%</td>
<td>(77% of resp.)</td>
<td>(81%)</td>
</tr>
<tr>
<td>MM full length</td>
<td>44%* /40%</td>
<td>In field</td>
<td>40%</td>
<td>41%</td>
<td></td>
</tr>
</tbody>
</table>

- **Contact mode**
  - Sequential: paper with 2nd reminder
  - Simultaneous: web + paper
  - Sequential: paper with 1st reminder
  - Sequential: paper only if no Internet at all
  - Web only: LISS-panel

- **Incentive**
  - 8.6 € prepaid + lottery for follow-up
  - 5€ prepaid
  - None
  - Lottery cond. on response


*Notes: *Announced as short (25 min).*
Conclusions

- Mixed-mode experiments
  - prepaid + simultaneous worked best for Germany
- Mixed-mode (web + mail) can complement face-to-face by:
  - achieving higher response rates (in Germany)
  - nearly comparable degree of representativeness (although F2F has an edge)
  - similar substantive results as the F2F mode
  - being much faster
  - being considerable cheaper
- Results from Denmark, Iceland and Switzerland indicate that long surveys are also feasible in mixed-mode
Next steps

- Assess data and measurement quality for the 50min full length mixed-mode survey
  - in collaboration with Christian Schnaudt, ESS-Germany

- Compare conclusions between countries
  - together with other EVS-MM countries

- Explore imputation options for the matrix design
  - together with other EVS-MM countries
Thank you for your attention.