DATA QUALITY IN CROSS-NATIONAL SURVEY
THE QUALITY INDICATORS
RESPONSE RATE, NONRESPONSE BIAS
AND FIELDWORK EFFORTS

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• Why do we think that Response Rate is „the“ quality indicator?
• Objective: Empirically test implicit assumptions
Content

Analysis: Indicators of data quality

• Part A- Development of Response Rates
• Part B- Response Rate and Nonresponse Bias
• Part C- Response Rate and Fieldwork Effort
• Part D- Nonresponse Bias and Fieldwork Effort
Why is the development of RR interesting?
RR as central indicator of survey quality
What’s new?
Previous research focus on
- the US,
- only one country
- older data.
- Include different surveys (different topics and set-ups).
- Response rate calculation is not always comparable.
Research gap?
Up to date comparable information for Europe
A-Analysis (general)

Pooled Ordinary Least Square Regression (POLS) of the development of RR controlled for ESS rounds

No significant differences (t-Test of independent samples) between the first and the last round ($p = .284$).
A-Analysis (country level)

Estimated mean changes in RR for each country between rounds

Decreasing RR:
DE-Germany
DK-Denmark
FI-Finland
HU-Hungary
NO-Norway
SE-Sweden

Increasing RR:
CH-Switzerland
ES-Spain
FR-France
A-Result

• RR trend: not decreasing in general
• Different trends in different countries
  – RR are decreasing in DE, DK, FI, HU, NO, SE
  – RR are increasing in CH, ES, FR
B- Response Rate and Nonresponse Bias

- Response Rate
- Nonresponse Bias
- Fieldwork Efforts
B- Response Rate and Nonresponse Bias

- **Hypothesis:**
  High RR $\rightarrow$ lower risk of Nonresponse Bias (NRB).

- **Analysis:** 16 countries for 7 socio-demographic variables (age, gender, education, occupation, nationality, household size, marital status)
B-Analysis (general)

Nonresponse bias (absolute value of relative bias) and response rate

Linear regression analysis: negative and significant correlation ($\text{coef} = -0.17; t = -3.85; p = .000^{**}$)
B-Analysis (variable specific)

Nonresponse Bias (absolute value of relative bias) and response rates

Higher RR are correlated with **lower** Nonresponse Bias for:
- Old persons
- Married person
- Persons with low education
- Nationals of country
- 1-person household

Higher RR are correlated with **higher** Nonresponse Bias for:
- Gender (male)
- 5- and more person household
B-Result

• RR has effect on Nonresponse Bias
• Variable specific effects:
  – As assumed: old persons, married persons, low education, high education, nationals of country and 1-person household
  – Against assumption: gender (male), five-and more person household
C- Response Rate and Fieldwork Efforts

Response Rate

Nonresponse Bias

Fieldwork Efforts
C- Response Rate and Fieldwork Efforts

• **Hypothesis:**
  Higher fieldwork effort $\rightarrow$ higher the RR

• **Analysis:** ESS offers comparable data on fieldwork efforts
C-Analysis (cross-sectional)

Fieldwork Effort Index (FEI):
- Experience of interviewer
- Payment of interviewer
- Personal briefing of interviewers
- Length of personal briefing sessions
- Interviewer trained in refusal conversion

Contact to respondent:
- Use of advance letter
- Use of brochure
- Use of respondent incentive

(Based on Stoop et. al. 2010)

Non sig. correlation. Pearson correlation coefficient ($r = -0.06; p = 0.596; n = 74$)
C-Analysis (longitudinal)

Non sig. correlation
Regression analysis
$(r = .13; p = .361, n = 54; R^2 \text{ (linear)} = .016; n = 4)$
C-Analysis (qualitative-Germany)

Decreasing RR in Germany

Pattern: the higher the fieldwork effort, the higher the response rate.
C-Results

- No correlation of FEI and RR.
- Analysis of change between the rounds (keeping countries constant): change in fieldwork effort did not have a positive effect on RR.
- At country levels positive effects of fieldwork efforts on RR can be detected.
D- Fieldwork Efforts and Nonresponse Bias
D- Fieldwork Efforts and Nonresponse Bias

• **Hypothesis:** Higher fieldwork effort $\rightarrow$ lower NRB

• **Analysis:**
  – ESS offers comparable information on fieldwork efforts.
  – Data of the ESS can be harmonized with the LFS data for nonresponse bias calculation.
D-Analysis (general)

FEI and Nonresponse Bias Index

Nonresponse Bias Index (additive index of absolute value of relative bias):
- Gender
- Education
- Occupation
- Marital status
- Nationality
- Household size

Pearson Correlation Coefficient ($r = -0.08; p = 0.5087$)
Regression ($coef = -0.24; t = 0.66; p = 0.509$); $n = 74$
D-Analysis (variable specific)

<table>
<thead>
<tr>
<th>Variable Specific Analysis</th>
<th>FEI Index and NRB</th>
<th>More Fieldwork Effort is Associated with Less Nonresponse Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working population (rel. bias)</td>
<td>coef = - .20</td>
<td>p = .089*</td>
</tr>
<tr>
<td>High education</td>
<td>coef = - .22</td>
<td>p = .064**</td>
</tr>
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<td>Nationality</td>
<td>coef = - .23</td>
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<tr>
<td>Gender (male)</td>
<td>coef = - .09</td>
<td>p = .429</td>
</tr>
<tr>
<td>Young persons (age 15-24)</td>
<td>coef = - .11</td>
<td>p = .356</td>
</tr>
<tr>
<td>Old persons (age 75 +)</td>
<td>coef = - .07</td>
<td>p = .595</td>
</tr>
<tr>
<td>Married persons</td>
<td>coef = - .03</td>
<td>p = .798</td>
</tr>
<tr>
<td>1- person household</td>
<td>coef = - .10</td>
<td>p = .501</td>
</tr>
<tr>
<td>5- and more person household</td>
<td>coef = - .18</td>
<td>p = .234</td>
</tr>
</tbody>
</table>
D-Results

- Fieldwork efforts are not correlated with lower NRB in general.
- Effects of fieldwork efforts on the NRB for certain variables:
  - For variables related to contactability (working population, high education, nationality): more fieldwork effort decreases NRB.
  - For variables related to refusal: no effect.
- Fieldwork efforts have country and variable specific effects on NRB.
Conclusion and Discussion

- Data from the ESS and the comparison of ESS and LFS allows testing assumptions on data quality in fieldwork regarding the factors: **Response Rate, Nonresponse Bias and Fieldwork Effort**.

- Assumptions are not always reflected in the data.
  - Fieldwork Efforts are important in the discussion of data quality. More attention should be given to this aspect, especially at the **country level**.
  - The development and relations are **variable and country specific**.
Lesions Learned

• Fieldwork processes should be communicated openly and standardized for comparability reasons.

• Fieldwork should be tailored according to country specific circumstances: country specific NRB as well as to the variables of interest.

• Tailored fieldwork effort at the variable and country level allow increasing data quality by increasing RR and decreasing NRB.
Thank you!

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