ELABORATED EVALUATION OF MODE EFFECTS IN MIXED MODE DATA

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Introduction

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Mixed-Mode Data Collection (MMDC)

- different sample members choose different modes
- mode effects:
  - selection effect: different mode, different respondents
    makes MM attractive
  - measurement effect: different mode, different measurement
    e.g. social desirability, primacy and recency effects, acquiescence, ...

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Problem

- differences between groups
  - = different respondents?
  - = different measurement?
- solution: compare MM data with comparable single-mode data

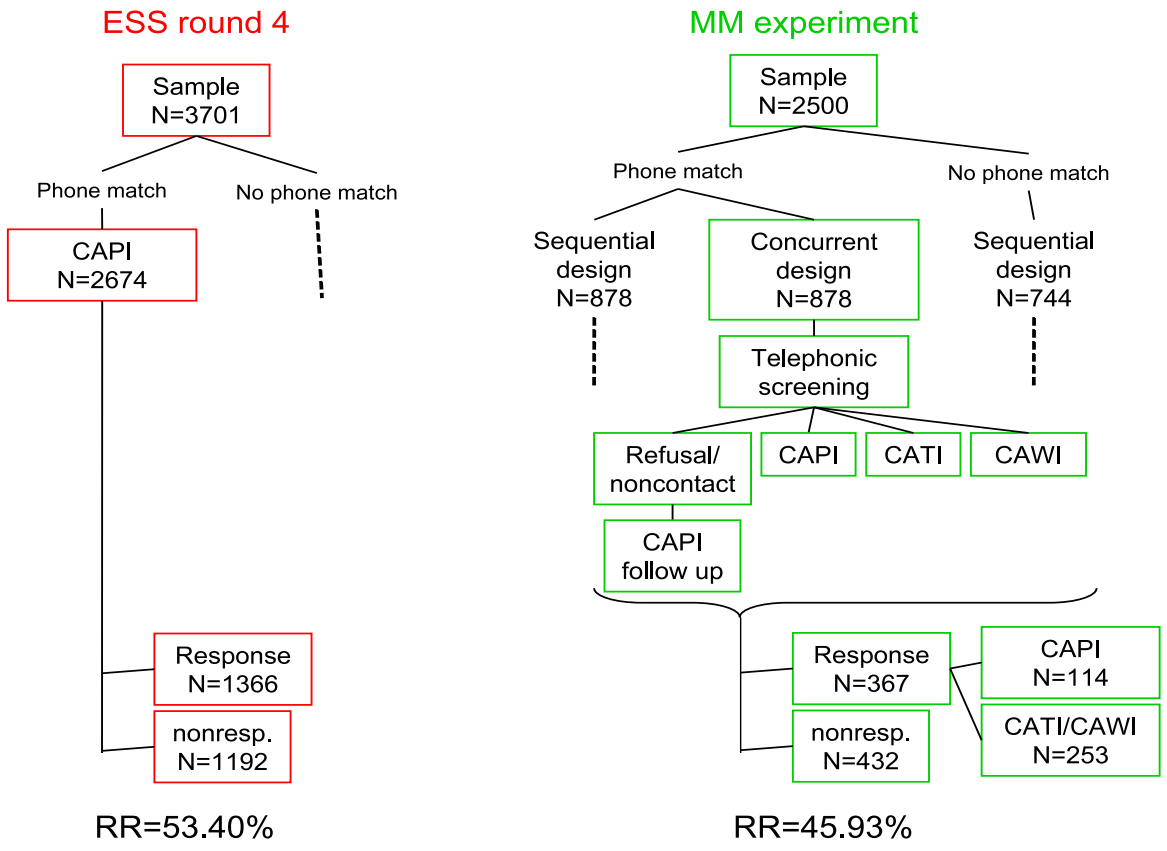
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ESS

- European Social Survey (ESS), 2008, 4^{th} wave
- FTF = expensive
- ⇒ MMDC experiment
  - the Netherlands
  - costs ↓?
  - equal data quality?

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ESS



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Comparability assumption

- comparability?
  - response rates
  - socio-demographic comparison

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Variables

- political Interest
  - 1=not at all interested
    2=hardly interested
    3=quite interested
    4=very interested
  - expectations:
    - social desirability bias
    - nonrespondents less interested
  - two versions:
    - FTF: $I_p \sim$ Multin($\boldsymbol{\pi}_{\mathbf{p}}$)
    - Tel./Web: $I_{wt} \sim$ Multin($\boldsymbol{\pi}_{\mathbf{wt}}$)

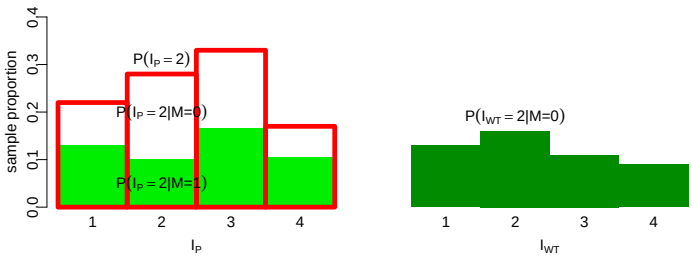
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Variables

- further we define M
  - the mode a respondent 'chooses'
  - 0= CATI or CAWI, 1=CAPI
  - $M \sim b(\tau)$

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Effect calcullation



selection effect $= P(I_p|M=1) - P(I_p|M=0)$

measurement effect $= P(I_{wt}|M=0) - P(I_p|M=0)$

$P(I_p|M=0) = P(I_p)\frac{1}{P(M=0)} - P(I_p|M=1)\frac{P(M=1)}{P(M=0)}$

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Inferences

selection effect $= P(I_p|M=1) - P(I_p|M=0)$

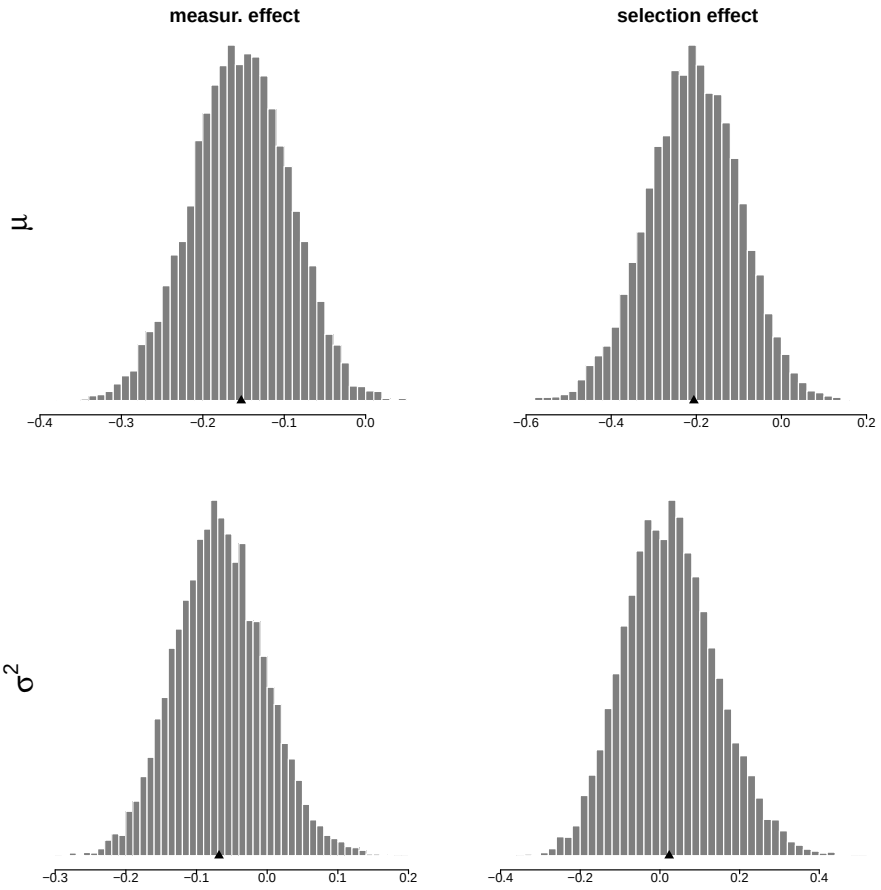
measurement effect $= P(I_{wt}|M=0) - P(I_p|M=0)$

$P(I_p|M=0) = P(I_p)\frac{1}{P(M=0)} - P(I_p|M=1)\frac{P(M=1)}{P(M=0)}$

- bayesian approach
- $p(\theta|y) = \frac{p(y|\theta)p(\theta)}{p(y)}$
- simulation of 10.000 values

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Graphs of simulations



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Results

	median	95% confidence interval 2,5 percentile	97,5 percentile	p*
MEASUREMENT EFFECT				
P(not at all interested)	-0,029	-0,068	0,014	0,087
P(hardly interested)	0,179	0,106	0,253	0,000
P(quite interested)	-0,119	-0,198	-0,040	0,002
P(very interested)	-0,032	-0,074	0,015	0,081
mean	-0,153	-0,273	-0,038	0,005
variance	-0,068	-0,187	0,063	0,150
SELECTION EFFECT				
P(not at all interested)	0,032	-0,041	0,131	0,219
P(hardly interested)	0,083	-0,033	0,218	0,086
P(quite interested)	-0,070	-0,205	0,068	0,158
P(very interested)	-0,054	-0,111	0,027	0,086
mean	-0,206	-0,425	0,001	0,026
variance	0,023	-0,185	0,271	0,425

based on 10.000 simulations

[*] The probability p refers to the number of simulations with a measurement effect/selection effect smaller than zero (P(sim<0)) for positive median values, or larger than zero (P(sim>0)) for negative median values.

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Discussion

Limitations

- measurement effects
  $(\pi_{wt}|M=0) - (\pi_p|M=0)$
- comparability assumption?
  - bias?
  - mode-preference, mode-acceptance?
- interpretation?
  Web and telephone confounded
  $\rightarrow$ use maximum 2 modes

Future

- MMDC: include small comparative group
- simulate respondents' values
  $\approx$ multiple imputation
- power?