Are Mobile Phone Users Sharing Their Cell Phone?

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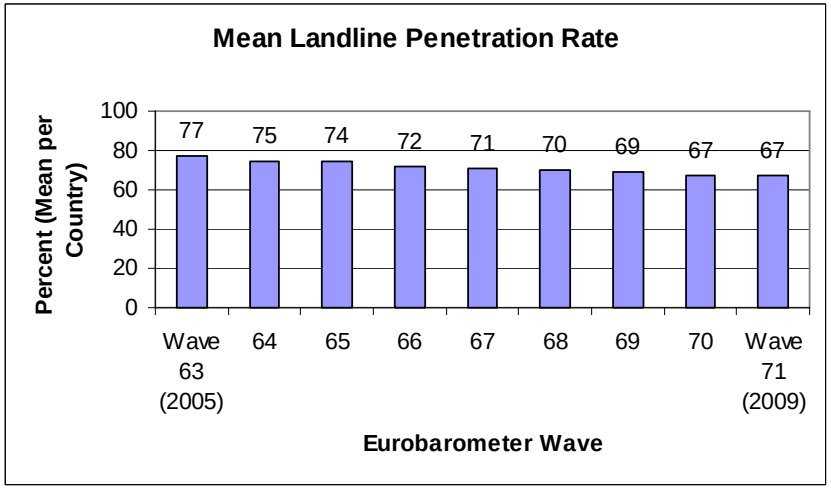
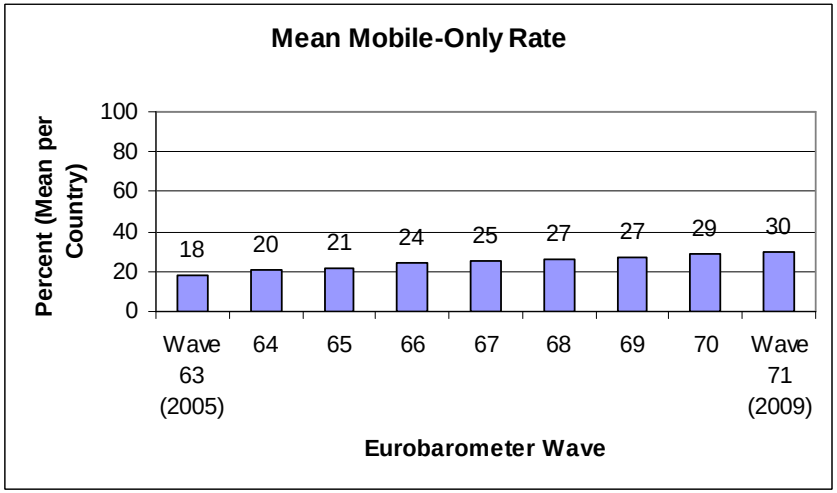
Telephone penetration across Europe





- Mobile only population less prevalent in Germany
- Nevertheless, dual frame approach (including mobile phones) required
- Because of coverage error problems

Background

- General assumption
  - Mobile phone = personal device
  - Dual Frame Approach (Gabler & Ayhan, 2007; Kalsbeek & Agans, 2008)

$$\Pi_i \approx k_i^F \frac{m^F}{M^F} \bullet \frac{1}{z_i} + k_i^C \frac{m^C}{M^C}$$

Background

- Assumption in Cell phone surveys

  - Every person answering a mobile phone is assumed to be the owner and is assigned a selection probability depending only on the reported quantity of cell phone numbers

- Is it legitimate to calculate the selection probability in cell phone frames based on this assumption?

Findings from the literature

- 50 validation interviews, US (Brick et al., 2007a)
  - 33% sharing
- 176 US mobile-only household screening interviews (Brick et al., 2007b)
  - 8% sharing
- 700 interviews in a German cross sectional study (Häder & Häder, 2009)
  - 8% sharing

Findings from the literature

- Doubts concerning proper question wording

  Supplement of CPS 2004

  „How many of the cell phone numbers are answered by more than one household member?”

  (Tucker et al., 2007)

- Probably overestimation because question is asked on household level
- At the same time it is not certain that sharing occurs within households

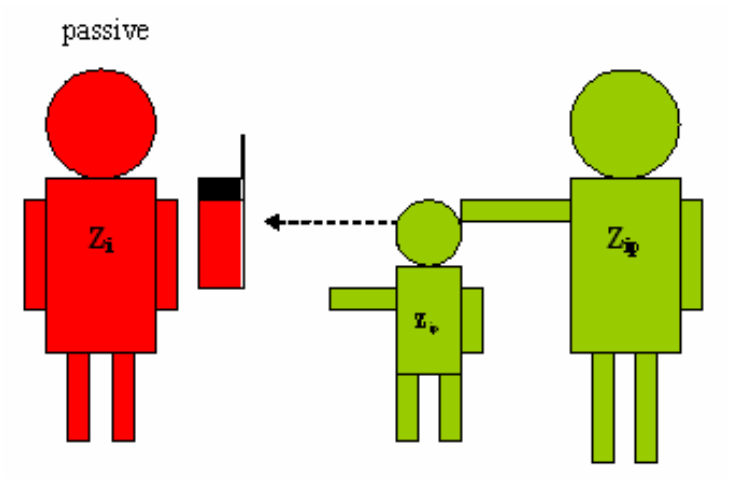
Research question

- What is the prevalence of sharing in the German mobile phone population?

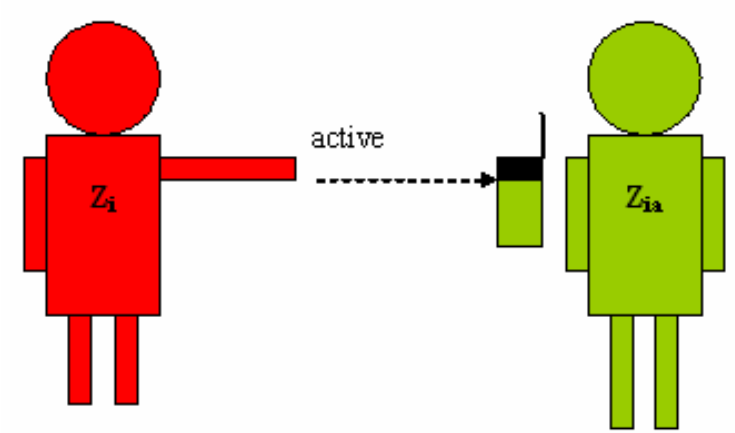
- Is the population that is sharing their mobile phones different from the general mobile phone population?

Research question

- Passive sharing
  - Other people answer calls on respondent's mobile phone



- Active sharing
  - Respondent answers calls on other people's mobile phone



Results

- Results from recruitment interviews (N = 1228)

	Call Center Mannheim	Call Center Duisburg	Overall
Active sharing	24%	33%	28%
Passive sharing	26%	29%	27%
Active and passive	16%	22%	19%
Active only	7%	11%	9%
Passive only	9%	7%	8%
Neither	68%	60%	64%
Total	100%	100%	100%

- 70 sharers were caught during recruitment interviews!

Results

Logistic regression

	Active sharing	Passive sharing
Sex (1=male)	.86	.64 **
Education	.94	.79 **
Household income	1.23 *	1.18 +
Age	.70 **	.84
Single person household	.73 +	.87
Occupation (1 = working)	.65 *	.65 *
Marital status (1=single)	1.15 +	1.27 **
Nagelkerkes R^2	.047	.072
N	936	896

+ p < .1; * p < .05; ** p < .01

Summary

- Sharing more prevalent than expected

- **Active Sharers** are
  - younger, not working, single,
  - living in multi-person high income households

- People allowing **passive Sharing** are
  - single, female, lower education, not working

Future research

- Design weights based on selection probabilities

$$DW_i = \frac{1}{\sum_{j=1}^{h} \frac{1}{z_{ij}}}$$

  - Dw_i
    - Design weight
  - H
    - # of mobile phone numbers that can be used to reach a respondent
  - Z_{ij}
    - # of eligible potential respondents for a particular mobile phone number

Simulation

Description of respondent (not necessarily owner of mobile phone)		Design Weight	$W_i = DW_i * \frac{N}{\sum_{i=1}^{N} DW_i}$
Respondent - owns 1 mobile phone, solely being used by himself	$DW_i = \frac{1}{\left(\frac{1}{1}\right)}$	1.000	1.111
Respondent - owns 2 mobile phones, 1 being used alone, 1 being shared with spouse	$DW_i = \frac{1}{\left(\frac{1}{1}+\frac{1}{2}\right)}$	0.667	0.740
Respondent - owns 2 mobile phones, both shared with one other person - takes calls on family cell phone	$DW_i = \frac{1}{\left(\frac{1}{2}+\frac{1}{2}+\frac{1}{5}\right)}$	0.833	0.926
Respondent - owns 2 mobile phones, both solely being used by himself	$DW_i = \frac{1}{\left(\frac{1}{1}+\frac{1}{1}\right)}$	0.500	0.556
Respondent - owns no mobile phone - shares mobile phone with spouse	$DW_i = \frac{1}{\left(\frac{1}{2}\right)}$	2.000	2.222
Respondent - owns 2 mobile phones, both solely being used - shares 1 phone with boy friend	$DW_i = \frac{1}{\left(\frac{1}{1}+\frac{1}{1}+\frac{1}{2}\right)}$	0.400	0.444
Sum of weights		5.400	6.000

Future research

- More detailed information regarding selection probabilities
  - Active sharing
    - Number of mobile phones involved
    - Exact frequency of behavior
    - Typical behavior of respondent when reached on another phone if incoming call asks for survey participation
  - Passive sharing
    - Number of people answering calls on the respondents mobile phone
    - Frequency of behavior
    - Typical reaction of other people if incoming call asks for survey participation

Future research

- How to identify and treat sharing?
  - Assessment of introductory segment of mobile phone interview for indications of sharing
  - Respondents selection procedure
    - Random selection (birthday method)
    - Ask for “owner” of mobile phone
  - Necessary information in order to determine selection probabilities

End

Thank you!