
Reducing the relative coverage bias caused by the mobile-only population

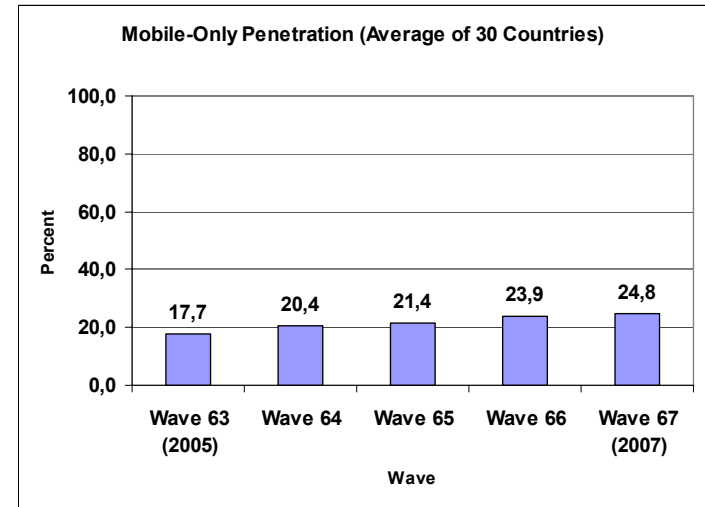
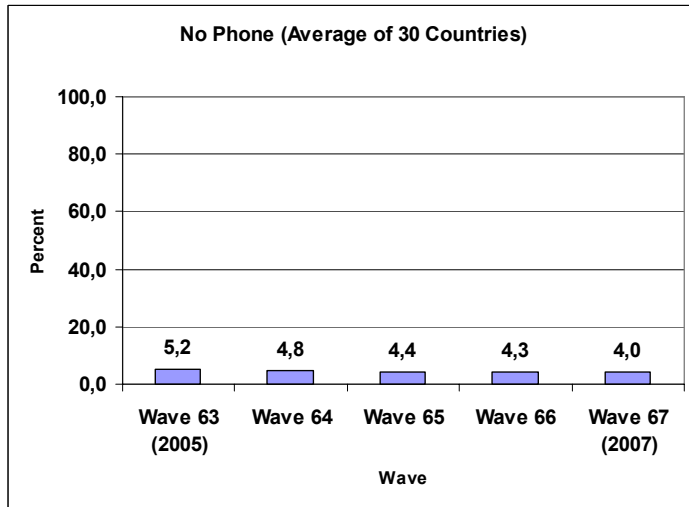
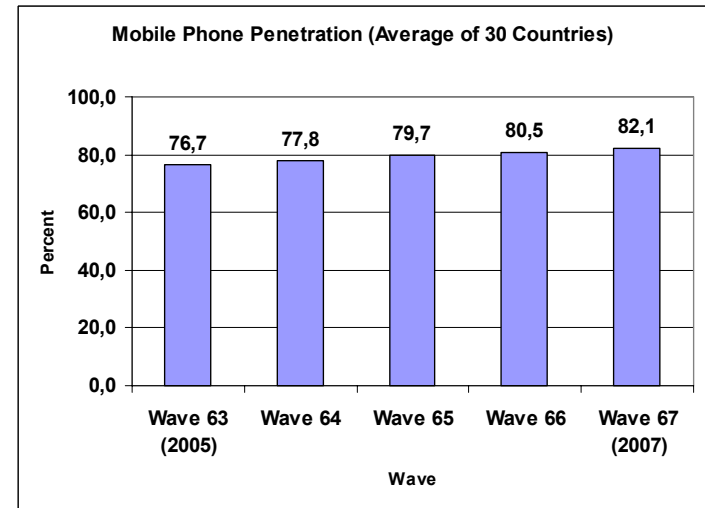
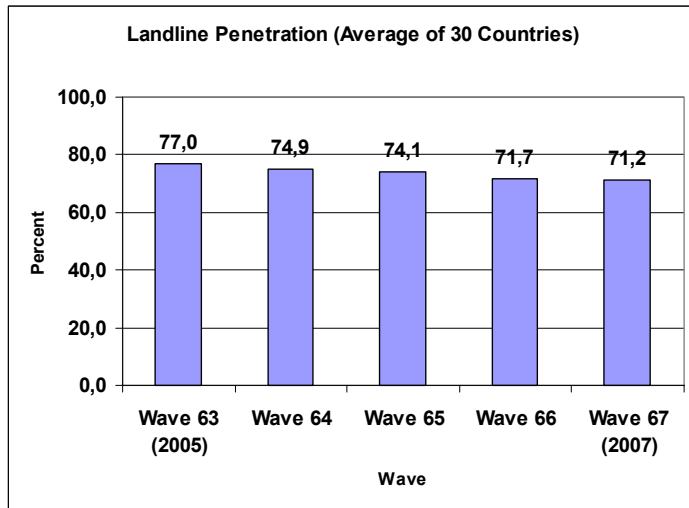
Effects of a dual frame sampling approach
on data quality in telephone surveys

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Outline

- Telephone penetration accross Europe
 - Growing mobile-only population
- Research problem
 - Coverage error
- Methods
 - Eurobarometer
- Results
 - Relative coverage bias for landline surveys
 - Relative coverage bias for dual frame surveys

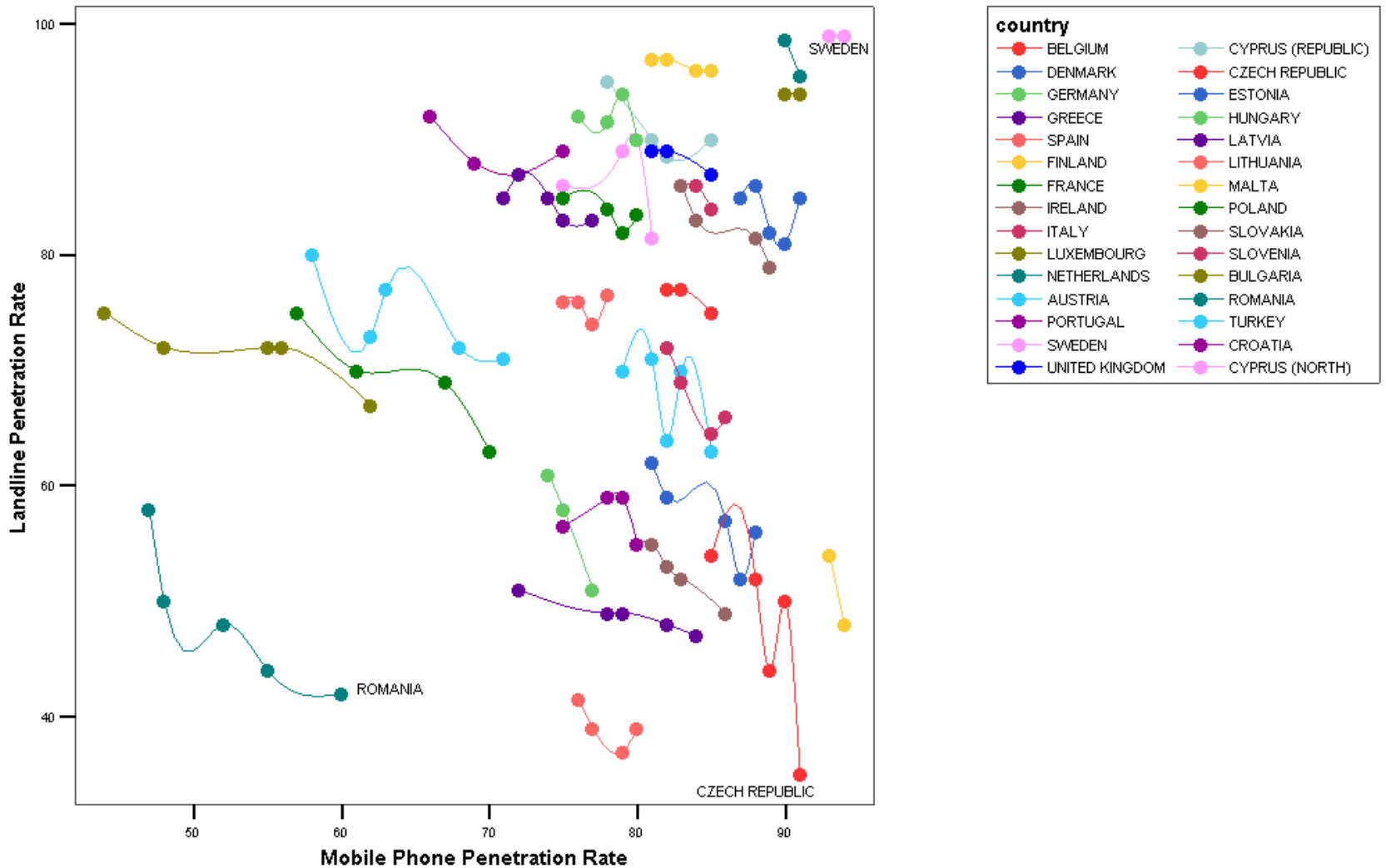
Telephone penetration across Europe



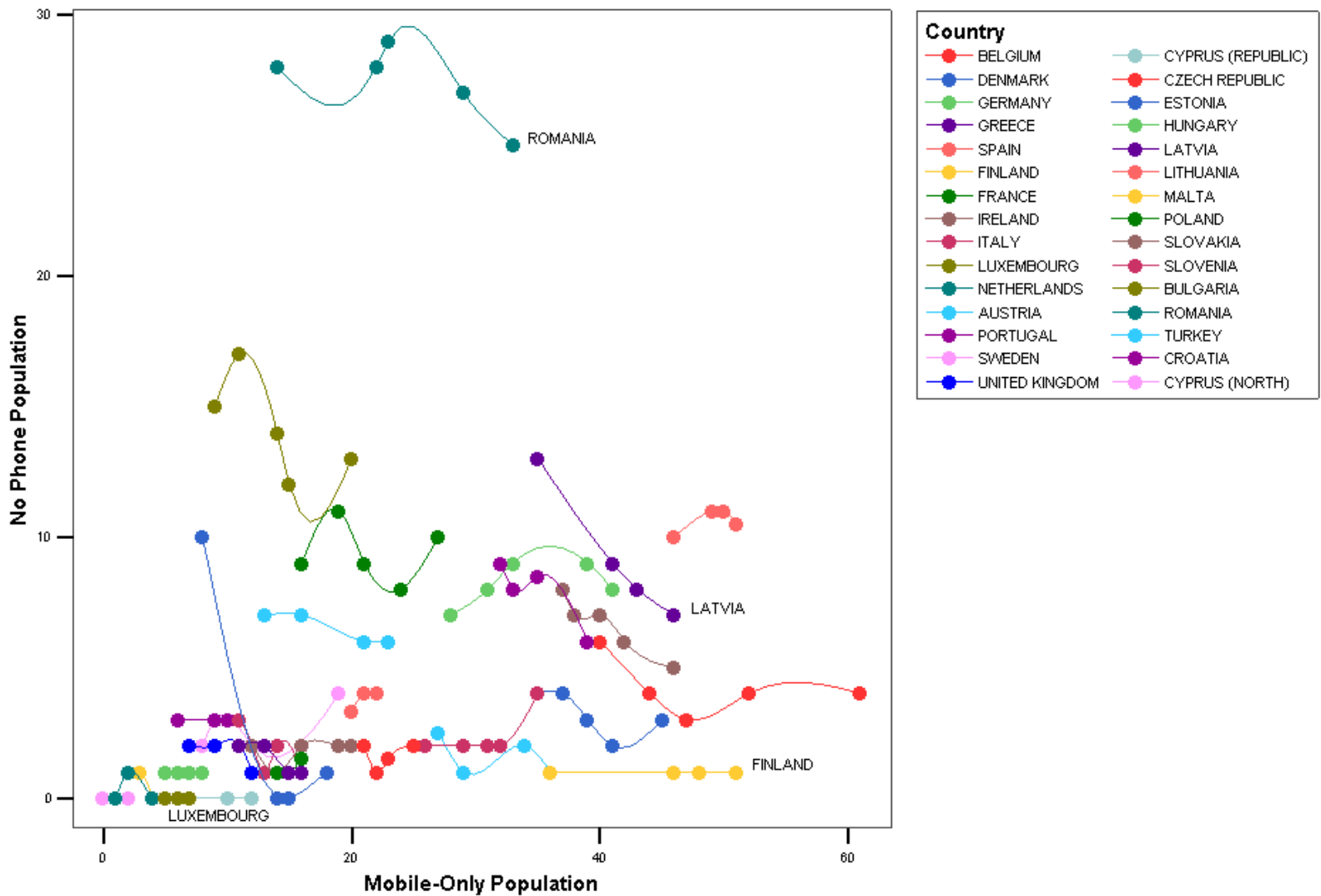
Telephone penetration across Europe

2007	IT	DE	FI	NL	SE	CZ	BG	RU
No Phone	2	1	1	0	0	4	13	25
Landline	66	90	48	96	99	35	67	42
Mobile	86	80	94	91	94	91	62	60
Mobile Only	32	8	51	4	1	61	20	33

Telephone penetration across Europe



Telephone penetration across Europe



■ Solutions

- Weighting of RDD landline samples
- Add-on samples of mobile-populations from an access panel
- Dual frame samples (landline and mobile phones)
- Mobile phone samples

Research problem

- What is the size of the relative coverage bias due to the mobile-only population in Europe?

Methods

- Study
 - Eurobarometer
 - Face-to-face survey
 - 30 European countries
- Sample
 - Area probability samples
 - N = 500 to 1,500 cases every 6 weeks
 - Waves are independently representative
 - N = 424,500 (2005-2007)
- Response rate
 - 30 to 70 percent
- Weighting
 - Design weights
 - Post stratification according to EUROSTAT population data

- Relative coverage bias
 - 7 socio-demographic variables

$$RCB = \frac{N_{nc}}{N_c} \cdot \frac{p_c - p_{nc}}{P}$$

- Sex, age, marital status, size of municipality, education, political orientation (left and right)
- Based on weighted data set

Relative coverage bias

Landline	Wave 63 (2005)	Wave 64	Wave 65	Wave 66	Wave 67 (2007)
right	.09	.05	.06	.06	.07
left	.07	.06	.04	.06	.07
size of municipality	.06	.06	.07	.08	.07
marital status	.07	.08	.08	.08	.08
Education	.09	.09	.09	.10	.10
Age	.08	.11	.10	.12	.11
Sex	.02	.02	.02	.03	.02
Total	.07	.07	.06	.07	.07

Results

	Model 0	Model 1
Gender (male)		-.26 ***
Age		.43 ***
Education		.13 *
Status (married)		.001
Size of town (rural)		.003
Political orient. (right)		-.01
No phone		.07 ***
Mobile only		.25 ***
-2 Log Likelihood	-911.12	-783.60
Level 2 variance	.09	.01
Level 1 variance	.28	.24

■ Problems

- Gender
- Age
- Education

■ Factors

- Mobile-only
- No phone

Results

M-Only	No Phone			Total
	0 to 5	6 to 10	10+	
0 to 10	.02	.06	.08	.03
11 to 20	.06	.04	.10	.07
21 to 30	.07	.05	.12	.07
31 to 40	.09	.07	.13	.09
41 to 50	.12	.14	.15	.13
51 +	.13	.14	.18	.14
Total	.06	.08	.12	.07

No Phone: $p < .05$, $\eta^2 = .06$; M-Only: $p < .001$, $\eta^2 = .21$

Summary

- Telephone coverage across Europe
 - Growing mobile-only population
 - Bigger increase of mobile population than decrease in landline coverage
 - Percentage no-phone is declining

- Relative coverage bias in landline survey
 - Large: age, education
 - Intermediate: size of municipality, political orientation, marital status
 - Small: sex

Summary

- Relative Coverage Bias
 - Mobile-only
 - No phone population

- Effects seem to counterbalance
 - People who are overrepresented due to “no phone” are missing due to “mobile-only”
 - E.g.
 - old people missing due to no “phone”
 - Young people missing due to “mobile-only”
 - Works only up to certain limits!

End

Thank you

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