Preferred citation style for this presentation

Kowald, Matthias (2010) The structure and spatial spread of egocentric leisure networks, *7th Conference on Applications of Social Network Analysis*, Zurich, September 2010.

The structure and spatial spread of egocentric leisure networks

M. Kowald

IVT
ETH
Zürich

September 2010

Institut für Verkehrsplanung und Transportsysteme
Institute for Transport Planning and Systems

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Motivation

Using the methods of SNA aims to:

- Approach and explain leisure traffic

Taking a snowball allows to:

- Address the structure of connected personal networks

Survey instrument

- Ego's characteristics

- Name generator
  - Leisure contacts
  - Emotionally important contacts

- Name interpreter

- Sociogram

Snowball Sampling

Challenges:

- Start with representative seeds

- Avoid selection bias

- React to homogenious clusters

- Correct the overrepresentation of ‚socializers' and underrepresentation of ‚isolates'


Respondents

Non-respondents

Ego-seeds   Iteration 1   Iteration 2
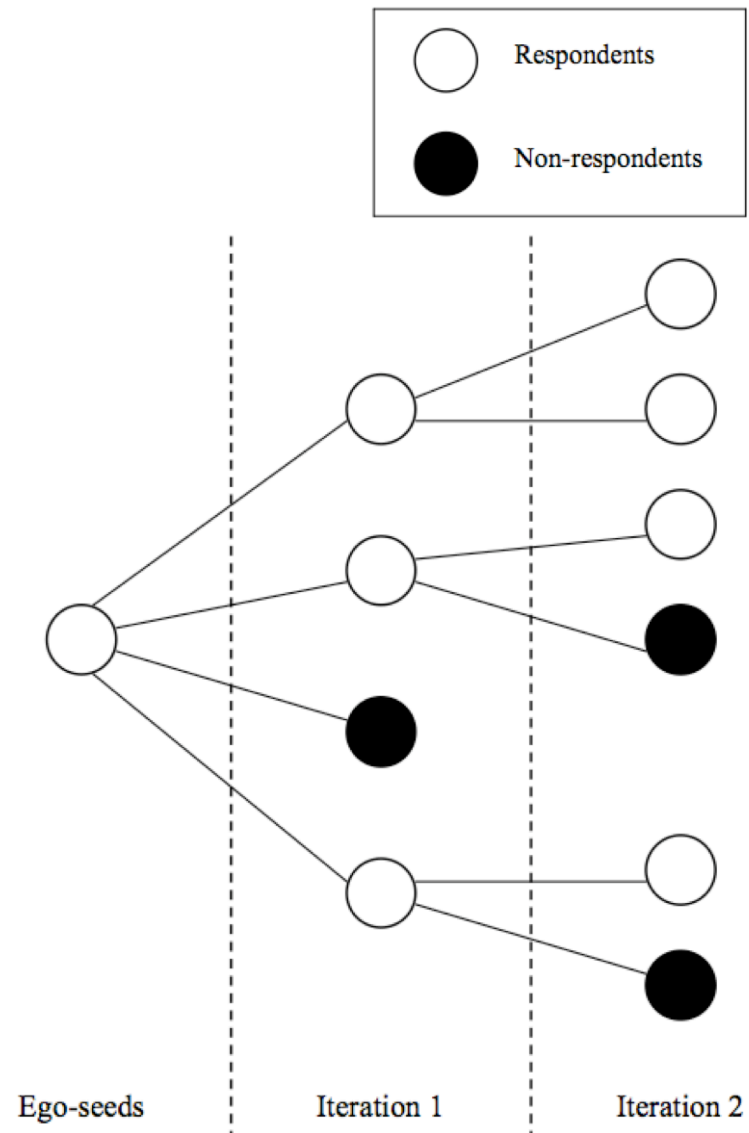
The fit between sample and target population

			All Egos (n = 468)	All Alters (n = 8668)	Microcensus Switzerland
[%]	Gender	- Male	39.29	42.59	48.70
		- Female	60.71	57.41	51.30
[%]	Civil status	- Single	12.84	20.90	29.90
		- Married	69.57	64.53	54.50
		- Divorced	9.11	8.31	7.60
		- Widowed	7.03	5.28	6.60
		- Living seperately	1.45	0.98	1.40
[CHF]	HH-Income	- < 8.000	40.77		73.00
		- 8.001 - 12.000	29.83		19.10
		- > 12.000	29.40		7.90
	Drivers license	- Available	89.89		80.70
		- Not available	10.11		19.30

Personal networks (of egos with sociogram)
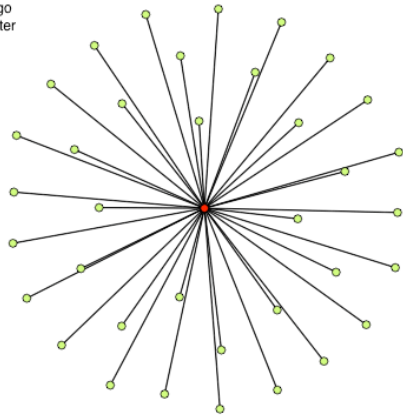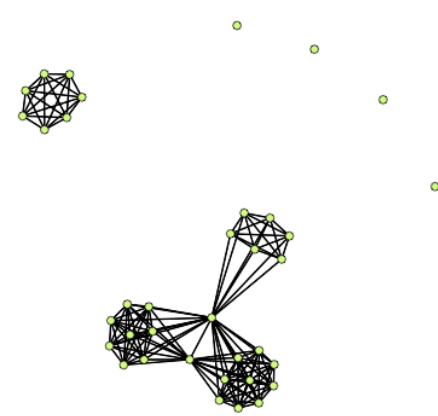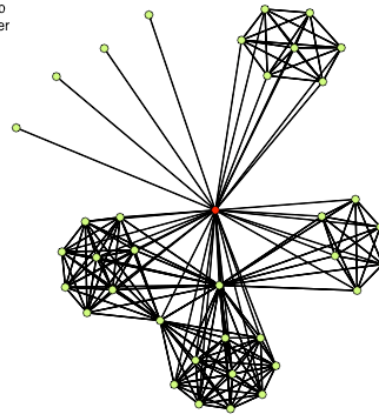
(N = 380)	Mean	Median	St.-Dev.	Range
Number of alters	21.11	20.00	10.07	38.00
Number of relations	46.17	23.00	63.18	398.00
Isolates	6.62	5.00	6.15	33.00
Cliques	4.00	3.00	2.57	19.00
Components (without isolates)	2.52	2.00	1.45	8.00

Binomial negative regression model of network size

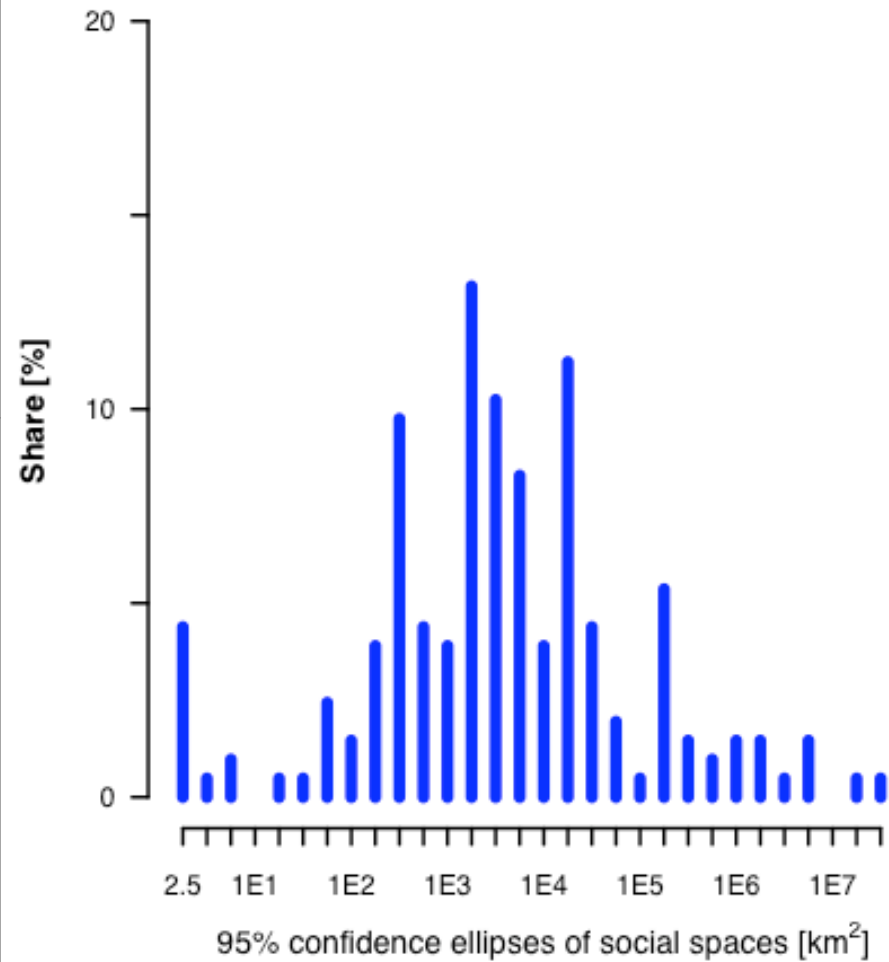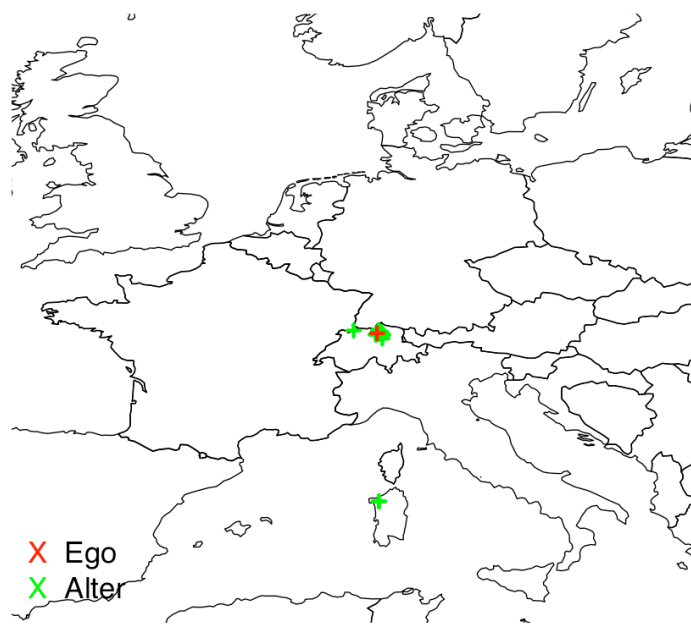| Variable	Beta	St.-Error	Sign.
Constant	0.819	0.520	0.115
Egos characteristics			
High household income (> 12.000CHF) [y/n]	0.131	0.042	0.002
Male & widowed [y/n]	-0.658	0.186	0.000
Number of persons in household []	0.042	0.015	0.005
Number of first residents in course of live []	0.015	0.007	0.027
Network topology			
Number of cliques in network []	0.072	0.008	0.000
Share of alters with ego's sex []	-0.040	0.008	0.000
Sqrt (Share of alters with ego's sex) []	0.557	0.131	0.000
Share of strong ties []	-0.015	0.002	0.000
Sqrt (Share of strong ties) []	0.084	0.023	0.000
Density	-0.806	0.278	0.004
(Density)^2	0.584	0.350	0.094
N	404		
Likelihood ratio	$\chi = 254.88$		0.000

The geographical spread of personal networks
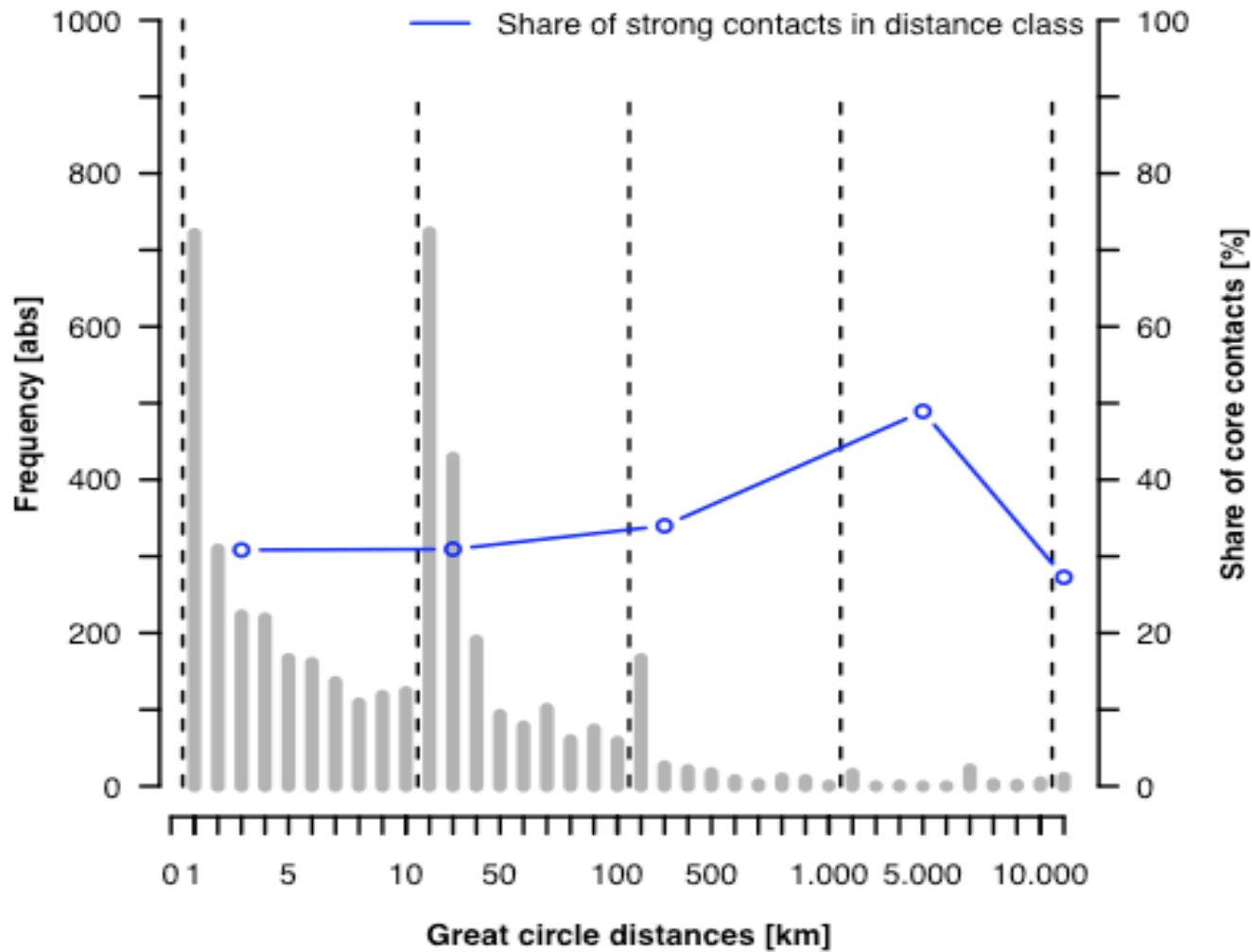
# Egos' contacts with alters: Modes and frequencies
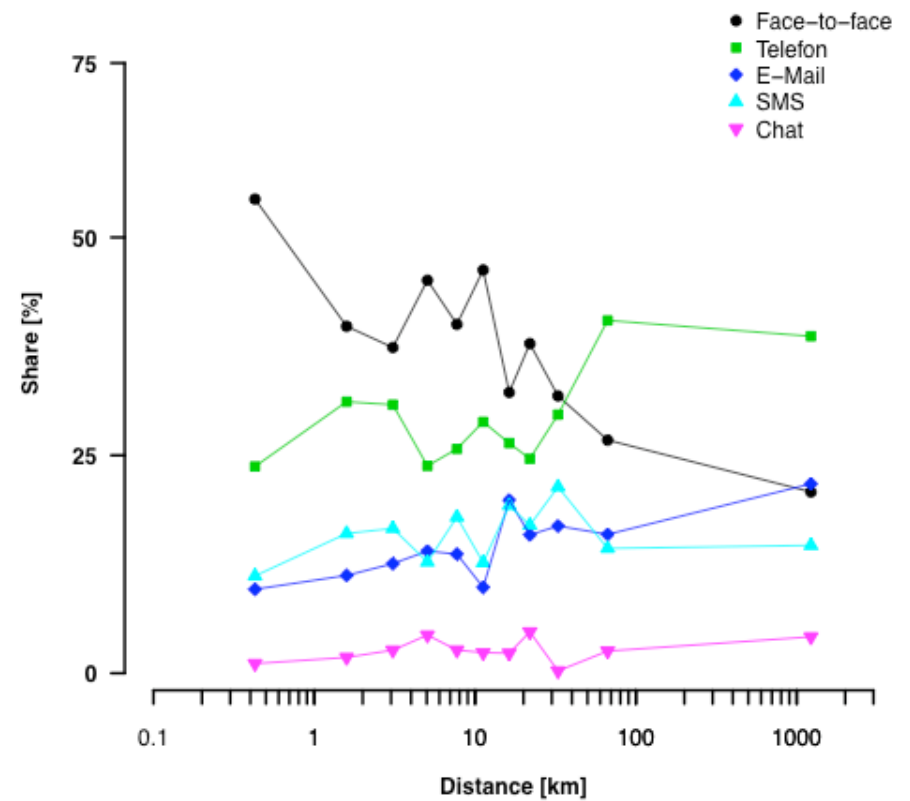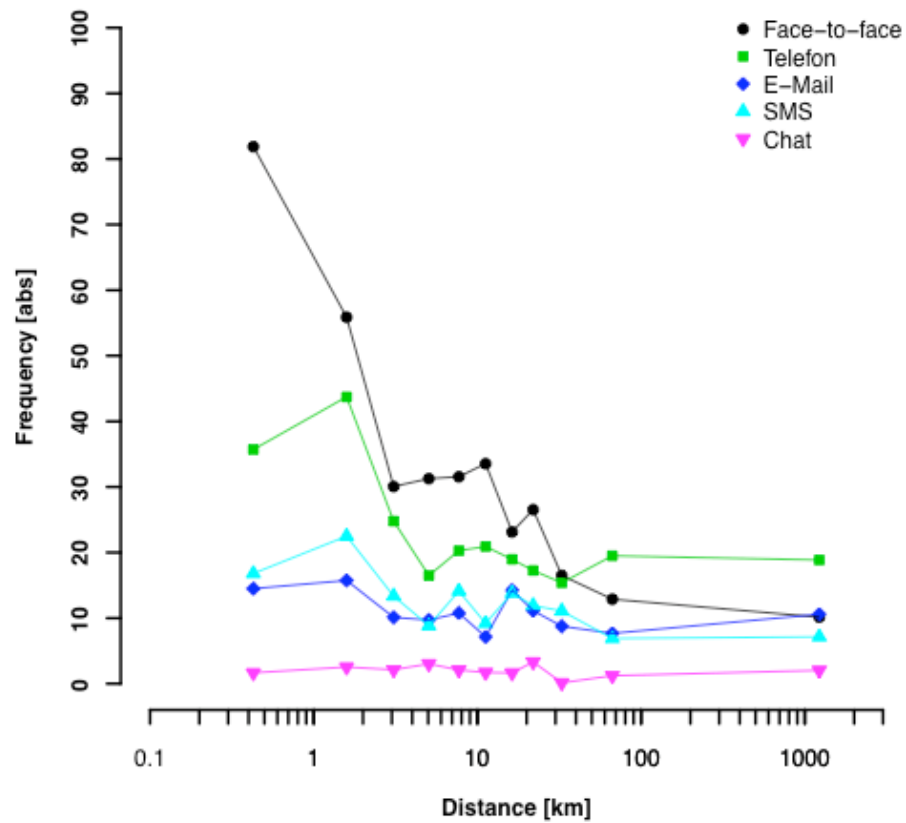
95% confidence ellipses of egos' social spaces

Linear regression model of social space ellipses' sizes

Variable	Beta	St.-Error	Sign.
Constant	7.534	0.676	0.000
Continuous variables			
Network size []	0.066	0.020	0.002
Share of alters with ego's civil status []	-0.018	0.008	0.022
Interaction effects			
Share of strong ties [] * High household income (> 12.000CHF) [y/n]	0.054	0.011	0.000
Number of isolates in network [] * High household income (> 12.000CHF) [y/n]	0.082	0.032	0.011
Number of education places in course of live [] * home worker/retiree [y/n]	0.148	0.054	0.007
Dummy variables			
Car sometimes available [y/n]	1.138	0.476	0.018
Ego between 41 and 60 years old [y/n]	-1.170	0.363	0.002
N	142		
Adjusted R^2	0.408		0.000

Behind egos' horizons: The connected 'snowball'-graph
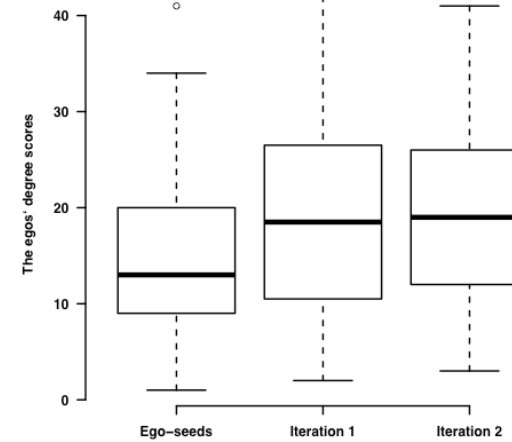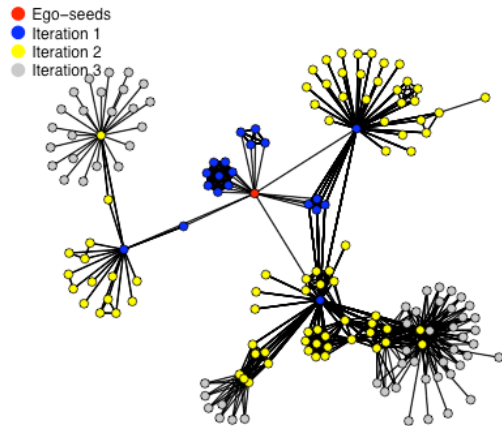
	Without sociogram	With sociogram
Vertices	2774	2774
Edges	2990	16454
Components	35	35
Density	0.001	0.004
Transitivity	0.013	0.614
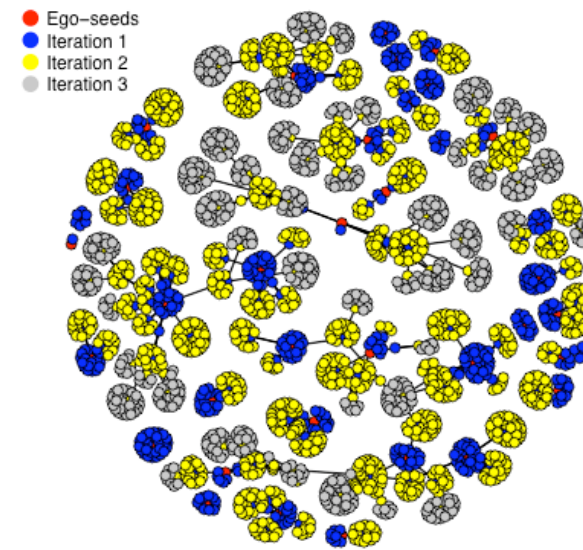
Outlook

Fieldwork:

- Small world experiment

- Finish field work by end of 2010

Analysis:

- Focus on snowball characteristics

- Improve regression models (structural equation models; multilevel models)

The validity of egos' information (n = 228)
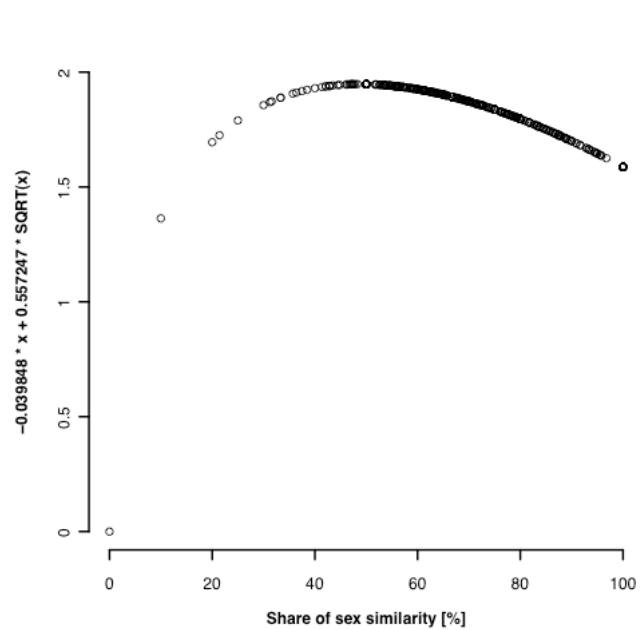
Ø Share of correct answers by ego

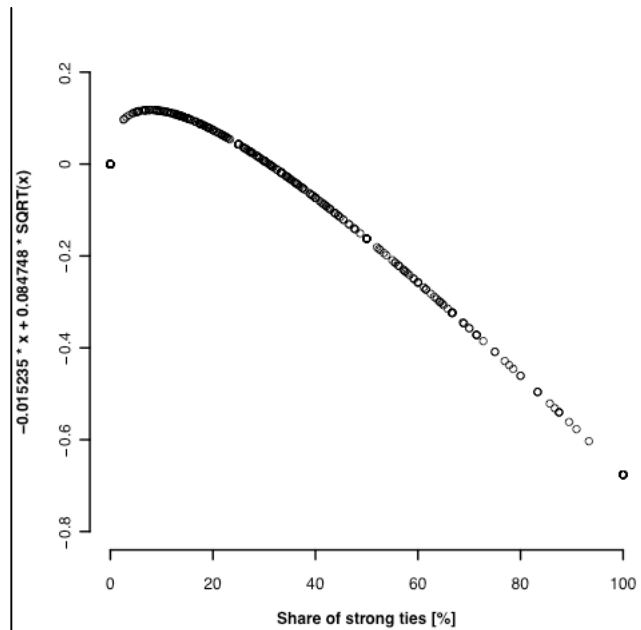|	
Sex	98.2%
Age +/- 5 years	97.2%
Civil status	95.9%
Citizenship	92.5%
Education	63.9%

Nonlinear effects on network size

Sex homophily

Strong ties

Density
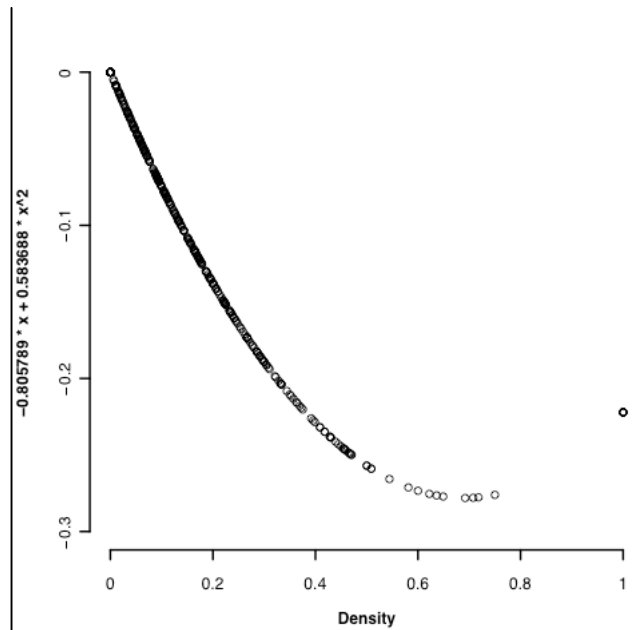
Response rate

	Ego-seeds		Iteration 1		Iteration 2		Whole sample	
	[abs]	[%]	[abs]	[%]	[abs]	[%]	[abs]	[%]
Sample size	275		568		1698		2541	
Reidentified	-		-		207		207	
Valid addresses	247	100.0	389	100.0	969	100.0	1605	100.0
Participation w. recruitment	40	16.2	105	27.0	244	25.2	389	24.2
Participantion wo. recruitment	-		14	3.6	25	2.6	39	2.4
Participation total	40	16.2	119	30.6	269	27.8	428	26.6

Survey data: Response rate and response burden
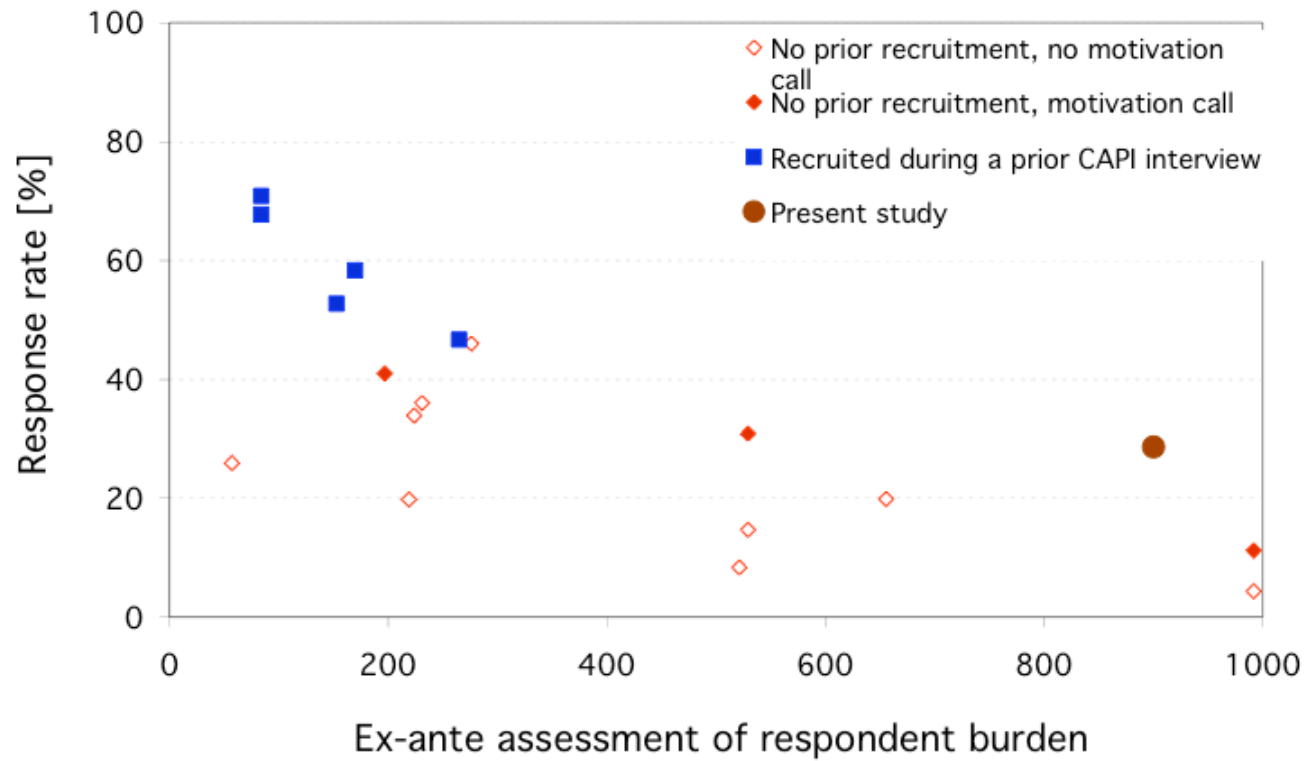
Protocol

Step	Ego-seeds	Iteration 1 and 2
Announcement letter	yes	yes
Recruitment call	yes	yes
Post card of Ego	-	if permitted
Interview (+ incentive)	only	-
Written instrument (+ incentive)	if requested	only
Diary survey	only participants	only participants