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The spatial spread of leisure networks: Experiences from a snowball survey

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Motivation

Transport planning tries to:

- Understand and model out-of-home movements of populations

Using the methods of SNA aims to:

- Approach and explain leisure traffic

Taking a snowball allows to:

- Address the global structure of connected personal networks

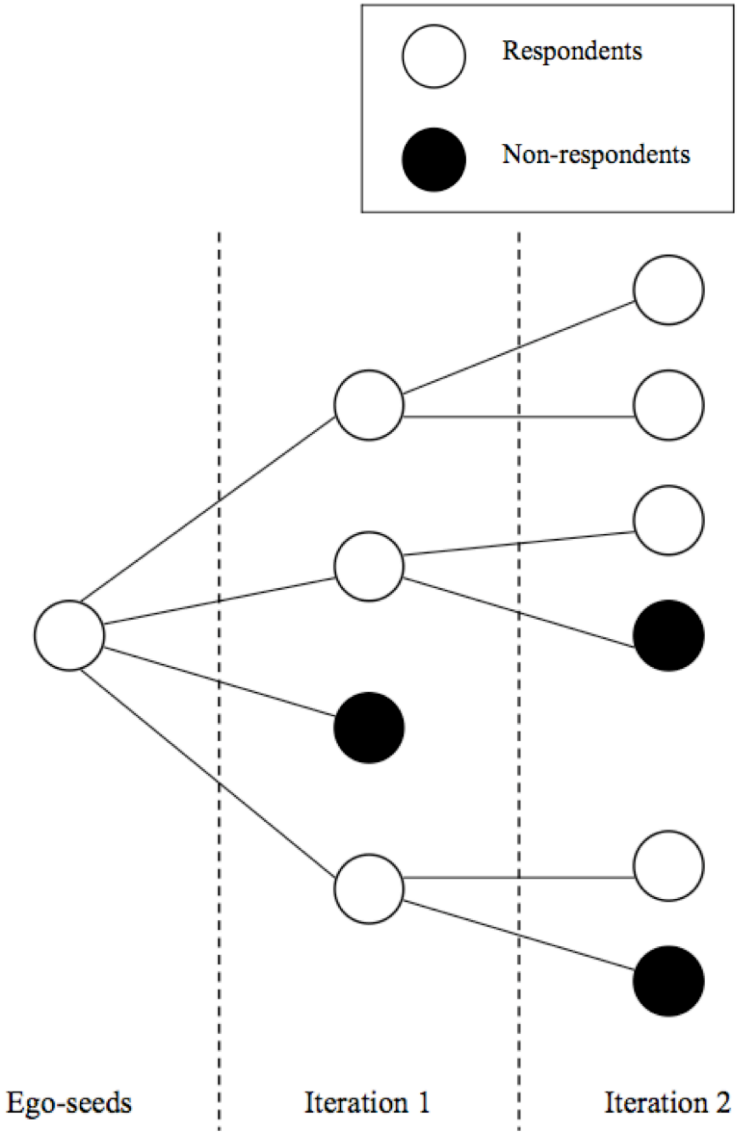
Survey instrument

- 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'



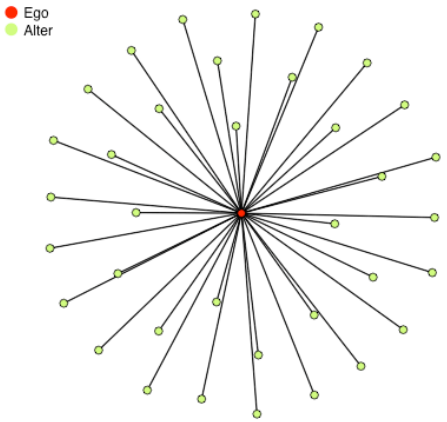
Response rate

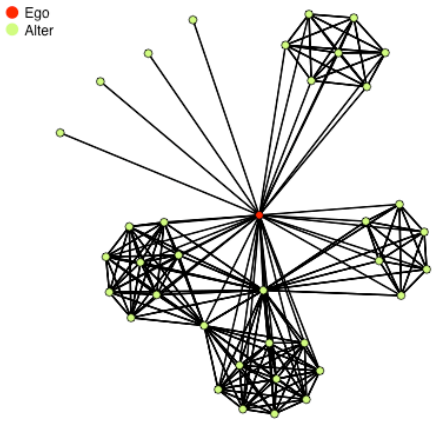
	Ego-seeds		Iteration 1		Iteration 2		Whole sample	
	[abs]	[%]	[abs]	[%]	[abs]	[%]	[abs]	[%]
Sample size	275		568		1462		2305	
Reidentified	-		-		201		201	
Valid addresses	247	100.0	377	100.0	855	100.0	1479	100.0
Participation w. recruitment	40	16.2	94	24.9	229	26.8	363	24.5
Participantion wo. recruitment	-		13	3.4	23	2.7	36	2.4
Participation total	40	16.2	107	28.3	252	29.5	399	26.9

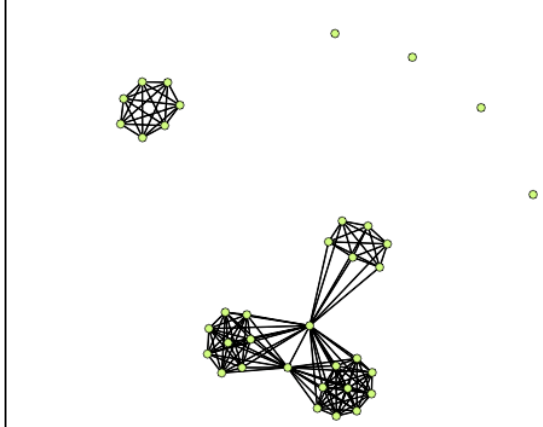
The fit between sample and target popultion

		All Seeds (n = 40)	Microcensus Canton Zurich	All Alters (n=7120)	Microcensus Switzerland
Gender [%]	- Male	30.77	48.80	42.78	48.70
	- Female	69.23	51.20	57.32	51.30
Civil status [%]	- Single	20.00	32.70	20.32	29.90
	- Married	55.00	50.30	65.02	54.50
	- Divorced	10.00	9.30	8.00	7.60
	- Widowed	15.00	6.40	5.56	6.60
	- Living seperately	0.00	1.40	1.10	1.40
Age [Ø years/class]	- 0 - 20	-	13.32	13.54	13.31
	- 21 - 40	31.57	31.51	33.36	31.41
	- 41 - 60	50.05	49.84	49.48	49.96
	- 61 - 80	72.17	69.28	68.50	69.37
	- 81 +	81.00	84.46	84.05	84.61

Personal networks (of egos with sociogram)





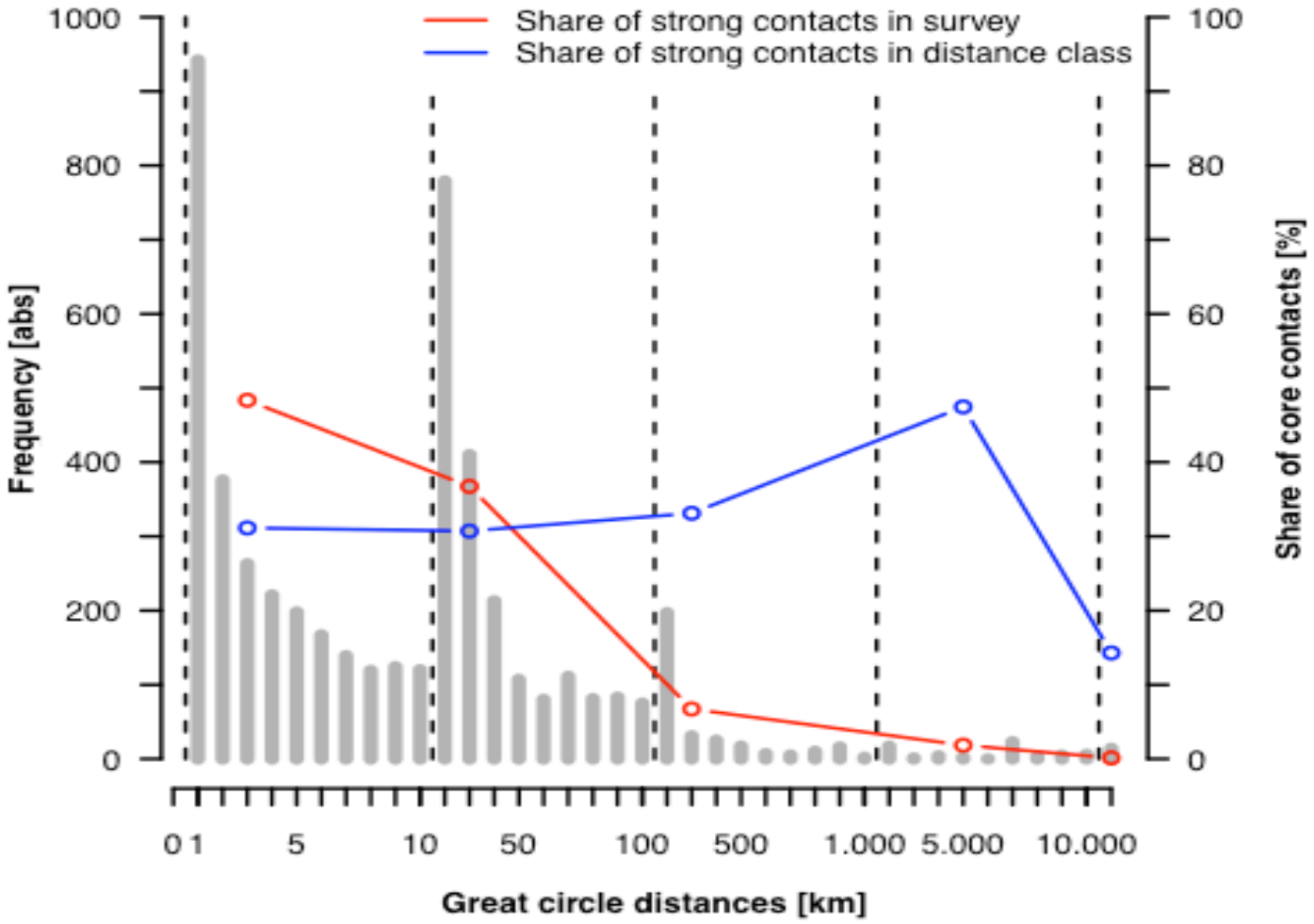


(N = 304)	Mean	Median	St.-Dev.	Range
Number of alters	20.48	19.00	9.80	36.00
Number of relations	43.32	22.50	59.71	398.00
Isolates	6.35	5.00	5.66	30.00
Cliques	3.98	3.00	2.63	19.00
Components (without isolates)	2.53	2.00	1.46	8.00

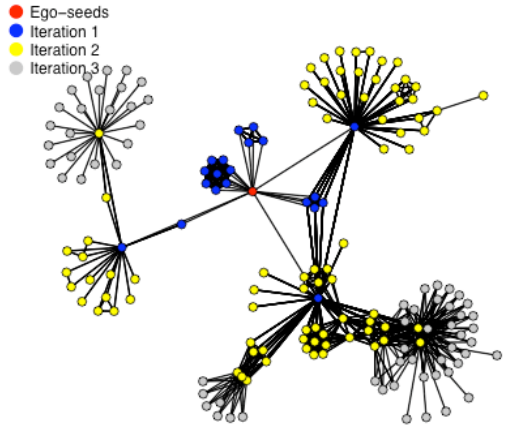
Binomial negative regression model of network size

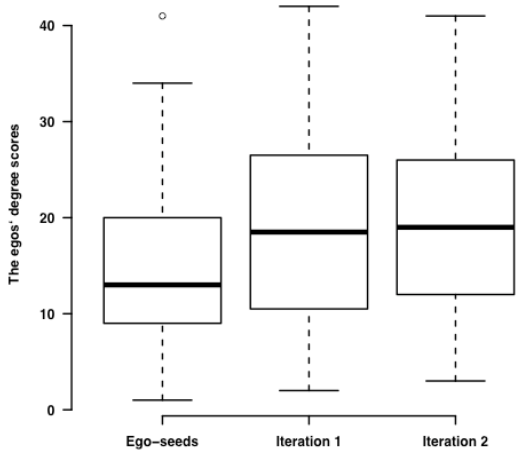
Variable	Beta	St.-Error	Sign.
Constant	2.535	0.063	0.000
Graduate [y/n]	0.110	0.051	0.032
High household income (> 12.000CHF) [y/n]	0.251	0.055	0.000
Work time (full time employed) [y/n]	-0.097	0.053	0.067
Number of education places in course of live []	0.024	0.008	0.004
Number of cliques []	0.085	0.010	0.000
Centralization []	-0.535	0.185	0.004
N	296		
Likelihood ratio	χ = 118.020	df = 2	0.000

The geographical spread of personal networks

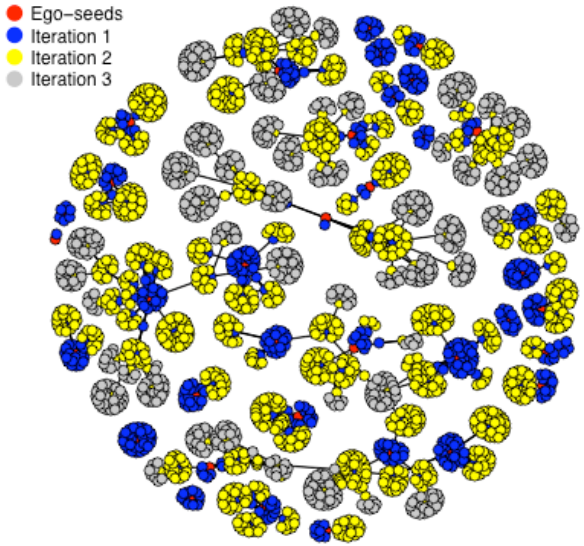


Behind egos' horizons: The connected 'snowball'-graph





	Without sociogram	With sociogram
Vertices	2774	2774
Edges	2990	16454
Components	35	35
Density	0.001	0.004
Transitivity	0.013	0.614



Outlook

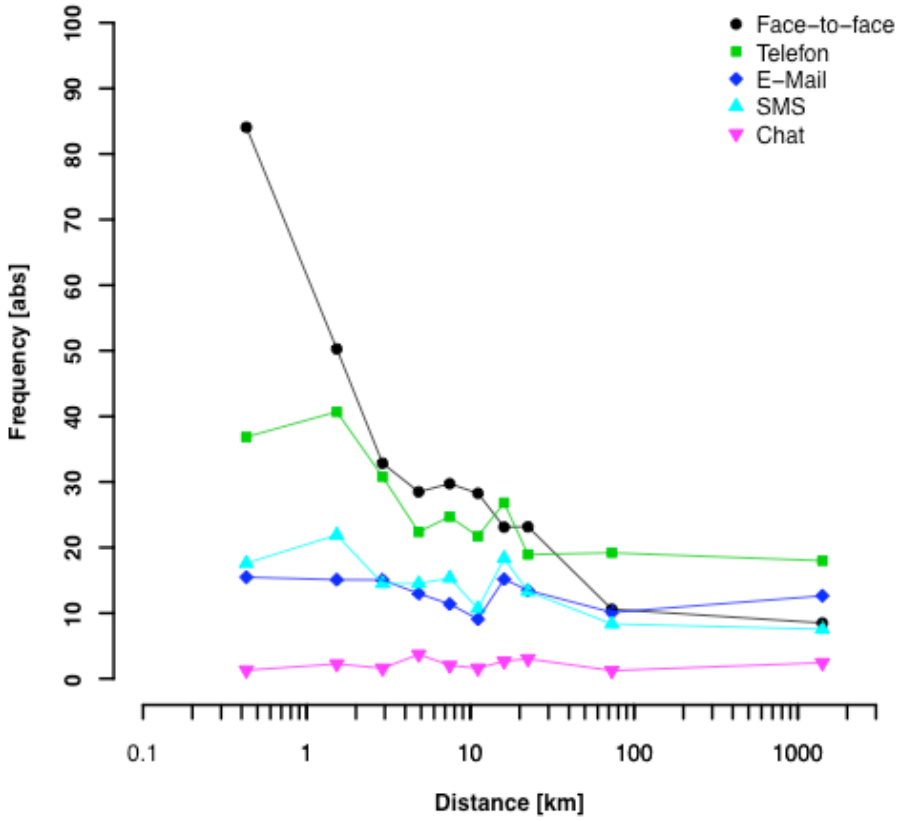
Fieldwork:

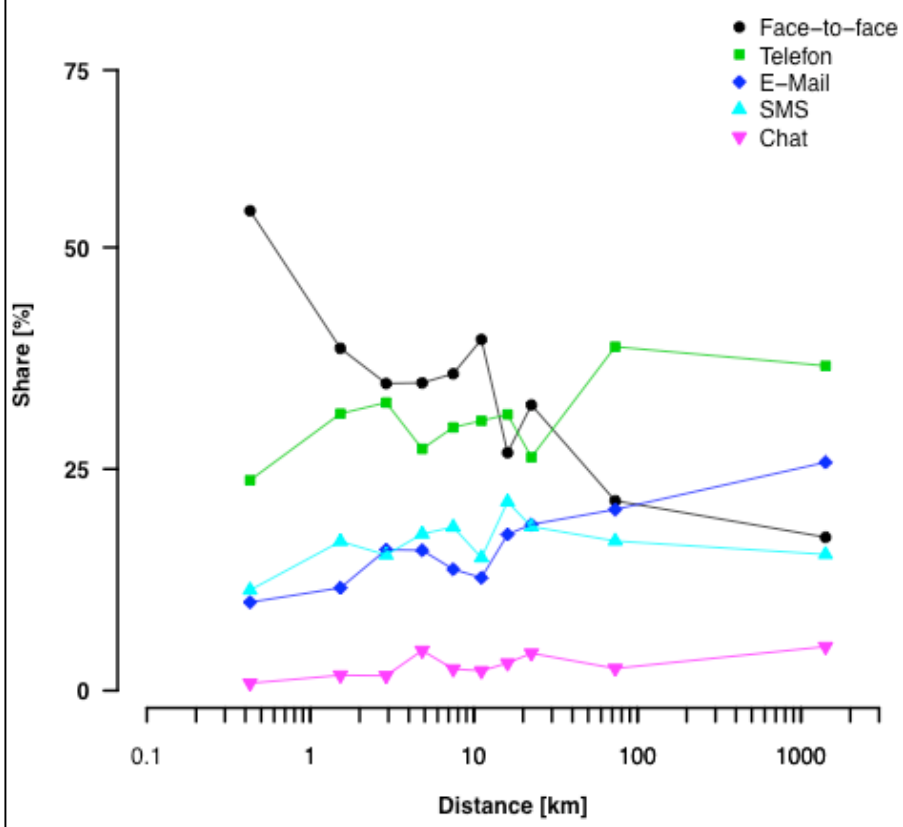
- Small world experiment
- Sub-sample 3

Analysis:

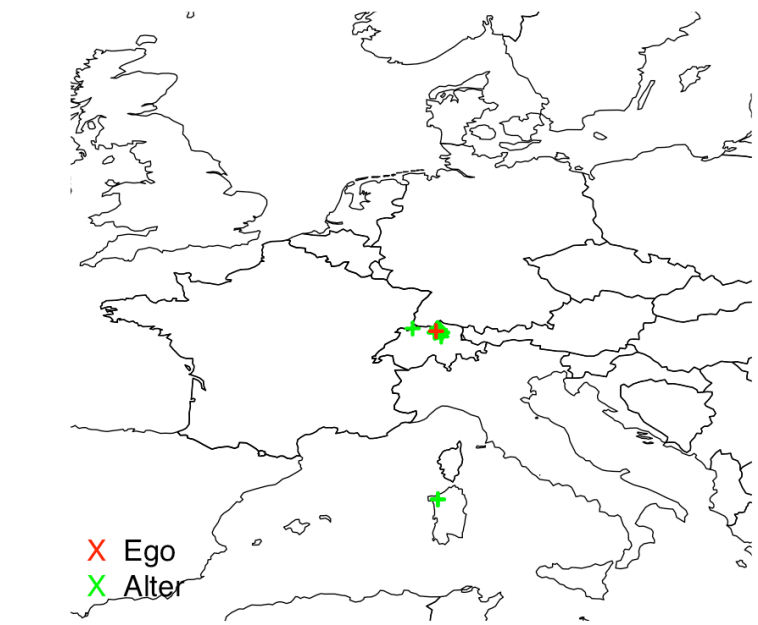
- Predict geographical distances between egos and alters
- Predict contact modes and -frequencies

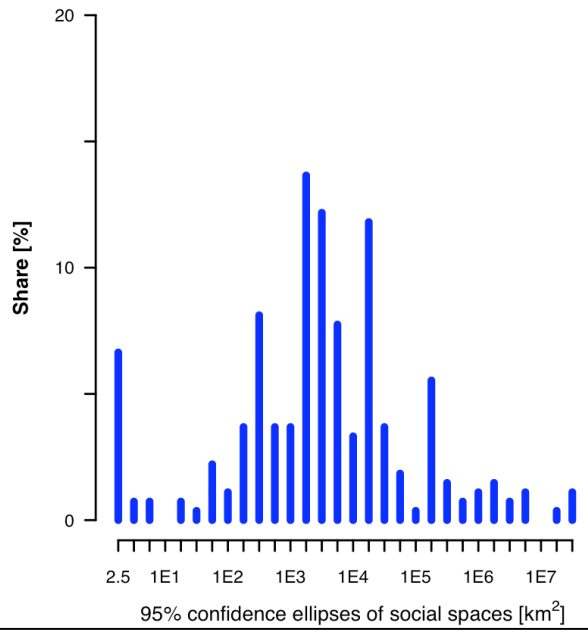
Egos' contacts with alters: Modes and frequencies

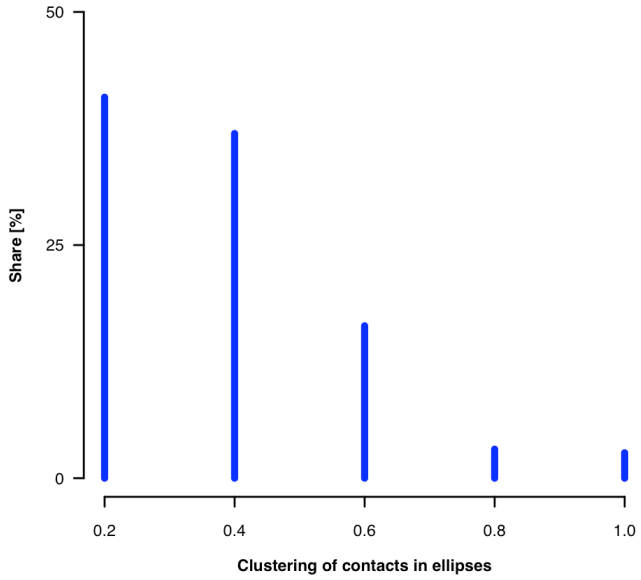




95% confidence ellipses of egos' social spaces







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

Linear regression of contact distances

Variable	Beta	St.-Error	Sign.
Constant	1.832	0.310	0.000
Alter 1. degree relative [y/n]	0.737	0.097	0.000
Alter other relative [y/n]	0.971	0.103	0.000
Ego retired [y/n]	0.347	0.078	0.000
Ego graduated [y/n]	0.425	0.069	0.000
Ego working full time [y/n]	-0.133	0.077	0.086
Ego GA [y/n]	0.164	0.083	0.048
Ego other adults in HH [y/n]	-0.837	0.301	0.005
Ego number 1. residents []	0.065	0.013	0.000
Ego network size []	0.011	0.004	0.006
N	3594		
Adjusted R^2	0.071		