Estimation of Seroprevalence, Rape, and Homelessness in the United States Using a Social Network Approach

Peter D. Killworth, Christopher McCarty, H. Russell Bernard, Gene Ann Shelley and Eugene C. Johnsen,

TABLE 1: The Subgroups Reported on By Respondents, the Mean Number in Each Subgroup Reported in Respondents' Active Networks, and the Size of Each Group in the United States

Subpopulation	Mean Number Known	Subpopulation Size (millions)
First name "Michael"	4.288	3.187
First name "Christina"	1.180	0.351
First name "Christopher"	1.649	1.255
First name "Jacqueline"	0.774	0.291
First name "James"	3.576	4.023
First name "Jennifer"	2.150	1.118
First name "Anthony"	1.536	0.874
First name "Kimberly"	1.449	0.642
First name "Robert"	4.049	3.811
First name "Stephanie"	1.192	0.510
First name "David"	3.128	2.865
First name "Nicole"	1.033	0.358
American Indian	2.677	2.0
Woman given birth last 12 months	3.720	4.0
Woman adopted a child in past 12 months	0.306	0.118
Man or woman widowed and under age	3.164	3.335
Person on kidney dialysis	0.420	0.17
Postal worker	2.310	0.81
Commercial pilot	0.649	0.534
Member of JAYCEES	1.504	0.19
Person with diabetes	3.401	6.5
Opened a business in past 12 months	1.125	0.63
Have twin brother or sister	1.999	5.3
Licensed gun dealer	0.545	0.240
HIV estimate	0.910	Our estimate
Came down with AIDS	0.469	0.207
Homeless	0.599	Our estimate
Women raped in past 12 months	0.220	Our estimate
Male incarceree in state or federal prison	1.342	0.892
Homicide victims in past 12 months	0.241	0.0274
Committed suicide in past 12 months	0.208	0.0302
Died in motor accident in past 12 months	0.480	0.0452

Table 1
Subpopulations used in the study

Subpopulation	Size of subpopulation in U.S. (millions)	Mean number known to respondents
Owns a swimming pool	6.2	4.76
Had a child in last 12 months	4.0	3.20
Plays golf	14.0	6.25
Member of the Jaycees	0.19	0.878
Has diabetes	6.5	2.43
Is out of work and looking for a job	9.4	2.85
Is an American Indian	2.0	1.55
Adopted a child	0.69	1.77
Plays tennis	11.0	4.06
Member of the YMCA or YWCA	1.4	1.44
Has multiple sclerosis	0.30	0.59
Opened a business in last 12 months	0.63	0.83
Is Islamic	0.90	0.96
Has family income > $200,000 per year	0.84	3.42
Goes bowling	25.0	4.62
Has a Diner's Club card	1.3	1.58
Is on kidney dialysis	0.17	0.48
Bought a house in last 12 months	8.2	1.68
Voted for Perot in 1992 election	20.0	3.33
Has a twin brother/sister	5.3	1.57
Goes fishing	37.0	7.86
Was born in a foreign country	22.0	4.76
Pilots a plane	0.57	2.06
Is widowed and under 65 years	3.3	2.83
Tested positive for HIV	??	0.63
Came down with AIDS	0.16	0.56

Notes: the last two subpopulations were asked of all respondents; all other subpopulations were asked in the groups of six as indicated.

Sources for subpopulation estimates: multiple sclerosis, National Multiple Sclerosis Society (1992); Islamic faith, verbal communication from the Islamic Information Resource Institute, San Diego; twins, Vital and Health Statistics (1992); pilots, U.S. Civil Airmen Statistics (1993); swimming pools, NSPI Market Research and Statistics Committee (1991); Jaycees, verbal communication from Florida headquarters of the Jaycees; YM/YWCA, verbal communication from local chapter of the YM/YWCA; Diner's Club, verbal communication from the national offices of Diner's Club, Inc.; sports, National Sporting Goods Association (1992); other subpopulations, widely available data, U.S. Chamber of Commerce, Statistical Abstracts of the United States (1993), etc.

Comparing Two Methods for Estimating Network Size

Christopher McCarty, Peter D. Killworth, H. Russell Bernard, Eugene C. Johnsen, and Gene A. Shelley

Table 1. Average Number of People Known for Subpopulations and Relation Types
(combined surveys with a total of 1,370 respondents)

29 Populations for Scale-up Method		16 Relation Types for Summation Method		3 Populations to be Estimated	
Michael	4.8	Immediate family	3.5	HIV positive	0.7
Christina	1.3	Other birth family	24.0	Women raped in past 12 months	0.2
Christopher	1.8	Family of spouse or significant other	12.3	Homeless	0.7
Jacqueline	0.7	Coworkers	35.6		
James	3.4	People at work but don't work with directly	62.1		
Jennifer	2.3	Best friends/confidantes	4.3		
Anthony	1.7	People known through hobbies/recreation	12.3		
Kimberly	1.4	People from religious organization	43.4		
Robert	4.1	People from other organization	17.1		
Stephanie	1.3	School relations	18.3		
David	3.5	Neighbors	12.8		
Nicole	1.1	Just friends	22.6		
Native Americans	3.5	People known through others	22.6		
Gave birth in past 12 months	3.6	Childhood relations	6.8		
		People who provide a service	7.7		
Women who adopted a child in past 12 months	0.3	Other	3.9		
Widow(er) under 65 years old	3.2				
On kidney dialysis	0.6				
Postal worker	2.2				
Commercial pilot	0.7				
Member of Jaycees	1.1				
Diabetic	3.3				
Opened a business in past 12 months	1.1				
Have a twin brother or sister	2.0				
Licensed gun dealer	0.5				
Came down with AIDS	0.4				
Males in state or federal prison	1.0				
Homicide victim in past 12 months	0.2				
Committed suicide in past 12 months	0.2				
Died in auto accident in past 12 months	0.5				

Question order and interviewer effects in CATI scale-up surveys
Silvia Snidero, Federica Zobec, Paola Berchialla, Roberto Corradetti, Dario Gregori
Injuries to Children Research Group Working paper (01/2008)

Id	Subpopulations of known size	Absolute size in thousands
	Low sensitive questions	
1	Bought a motorcycle	409
2	Own a Mercedes car	956
3	Competitive athletes members of FIDAL	127
4	Competitive basket players members of FIP	169
5	Families with 5 or more components	1635
6	People went in business during 2004	426
7	Families with 3 or more children	1276
8	People 100 or more years old	6
9	People doing a temporary job	119
10	People working in hotels and restaurants	859
11	People sentenced for driving under the influence of alcohol in 2004	426
12	Women had a child in 2004	528
13	People bought a new car	2249
14	People owing a BMW car	630
15	People owing a car with gas or methane	1356
16	Teachers	707
17	Teachers of primary school	236
18	People volunteer in non-profit associations	3481
19	Families with 2 children	4436
20	People with a post graduated speciality (master, medical specialization, etc.) or a PhD	644
	High sensitive questions	
21	Children adopted in 2004	6
22	People had a heart transplantation in 2004	0.3
23	People had a kidney transplantation in 2004	1.7
24	People committed suicide in 2004	3
25	People dead for a cancer in 2004	164
26	People currently detained in prison	57
27	People killed in 2004	0.7
28	People reported a rape in 2004	2
29	Widows younger than 60 years	506
30	Families with only one parent living alone with children	2101
31	People voted for Casa delle Libertà (Italian right party) in 2001 elections	18300
32	People voted for Rifondazione Comunista (Italian left party) in 2004 elections	1972
33	People reported a robbery	1303
	Target questions	
34	How many children do you know that had an injury due to the ingestion of a foreign body?	Unknown
35	Of those, how many children went to the emergency service or were hospitalized?	Unknown
36	Of those, how many children ingested a toy?	Unknown

Scale-up estimators in CATI surveys for estimating the number of foreign body injuries in the aero-digestive tract in children
Silvia Snidero, Federica Zobec, Paola Berchialla, Dario Gregori
Injuries to Children Research Group Working paper (02/2008)

Id	Subpopulations of known size	Absolute size in thousands	Id	Subpopulations of known size	Absolute size in thousands
1	Bought a motorcycle	409	18	People committed suicide in 2004	3
2	Own a Mercedes car	956	19	People dead for a cancer in 2004	164
3	Competitive athletes members of FIDAL	127	20	People currently detained in prison	57
4	Competitive basket players members of FIP	169	21	People bought a new car	2249
5	Families with 5 or more components	1635	22	People owing a BMW car	630
6	People went in business during 2004	426	23	People owing a car with gas or methane	1356
7	Families with 3 or more children	1276	24	Teachers	707
8	People 100 or more years old	6	25	Teachers of primary school	236
9	People doing a temporary job	119	26	People volunteer in non-profit associations	3481
10	People working in hotels and restaurants	859	27	People with a specialization or a PhD	644
11	People sentenced for driving under the influence of alcohol in 2004	426	28	Widows younger than 60 years	506
12	Children adopted in 2004	6	29	Families with only one parent living alone with children	2101
13	People had a heart transplantation in 2004	0.3	30	Families with 2 children	4436
14	People had a kidney transplantation in 2004	1.7	31	People voted for Casa delle Libertà in 2001 elections	18300
15	Women had a child in 2004	528	32	People voted for Rifondazione Comunista in 2004 elections	1972
16	People killed in 2004	0.7	33	People reported a robbery	1303
17	People reported a rape in 2004	2			

Table 1 Subpopulation of known size used to estimate the respondents' social network sizes

Estimating the Size of Populations with High Risk for HIV Using the Network Scale-up Method
Volodymyr Paniotto, Tetyana Petrenko, Volodymyr Kupriyanov, Olha Pakhok
Analytical Report, Kiev International Institute of Sociology: Ukraine (April 2009)

Group	Estimated number	Statistics	Estimate/ statistics
Men aged 20-30	4651463	4 088 438	1,14
Men aged 15-17	2096100	935 153	2,24
Men above 70	1258531	1 328 606	0,95
Women aged 20-30	3857891	3 966 956	0,97
Women aged 15-17	1803648	889 443	2,03
Women above 70	1649871	2 993 846	0,55
Children (boys and girls) aged 10-13	1534735	1 869 098	0,82
Moldavians	122216	258 619	0,47
Romanians	75999	150 989	0,50
Poles	284714	144 130	1,98
Jews	427085	104 186	4,10
Romany	236681	47 587	4,97
1st group invalids	247251	278 195	0,89
Doctors of any specialty	1161290	222 884	5,21
People who died in 2007	463337	762 877	0,61
Men named Pavlo	332437	323 863	1,03
Men who served sentences in places of imprisonment in 2007	111936	108 511	1,03
Men who officially divorced in 2007	113544	178 364	0,64
Women who gave birth to a child in 2007	288706	472 657	0,61
Doctors and Candidates of Science who received a scientific degree in Ukraine over the last 15 years	141725	69 471	2,04
Nurse women, nurse men, aid-men and aid-women	736444	487 148	1,51
Militiamen	523048	273 200	1,91
			1,65

Table 2
Subpopulations of known size used for estimating the social network of respondents

	Subpopulations	Absolute size
1	Maria	29326
2	Anna	13489
3	Rosa	8184
4	Giuseppina	8108
5	Angela	8033
6	Giovanna	7654
7	Giuseppe	59865
8	Antonio	40996
9	Giovanni	37738
10	Francesco	32433
11	Mario	27508
12	Luigi	27356
13	Graduates in physical education	3715
14	Women with one child	180870
15	Houses with more than six inhabitants	137671
16	People living in rented houses	1305153
17	Self employed	325040
18	Families with seven or more components	40019
19	Women with three or more children	32897
20	Graduated at school of arts	3544
21	Sport trainers	558
22	Farmers	73177
23	Architects	3415
24	People living in assistance institute	24240
25	Unlettered	37253