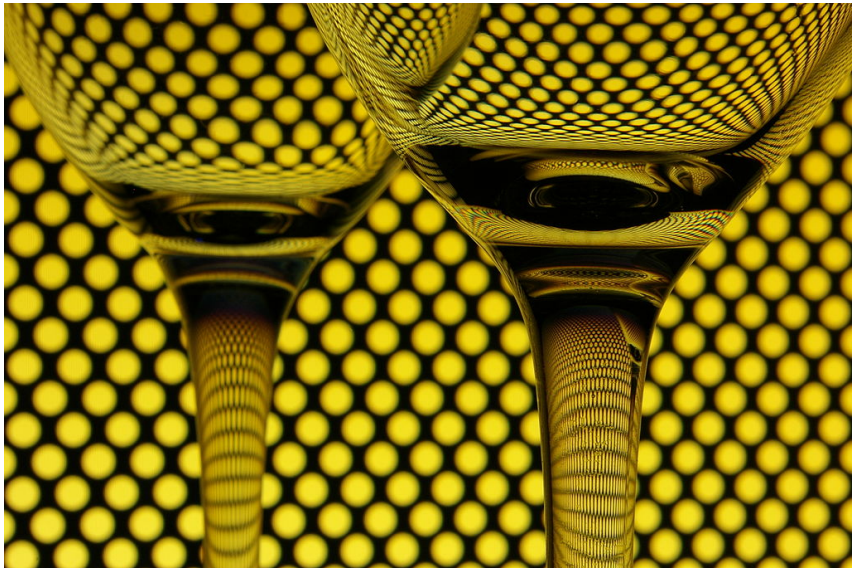
Lecture 23: Who knows what about who?

Matthew J. Salganik

Sociology 204: Social Networks
Princeton University



https://commons.wikimedia.org/wiki/File:Uniformity.jpg

- your perception of the social world is distorted

- your perception of the social world is distorted
- your perception of your own social world is distorted

- your perception of the social world is distorted
- your perception of your own social world is distorted

Why do we care?

- important for scale-up method

The game of contacts: Estimating the social visibility of groups☆

Matthew J. Salganik[a,*], Maeve B. Mello[b], Alexandre H. Abdo[c], Neilane Bertoni[b], Dimitri Fazito[d], Francisco I. Bastos[b,e]

[a] *Department of Sociology and Office of Population Research, Princeton University, Princeton, NJ, USA*
[b] *Laboratory on Health Information, Oswaldo Cruz Foundation, Rio de Janeiro, Brazil*
[c] *Department of Physics, University of São Paulo, São Paulo, Brazil*
[d] *Department of Demography, Center of Development and Regional Planning, Federal University of Minas Gerais, Belo Horizonte, Brazil*
[e] *Fulbright/Capes Visiting Scholar, Brown University, Providence, RI, USA*

- Hidden population: Heavy drug users, people who had used illegal drugs other than marijuana more than 25 times in the past 6 months
- Location: Curitiba, Brazil (1.8 million people)
- Funded by UNAIDS and Brazilian Ministry of Health

Map source: Wikipedia

We want to learn about:

- true positive rate (probability that a randomly chosen alter of a randomly chosen ego in the hidden population is aware that ego is in the hidden population)

Interviewer shuffles a deck of 24 playing cards

A card is pulled from the deck and the respondent is asked:

How many people do you know named [Amadeu]?

The respondent will pick up this many blocks and place them:

Record answers; clear board; repeated for 24 names.

	Alter uses drugs	Alter does not use drugs
Alter aware that ego uses drugs	2082	1156
Alter not aware that ego uses drugs	225	710

- Overall

$$\hat{\tau} = \frac{\text{total alters aware}}{\text{total alters}} = \frac{3,238}{4,173} = 0.78$$

	Alter uses drugs	Alter does not use drugs
Alter aware that ego uses drugs	2082	1156
Alter not aware that ego uses drugs	225	710

- Overall

$$\hat{\tau} = \frac{\text{total alters aware}}{\text{total alters}} = \frac{3,238}{4,173} = 0.78$$

- Alter uses drugs

$$\hat{\tau} = \frac{\text{total alters aware}}{\text{total alters}} = \frac{2,082}{2,307} = 0.90$$

	Alter uses drugs	Alter does not use drugs
Alter aware that ego uses drugs	2082	1156
Alter not aware that ego uses drugs	225	710

- Overall

$$\hat{\tau} = \frac{\text{total alters aware}}{\text{total alters}} = \frac{3,238}{4,173} = 0.78$$

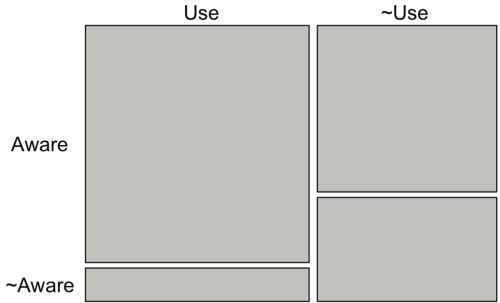
- Alter uses drugs

$$\hat{\tau} = \frac{\text{total alters aware}}{\text{total alters}} = \frac{2,082}{2,307} = 0.90$$

- Alter does not use drugs

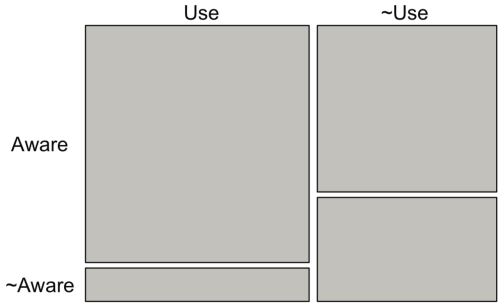
$$\hat{\tau} = \frac{\text{total alters aware}}{\text{total alters}} = \frac{1,156}{1,866} = 0.62$$

Estimates slightly different from paper because estimates in paper include sampling weights (which are neglected here for simplicity)



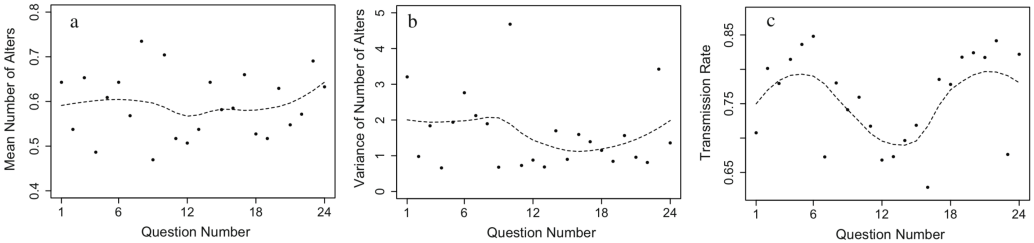
Evidence of:

- selective exposure

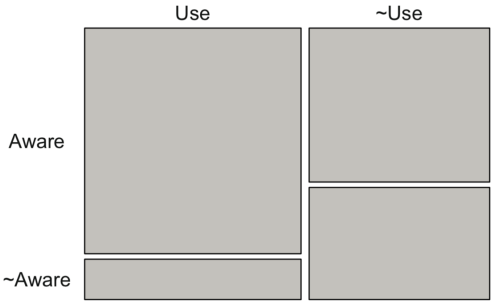


Evidence of:

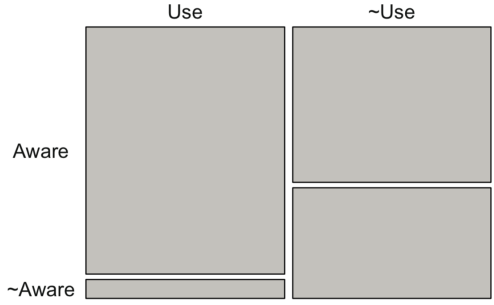
- selective exposure
- selective disclosure



- No strong evidence of question order effects



(a) Interviewer A



(b) Interviewer B

- No strong interviewer effects

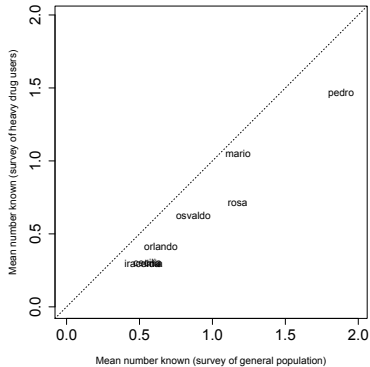
We want to learn about:

- true positive rate (probability that a randomly chosen alter of a randomly chosen ego in the hidden population is aware that ego is in the hidden population)

We want to learn about:

- true positive rate (probability that a randomly chosen alter of a randomly chosen ego in the hidden population is aware that ego is in the hidden population)

Bonus: we can combine this data with data from the general population to learn about the degree ratio (the difference in average network size between the hidden population and general population)



Degree ratio is 0.69. People in the hidden population have smaller personal networks that people in the general population

$$\hat{\bar{v}}_{H,F} = \hat{\bar{d}}_{F,F} \times \underbrace{\frac{\widehat{\bar{d}_{H,F}}}{\bar{d}_{F,F}}}_{\text{degree ratio } (\delta)} \times \underbrace{\frac{\widehat{\bar{v}_{H,F}}}{\bar{d}_{H,F}}}_{\text{true positive rate } (\tau)}$$

$$\hat{\bar{v}}_{H,F} = 184 \times 0.69 \times 0.77 \approx 100$$

Average visible degree of the hidden population is very different from the average degree of the population

- your perception of the social world is distorted
- your perception of your own social world is distorted

- your perception of the social world is distorted
- your perception of your own social world is distorted

Why do we care?

- important for scale-up method

- your perception of the social world is distorted
- your perception of your own social world is distorted

Why do we care?

- important for scale-up method
- interesting

- your perception of the social world is distorted
- your perception of your own social world is distorted

Why do we care?

- important for scale-up method
- interesting
- impacts social influence

- your perception of the social world is distorted
- your perception of your own social world is distorted

Why do we care?

- important for scale-up method
- interesting
- impacts social influence
- potentially creates social stasis

sociological science

Secrets and Misperceptions: The Creation of Self-Fulfilling Illusions

Sarah K. Cowan

New York University

Contact hypothesis: when individuals come into contact with a stigmatized outgroup, prejudice decreases.

Contact hypothesis: when individuals come into contact with a stigmatized outgroup, prejudice decreases.

What if secrets prevent us from realizing that we are already in connect with stigmatized outgroups?

Survey of random sample of Americans to measuring hearing and telling about two outcomes

- having an abortion
- having a miscarriage

Very nice comparison

Hypothesis 1: Among concealable characteristics, the less stigmatized the characteristic the more people will hear about it

Hypothesis 1: Among concealable characteristics, the less stigmatized the characteristic the more people will hear about it

- 75% of Americans report knowing someone who has had a miscarriage
- 50% of Americans report knowing someone who had an abortion

Hypothesis 1: Among concealable characteristics, the less stigmatized the characteristic the more people will hear about it

- 75% of Americans report knowing someone who has had a miscarriage
- 50% of Americans report knowing someone who had an abortion

- Estimated that nearly 20% of recognized pregnancies end in abortion
- Estimated that 13% of recognized pregnancies end in miscarriage

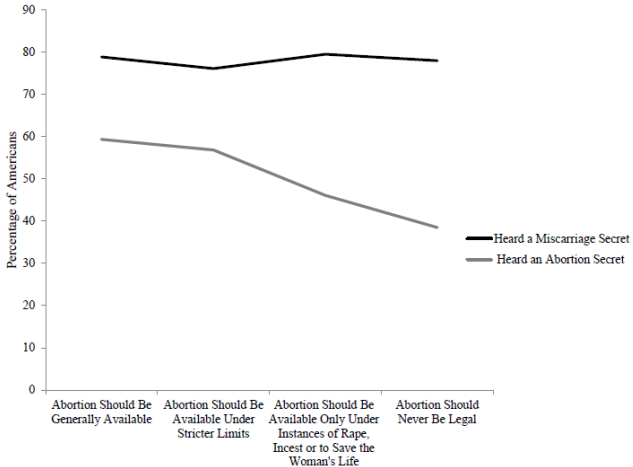
Table 1: Frequency and Magnitude of Secret Telling and Secret Keeping for Own and Others' Miscarriages and Abortions, AMACS 2012

	Respondent or Partner Has Had:			Respondent Has Heard of Someone Else's:		
	Miscarriage	Abortion	Diff.	Miscarriage	Abortion	Diff.
Secret telling						
Respondent disclosed secret (%)	77.31	66.00	+	31.14	15.85	+
If disclosed, mean number of people told	2.63	1.24	†	2.73	2.22	+
Total people told per event	2.03	0.82	†	0.85	0.35	†
Secret keeping[a]						
Respondent kept secret (%)	7.36	31.01	†	12.71	24.68	†
If kept, mean number of people kept from	2.61	2.63		3.66	3.01	*
Total people secret kept from per event	0.20	0.82	†	0.47	0.74	†
N	278	179		1275	856	

- Difference in hearing is because miscarriage secrets are told to more people and concealed from fewer people

Hypothesis 2: Among concealable characteristics, people who hold positive attitudes toward the characteristics are more likely to hear about it

Hypothesis 2: Among concealable characteristics, people who hold positive attitudes toward the characteristics are more likely to hear about it



- Comparison between abortion and miscarriage is key here
- Cowen thinks attitude change is unlikely to explain this pattern

Hypothesis 3: Among concealable characteristics, the more stigmatized the more likely to be disclosed to those who are accepting

Hypothesis 3: Among concealable characteristics, the more stigmatized the more likely to be disclosed to those who are accepting

Supported by:

- open-ended responses to survey
- intake data from abortion clinic

What if secrets prevent us from realizing that we are already in connect with stigmatized outgroups?

What if secrets prevent us from realizing that we are already in connect with stigmatized outgroups?
Information ends up where it will have the least effect leading to social stasis

Journal of Personality and Social Psychology

0022-3514/10/$12.00 DOI: 10.1037/a0020697

Real and Perceived Attitude Agreement in Social Networks

Sharad Goel, Winter Mason, and Duncan J. Watts
Yahoo! Research

Not assigned

homophily: “love of the same” (offline filter bubble)
People tend to be connected to people who are similar to them:

- sociodemographic homophily
- attitude homophily

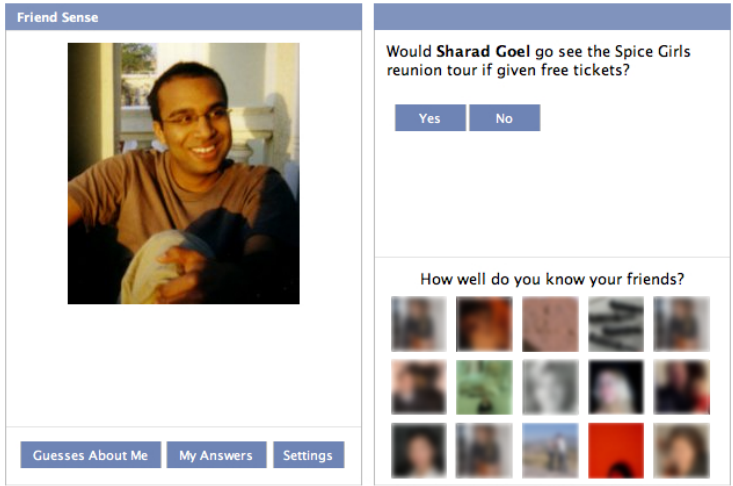
Maybe our attitudes are not as similar as we think to our friends?

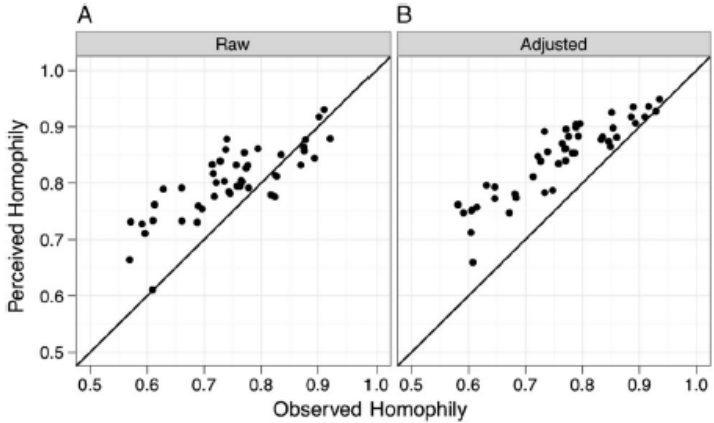
"Would you go to a One Direction concert if you were given free tickets?"
Alice and Bob are friends:

- Alice answers question about Alice
- Alice answers question about Bob
- Bob answers question about Bob
- Bob answers question about Alice

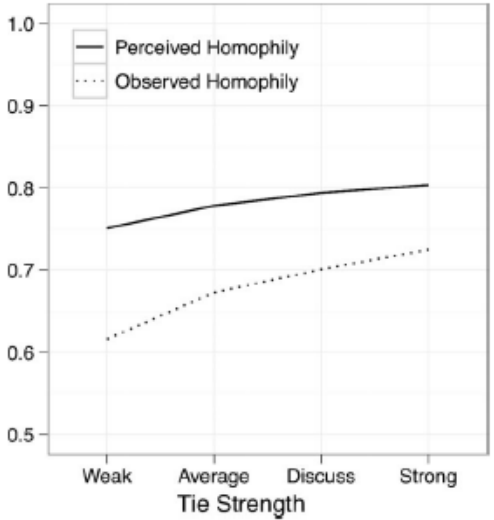
From patterns, we can estimate actual agreement and perceived agreement

Facebook app used “social graph”; kind of like a social quiz

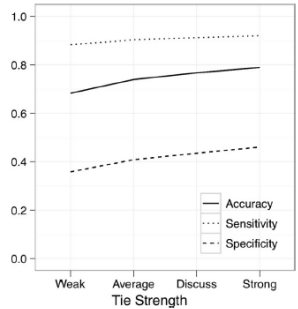




- For almost all questions considered, perceived agreement is higher than observed agreement (although it depends a bit on statistical adjustments)

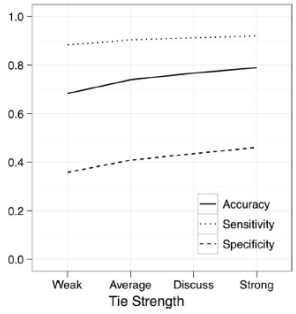


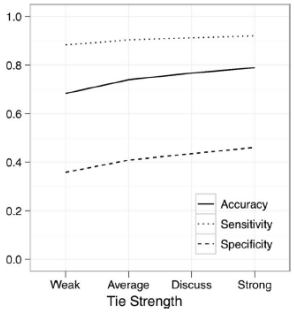
- Perceived agreement is higher than observed agreement for all different tie strengths

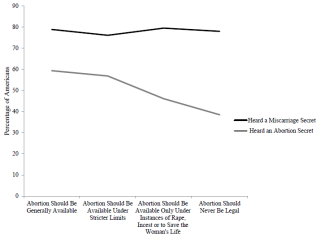


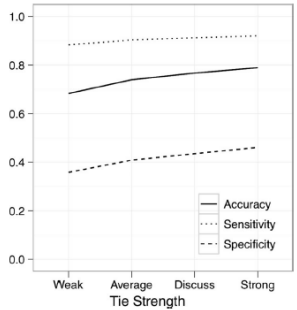
People are bad at detecting disagreement

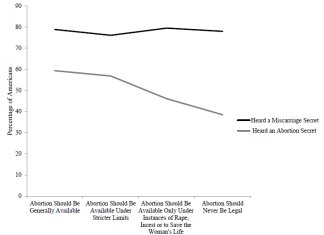
- Accuracy = p(correct guess)
- Sensitivity = p(correct guess given agreement)
- Specificity = p(correct guess given disagreement)

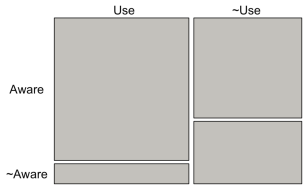

1.0
0.8
0.6
0.4
0.2
0.0
Accuracy
Sensitivity
Specificity
Weak
Average
Discuss
Strong
Tie Strength


1.0
0.8
0.6
0.4
0.2
0.0
Accuracy
Sensitivity
Specificity
Weak
Average
Discuss
Strong
Tie Strength

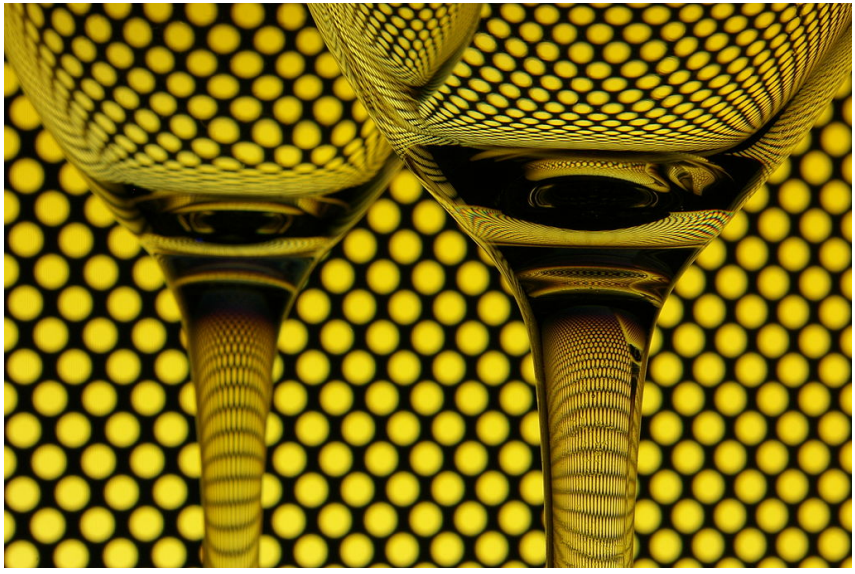

90
80
70
60
50
40
30
20
10
0
Percentage of Americans
Heard a Miscarriage Secret
Heard an Abortion Secret
Abortion Should Be Generally Available
Abortion Should Be Available Under Stricter Limits
Abortion Should Be Available Only Under Instances of Rape, Incest or to Save the Woman's Life
Abortion Should Never Be Legal







Three different results about social distortion



https://commons.wikimedia.org/wiki/File:Uniformity.jpg

Stepping back:

- your beliefs about the attitude of your friends are probably systematically distorted

Stepping back:

- your beliefs about the attitude of your friends are probably systematically distorted
- systematic biases can mess up scale-up estimates, but these can be measured

Stepping back:

- your beliefs about the attitude of your friends are probably systematically distorted
- systematic biases can mess up scale-up estimates, but these can be measured
- systematic biases in information awareness may promote stability of attitudes