

# Lecture 23: Who knows what about who?

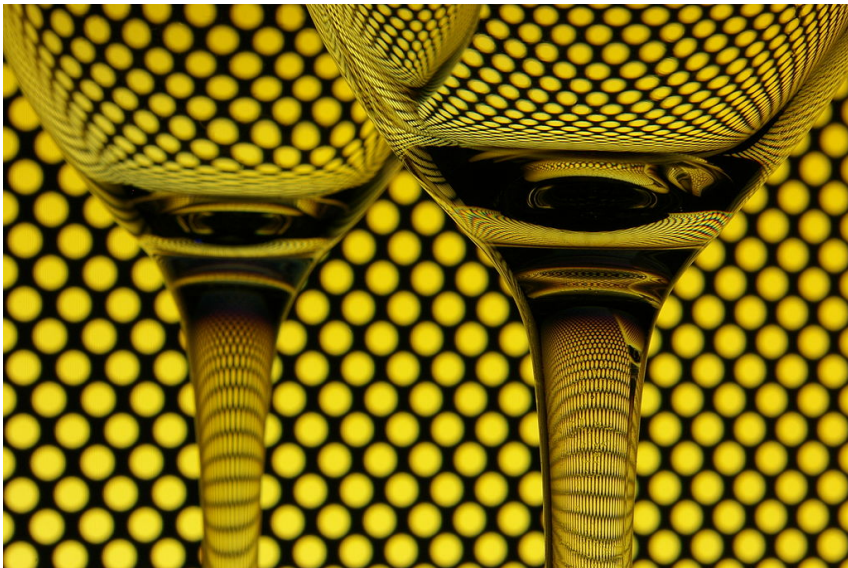
Matthew J. Salganik

Sociology 204: Social Networks  
Princeton University



- ▶ Salganik, M.J. et al. (2011). The game of contacts: Estimating the social visibility of groups. *Social Networks*.
- ▶ Cowan, S. (2014). Secrets and Misperceptions: The Creation of Self-Fulfilling Illusions. *Sociological Science*.

## Community Minute



- ▶ your perception of the social world is distorted

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Why do we care?

- ▶ important for scale-up method

# The game of contacts: Estimating the social visibility of groups<sup>☆</sup>

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- ▶ 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

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

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



	Use	~Use
Aware		
~Aware		

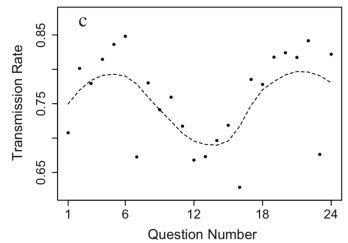
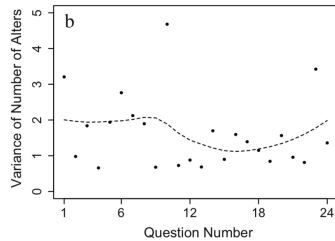
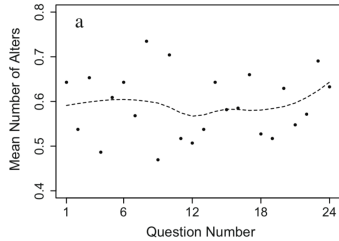
Evidence of:

- ▶ selective exposure

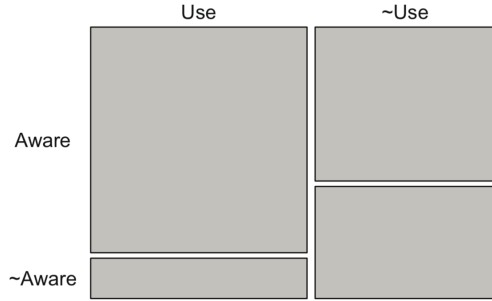
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Aware		
~Aware		

Evidence of:

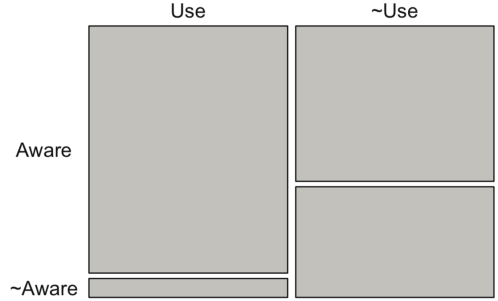
- ▶ selective exposure
- ▶ selective disclosure



► No strong evidence of question order effects



(a) Interviewer A



(b) Interviewer B

► No strong interviewer effects

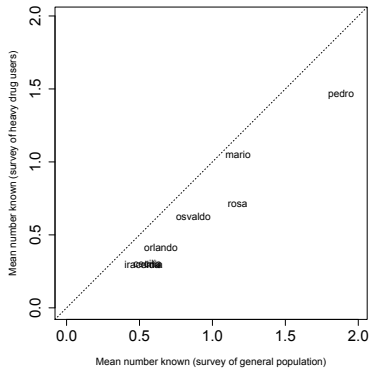
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Bonus: we can combine this data with data from the general population to learn about the degree ratio (the difference in average network size between the hidden population and general population)



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

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

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

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



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- ▶ interesting
- ▶ impacts social influence

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Why do we care?

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



sociological science

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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.

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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

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

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- ▶ 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

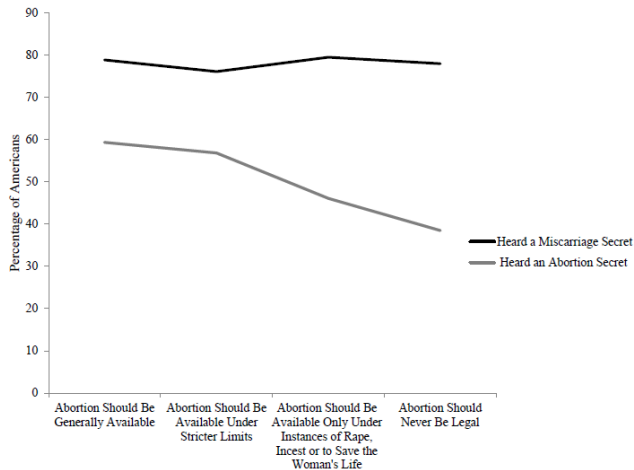
**Table 1:** Frequency and Magnitude of Secret Telling and Secret Keeping for Own and Others' Miscarriages and Abortions, AMACS 2012

	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 <sup>a</sup>						
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

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- ▶ 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



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Supported by:

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

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Information ends up where it will have the least effect leading to social stasis

# 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

Friend Sense



Guesses About Me

My Answers

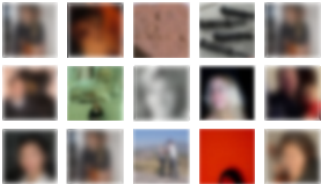
Settings

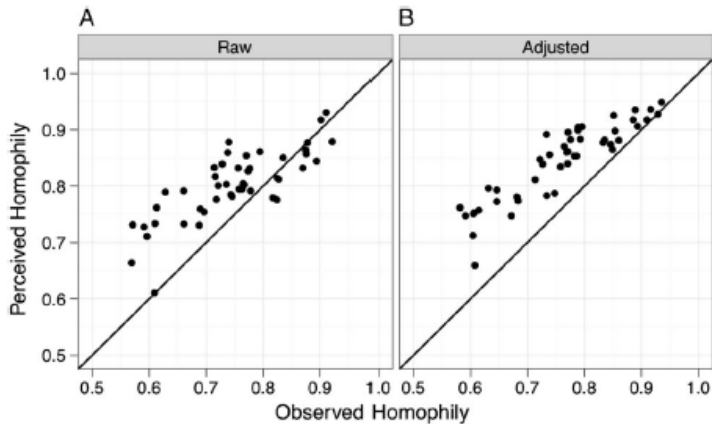
Would **Sharad Goel** go see the Spice Girls reunion tour if given free tickets?

Yes

No

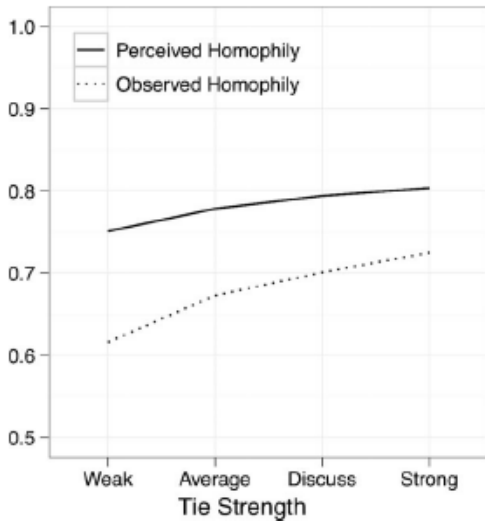
How well do you know your friends?



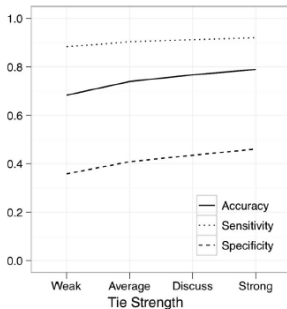


- For almost all questions considered, perceived agreement is higher than observed agreement (although it depends a bit on statistical adjustments)



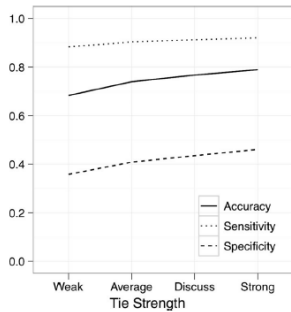


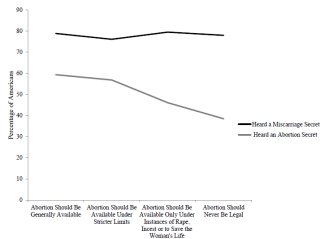
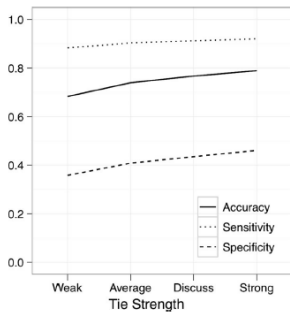
- Perceived agreement is higher than observed agreement for all different tie strengths

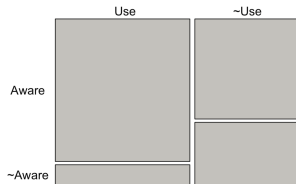
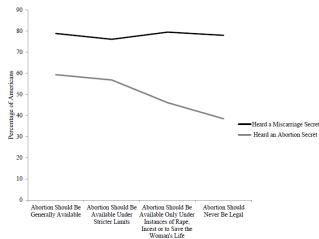
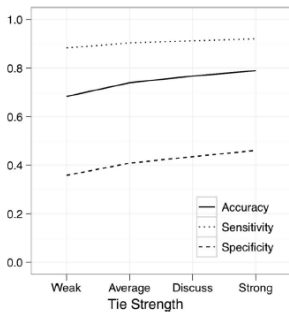


People are bad at detecting disagreement

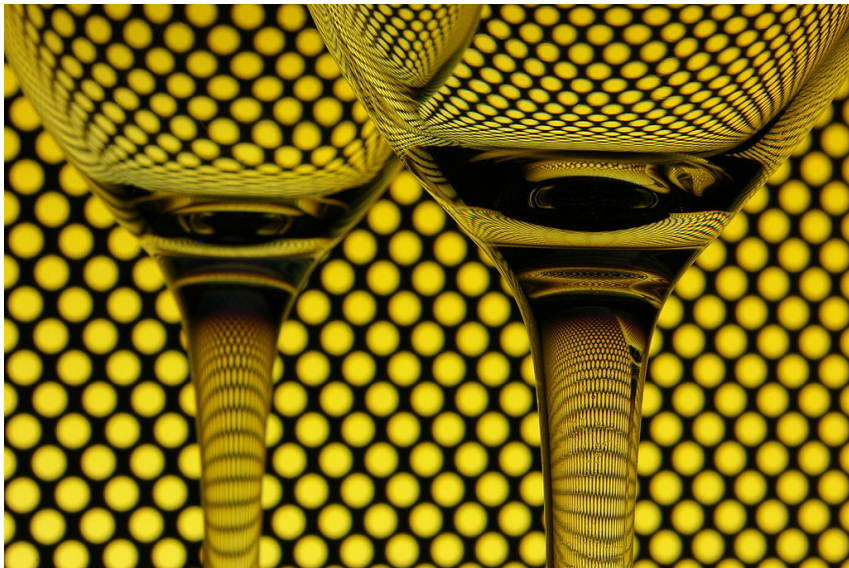
- ▶ Accuracy =  $p(\text{correct guess})$
- ▶ Sensitivity =  $p(\text{correct guess given agreement})$
- ▶ Specificity =  $p(\text{correct guess given disagreement})$







Three different results about social distortion



Stepping back:

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

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- ▶ 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

Topic for the final class is. . . . .

Topic for the final class is. . . . social networks and jobs

- ▶ Gee et al. (2017) “Social Networks and Labor Markets: How Strong Ties Relate to Job Finding on Facebook’s Social Network.” *Journal of Labor Economics*.
- ▶ Greenberg et al. (2016) “The Strength of Weak Ties in MBA Job Search: A Within–Person Test.” *Sociological Science*.