Learning about networks using sampling

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Discussion of Steve Thompson’s Morris Hansen lecture
Washington, D.C., 17 Nov 2015
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1999: voted for a measure prohibiting same-sex couples from adopting children.

2011: "openly hostile" record on gay rights led to a mass protest of students at the University of Michigan against Portman speaking at the graduation ceremony.

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Social penumbra

Size and the shape of the penumbra can relate to the political salience and influence of a social group.
Panel design

- Two surveys administered by YouGov 12 months apart
- 3,000 respondents in wave 1; 2,106 re-interviewed in wave 2
- Penumbra membership in 14 social groups and 8 names
- Attitude questions on 12 related policies
- Also GSS in 2006 and 2014
Group size (area of red circle) and penumbras (areas of black circles indicate close family, close family + close friends, and close family + close friends + others known) compared to the population of American adults (light gray circle).

Notes: Group sizes given from various internet sources. Penumbras estimated from our 2013 survey. Proportions are indicated by areas, with the gray circle in each case representing the entire U.S. adult population. The data show oddities arising from ambiguity in survey responses (what counts as "a serious health problem," "government welfare," etc.), confusions about definitions (for example, of active military service), and secret-keeping (for example, not everyone learns that you have had an abortion).
Sample as microcosm of the general population
The poststratification identity

\[ \theta = \frac{\sum_{j=1}^{J} N_j \theta_j}{\sum_{j=1}^{J} N_j} \]
The poststratified estimate

\[ \hat{\theta} = \frac{\sum_{j=1}^{J} N_j \hat{\theta}_j}{\sum_{j=1}^{J} N_j} \]
Why multilevel regression?
Fundamental problem of network sampling
Challenges of replicating a network in miniature
Learning about hard-to-reach populations