Voting Together

How social networks affect the emergent norm of voter turnout

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Why voter turnout?

- 1922: First survey study of non-voting (Merriam and Gosnell)
  - Education, income, race/ethnicity, gender, language, registration, length of residence, age, political interest

- 1995: People participate because they can (skills), they want to (interest) and somebody asked. (Verba, Schlozman, and Brady)
  - Education, income, race/ethnicity, gender, language, registration, length of residence, age, political interest, church attendance
Puzzle: Turnout dropped over time period when access to college education increased

Puzzle: Education doesn’t impact turnout in many countries

Puzzle: Vote by mail (lower costs) doesn’t increase turnout

Puzzle: In theory, “Rational” citizens don’t vote
Why agent-based modeling?

- Multiple criticisms
  - Just a passing fad
  - “Where are the social science applications?”
  - Models are “made up” -- there are no constraining assumptions
  - Realistic models include “everything” (KISS)
  - Is it a “third way” of doing science?
Conditional Choice

Modeling the decisions of social actors
<table>
<thead>
<tr>
<th><strong>Social Actor</strong></th>
<th><strong>Rational Actor</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Social interaction</td>
<td>1. Strategic interaction*</td>
</tr>
<tr>
<td>2. Social meaning of situation (norms)</td>
<td>2. Game structure of situation</td>
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<tr>
<td>3. Rules of thumb</td>
<td>3. Maximize payoffs*</td>
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<td>4. Mixed motives</td>
<td>4. Preferences</td>
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<td>5. Individual difference</td>
<td>5. Individual homogeneity*</td>
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<tr>
<td>6. Social structure</td>
<td>6. --*</td>
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</tbody>
</table>
Using data to engineer a conditional decision model

1. Identify social meaning of situation
   - Media, surveys, self-reports, discourse
2. Identify conditional decision-making rules
   - Experiments, existing theory
3. Analyze decision model
   - Proofs, simulations
4. Develop theory and look for “traces”
   - Multiple data sources
A conditional decision-model of political participation

1. Identify social meaning of situations
   “Voting is a public good”
2. Identify rules of thumb
   Conditional d-m in public good experiments
3. Analyse social model
   \[ \uparrow \text{network size} \rightarrow \uparrow \text{turnout} \]
4. Look for traces in the data
   surveys, geo-spatial, interviews
Voting is a civic duty
American citizens are equals

QuickTime™ and a decompressor are needed to see this picture.
A conditional decision-model of political participation

1. Identify social meaning of situations
   “Voting is a public good”
2. Identify rules of thumb
   Conditional d-m in public good experiments
3. Analyze social model
   ↑ network size → ↑ turnout
4. Look for traces in the data
   surveys, geo-spatial, interviews
Experimental social dilemmas

- Goal: split the money with equals
- Unanimous agreement on fair response
  - public goods games
  - bargaining games (ultimatum, dictator)
- Not everyone splits the money “fairly”
Conditional decisions: the basic model

\[ pr(d_{i,s} = 1) = \alpha_{i,s}(1) + \beta_{i,s} \frac{\sum (d_{j,s} \times r_{i,j})}{\sum r_{i,j}} + \gamma_{i,s} \frac{1}{1 + \exp((a - b) \frac{\sum (d_{j,s} \times r_{i,j})}{\sum r_{i,j}})} + \delta_{i,s}(0) \]

**Probability of cooperating [0,1]**

\( i = \text{individual heterogeneity} \)

\( s = \text{variation in situations} \)
Conditional decisions: the basic model

\[ pr(d_{i,s} = 1) = \alpha_{i,s}(1) + \beta_{i,s} \frac{\sum (d_{j,s} \times r_{i,j})}{\sum r_{i,j}} + \gamma_{i,s} \frac{1}{1 + \exp \left( (a - b) \frac{\sum (d_{j,s} \times r_{i,j})}{\sum r_{i,j}} \right)} + \delta_{i,s}(0) \]
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“Fairness”: conditional cooperation in proportion to mean of friends and family
Conditional adoption: the basic model

\[ pr(d_{i,s} = 1) = \alpha_{i,s}(1) + \beta_{i,s} \sum \frac{d_{j,s} \times r_{i,j}}{r_{i,j}} + \gamma_{i,s} \frac{1}{1 + \exp \left( (a - b) \sum \frac{d_{j,s} \times r_{i,j}}{r_{i,j}} \right)} + \delta_{i,s}(0) \]

"Conformity": conditional cooperation in proportion to median of friends and family
Conditional adoption: the basic model

\[
pr(d_{i,s} = 1) = \alpha_{i,s}(1) + \beta_{i,s} \frac{\sum (d_{j,s} \times r_{i,j})}{\sum r_{i,j}} + \gamma_{i,s} \frac{1}{1 + \exp\left((a-b) \frac{\sum (d_{j,s} \times r_{i,j})}{\sum r_{i,j}}\right)} + \delta_{i,s}(0)
\]

Unconditional non-cooperation
Use of conditional strategies

- 10-20% unconditional cooperation
  - Ledyard (1994)
  - final round contributions >25%
  - 50/50 split in anonymous dictator
  - No increase when contributions are public
  - Conditional contribution tables

- Split across the conditional strategies
A conditional decision-model of political participation

1. Identify social social meaning of situations
   *Voting is a public good*

2. Identify rules of thumb
   *Conditional d-m in public good experiments*

3. Analyze social model
   *First movers* → *cooperation*
   *Network size* → *cooperation*

4. Look for traces in the data
   *surveys, geo-spatial, interviews*
What happens, in general?

- In some situations, behavior spreads easily
  - ↑ unconditional cooperation
  - fairness > conformity

- In some situations, behavior doesn’t spread
  - ↓ unconditional cooperation
  - conformity > fairness
What happens in local social networks?

- Small, dense personal networks impede spread of innovations when behavior spreads easily
- Small, dense personal networks incubate small pockets of adoption when behavior doesn’t spread easily
Threshold simulation

- Agents randomly given weights for decision function \((\alpha, \beta, \gamma)\)
- Agents given friends
- Simulation is run: first movers vote, and then others join in
- Final round turnout recorded
20 person networks
Fully specifying the model

Personal networks

- Use surveys of personal networks
- Estimates of 12-20 “friends”
Simulated turnout with 15% unconditional cooperation
10% Unconditional Cooperation
Finally...

A social theory of voter turnout
A conditional decision-model of political participation

1. Identify social beliefs
   *Voting is a public good*

2. Identify rules of thumb
   *Conditional d-m in public good experiments*

3. Analyse social model
   \[ \text{↑ network size } \rightarrow \text{↑ turnout} \]

4. Develop social theory and look for traces in the data
   *Surveys, geo-spatial, interviews*
A social theory of voter turnout

- Turnout is low cost “social dilemma”
  - \( \uparrow \) network size \( \rightarrow \) \( \uparrow \) turnout
  - \( \uparrow \) costs \( \rightarrow \) \( \downarrow \) first movers \( \rightarrow \) \( \downarrow \) turnout

- Mobilization stimulates political discussion
  - \( \uparrow \) mobilization \( \rightarrow \) \( \uparrow \) network size \( \rightarrow \) \( \uparrow \) turnout
Variation across individuals:

↑ network size → ↑ turnout

✧ Social network context
  ✧ College-educated have larger networks

✧ Mobilization and political discussion
  ✧ Candidate social networks
  ✧ Direct mobilization
Structure of social context
Social context and network size
(1985 GSS)

Individual Education

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Name Low Educ Friends Only</th>
<th>Name High &amp; Low Educ Friends</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS Degree</td>
<td>3.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Some College</td>
<td>3.5</td>
<td>4.5</td>
</tr>
<tr>
<td>College Degree</td>
<td>3.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Grad. Degree</td>
<td>4.5</td>
<td>5.0</td>
</tr>
</tbody>
</table>
Voter turnout by social context (1985 GSS)

- HS Degree
- Some College
- College Degree
- Grad. Degree

- Low education
- Multi-education
Low Salience Elections

↑mobilization → ↑network size → ↑turnout

- No discussion of the election, only first movers vote (~8-12%)
- UNLESS mobilized by candidate
- Prediction: Range of turnout same in high and low salience, mean varies
- Prediction: no relationship between education and turnout in low salience
Variation across elections:
↑mobilization → ↑network size

1) off-year Congress
2) Municipal election
3) Municipal primary
Low Salience Elections

\[ \uparrow \text{mobilization} \rightarrow \uparrow \text{network size} \rightarrow \uparrow \text{turnout} \]

- No discussion of the election, only first movers vote (~8-12%)
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Turnout in a congressional primary
Turnout in a congressional primary
Turnout in a municipal primary
REGIME CHANGE BEGINS AT HOME.

VOTE