Testing Formal Models of Direct Democracy

Anthony Bertelli
Texas A&M and Univ. of Georgia

Lilliard E. Richardson, Jr.
University of Missouri


Research Questions

• Many issues in state politics require preference estimates for constituents, legislators, and governors
  – Legislator responsiveness
  – Impact of initiatives
  – Committee outliers
  – Power of governors
• What is the best methodology for estimating preferences given the spatial model of voting?
Coding – Arizona 44th Legislature

• Substantive coding of I&R vs. Roll Calls
  – Proposition 203 (2000) general election would mandate English-only instruction in Arizona public schools
  – HB 2387 in the 44th Legislature, 1st Regular session provides for bilingual education.
  – County vote for Proposition 203 as a “nay” vote on HB 2387 and vice versa.

• Similar for governors

Statistical Model

• Logit model with the probability of a “yea” vote as a function of an unobserved regressor, the ideal point of actor $I$

$$z_{ij} = \alpha_j + \beta_j \theta_i + e_{ij}$$

– item response model with “difficulty” parameter $\alpha_j$ and “discrimination” parameter $\beta_j$. 
Identification

- Bayesian setup (e.g., Martin and Quinn 2003; Clinton, Jackman, and Rivers 2003; Trier 2003; Bailey 2004)
  - Diffuse priors of $\mathcal{N}(0, 25)$ on bill parameters
  - “Spike priors” of $\mathcal{N}(-1, .000001)$ for known liberal legislators, $\mathcal{N}(1, .000001)$ for known conservative legislators
  - $\mathcal{N}(0, 1)$ on other legislators
- Very little information in these priors
## Posterior Density Summary of Ideal Points, Governor & Counties

<table>
<thead>
<tr>
<th>Actor</th>
<th>Mean</th>
<th>S Dev</th>
<th>Actor</th>
<th>Mean</th>
<th>S Dev</th>
</tr>
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<tbody>
<tr>
<td>Gov Hull</td>
<td>-0.39084</td>
<td>0.09986</td>
<td>Maricopa</td>
<td>0.01050</td>
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<tr>
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<td>0.04887</td>
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<tr>
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<td>Pima</td>
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<td>Graham</td>
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<td>Yavapai</td>
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<td>0.07129</td>
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<tr>
<td>La Paz</td>
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<td>0.07163</td>
<td>Yuma</td>
<td>0.16583</td>
<td>0.07725</td>
</tr>
</tbody>
</table>

## Preference Estimates vs. a Scale of Interest Group Endorsements

Comparison of Interest Group Endorsements and Ideology Estimates

\[
y = -0.0174x^2 - 0.1271x + 0.5422
\]

\[
R^2 = 0.5811
\]
Preference Estimates vs. Scores from the Arizona League of Conservation Voters

Comparison of Conservation League Scores and Ideology Estimates

\[ y = -0.0083x + 0.8139 \]

\[ R^2 = 0.5169 \]

Preference Estimates vs. Scores from the National Federal of Independent Businesses

Comparison of National Federation of Independent Business scores to Ideology Estimates

\[ y = 0.0135x - 0.4066 \]

\[ R^2 = 0.6119 \]
Preference Estimates vs. the District Minority Percent

Comparison of District Minority Percent and Ideology Estimates

\[ y = -0.0127x + 0.8654 \]

\[ R^2 = 0.3499 \]

Comparison of Preference Estimates and Bush’s Vote Share in the District

Comparison of Bush District Vote Share and Ideology Estimates

\[ y = 2.3534x - 0.6616 \]

\[ R^2 = 0.3838 \]
Next Steps

• Agenda Considerations
• Estimate District Level Ideal Points
• Expand Data to 1994
• Examine Voters vs Legislator Ideal Points
• Test Formal Models
• Other States