

# Estimating Public Opinion in the States: Gay Rights and Policy Responsiveness

Jeffrey R. Lax and Justin H. Phillips

Columbia University

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# Introduction

- **Substantive question:** What is the relationship between gay rights policies in the states and public opinion?
  - Responsiveness (correlation)
  - Congruence (opinion majorities)
  - Policy-specific opinion vs. general ideology
- **Methodological question:** How can we estimate policy-specific opinion at the state level?
  - State surveys
  - Disaggregation
  - Multilevel Regression and Poststratification (MRP)

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- **Methodological question:** How can we estimate policy-specific opinion at the state level?
  - State surveys
  - Disaggregation
  - Multilevel Regression and Poststratification (MRP)

# Alternative 1

- State Surveys
  - Usually not an option
  - Rare and not comprehensive
  - Often not comparable (wording, timing, method)

# Alternative 2

- Disaggregation
  - Erikson, Wright, & McIver (1993)
  - Pools large numbers of national surveys
  - Disaggregates by state
  - No pooling of respondents/information across states
  - Advantages
    - Easily implemented
    - Used successfully by numerous scholars
    - Respects differences across states
  - Disadvantages
    - Must pool surveys over numerous years (10 to 25)
    - Does not correct for sampling artifacts

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# Alternative 3

- Multilevel Regression and Poststratification (MRP)
  - Park, Gelman, & Bafumi (2006)
  - National level surveys
  - Individual survey responses are modeled
    - Demographic & geographic factors used
    - Estimated with a hierarchical linear model
    - Respondents are partially pooled (endogenous)
    - State level effects are also modeled
  - Create estimates for each demographic-geographic respondent type
  - Poststratification: weight these estimates by frequencies within state

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# Alternative 3

- MRP Continued...
  - Advantages
    - Potentially more accurate
    - Corrects for sampling artifacts
    - Potentially requires fewer surveys
  - Disadvantages
    - Statistically more complex
    - More data of a different type (census)

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# The Status Quo

- What we know
  - Disaggregation solid successes when  $N$  is large
  - Older simulation techniques relatively inaccurate
- What we don't know
  - Are estimates from MRP as good as those from disaggregation?
  - How good are they?
  - How many surveys do we need to generate "good" estimates using MRP?
  - How complicated a model of individual response is necessary?

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# Research Design

- Compare each method
  - Use random samples of pooled national poll data
  - Use disaggregation as the baseline
  - Vary sample sizes
  - Compare the predictive success
- Then see how far one can push MRP
  - Compare sparse and complex models of opinion
  - Assess MRP from a single national poll

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# Comparing methods

- Randomly split data
  - 1/2 used to define “truth”
    - Truth measured using disaggregation
  - Some portion of the remaining data is used to estimate opinion
    - Once using each technique
  - We do this 200 times
- Vary sample sizes
  - 5% ( $n = 1,400$ ) (roughly a national poll)
  - 10% ( $n = 2,800$ )
  - 25% ( $n = 7,000$ )
  - 50% ( $n = 14,000$ )

# Data

- 26 national polls from 1996 through 2005
  - Approximately 28,000 respondents
- Ask respondents about support for same-sex marriage
- Re-code for internal consistency
  - Male or female
  - Black, Hispanic, or White
  - Age (4 levels)
  - Education (4 levels: <HS, HS, some college, college)
- State level data
  - % Evangelical Protestants & Mormons
  - Region
- 1% Public Use Microdata Sample from the 2000 Census
  - Used in poststratification



# Applying MRP

- Estimating Individual Opinion  
(LMER function in R)

$$\Pr(y_i = 1) = \text{logit}^{-1}(\beta^0 + \alpha_{j[i]}^{\text{race,gender}} + \alpha_{k[i]}^{\text{age}} + \alpha_{l[i]}^{\text{edu}} + \alpha_{s[i]}^{\text{state}} + \alpha_{p[i]}^{\text{year}})$$

$$\alpha_j^{\text{race,gender}} \sim N(0, \sigma_{\text{race,gender}}^2), \text{ for } j = 1, \dots, 6$$

$$\alpha_k^{\text{age}} \sim N(0, \sigma_{\text{age}}^2), \text{ for } k = 1, \dots, 4$$

$$\alpha_l^{\text{edu}} \sim N(0, \sigma_{\text{edu}}^2), \text{ for } l = 1, \dots, 4$$

$$\alpha_p^{\text{year}} \sim N(0, \sigma_{\text{poll}}^2), \text{ for } p = 1, \dots, 7$$

$$\alpha_s^{\text{state}} \sim N(\alpha_{m[s]}^{\text{region}} + \beta^{\text{relig}} \cdot \text{relig}_s, \sigma_{\text{state}}^2), \text{ for } s = 1, \dots, 49$$

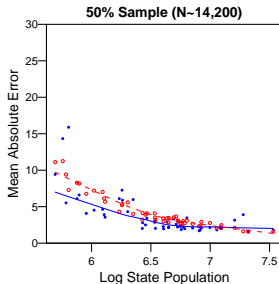
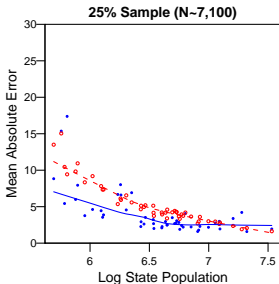
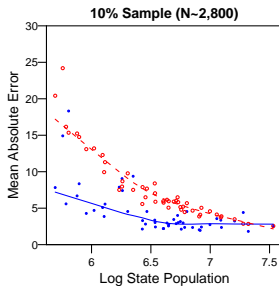
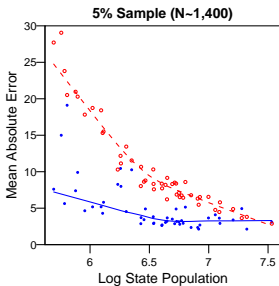
$$\alpha_m^{\text{region}} \sim N(0, \sigma_{\text{region}}^2), \text{ for } m = 1, \dots, 5$$

# Applying MRP

- Estimating state opinion

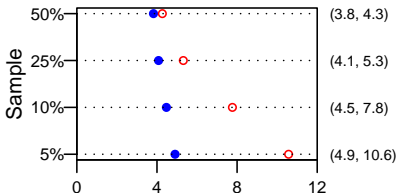
$$y_{\text{state } s}^{\text{MRP}} = \frac{\sum_{c \in S} N_c \theta_c}{\sum_{c \in S} N_c}$$

# Cross Validation: Mean errors by state and method

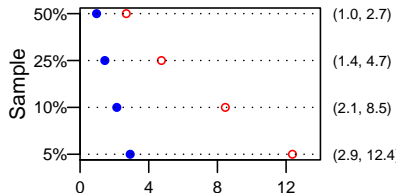


# Cross Validation: Summary performance measures

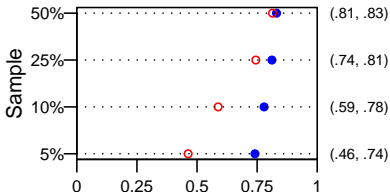
## Mean Absolute Error



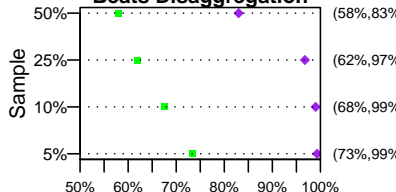
## Standard Deviation



## Correlation



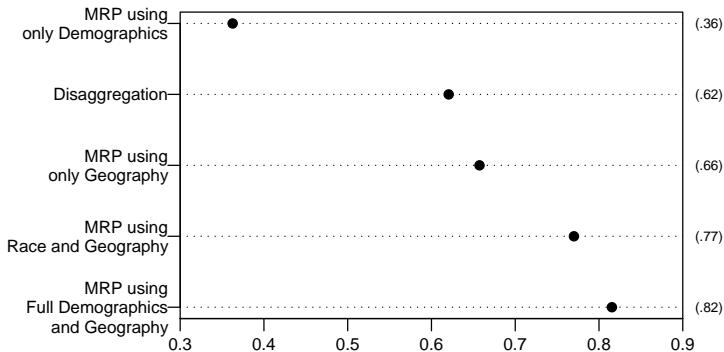
## How Often MRP Beats Disaggregation



# Pushing MRP further (the response model)

- How complicated a response model do you need?
  - Compare sparse and complex demographic models
  - Assess contributions of demographic and geographic predictors
- Create five sets of estimates
  - Use 10% samples for estimates
  - Use 90% samples and disaggregation to define the baseline (repeat 200 times)

# Correlation by Model Complexity



- Geography vs. Demography?
  - Methodological message
  - Substantive message

# MRP Using A Single National Poll

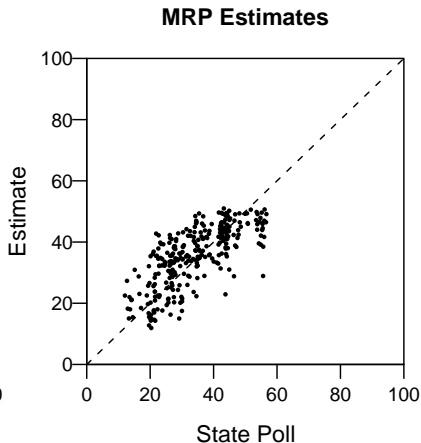
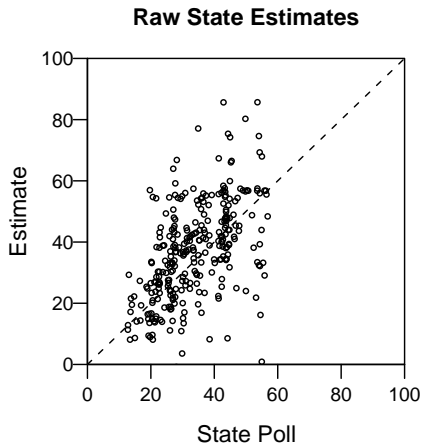
- Results suggest that imputation only needs a single large national poll... is that true?
- Face validity
  - Use four national polls to generate four different estimates (by state) of support for same sex marriage
  - Do these results look reasonable?
- Compare to actual state-level polls
  - Gathered 75 polls—cover all but 13 states and Washington D.C.
  - Use a national poll taken during the same year to generate a prediction
  - How close do we get?

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# External Validity: predicting state polls



Correlation between MRP estimates & actual state polls = .73

# Methodological Conclusion

- Findings
  - MRP is superior to disaggregation when samples are small to medium sized
  - For large samples, the methods converge (but MRP still has the edge)
  - MRP performs nearly as well on small and large samples
  - Does “sufficiently” well even using a “single” national poll
- Implications
  - Many more issues, finer-grained geographic areas, narrow time periods
  - Should greatly enhance research into responsiveness
  - Speaking of which... what *can* you do with policy-specific state-level opinion?

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# Gay Rights in the States

- Approach
  - Gay rights policies
  - Estimate state-level policy-specific opinion
  - Compare to actual state policies
- Implications
  - Democratic control of government
  - Federalism
  - Tyranny of the majority
  - Special interest (pro-gay bias?)
  - Methodological (specific opinion?)



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# Gay Rights Data

- 39 national polls (approximately 70,000 respondents)
- 1994-2005
- race, gender, age, education, age  $\times$  education
- state, region, religion
- policies:
  - same-sex marriage
  - civil unions
  - sodomy laws
  - second-parent adoption
  - health benefits for domestic partners
  - housing anti-discrimination laws
  - employment anti-discrimination laws
  - hate crime laws

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# Theoretical Expectations

- High responsiveness
  - Non-complex policies
  - Salient (some highly)
  - Consistently on state legislative agendas
- But...
  - Gays rights policies determined by the interaction of legislatures, courts, direct democracy, state and federal constitutional law
  - Courts highly involved in some (adoption, sodomy); less in jobs, housing, hate; others split
  - Varying intensity of preferences, salience, information



# Mean Difference

Pro-Gay Policy	Mean Opinion		Difference
	States with Policy	States without Policy	
Same-Sex Marriage	46	32	14(NA)
Civil Unions	51	40	11**
Second-Parent Adoption	49	39	10**
Employment Protection	75	69	6**
Housing Protection	78	73	6**
Health Care Benefits for Domestic Partners	65	59	6**
Hate Crimes Law includes Sexual Orientation	72	67	5**
No Sodomy Prohibition	50	40	10**



# Responsiveness

- policy-specific opinion, voter ideology, government ideology, % religious conservatives
- separate models, full model

	Model 1: Policy Fixed Effects		Model 2: State Fixed Effects	
	Unstandardized Coefficients	Standardized Coefficients	Unstandardized Coefficients	Standardized Coefficients
Policy-Specific Opinion	.11** (.06)	3.76** (2.15)	.07** (.01)	2.23** (.38)
Government Ideology	.03** (.01)	1.16** (.39)	—	—
Voter Ideology	.13** (.04)	1.90** (.54)	—	—
Share Relig. Conservatives	-.05 (.04)	-1.27 (.94)	—	—

# Causality? Two Responses

- Demographics vs. State Effects
  - Demographics are fixed – can't respond to policy except in aggregate correlations
  - State effects which “correct” for this do not vary systematically with policy adoption
- Limit analysis to polls prior to policy adoption – civil unions and hate crimes laws
  - Robust, statistically significant, substantively similar



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# Responsiveness: What have we learned?

- Strong positive relationship between policy-specific opinion and state policy
- Even after controlling for other possible influences
- Bigger role shaping outcomes than other influences
- Strength varies by policy
- Evidence of causality
- Next: congruence. Do opinion majorities prevail?

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# Congruence

Pro-Gay Policy	Number of States with Opinion-Policy Congruence
Same-Sex Marriage	49
Civil Unions	45
Second-Parent Adoption	44
No Sodomy Prohibition	34
Hate Crimes Law includes Sexual Orientation	31
Employment Protection	20
Housing Protection	20
Health Care Benefits for Domestic Partners	15







# Congruence: What have we learned?

- **Opinion majorities often do not prevail**
- Policies pertaining to economic fairness least congruent
- Policies regulating personal relationships most congruent
- Courts not counter-majoritarian (civil unions, adoption, marriage most congruent)
- Non-congruence usually occurs in the form of policy that is too conservative
- No pro-gay bias

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