Rich State, Poor State, Red State, Blue State: What’s the Matter with Connecticut

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Introduction

Individual, county, and state-level analyses
Multilevel models of individuals within states
Understanding the results
A trip to Mexico

Themes

▶ Income and voting: understanding aggregate and individual patterns
▶ Multilevel modeling and graphical display
▶ Some politics and some psychology
▶ Collaborators
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Puzzles

- Rich states go for the Democrats, but rich voters go for the Republicans. How do we understand this?
- Why all the fuss since 2000?
- How to reconcile journalists’ and social scientists’ views about income and political preferences?
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Richer states now support the Democrats

▶ In each presidential election year, run linear regression:
  ▶ \( y = \) state vote share for the Republican
  ▶ \( x = \) average income in the state
▶ Display time series of estimates ± standard errors (the "secret weapon")
▶ Quantitative version of looking at a series of red/blue maps
▶ Also do separate analyses for South, non-South
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- Recent trends explain why it’s recent news
- Is state-level inequality (rather than average income) the explanation?
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- Including ethnicity, sex, education, and age as predictors in the model has little effect on the coefficient for income
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Richer counties support the Republicans in some states and the Democrats in others.

- Within each state, estimate regression on county data:
  - $y$ = county vote share for the Republican
  - $x$ = average income in the county
- Varying-intercept, varying-slope model:
- Fit separate model for each election year ("secret weapon")
- For each state, display time series of estimated $\beta_s$
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- Within each state, estimate regression on county data:
  - $y =$ county vote share for the Republican
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- Varying-intercept, varying-slope model:
  - $y_c = \alpha_s[c] + \beta_s[c] x_c + \text{error}_c$
  - $s[c] =$ state containing county $c$
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Coef of county-level income on county-level vote: South

- Oklahoma
- Texas
- Mississippi
- South Carolina
- Kentucky
- Alabama
- North Carolina
- Georgia
- Virginia
- Louisiana
- West Virginia
- Arkansas
- Tennessee
- Florida
Coef of county-level income on county-level vote: West

- Utah
- Wyoming
- Idaho
- Montana
- Colorado
- Arizona
- Nevada
- New Mexico
- Oregon
- Washington
- California
- Hawaii
Coef of county-level income on county-level vote: Midwest

- Nebraska
- North Dakota
- South Dakota
- Kansas
- Indiana
- Ohio
- Missouri
- Wisconsin
- Iowa
- Minnesota
- Michigan
- Illinois
## Coef of county-level income on county-level vote: Northeast

<table>
<thead>
<tr>
<th>State</th>
<th>Year 1968</th>
<th>Year 1980</th>
<th>Year 1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Hampshire</td>
<td>-0.3</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>-0.3</td>
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<tr>
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- In “deep-red” Southern states such as Oklahoma, Texas, Mississippi, etc., richer counties strongly support the Republicans.
- In “media-center” states of New York, California, Maryland, and Virginia, richer counties slightly support the Democrats.
- Journalists noticed a pattern (richer counties supporting the Democrats) that is concentrated in the states where the journalists live!
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Richer voters continue to support the Republicans within states

- Within each state, estimate logistic regression on individuals:
  - $y =$ vote preference (1=Rep, 0=Dem)
  - $x =$ individual income (on a five-point scale)
- Varying-intercept model:
  - $\Pr(y_i = 1) = \logit^{-1}(\alpha_s[i] + \beta x_i)$
  - $s[i] =$ state containing county $i$
- State-level regression of $\alpha_s$ on state income
- Use 2000 Annenberg Election Survey (over 100,000 respondents)
- Plot estimated $\Pr(R\ vote)$ vs. income for three representative states
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  - \( y = \text{vote preference (1=Rep, 0=Dem)} \)
  - \( x = \text{individual income (on a five-point scale)} \)

- Varying-intercept model:
  - \( \Pr(y_i = 1) = \logit^{-1}(\alpha_{s[i]} + \beta x_i) \)
  - \( s[i] = \text{state containing county } i \)
  - State-level regression of \( \alpha_s \) on state income

- Use 2000 Annenberg Election Survey (over 100,000 respondents)

- Plot estimated \( \Pr(\text{R vote}) \) vs. income for three representative states
Richer voters support the Republicans within states

Varying–intercept model, 2000

Connecticut
Ohio
Mississippi

Andrew Gelman
Rich State, Poor State, ...
How do income/voting patterns vary by state

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- Income is coded as \(-2, -1, 0, 1, 2\), so we can interpret both intercepts and slopes

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- Plot estimated slopes vs. state incomes
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Understanding the results
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Income matters more in “red America” than in “blue America”
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![Graph showing the relationship between slope and average state income.](graph.png)

Andrew Gelman
Rich State, Poor State, ...
Supplementary analyses give the same results

- Excluding African Americans
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Estimates using National Election Studies
Income and vote preference from exit polls

Mississippi

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Virginia
Understanding the differences between states

- Richer states support the Democrats—even though, within any given state, richer voters tend to support the Republicans.
- The slope within a state is strongest in poor, rural, Republican-leaning “red” states and weakest in rich, urban, Democrat-leaning “blue” states.
- These patterns have largely arisen in the past ten or fifteen years.
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- Positive slopes within states are no surprise.
- Between states: state income as product of long-term trends (large cities 50 or 100 years ago, more trade, immigration, ethnic diversity).
- Economic issues are perhaps more salient in poor states, less salient in rich states (that could be “what’s wrong with Connecticut”.)
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Explaining journalists’ confusion

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- Red-blue map is misleading
  - Overstates “polarization”
  - Focus on large land-area states
- Reliance on anecdotes leads to confirmation of what is already “known”
- Aggregation bias: within-state and between-state correlations in different directions
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- I come from Huntington, a small farming community in Indiana. I had an upbringing like many in my generation—a life built around family, public school, Little League, basketball and church on Sunday. My brother and I shared a room in our two-bedroom house. — Dan Quayle, 1992


- Lower-than-average income Americans are part of the “mom and apple pie” cluster

- Both sides want to claim the “average American”

- 50% of voters support each party, so no easy answers for either side!
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- What does a “typical” Democrat or a “typical” Republican look like?
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- I can’t believe Nixon won. I don’t know anybody who voted for him. — attributed to Pauline Kael, 1972
- It evidently irritates many liberals to point out that their party gets heavy support from superaffluent “people of fashion” and does not run very well among “the common people.” — Michael Barone, 2005
- First-order availability bias (“false consensus effect”): most people I know are Democrats, therefore most people are Democrats
- This is the error attributed to Kael, but nobody would actually make this mistake for a presidential election!
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  - Rich counties support the Democrats, poor counties support the Republicans
  - There is only a weak relation between income and vote preference
- In contrast, in the deep-red Southern states:
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The red/blue map is misleading. Actually, Republicans are richer than Democrats, on average—in the U.S., and within states.

But, there are real differences between red and blue states. Income is more important in red states.

There are statistical, political, and psychological reasons for journalists (and others) to get confused on this.

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- Every 6 years
- Historically controlled by the Institutional Revolutionary Party (PRI)
- 2000 and 2006 were the first fair elections; 3 major parties:
  - PAN beat PRI in 2000;
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- Income at individual level: middle class and poor
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Andrew Gelman

Rich State, Poor State, ...
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Presidential election results in 2000 and 2006
Fitting the model

- 3 parties instead of 2
  - Model a continuous outcome $y = 1, 2, 3$
  - Logistic regression comparing each party to the other two
  - Ordered logit, estimating cutpoints
- Data issues
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State vote vs. state GDP

Background on Mexican elections
Repeating our analysis
Challenges in fitting the model
Costs and benefits of Bayesian inference and multilevel models

Introduction
Individual, county, and state-level analyses
Multilevel models of individuals within states
Understanding the results
A trip to Mexico
Data and fitted lines within poor and rich states
Estimated intercepts and slopes vs. state GDP
Summary of results

- Similar to the U.S.
  - Rich voters support more conservative candidates
  - Income predicts vote choice more strongly in poor states
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Nonlinear relation to state GDP

- Richer states are more conservative and have lower slopes—except for Mexico City, the richest “state”
- Cannot simply display the equivalents of Mississippi, Ohio, and Connecticut
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Cannot simply display the equivalents of Mississippi, Ohio, and Connecticut
Original fit
Fixing the model

- Add state-level predictors
  - GDP per capita (already included in model)
  - Indicators for the five regions (including Mexico City)
- Collinearity
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- Cost
  - Can be more effort to fit

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