

Rich state, poor state, red state, blue state: What's the matter with Connecticut? A demonstration of multilevel modeling

Andrew Gelman
Department of Statistics and Department of Political Science
Columbia University

2 Nov 2005

Themes

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

Themes

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

Themes

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

Themes

- ▶ Income and voting: understanding aggregate and individual patterns
- ▶ Multilevel modeling and graphical display
- ▶ Some politics and some psychology
- ▶ Collaborators
 - ▶ Boris Shor (Harris School of Public Policy, U of Chicago)
 - ▶ Joseph Bafumi (Dept of Political Science, Dartmouth)
 - ▶ Michael Franz (Dept of Political Science, Wash U, St. Louis)

Themes

- ▶ Income and voting: understanding aggregate and individual patterns
- ▶ Multilevel modeling and graphical display
- ▶ Some politics and some psychology
- ▶ Collaborators
 - ▶ Boris Shor (Harris School of Public Policy, U of Chicago)
 - ▶ Joseph Bafumi (Dept of Political Science, Dartmouth)
 - ▶ David Park (Dept of Political Science, Wash U, St. Louis)

Themes

- ▶ Income and voting: understanding aggregate and individual patterns
- ▶ Multilevel modeling and graphical display
- ▶ Some politics and some psychology
- ▶ Collaborators
 - ▶ Boris Shor (Harris School of Public Policy, U of Chicago)
 - ▶ Joseph Bafumi (Dept of Political Science, Dartmouth)
 - ▶ David Park (Dept of Political Science, Wash U, St. Louis)

Themes

- ▶ Income and voting: understanding aggregate and individual patterns
- ▶ Multilevel modeling and graphical display
- ▶ Some politics and some psychology
- ▶ Collaborators
 - ▶ Boris Shor (Harris School of Public Policy, U of Chicago)
 - ▶ Joseph Bafumi (Dept of Political Science, Dartmouth)
 - ▶ David Park (Dept of Political Science, Wash U, St. Louis)

Themes

- ▶ Income and voting: understanding aggregate and individual patterns
- ▶ Multilevel modeling and graphical display
- ▶ Some politics and some psychology
- ▶ Collaborators
 - ▶ Boris Shor (Harris School of Public Policy, U of Chicago)
 - ▶ Joseph Bafumi (Dept of Political Science, Dartmouth)
 - ▶ David Park (Dept of Political Science, Wash U, St. Louis)

Democrats and Republicans, rich and poor

- ▶ I never said all Democrats are saloon-keepers. What I said is that all saloon-keepers are Democrats. — Horace Greeley, 1860
- ▶ Pat doesn't have a mink coat. But she does have a respectable Republican cloth coat. — Richard Nixon, 1952
- ▶ Like upscale areas everywhere, from Silicon Valley to Chicago's North Shore to suburban Connecticut, Montgomery County supported the Democratic ticket in last year's presidential election, by a margin of 63 percent to 34 percent. — David Brooks, 2001
- ▶ A lot of Bush's red zones can be traced to wealthy enclaves or sun-belt suburbs where tax cuts are king. — Matt Bai, 2001

Democrats and Republicans, rich and poor

- ▶ I never said all Democrats are saloon-keepers. What I said is that all saloon-keepers are Democrats. — Horace Greeley, 1860
- ▶ Pat doesn't have a mink coat. But she does have a respectable Republican cloth coat. — Richard Nixon, 1952
- ▶ Like upscale areas everywhere, from Silicon Valley to Chicago's North Shore to suburban Connecticut, Montgomery County supported the Democratic ticket in last year's presidential election, by a margin of 63 percent to 34 percent. — David Brooks, 2001
- ▶ A lot of Bush's red zones can be traced to wealthy enclaves or sun-belt suburbs where tax cuts are king. — Matt Bai, 2001

Democrats and Republicans, rich and poor

- ▶ I never said all Democrats are saloon-keepers. What I said is that all saloon-keepers are Democrats. — Horace Greeley, 1860
- ▶ Pat doesn't have a mink coat. But she does have a respectable Republican cloth coat. — Richard Nixon, 1952
- ▶ Like upscale areas everywhere, from Silicon Valley to Chicago's North Shore to suburban Connecticut, Montgomery County supported the Democratic ticket in last year's presidential election, by a margin of 63 percent to 34 percent. — David Brooks, 2001
- ▶ A lot of Bush's red zones can be traced to wealthy enclaves or sun-belt suburbs where tax cuts are king. — Matt Bai, 2001

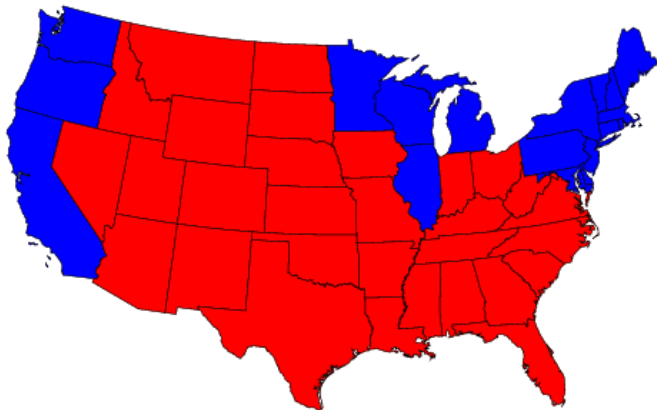
Democrats and Republicans, rich and poor

- ▶ I never said all Democrats are saloon-keepers. What I said is that all saloon-keepers are Democrats. — Horace Greeley, 1860
- ▶ Pat doesn't have a mink coat. But she does have a respectable Republican cloth coat. — Richard Nixon, 1952
- ▶ Like upscale areas everywhere, from Silicon Valley to Chicago's North Shore to suburban Connecticut, Montgomery County supported the Democratic ticket in last year's presidential election, by a margin of 63 percent to 34 percent. — David Brooks, 2001
- ▶ A lot of Bush's red zones can be traced to wealthy enclaves or sun-belt suburbs where tax cuts are king. — Matt Bai, 2001

Democrats and Republicans, rich and poor

- ▶ I never said all Democrats are saloon-keepers. What I said is that all saloon-keepers are Democrats. — Horace Greeley, 1860
- ▶ Pat doesn't have a mink coat. But she does have a respectable Republican cloth coat. — Richard Nixon, 1952
- ▶ Like upscale areas everywhere, from Silicon Valley to Chicago's North Shore to suburban Connecticut, Montgomery County supported the Democratic ticket in last year's presidential election, by a margin of 63 percent to 34 percent. — David Brooks, 2001
- ▶ A lot of Bush's red zones can be traced to wealthy enclaves or sun-belt suburbs where tax cuts are king. — Matt Bai, 2001

That map



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?

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?

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?

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?

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 \pm standard errors (the "secret weapon")
- ▶ Quantitative version of looking at a series of red/blue maps
- ▶ Also do separate analyses for South, non-South

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 \pm standard errors (the “secret weapon”)
- ▶ Quantitative version of looking at a series of red/blue maps
- ▶ Also do separate analyses for South, non-South

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 \pm standard errors (the “secret weapon”)
- ▶ Quantitative version of looking at a series of red/blue maps
- ▶ Also do separate analyses for South, non-South

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 \pm standard errors (the “secret weapon”)
- ▶ Quantitative version of looking at a series of red/blue maps
- ▶ Also do separate analyses for South, non-South

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 \pm standard errors (the “secret weapon”)
- ▶ Quantitative version of looking at a series of red/blue maps
- ▶ Also do separate analyses for South, non-South

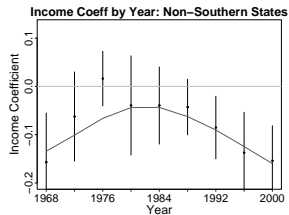
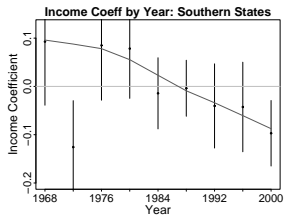
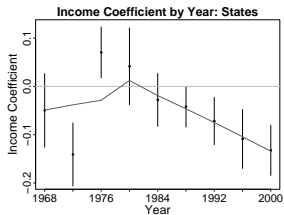
Richer states now support the Democrats

- ▶ 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 \pm standard errors (the “secret weapon”)
- ▶ Quantitative version of looking at a series of red/blue maps
- ▶ Also do separate analyses for South, non-South

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 \pm standard errors (the “secret weapon”)
- ▶ Quantitative version of looking at a series of red/blue maps
- ▶ Also do separate analyses for South, non-South

Richer states now support the Democrats



Richer states now support the Democrats

- ▶ “Latte” Democrats vs. “Nascar” Republicans
- ▶ Recent trends explain why it’s recent news
- ▶ Is state-level inequality (rather than average income) the explanation?

Richer states now support the Democrats

- ▶ “Latte” Democrats vs. “Nascar” Republicans
- ▶ Recent trends explain why it’s recent news
- ▶ Is state-level inequality (rather than average income) the explanation?

Richer states now support the Democrats

- ▶ “Latte” Democrats vs. “Nascar” Republicans
- ▶ Recent trends explain why it’s recent news
- ▶ Is state-level inequality (rather than average income) the explanation?
 - ▶ Including state Gini index in the regressions has essentially no effect

Richer states now support the Democrats

- ▶ “Latte” Democrats vs. “Nascar” Republicans
- ▶ Recent trends explain why it’s recent news
- ▶ Is state-level inequality (rather than average income) the explanation?
 - ▶ Including state Gini index in the regressions has essentially no effect

Richer states now support the Democrats

- ▶ “Latte” Democrats vs. “Nascar” Republicans
- ▶ Recent trends explain why it’s recent news
- ▶ Is state-level inequality (rather than average income) the explanation?
 - ▶ Including state Gini index in the regressions has essentially no effect

Richer voters continue to support the Republicans

- ▶ National Election Study
- ▶ Each election year, logistic regression on individual voters:
$$y_i = \text{vote preference}_i \quad (y_i = \text{Rep.} = 1, \text{Dem.} = 0)$$
$$x_i = \text{individual covariates (on a five-point scale)}$$
- ▶ Display time series of estimates \pm standard errors
- ▶ Also do separate analyses for South, non-South

Richer voters continue to support the Republicans

- ▶ National Election Study
- ▶ Each election year, logistic regression on individual voters:
 - ▶ y = vote preference (1=Rep, 0=Dem)
 - ▶ x = individual income (on a five-point scale)
- ▶ Display time series of estimates \pm standard errors
- ▶ Also do separate analyses for South, non-South

Richer voters continue to support the Republicans

- ▶ National Election Study
- ▶ Each election year, logistic regression on individual voters:
 - ▶ y = vote preference (1=Rep, 0=Dem)
 - ▶ x = individual income (on a five-point scale)
- ▶ Display time series of estimates \pm standard errors
- ▶ Also do separate analyses for South, non-South

Richer voters continue to support the Republicans

- ▶ National Election Study
- ▶ Each election year, logistic regression on individual voters:
 - ▶ y = vote preference (1=Rep, 0=Dem)
 - ▶ x = individual income (on a five-point scale)
- ▶ Display time series of estimates \pm standard errors
- ▶ Also do separate analyses for South, non-South

Richer voters continue to support the Republicans

- ▶ National Election Study
- ▶ Each election year, logistic regression on individual voters:
 - ▶ y = vote preference (1=Rep, 0=Dem)
 - ▶ x = individual income (on a five-point scale)
- ▶ Display time series of estimates \pm standard errors
- ▶ Also do separate analyses for South, non-South

Richer voters continue to support the Republicans

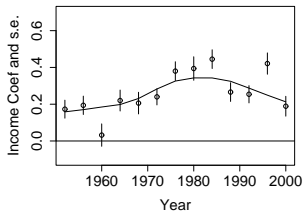
- ▶ National Election Study
- ▶ Each election year, logistic regression on individual voters:
 - ▶ y = vote preference (1=Rep, 0=Dem)
 - ▶ x = individual income (on a five-point scale)
- ▶ Display time series of estimates \pm standard errors
- ▶ Also do separate analyses for South, non-South

Richer voters continue to support the Republicans

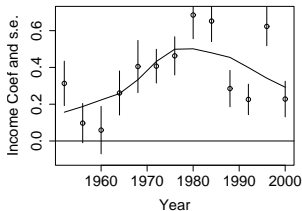
- ▶ National Election Study
- ▶ Each election year, logistic regression on individual voters:
 - ▶ y = vote preference (1=Rep, 0=Dem)
 - ▶ x = individual income (on a five-point scale)
- ▶ Display time series of estimates \pm standard errors
- ▶ Also do separate analyses for South, non-South

Richer voters continue to support the Republicans

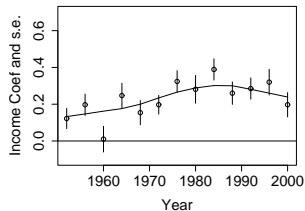
All Individuals



Southerners



Non-Southerners



Richer voters continue to support the Republicans

- ▶ “Fat-cat” Republicans and “working-class” Democrats
- ▶ Including ethnicity, sex, education, and age as predictors in the model has little effect on the coefficient for income

Richer voters continue to support the Republicans

- ▶ “Fat-cat” Republicans and “working-class” Democrats
- ▶ Including ethnicity, sex, education, and age as predictors in the model has little effect on the coefficient for income

Richer voters continue to support the Republicans

- ▶ “Fat-cat” Republicans and “working-class” Democrats
- ▶ Including ethnicity, sex, education, and age as predictors in the model has little effect on the coefficient for income

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 β_s

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 β_s

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:

$y_{ij} = \alpha_j + \beta_j x_{ij} + \epsilon_{ij}$

α_j = state-varying intercept

β_j = state-varying slope

- ▶ Fit separate model for each election year (“secret weapon”)
- ▶ For each state, display time series of estimated β_s

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:

$$y_c = \alpha_{s[c]} + \beta_{s[c]}x_c + \text{error}_c$$

▶ $s[c]$ = state containing county c

- ▶ Fit separate model for each election year (“secret weapon”)
- ▶ For each state, display time series of estimated β_s

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:
 - ▶ $y_c = \alpha_{s[c]} + \beta_{s[c]}x_c + \text{error}_c$
 - ▶ $s[c]$ = state containing county c
- ▶ Fit separate model for each election year (“secret weapon”)
- ▶ For each state, display time series of estimated β_s

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:
 - ▶ $y_c = \alpha_{s[c]} + \beta_{s[c]}x_c + \text{error}_c$
 - ▶ $s[c]$ = state containing county c
- ▶ Fit separate model for each election year (“secret weapon”)
- ▶ For each state, display time series of estimated β_s

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:
 - ▶ $y_c = \alpha_{s[c]} + \beta_{s[c]}x_c + \text{error}_c$
 - ▶ $s[c]$ = state containing county c
- ▶ Fit separate model for each election year (“secret weapon”)
- ▶ For each state, display time series of estimated β_s

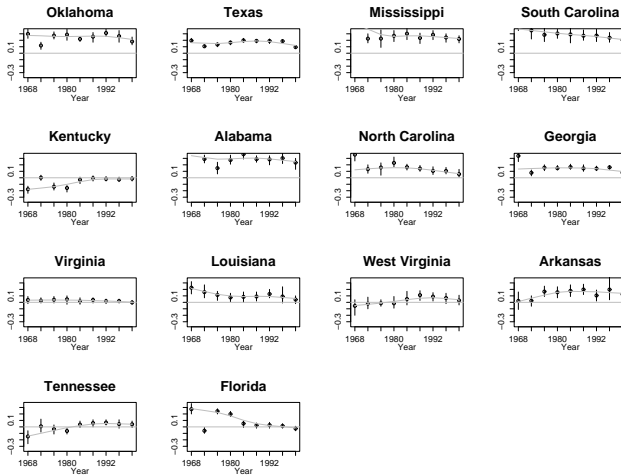
Richer counties support the Republicans in some states and the Democrats in others

- ▶ 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:
 - ▶ $y_c = \alpha_{s[c]} + \beta_{s[c]}x_c + \text{error}_c$
 - ▶ $s[c]$ = state containing county c
- ▶ Fit separate model for each election year (“secret weapon”)
- ▶ For each state, display time series of estimated β_s

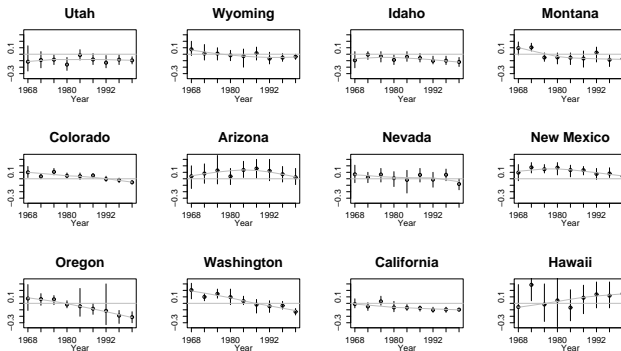
Richer counties support the Republicans in some states and the Democrats in others

- ▶ 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:
 - ▶ $y_c = \alpha_{s[c]} + \beta_{s[c]}x_c + \text{error}_c$
 - ▶ $s[c]$ = state containing county c
- ▶ Fit separate model for each election year (“secret weapon”)
- ▶ For each state, display time series of estimated β_s

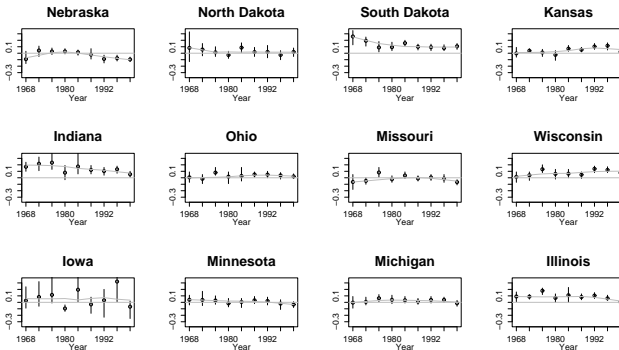
Coef of county-level income on county-level vote: South



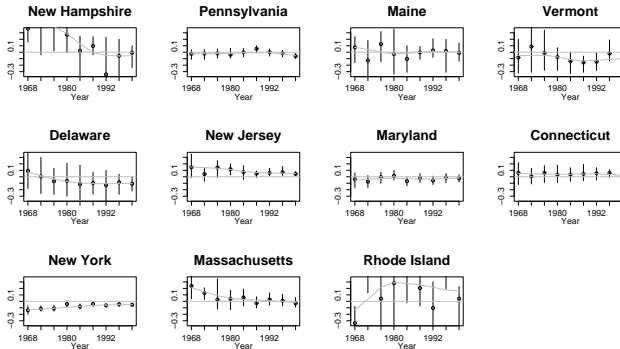
Coef of county-level income on county-level vote: West



Coef of county-level income on county-level vote: Midwest



Coef of county-level income on county-level vote: Northeast



Richer counties support the Republicans in some states and the Democrats in others

- ▶ 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!

Richer counties support the Republicans in some states and the Democrats in others

- ▶ 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!

Richer counties support the Republicans in some states and the Democrats in others

- ▶ 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!

Richer counties support the Republicans in some states and the Democrats in others

- ▶ 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!

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:
 - ▶ Use 2000 Annenberg Election Survey (over 100,000 respondents)
 - ▶ Plot estimated $\Pr(\text{R vote})$ vs. income for three representative states

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:
 - ▶ Use 2000 Annenberg Election Survey (over 100,000 respondents)
 - ▶ Plot estimated $\Pr(\text{R vote})$ vs. income for three representative states

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:
 - ▶ y_{ij} = county containing county j
 - ▶ State-level regression effect 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 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:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of $\alpha_{s[i]}$ 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 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:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_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 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:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_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 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:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_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 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:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_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

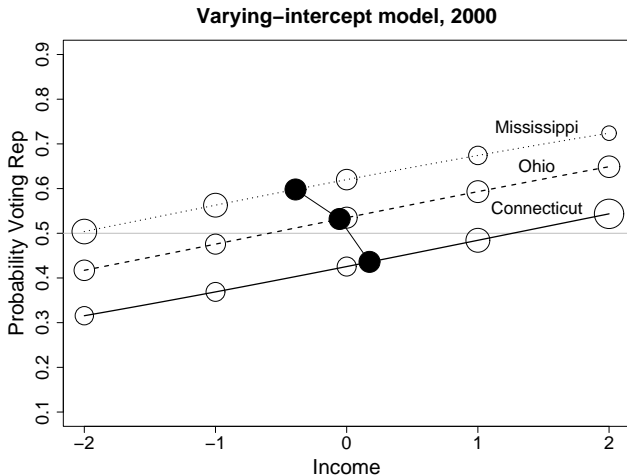
Richer voters continue to support the Republicans within states

- ▶ 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:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_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 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:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_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



How do income/voting patterns vary by state

- ▶ Varying-intercept, varying-slope model:

- ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta_{s[i]}x_i)$

- ▶ $s[i]$ = state containing county i

- ▶ $\alpha_{s[i]}$ = estimated log-odds of R vote for county i in state s

- ▶ Income is coded as $-2, -1, 0, 1, 2$, so we can interpret both intercepts and slopes
 - ▶ Plot estimated $\Pr(\text{R vote})$ vs. income for 3 representative states
 - ▶ Plot estimated slopes vs. state incomes

How do income/voting patterns vary by state

- ▶ Varying-intercept, varying-slope model:

- ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta_{s[i]}x_i)$

- ▶ $s[i]$ = state containing county i

- ▶ State-level regression of α_s and β_s on state income

- ▶ Income is coded as $-2, -1, 0, 1, 2$, so we can interpret both intercepts and slopes

- ▶ Plot estimated $\Pr(\text{R vote})$ vs. income for 3 representative states

- ▶ Plot estimated slopes vs. state incomes

How do income/voting patterns vary by state

- ▶ Varying-intercept, varying-slope model:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta_{s[i]}x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_s and β_s on state income
- ▶ Income is coded as $-2, -1, 0, 1, 2$, so we can interpret both intercepts and slopes
- ▶ Plot estimated $\Pr(\text{R vote})$ vs. income for 3 representative states
- ▶ Plot estimated slopes vs. state incomes

How do income/voting patterns vary by state

- ▶ Varying-intercept, varying-slope model:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta_{s[i]}x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_s and β_s on state income
- ▶ Income is coded as $-2, -1, 0, 1, 2$, so we can interpret both intercepts and slopes
- ▶ Plot estimated $\Pr(\text{R vote})$ vs. income for 3 representative states
- ▶ Plot estimated slopes vs. state incomes

How do income/voting patterns vary by state

- ▶ Varying-intercept, varying-slope model:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta_{s[i]}x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_s and β_s on state income
- ▶ Income is coded as $-2, -1, 0, 1, 2$, so we can interpret both intercepts and slopes
- ▶ Plot estimated $\Pr(\text{R vote})$ vs. income for 3 representative states
- ▶ Plot estimated slopes vs. state incomes

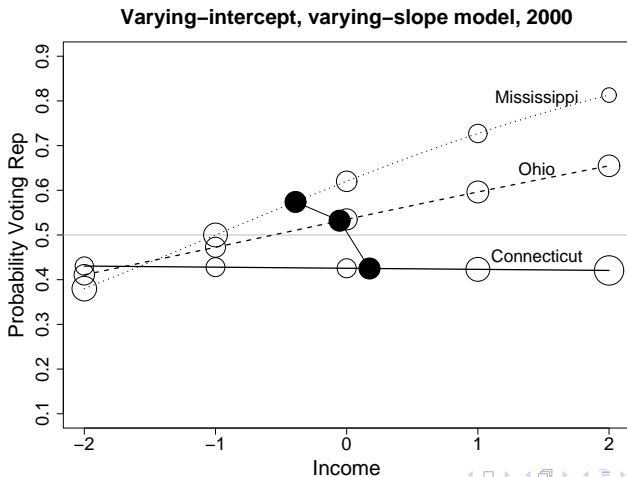
How do income/voting patterns vary by state

- ▶ Varying-intercept, varying-slope model:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta_{s[i]}x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_s and β_s on state income
- ▶ Income is coded as $-2, -1, 0, 1, 2$, so we can interpret both intercepts and slopes
- ▶ Plot estimated $\Pr(\text{R vote})$ vs. income for 3 representative states
- ▶ Plot estimated slopes vs. state incomes

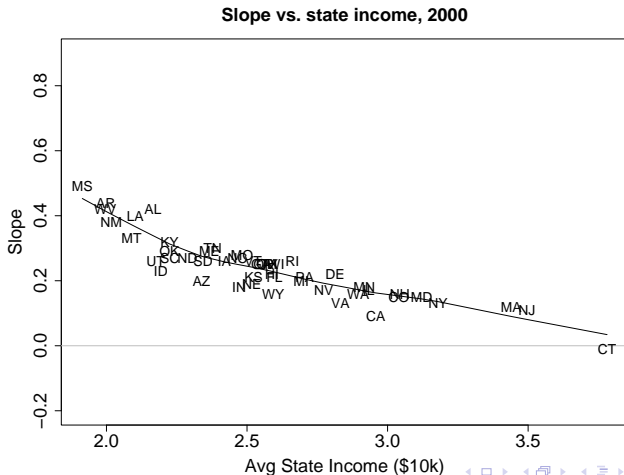
How do income/voting patterns vary by state

- ▶ Varying-intercept, varying-slope model:
 - ▶ $\Pr(y_i = 1) = \text{logit}^{-1}(\alpha_{s[i]} + \beta_{s[i]}x_i)$
 - ▶ $s[i]$ = state containing county i
 - ▶ State-level regression of α_s and β_s on state income
- ▶ Income is coded as $-2, -1, 0, 1, 2$, so we can interpret both intercepts and slopes
- ▶ Plot estimated $\Pr(\text{R vote})$ vs. income for 3 representative states
- ▶ Plot estimated slopes vs. state incomes

Income matters more in “red America” than in “blue America”



Income matters more in “red America” than in “blue America”



Supplementary analyses

- ▶ Excluding African Americans
 - ▶ Similar general patterns
- ▶ Estimates since 1968 using National Election Studies
- ▶ Exit polls from 2000
- ▶ Exit polls from 2004

Supplementary analyses

- ▶ **Excluding African Americans**
 - ▶ Similar general patterns
- ▶ Estimates since 1968 using National Election Studies
 - ▶ Both state, poor/rich patterns started in 1968
- ▶ Exit polls from 2000
- ▶ Exit polls from 2004

Supplementary analyses

- ▶ Excluding African Americans
 - ▶ Similar general patterns
- ▶ Estimates since 1968 using National Election Studies
 - ▶ “Rich-state, poor-state” patterns started in the 1990s
- ▶ Exit polls from 2000
- ▶ Exit polls from 2004

Supplementary analyses

- ▶ Excluding African Americans
 - ▶ Similar general patterns
- ▶ Estimates since 1968 using National Election Studies
 - ▶ “Rich-state, poor-state” patterns started in the 1990s
- ▶ Exit polls from 2000
- ▶ Exit polls from 2004

Supplementary analyses

- ▶ Excluding African Americans
 - ▶ Similar general patterns
- ▶ Estimates since 1968 using National Election Studies
 - ▶ “Rich-state, poor-state” patterns started in the 1990s
- ▶ Exit polls from 2000
- ▶ Exit polls from 2004

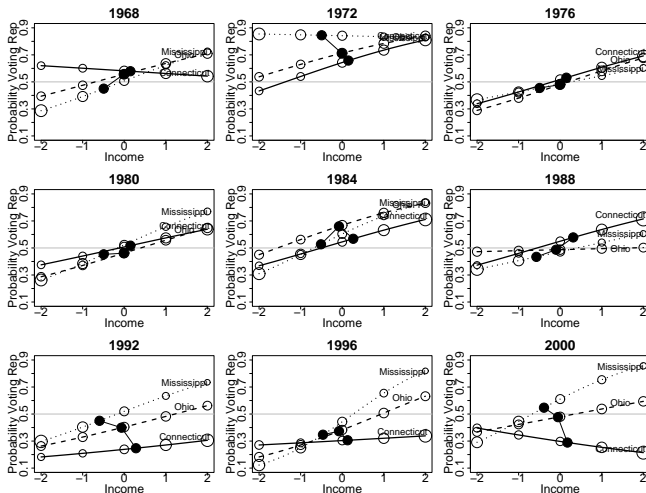
Supplementary analyses

- ▶ Excluding African Americans
 - ▶ Similar general patterns
- ▶ Estimates since 1968 using National Election Studies
 - ▶ “Rich-state, poor-state” patterns started in the 1990s
- ▶ Exit polls from 2000
- ▶ Exit polls from 2004

Supplementary analyses

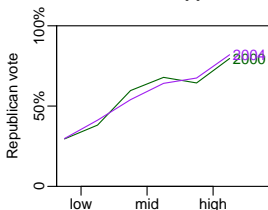
- ▶ Excluding African Americans
 - ▶ Similar general patterns
- ▶ Estimates since 1968 using National Election Studies
 - ▶ “Rich-state, poor-state” patterns started in the 1990s
- ▶ Exit polls from 2000
- ▶ Exit polls from 2004

Estimates using National Election Studies

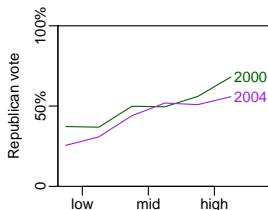


Income and vote preference from exit polls

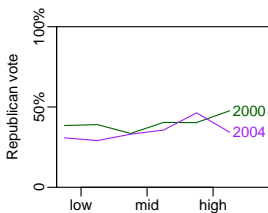
Mississippi



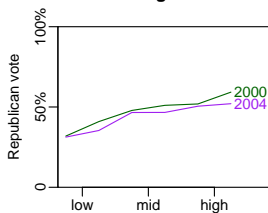
Ohio



Connecticut



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.

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.

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.

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.

Understanding the differences between states

- ▶ 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”)

Understanding the differences between states

- ▶ 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”)

Understanding the differences between states

- ▶ 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”)

Understanding the differences between states

- ▶ 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”)

Explaining journalists' confusion

- ▶ Statistical explanations
- ▶ Political explanations
- ▶ Psychological explanations

Explaining journalists' confusion

- ▶ Statistical explanations
- ▶ Political explanations
- ▶ Psychological explanations

Explaining journalists' confusion

- ▶ Statistical explanations
- ▶ Political explanations
- ▶ Psychological explanations

Explaining journalists' confusion

- ▶ Statistical explanations
- ▶ Political explanations
- ▶ Psychological explanations

Statistical explanations for journalists' confusion

- ▶ 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

Statistical explanations for journalists' confusion

- ▶ 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

Statistical explanations for journalists' confusion

- ▶ 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

Statistical explanations for journalists' confusion

- ▶ 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

Statistical explanations for journalists' confusion

- ▶ 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

Statistical explanations for journalists' confusion

- ▶ 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

Political explanations for journalists' confusion

- ▶ 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
- ▶ Clinton displays almost every trope of blackness: single-parent household, born poor, working-class, saxophone-playing, McDonald's-and-junk-food-loving boy from Arkansas. — Toni Morrison, 1998
- ▶ 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!

Political explanations for journalists' confusion

- ▶ 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
- ▶ Clinton displays almost every trope of blackness: single-parent household, born poor, working-class, saxophone-playing, McDonald's-and-junk-food-loving boy from Arkansas. — Toni Morrison, 1998
- ▶ 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!

Political explanations for journalists' confusion

- ▶ 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
- ▶ Clinton displays almost every trope of blackness: single-parent household, born poor, working-class, saxophone-playing, McDonald's-and-junk-food-loving boy from Arkansas. — Toni Morrison, 1998
- ▶ 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!

Political explanations for journalists' confusion

- ▶ 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
- ▶ Clinton displays almost every trope of blackness: single-parent household, born poor, working-class, saxophone-playing, McDonald's-and-junk-food-loving boy from Arkansas. — Toni Morrison, 1998
- ▶ 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!

Political explanations for journalists' confusion

- ▶ 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
- ▶ Clinton displays almost every trope of blackness: single-parent household, born poor, working-class, saxophone-playing, McDonald's-and-junk-food-loving boy from Arkansas. — Toni Morrison, 1998
- ▶ 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!

Political explanations for journalists' confusion

- ▶ 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
- ▶ Clinton displays almost every trope of blackness: single-parent household, born poor, working-class, saxophone-playing, McDonald's-and-junk-food-loving boy from Arkansas. — Toni Morrison, 1998
- ▶ 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!

Psychological explanations for journalists' confusion

- ▶ “Typicality” (Rosch, 1975): robins and penguins
- ▶ What does a “typical” Democrat or a “typical” Republican look like?
- ▶ Personification of states and counties

Psychological explanations for journalists' confusion

- ▶ “Typicality” (Rosch, 1975): robins and penguins
- ▶ What does a “typical” Democrat or a “typical” Republican look like?
- ▶ Personification of states and counties

Psychological explanations for journalists' confusion

- ▶ “Typicality” (Rosch, 1975): robins and penguins
- ▶ What does a “typical” Democrat or a “typical” Republican look like?
- ▶ Personification of states and counties

Psychological explanations for journalists' confusion

- ▶ “Typicality” (Rosch, 1975): robins and penguins
- ▶ What does a “typical” Democrat or a “typical” Republican look like?
- ▶ Personification of states and counties

Psychological explanations for journalists' confusion

- ▶ 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!

Psychological explanations for journalists' confusion

- ▶ 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!

Psychological explanations for journalists' confusion

- ▶ 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!

Psychological explanations for journalists' confusion

- ▶ 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!

Psychological explanations for journalists' confusion

- ▶ 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!

Second-order availability bias

- ▶ Journalists are mostly Democrats and mostly richer than average
- ▶ Second-order availability bias: I am a Democrat and richer than average, therefore the Republicans are likely to be poorer than average
- ▶ Richer journalists are more likely to be Democrats
- ▶ Second-order availability bias: I see a positive correlation between income and voting for the Democrats, therefore this correlation must exist in the population
- ▶ This is the error that Barone makes

Second-order availability bias

- ▶ Journalists are mostly Democrats and mostly richer than average
- ▶ Second-order availability bias: I am a Democrat and richer than average, therefore the Republicans are likely to be poorer than average
- ▶ Richer journalists are more likely to be Democrats
- ▶ Second-order availability bias: I see a positive correlation between income and voting for the Democrats, therefore this correlation must exist in the population
- ▶ This is the error that Barone makes

Second-order availability bias

- ▶ Journalists are mostly Democrats and mostly richer than average
- ▶ Second-order availability bias: I am a Democrat and richer than average, therefore the Republicans are likely to be poorer than average
- ▶ Richer journalists are more likely to be Democrats
- ▶ Second-order availability bias: I see a positive correlation between income and voting for the Democrats, therefore this correlation must exist in the population
- ▶ This is the error that Barone makes

Second-order availability bias

- ▶ Journalists are mostly Democrats and mostly richer than average
- ▶ Second-order availability bias: I am a Democrat and richer than average, therefore the Republicans are likely to be poorer than average
- ▶ Richer journalists are more likely to be Democrats
- ▶ Second-order availability bias: I see a positive correlation between income and voting for the Democrats, therefore this correlation must exist in the population
- ▶ This is the error that Barone makes

Second-order availability bias

- ▶ Journalists are mostly Democrats and mostly richer than average
- ▶ Second-order availability bias: I am a Democrat and richer than average, therefore the Republicans are likely to be poorer than average
- ▶ Richer journalists are more likely to be Democrats
- ▶ Second-order availability bias: I see a positive correlation between income and voting for the Democrats, therefore this correlation must exist in the population
- ▶ This is the error that Barone makes

Second-order availability bias

- ▶ Journalists are mostly Democrats and mostly richer than average
- ▶ Second-order availability bias: I am a Democrat and richer than average, therefore the Republicans are likely to be poorer than average
- ▶ Richer journalists are more likely to be Democrats
- ▶ Second-order availability bias: I see a positive correlation between income and voting for the Democrats, therefore this correlation must exist in the population
- ▶ This is the error that Barone makes

Second-order availability bias

- ▶ National journalists in New York, California, Maryland, and Virginia live in states where:
 - ▶ 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:
 - ▶ Paradoxically, journalists are influenced by their geography—even when they try to generalize to the general population!

Second-order availability bias

- ▶ National journalists in New York, California, Maryland, and Virginia live in states where:
 - ▶ 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:
 - ▶ Paradoxically, journalists are influenced by their geography—even when they try to generalize to the general population!

Second-order availability bias

- ▶ National journalists in New York, California, Maryland, and Virginia live in states where:
 - ▶ 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:
 - ▶ Rich counties support the Republicans, poor counties support the Democrats
 - ▶ There is a strong correlation between income and Republican vote preference
- ▶ Paradoxically, journalists are influenced by their geography—even when they try to generalize to the general population!

Second-order availability bias

- ▶ National journalists in New York, California, Maryland, and Virginia live in states where:
 - ▶ 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:
 - ▶ Rich counties support the Republicans, poor counties support the Democrats
 - ▶ There is a strong correlation between income and Republican vote preference
- ▶ Paradoxically, journalists are influenced by their geography—even when they try to generalize to the general population!

Second-order availability bias

- ▶ National journalists in New York, California, Maryland, and Virginia live in states where:
 - ▶ 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:
 - ▶ Rich counties support the Republicans, poor counties support the Democrats
 - ▶ There is a strong correlation between income and Republican vote preference
- ▶ Paradoxically, journalists are influenced by their geography—even when they try to generalize to the general population!

Second-order availability bias

- ▶ National journalists in New York, California, Maryland, and Virginia live in states where:
 - ▶ 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:
 - ▶ Rich counties support the Republicans, poor counties support the Democrats
 - ▶ There is a strong correlation between income and Republican vote preference
- ▶ Paradoxically, journalists are influenced by their geography—even when they try to generalize to the general population!

Second-order availability bias

- ▶ National journalists in New York, California, Maryland, and Virginia live in states where:
 - ▶ 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:
 - ▶ Rich counties support the Republicans, poor counties support the Democrats
 - ▶ There is a strong correlation between income and Republican vote preference
- ▶ Paradoxically, journalists are influenced by their geography—even when they try to generalize to the general population!

Second-order availability bias

- ▶ National journalists in New York, California, Maryland, and Virginia live in states where:
 - ▶ 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:
 - ▶ Rich counties support the Republicans, poor counties support the Democrats
 - ▶ There is a strong correlation between income and Republican vote preference
- ▶ Paradoxically, journalists are influenced by their geography—even when they try to generalize to the general population!

Conclusions

- ▶ 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.
- ▶ Key statistical tools:

Conclusions

- ▶ 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.
- ▶ Key statistical tools:

Conclusions

- ▶ 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.
- ▶ Key statistical tools:

Conclusions

- ▶ 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.
- ▶ Key statistical tools:
 - ▶ Multilevel modeling
 - ▶ Interactions (varying slopes)

Conclusions

- ▶ 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.
- ▶ Key statistical tools:
 - ▶ Multilevel modeling
 - ▶ Interactions (varying slopes)
 - ▶ The secret weapon
 - ▶ The superplot

Conclusions

- ▶ 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.
- ▶ Key statistical tools:
 - ▶ Multilevel modeling
 - ▶ Interactions (varying slopes)
 - ▶ The secret weapon
 - ▶ The superplot

Conclusions

- ▶ 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.
- ▶ Key statistical tools:
 - ▶ Multilevel modeling
 - ▶ Interactions (varying slopes)
 - ▶ The secret weapon
 - ▶ The superplot

Conclusions

- ▶ 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.
- ▶ Key statistical tools:
 - ▶ Multilevel modeling
 - ▶ Interactions (varying slopes)
 - ▶ The secret weapon
 - ▶ The superplot

Conclusions

- ▶ 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.
- ▶ Key statistical tools:
 - ▶ Multilevel modeling
 - ▶ Interactions (varying slopes)
 - ▶ The secret weapon
 - ▶ The superplot