METHODOLOGY AS IDEOLOGY: SOME COMMENTS ON ROBERT AXELROD'S *THE EVOLUTION OF COOPERATION*

*di Andrew Gelman**

1. Introduction

Robert Axelrod's *The Evolution of Cooperation* (1984) is an extremely influential work in the application of game theory to political science. The book uses theory, computer experiments, and historical examples to identify the benefits of cooperative strategies in the iterated prisoner's dilemma. The book's longest historical example is a model of cooperative behavior among British and German soldiers in First World War trenches. The model is appealing both intellectually, as a solution to a behavioral puzzle, and emotionally, because it seems to bring some sense to a scary and confusing subject.

However, a closer look reveals serious problems with the application of the prisoner's dilemma to this particular historical situation, which in turn calls into question the claims made about the importance of the prisoner's

Recent challenges and developments in Bayesian modeling and computation (from a political and social science perspective)

Andrew Gelman

Department of Statistics and Department of Political Science
Columbia University, New York

In collaboration with Yair Ghitza, Wei Wang, David Rothschild, Sharad Goel, Doug Rivers, Bob Carpenter, Daniel Lee, Michael Betancourt, Ben Goodrich, ...

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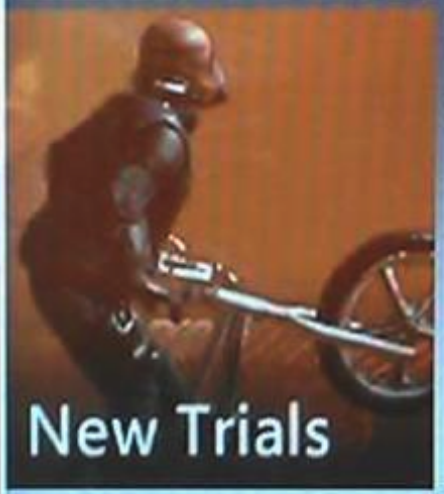

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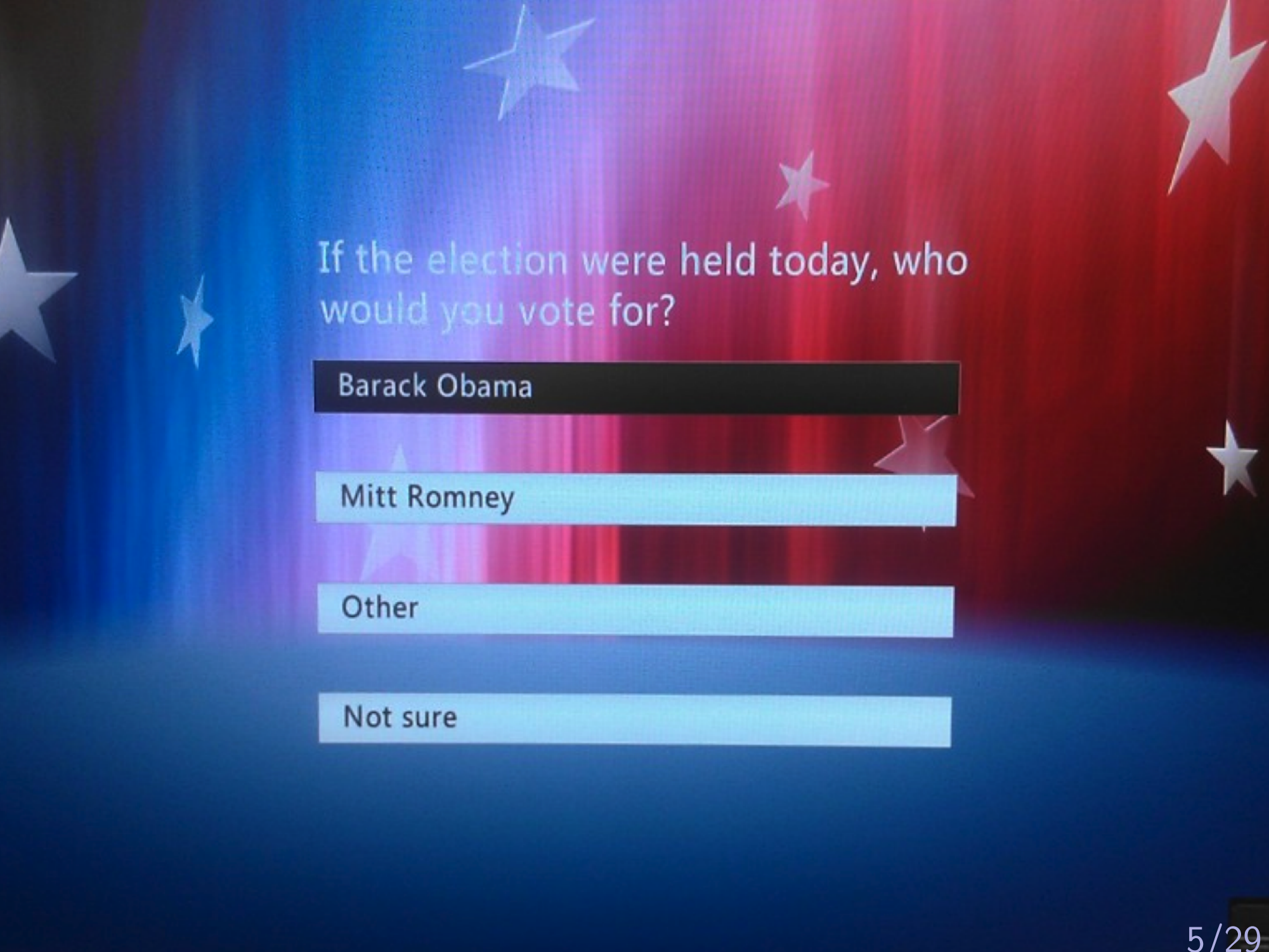
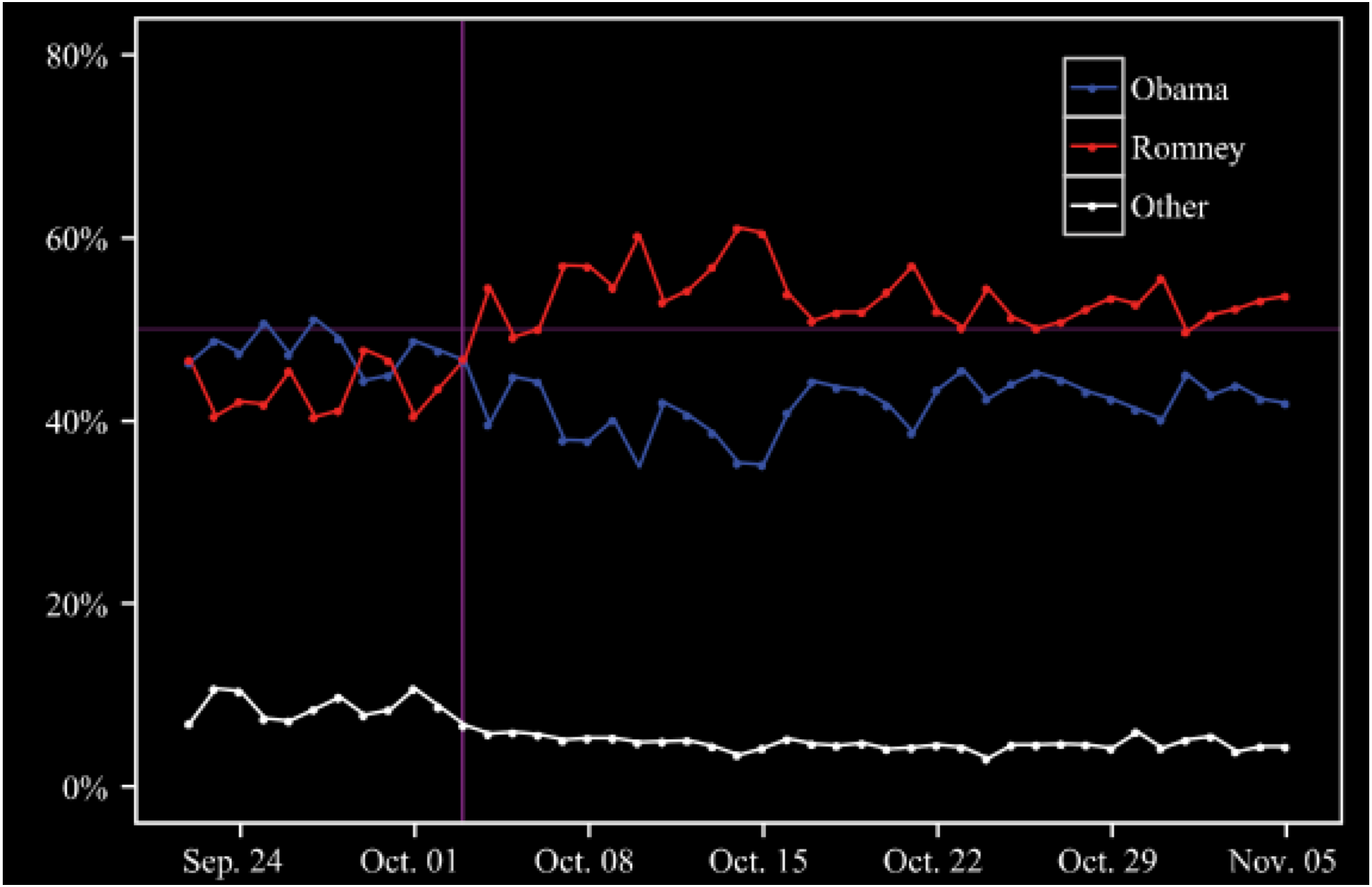

If the election were held today, who would you vote for?
Barack Obama
Mitt Romney
Other
Not sure


80%
60%
40%
20%
0%
Obama
Romney
Other
Sep. 24
Oct. 01
Oct. 08
Oct. 15
Oct. 22
Oct. 29
Nov. 05

"This week, the New York Times and CBS News published a story using, in part, information from a non-probability, opt-in survey sparking concern among many in the polling community. In general, these methods have little grounding in theory and the results can vary widely based on the particular method used."
— Michael Link, President, American Association for ~~Buggy-Whip Manufacture~~ Public Opinion Research

Michael W. Link is Chief Methodologist for Research Methods at The Nielsen Company. base of experience in survey research, having worked in academia (University of South C 1999), not-for-profit research (RTI International, 1999-2004), government (Centers for Dis Prevention, 2004-2007), and the private sector (Nielsen, 2007-present). He received his Science from the University of South Carolina. Michael's research centers around develo methodologies for confronting some of the most pressing issues facing survey research, techniques for improving survey participation and data quality (use of address-based sam call screening technologies), methodological issues involving use of multiple modes in da mail, CATI, field, mobile, meters), and obtaining participation from hard-to-survey populat isolated, racial and ethnic groups). His numerous research articles have appeared in *Pu Quarterly* and other leading scientific journals.

An AAPOR member since 1993, Michael served as AAPOR Conference Chair in back-to & 2010), a member of both the Cell Phone and Online task forces, an instructor for an AA numerous short-courses, a reviewer for the student paper competition on several occasio regular reviewer for *Public Opinion Quarterly*. He is a member of SAPOR, serving from 2 President, Conference Chair, and Student Paper Competition Organizer and also a mem

In 2011 he, along with several research colleagues, received AAPOR's Warren J. Mitofsk Award for their work on address based sampling designs. His current research focuses o technologies, such as mobile and social platforms, as vehicles for measuring and unders attitudes and behaviors. He will be teaching a short course on "The Role of New Techno Augmenting, or Replacing Traditional Surveys" at the 2012 AAPOR conference.

Nielsen feels the heat of competition as it flubs its ratings of news broadcasts, putting ABC ahead of NBC

BY DON KAPLAN

In spite of the goof, its global president took time to slam rival Rentrak, which collects different kind of data from viewers

NEW YORK DAILY NEWS / Sunday, October 19, 2014, 2:00 AM

A A A

MEDIA

TV Ratings by Nielsen Had Errors for Months

By **BILL CARTER** and **EMILY STEEL** OCT. 10, 2014

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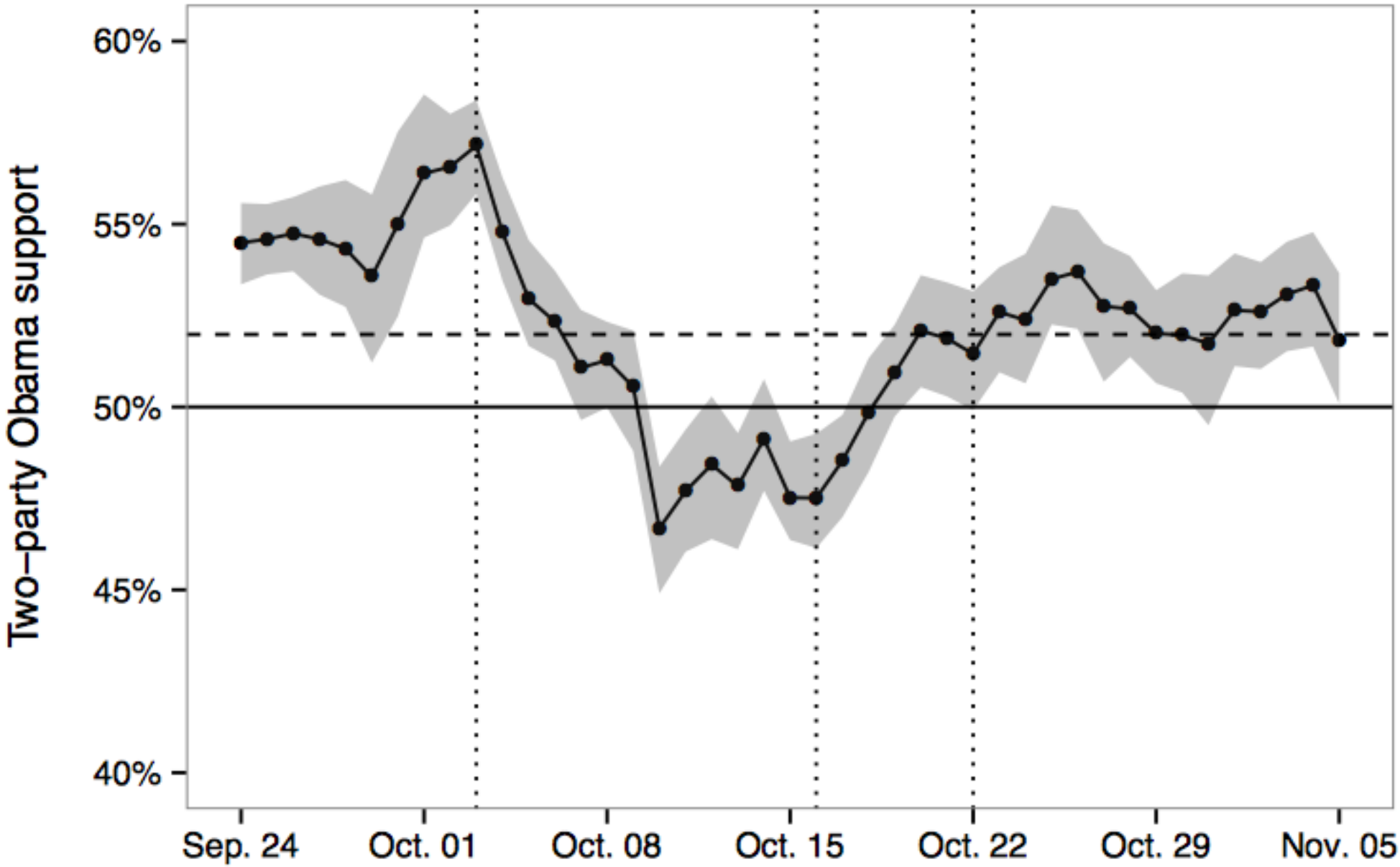
Nielsen, the television research firm, acknowledged on Friday that it had been reporting inaccurate ratings for the broadcast networks for the last seven months, a mistake that raises questions about the company's increasingly criticized system for measuring TV audiences.

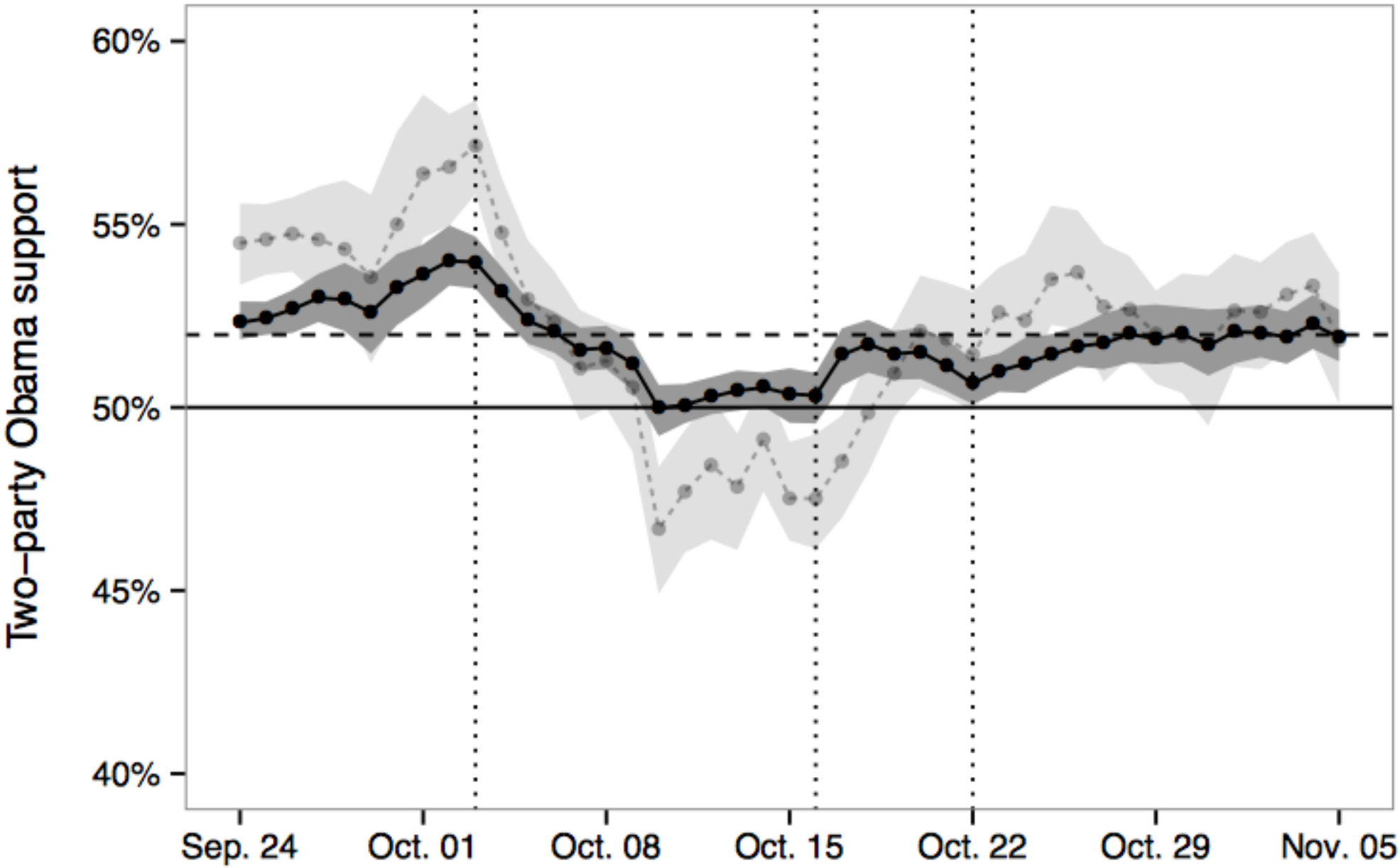
Xbox estimates, adjusting for demographics:



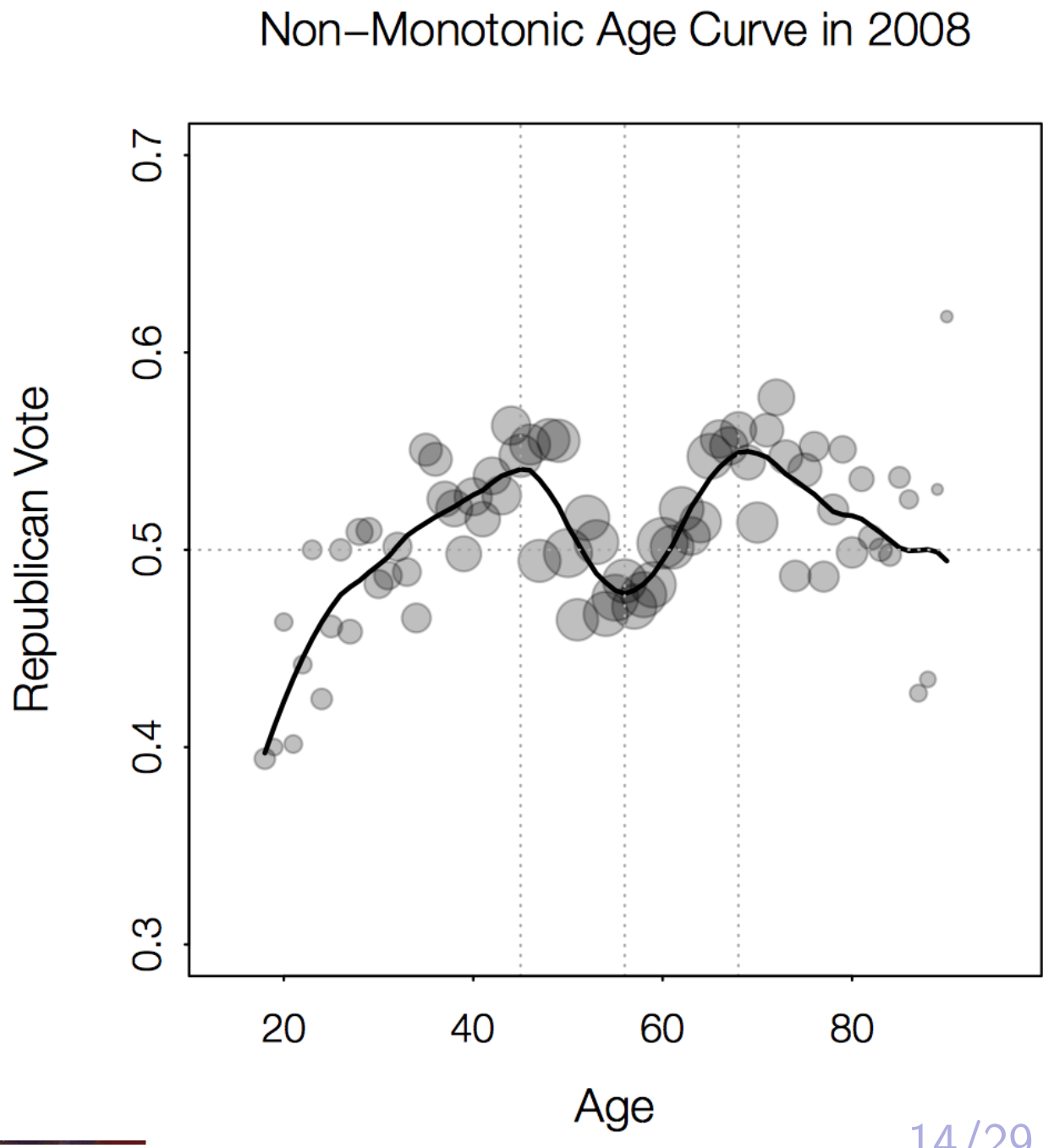

The Presidential
2012 DEBATES
#nbcpolitics

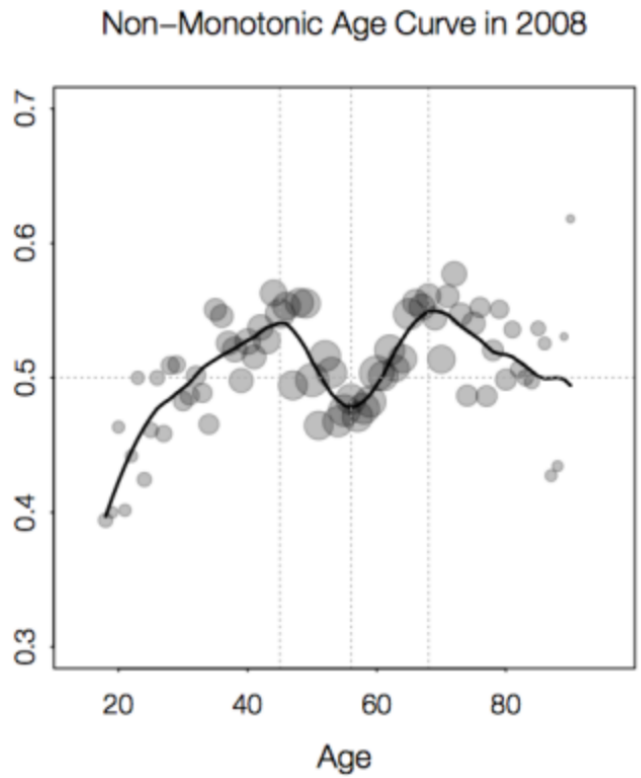
- Karl Rove, *Wall Street Journal*, 7 Oct: "Mr. Romney's bounce is significant."
- Nate Silver, *New York Times*, 6 Oct: "Mr. Romney has not only improved his own standing but also taken voters away from Mr. Obama's column."

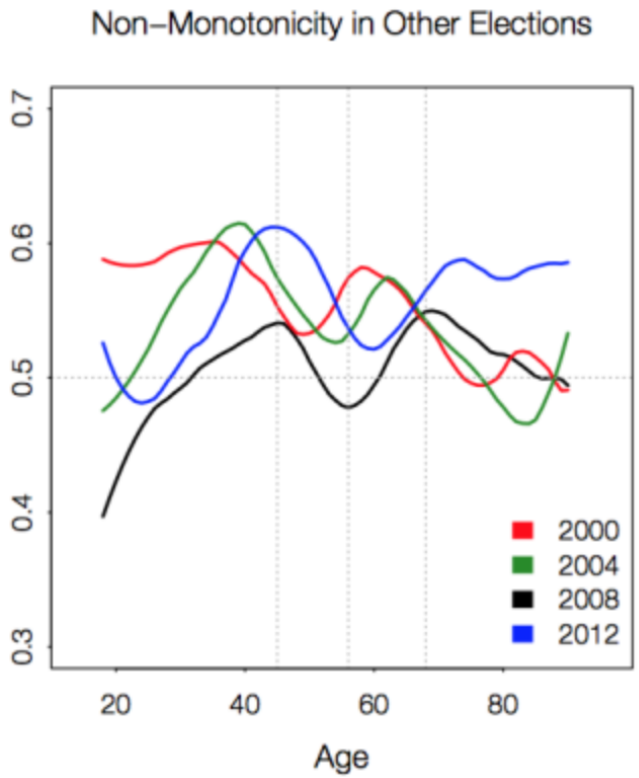
Xbox estimates, adjusting for demographics and partisanship:

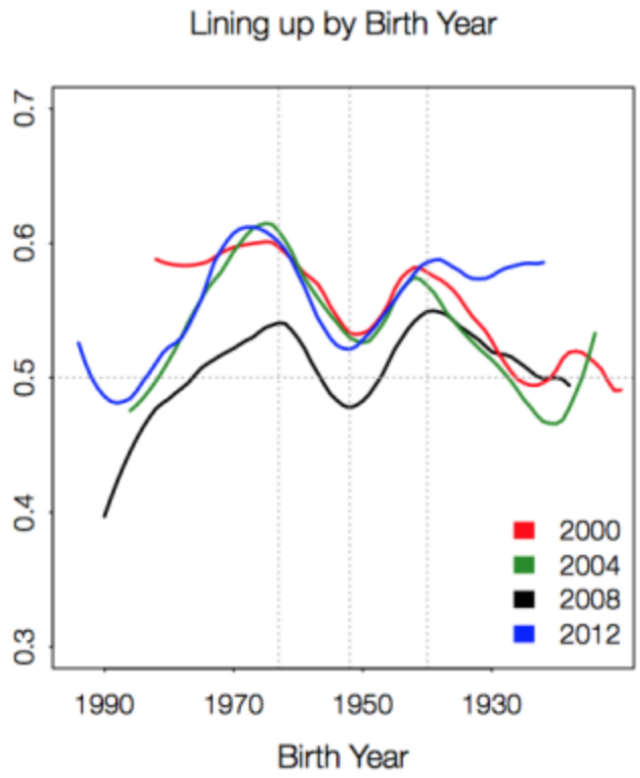


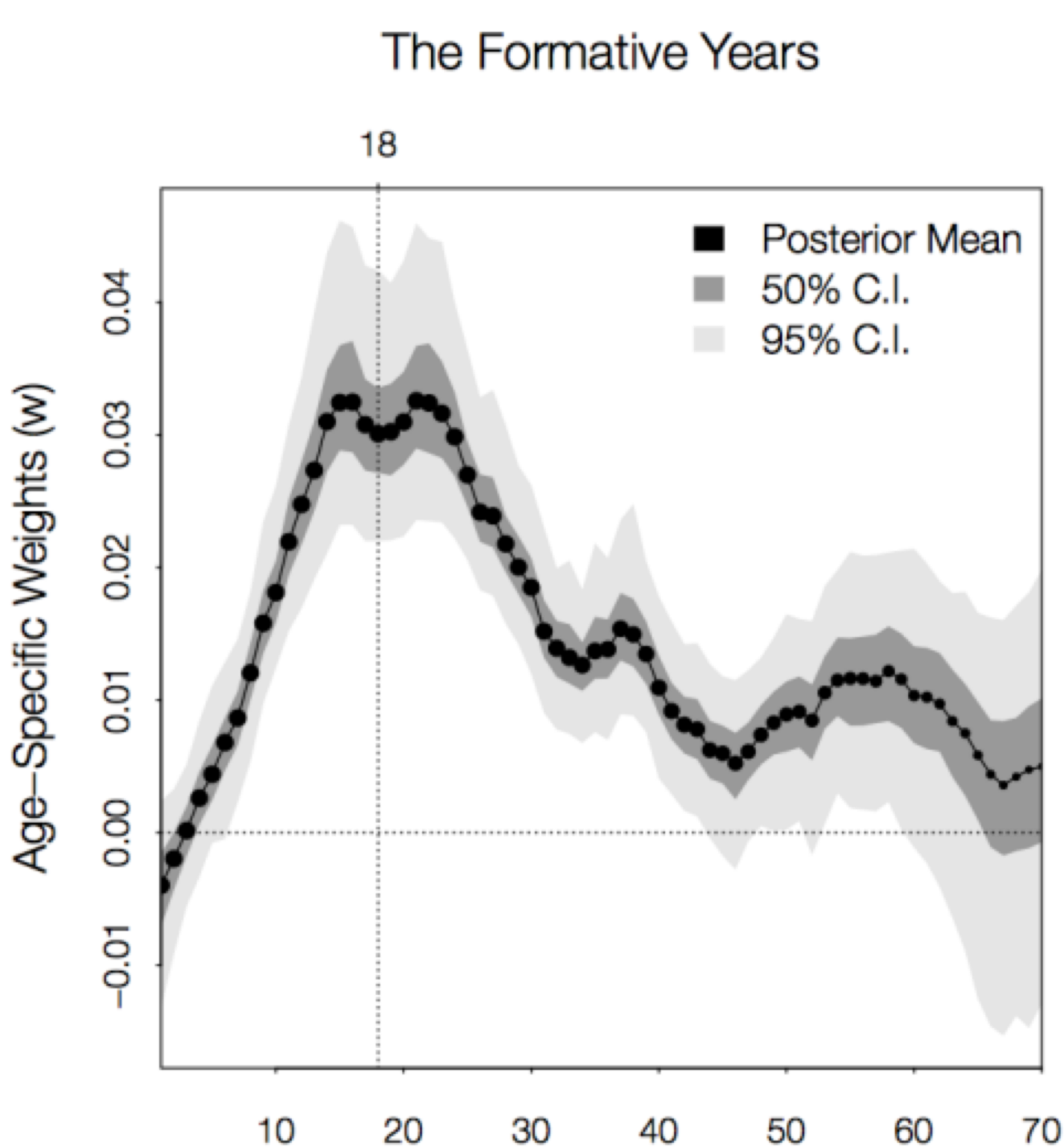
Jimmy Carter Republicans and George W. Bush Democrats:




Non−Monotonic Age Curve in 2008
0.3
0.4
0.5
0.6
0.7
20
40
60
80
Age


Non−Monotonicity in Other Elections
0.3
0.4
0.5
0.6
0.7
20
40
60
80
Age
2000
2004
2008
2012


Lining up by Birth Year
0.3
0.4
0.5
0.6
0.7
1990
1970
1950
1930
Birth Year
2000
2004
2008
2012


The Formative Years
18
Posterior Mean
50% C.I.
95% C.I.
Age–Specific Weights (w)
−0.01
0.00
0.01
0.02
0.03
0.04
10
20
30
40
50
60
70

Stan

Stan is a probabilistic programming language implementing full Bayesian statistical inference with

- MCMC sampling (NUTS, HMC)

and penalized maximum likelihood estimation with

- Optimization (BFGS)

Stan is coded in C++ and runs on all major platforms (Linux, Mac, Windows).

Stan is freedom-respecting, open-source software (new BSD core, GPLv3 interfaces).

Interfaces

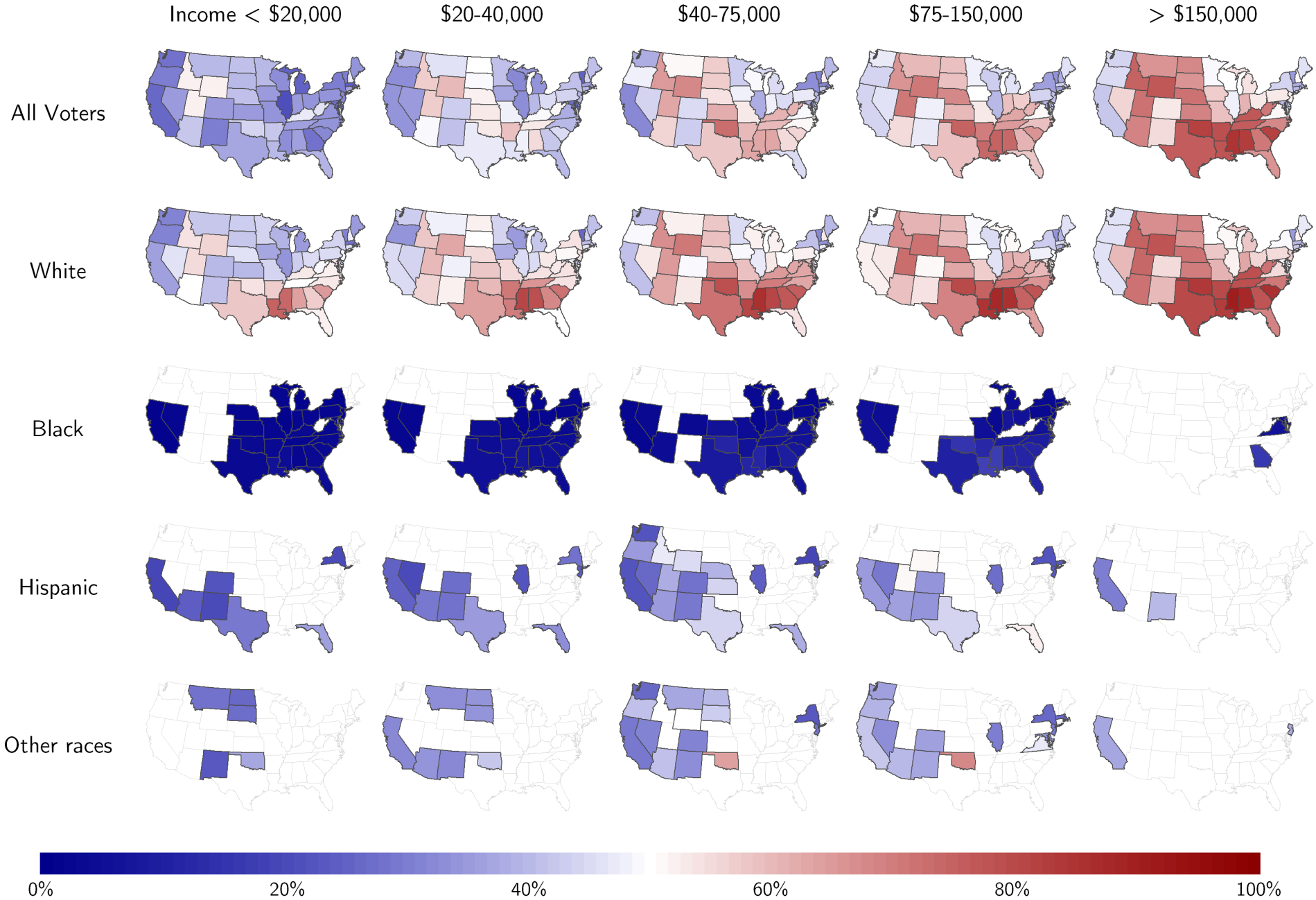
Download and getting started instructions, organized by interface:

- RStan v2.5.0 (R)
- PyStan v2.5.0 (Python)
- CmdStan v2.5.0 (shell, command-line terminal)
- MatlabStan (MATLAB)
- Stan.jl (Julia)

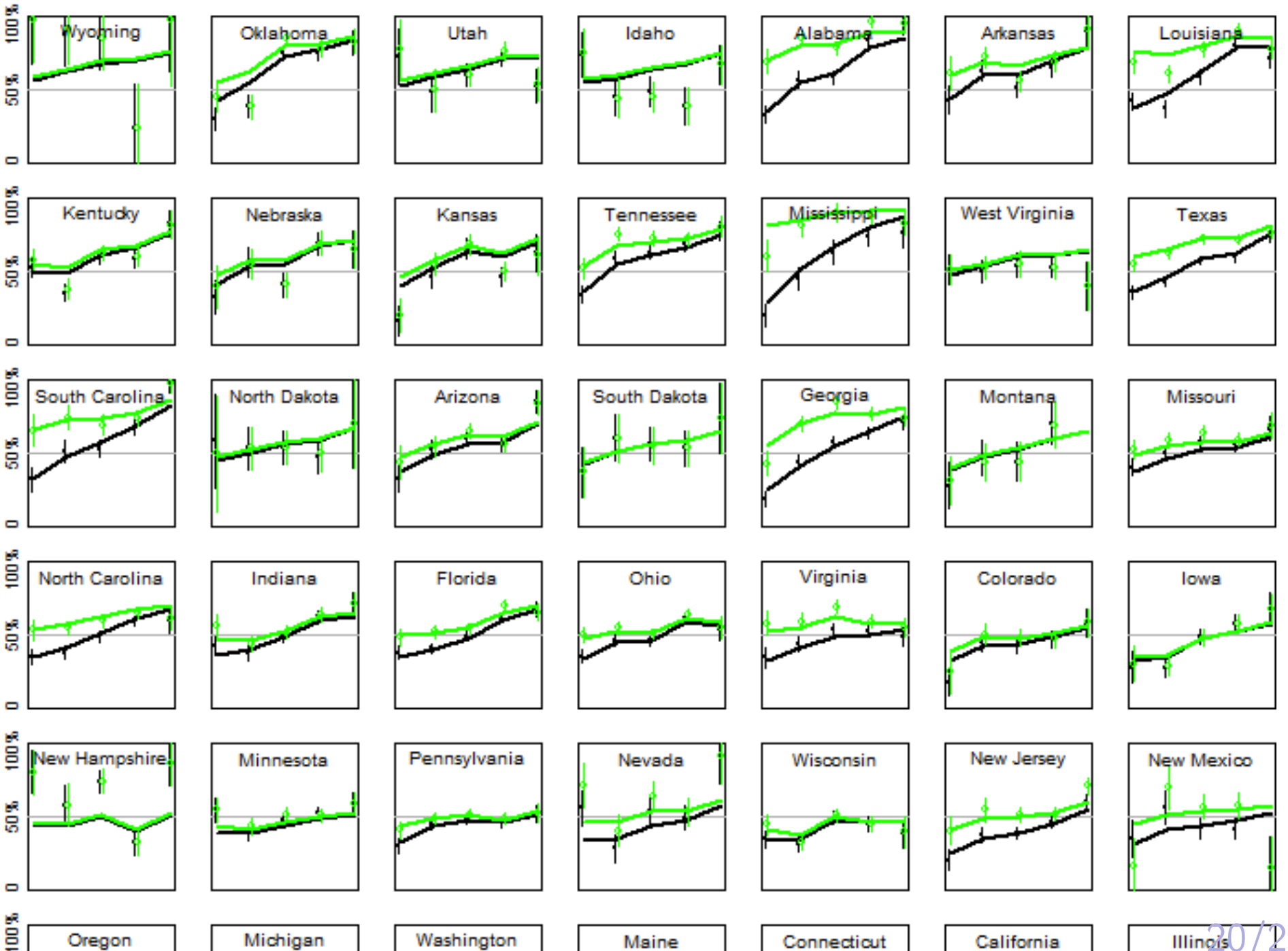
Adjusting for known differences between sample and population:

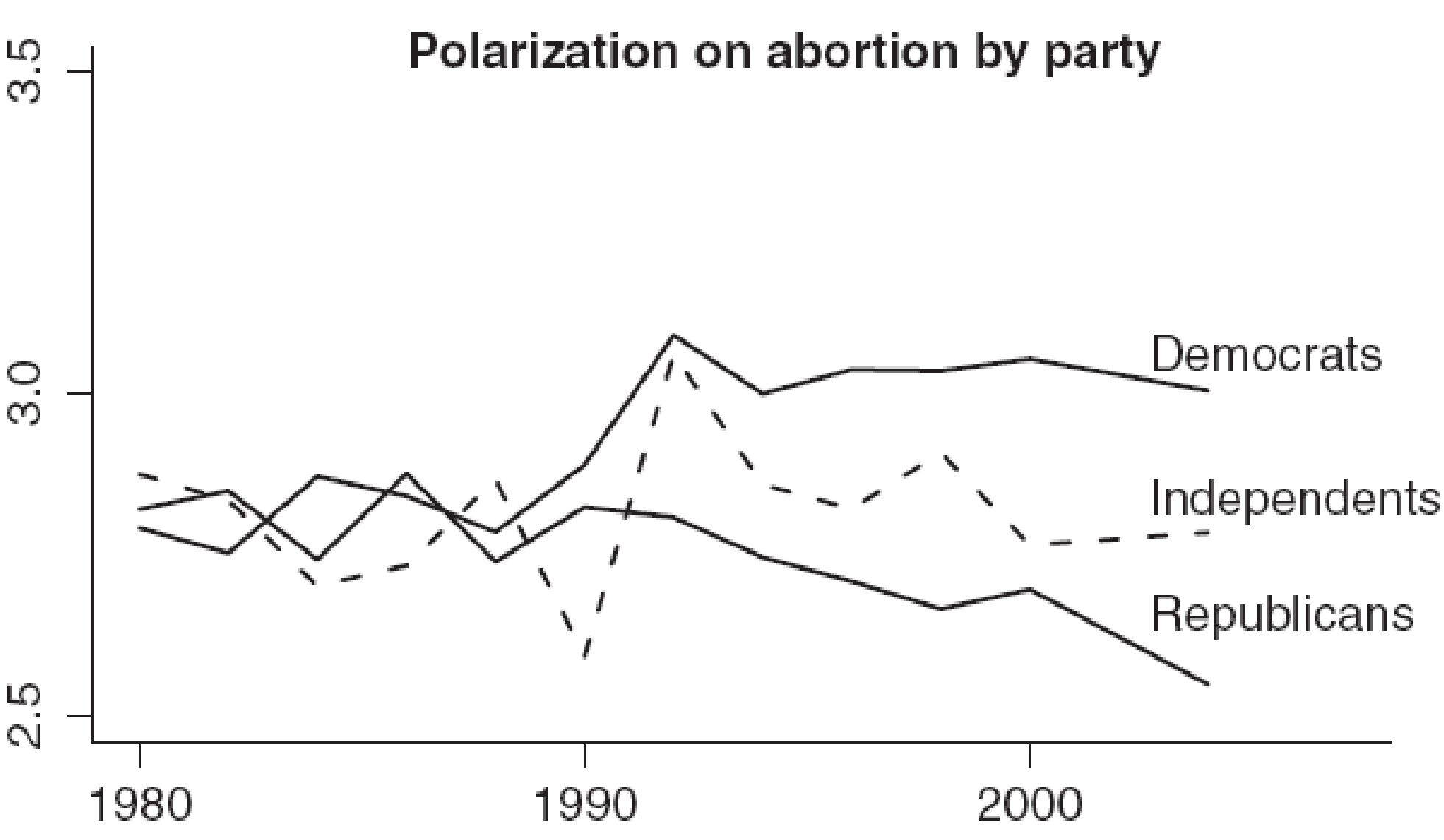
- Include more predictors
- Multilevel regression
- Poststratification

Did you vote for McCain in 2008?



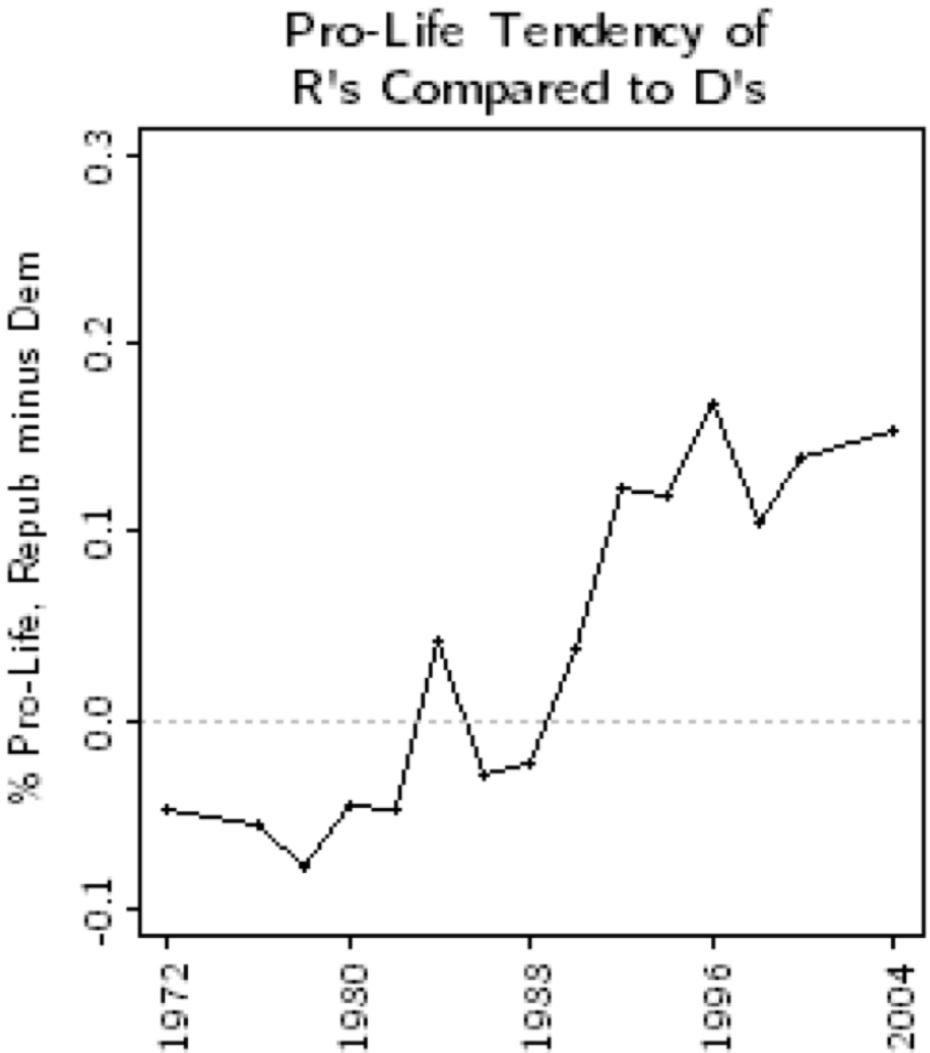
When a category represents less than 1% of the voters in a state, the state is left blank

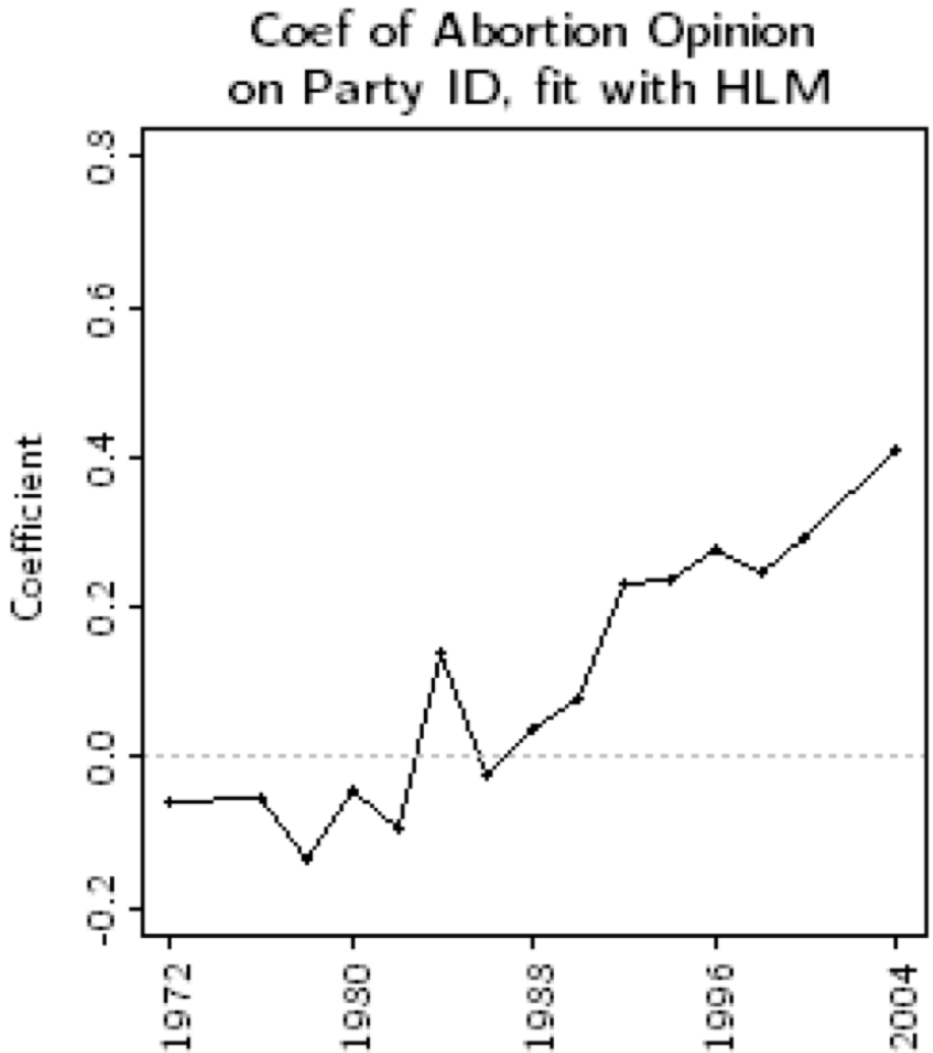

2008 election: McCain share of the two-party vote in each income category
within each state among all voters (black) and non-Hispanic whites (green)
100%
50%
0
Wyoming
Oklahoma
Utah
Idaho
Alabama
Arkansas
Louisiana
Kentucky
Nebraska
Kansas
Tennessee
Mississippi
West Virginia
Texas
South Carolina
North Dakota
Arizona
South Dakota
Georgia
Montana
Missouri
North Carolina
Indiana
Florida
Ohio
Virginia
Colorado
Iowa
New Hampshire
Minnesota
Pennsylvania
Nevada
Wisconsin
New Jersey
New Mexico
Oregon
Michigan
Washington
Maine
Connecticut
California
Illinois

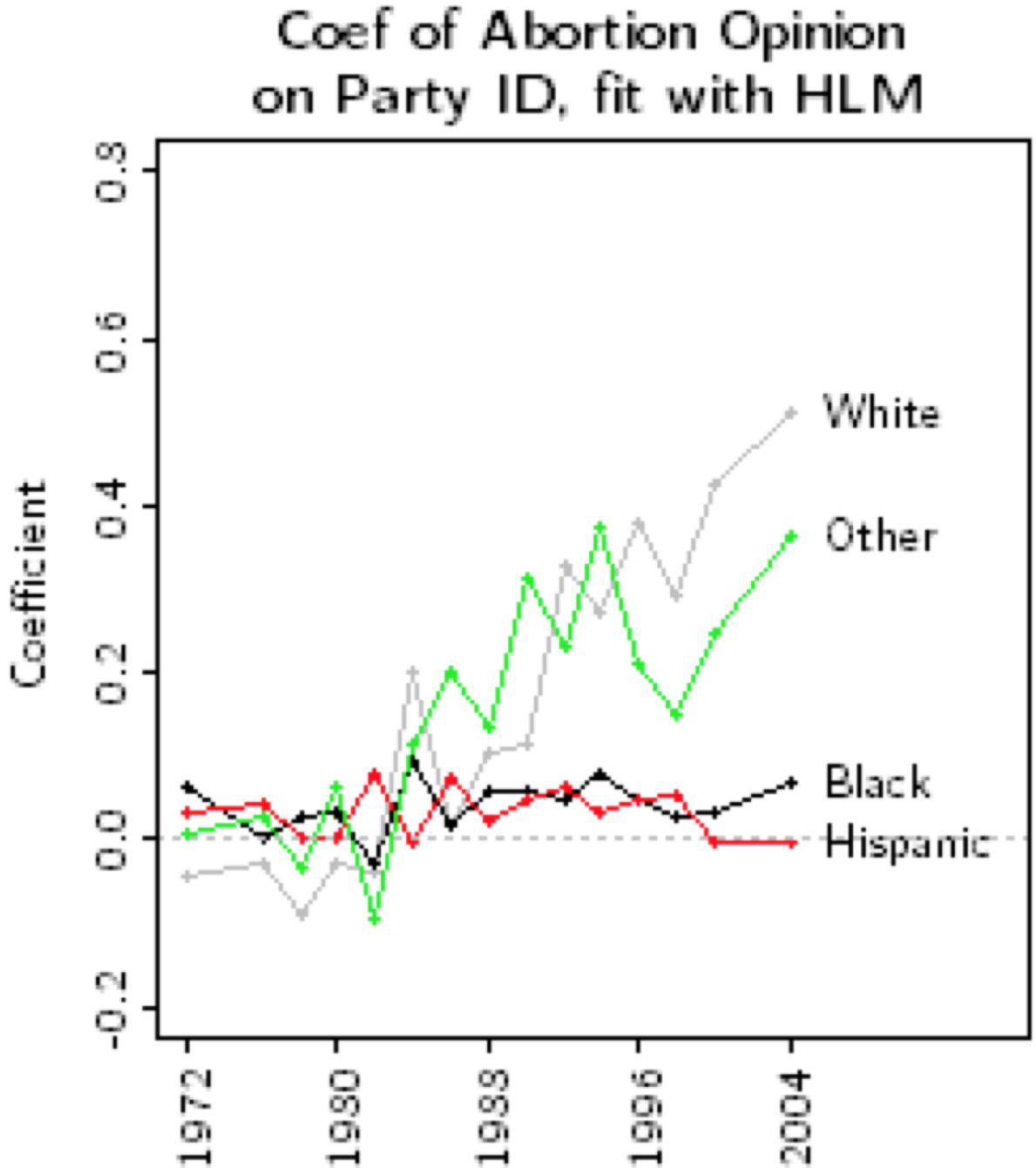

Polarization on abortion by party
3.5
3.0
2.5
1980
1990
2000
Democrats
Independents
Republicans

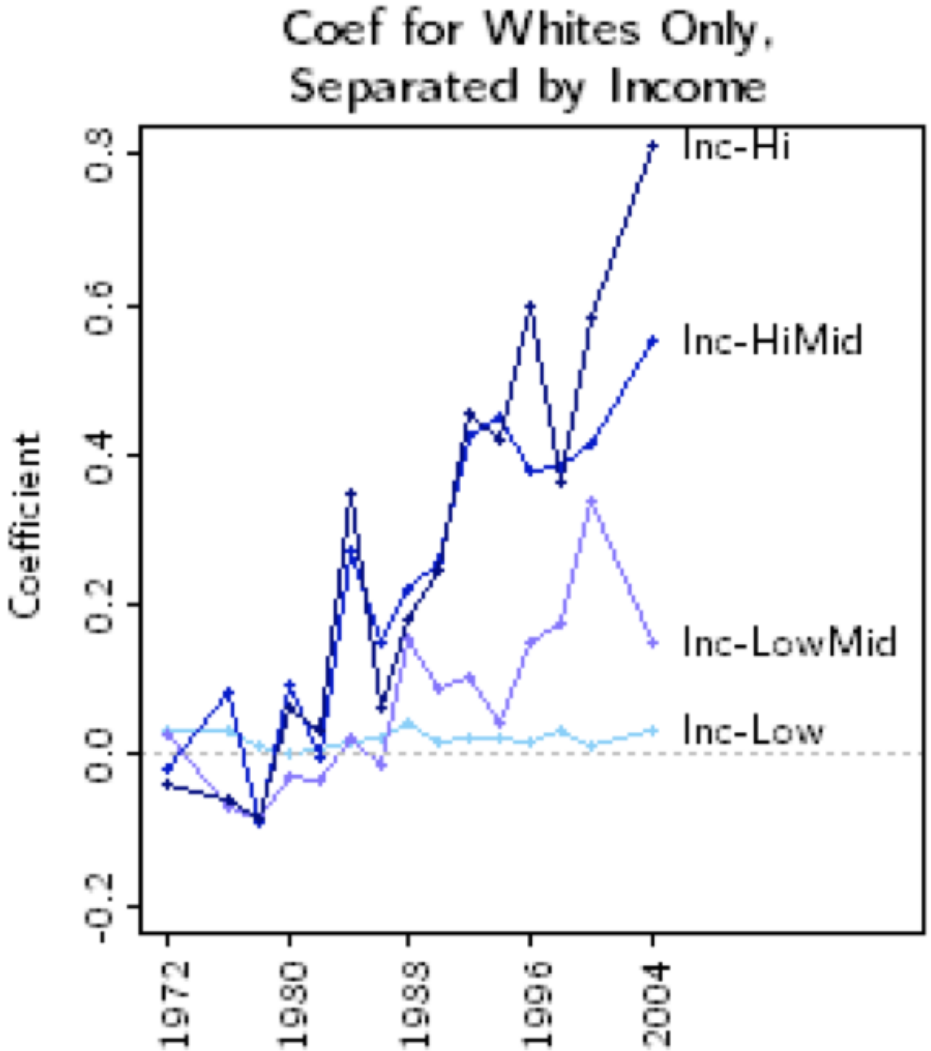
The New York Times

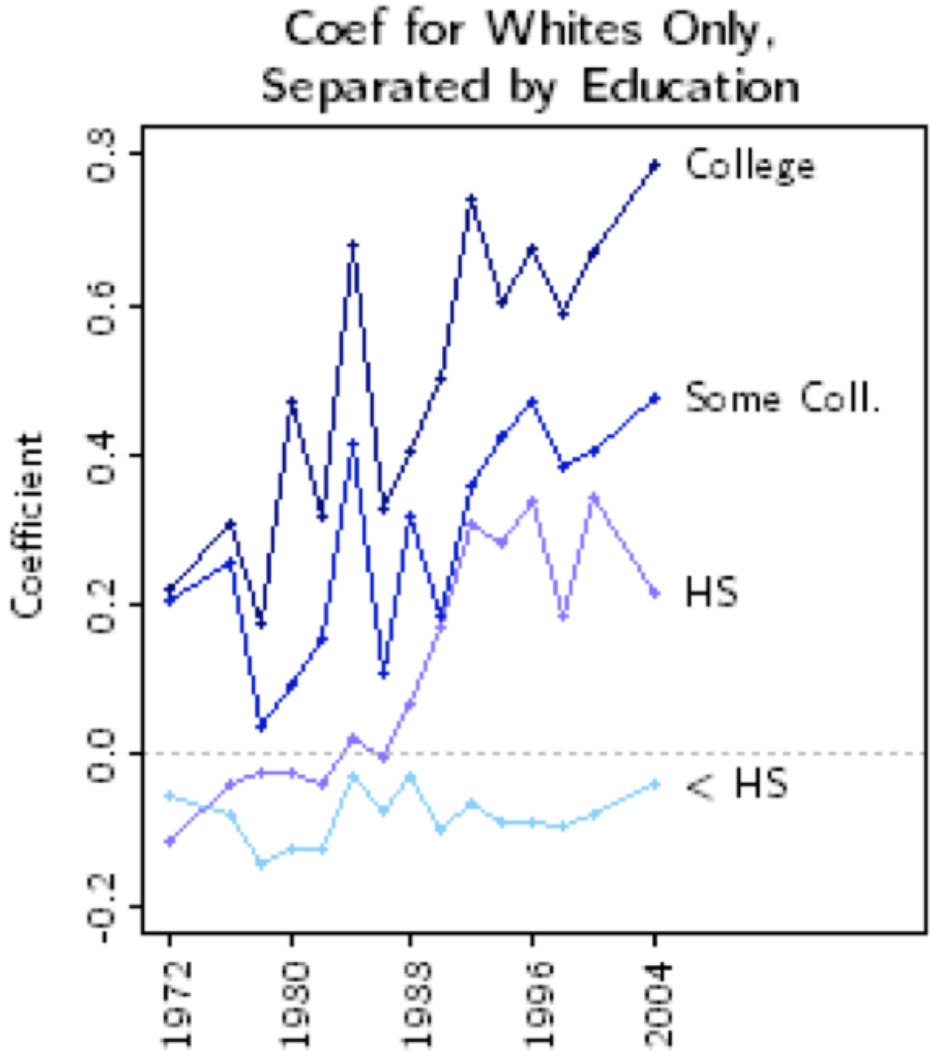
G.O.P. Pursues Hispanic Votes With Abortion Stance


Pro-Life Tendency of
R's Compared to D's
% Pro-Life, Repub minus Dem
-0.1
0.0
0.1
0.2
0.3
1972
1980
1988
1996
2004

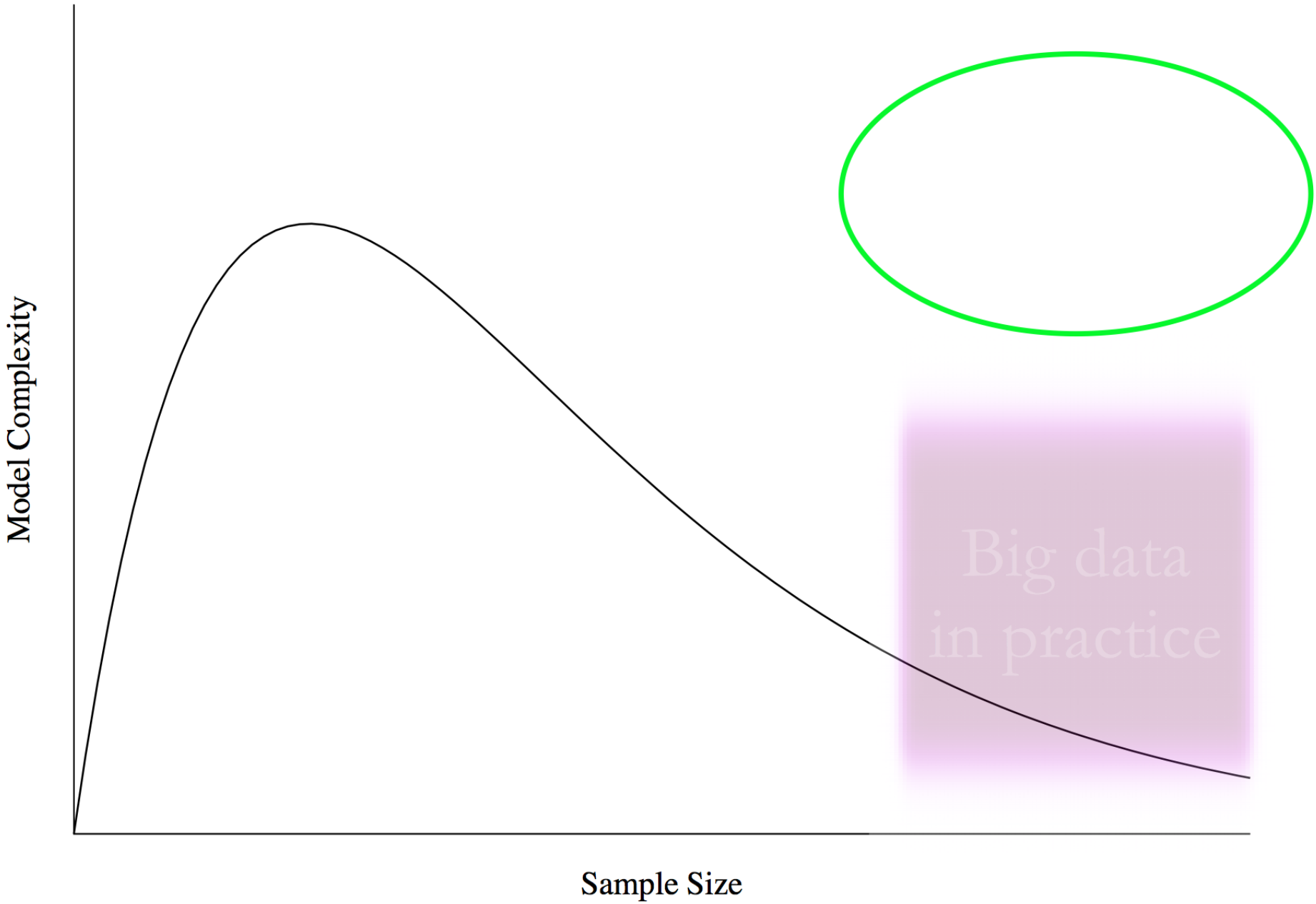

Coef of Abortion Opinion
on Party ID, fit with HLM
Coefficient
-0.2
0.0
0.2
0.4
0.6
0.8
1972
1980
1988
1996
2004


Coef of Abortion Opinion
on Party ID, fit with HLM
Coefficient
-0.2
0.0
0.2
0.4
0.6
0.8
1972
1980
1988
1996
2004
White
Other
Black
Hispanic


Coef for Whites Only,
Separated by Income
Coefficient
-0.2
0.0
0.2
0.4
0.6
0.8
1972
1980
1988
1996
2004
Inc-Hi
Inc-HiMid
Inc-LowMid
Inc-Low

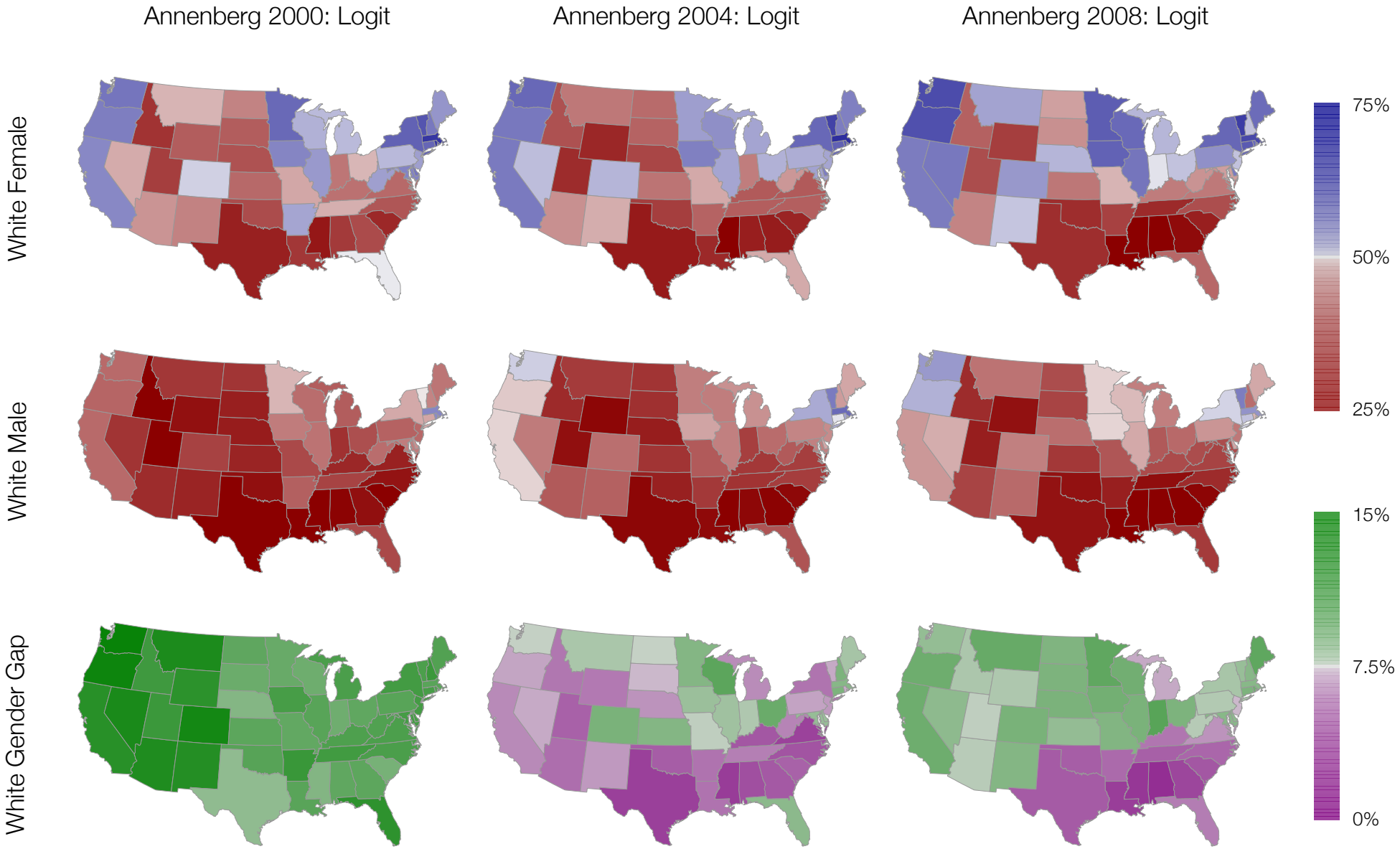

Coef for Whites Only,
Separated by Education
Coefficient
-0.2
0.0
0.2
0.4
0.6
0.8
1972
1980
1988
1996
2004
College
Some Coll.
HS
< HS

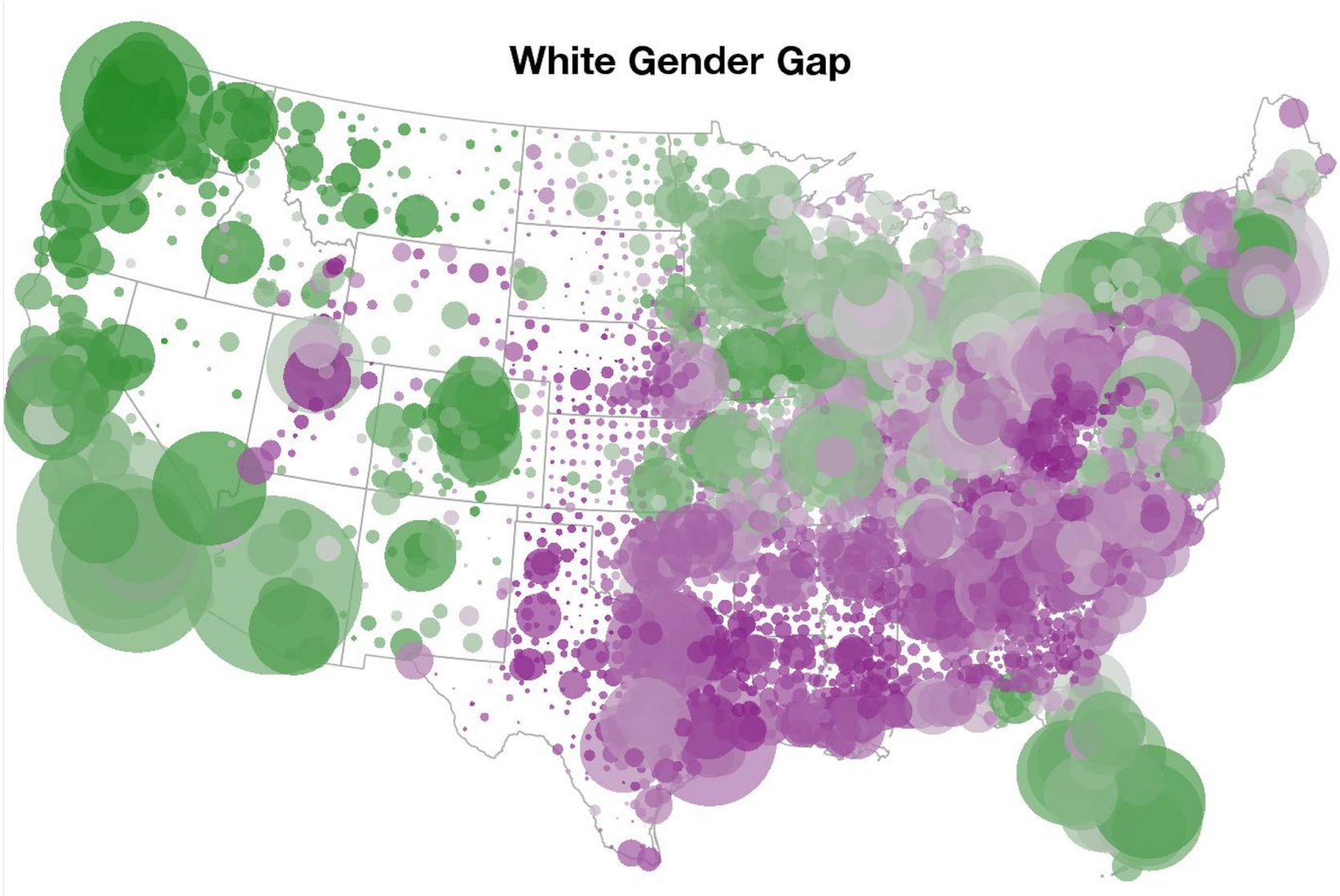
Big Data need Big Model:



Some Bayesian issues:

- Regression with lots of predictors
- Dense multilevel models
- Deep interactions
- Informative priors
- Computing
- Confidence building
- Understanding the models we've fit


Annenberg 2000: Logit
Annenberg 2004: Logit
Annenberg 2008: Logit
White Female
White Male
White Gender Gap
75%
50%
25%
15%
7.5%
0%


White Gender Gap