Improving the Presentation of Quantitative Results in Political Science

John Kastellec and Andrew Gelman

Columbia University

February 12, 2009

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Overview

- What do political scientists do?
- Why tables?
- Why graphs?
- Some basic principles
- A graphing template
- Some examples

Overview

- What do political scientists do?
- Why tables?
- Why graphs?
- Some basic principles
- A graphing template
- Some examples

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Overview

- What do political scientists do?
- Why tables?
- Why graphs?
- Some basic principles
- A graphing template
- Some examples

Overview

- What do political scientists do?
- Why tables?
- Why graphs?
- Some basic principles
- A graphing template
- Some examples

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Overview

- What do political scientists do?
- Why tables?
- Why graphs?
- Some basic principles
- A graphing template
- Some examples

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Overview

- What do political scientists do?
- Why tables?
- Why graphs?
- Some basic principles
- A graphing template
- Some examples

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Overview

- What do political scientists do?
- Why tables?
- Why graphs?
- Some basic principles
- A graphing template
- Some examples

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

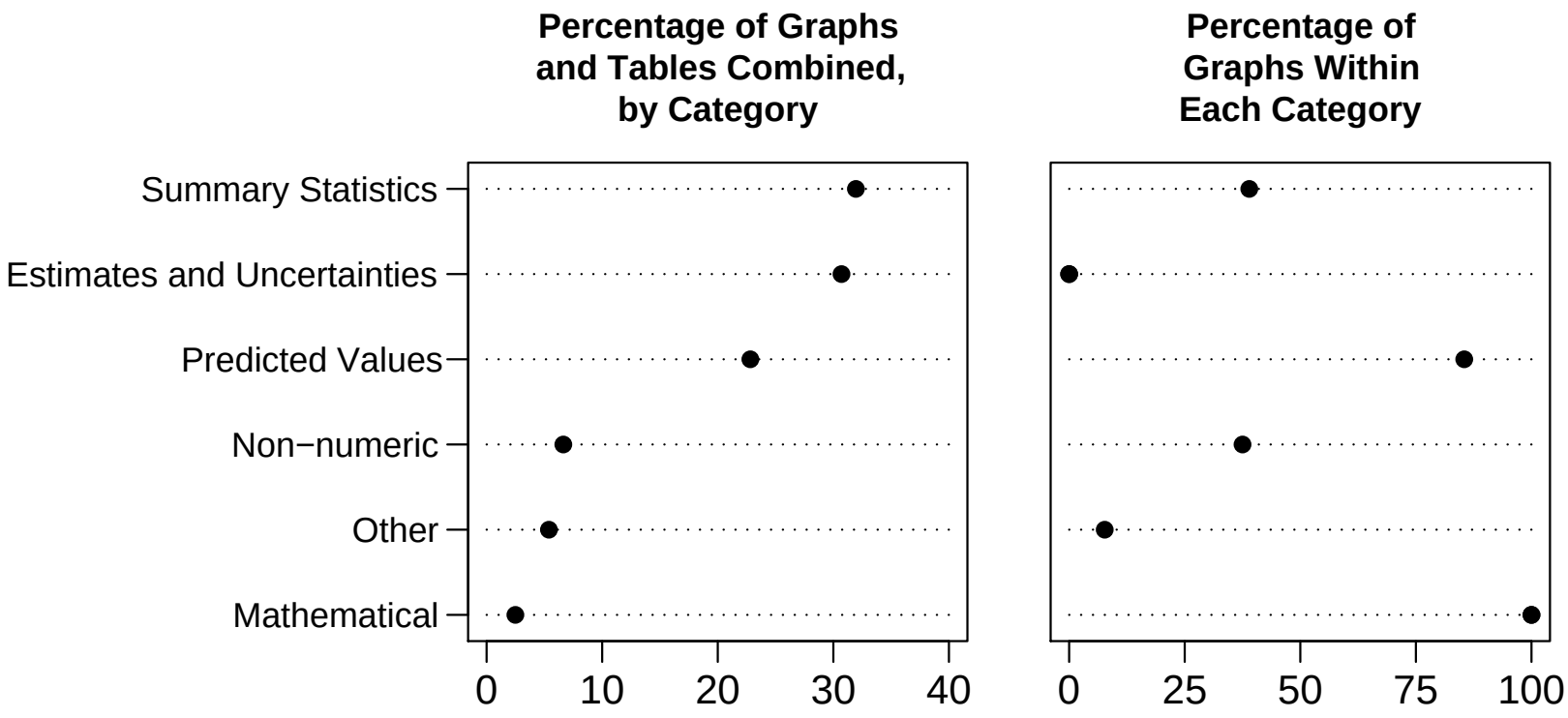
Sports fans

Multiple regression models

Conclusion

The use of tables vs. graphs in political science

- Examined 5 journals in 2006 (Kastellec and Leoni 2007)
- Coded tables/graphs, and purpose of each
- Overall: 150 tables, 89 graphs



Improving the Presentation of Quantitative Results in Political Science

John Kastellec and Andrew Gelman

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Why Tables?

- Tables:
  - Much easier to produce
  - Standard in teaching, presentation and publishing
  - Can aid replication studies
- Graphs:
  - Takes a lot of work
  - Belief it's not possible to present info graphically

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Why Tables?

- Tables:
  - Much easier to produce
  - Standard in teaching, presentation and publishing
  - Can aid replication studies
- Graphs:
  - Takes a lot of work
  - Belief it's not possible to present info graphically

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Why Tables?

- Tables:
  - Much easier to produce
  - Standard in teaching, presentation and publishing
  - Can aid replication studies
- Graphs:
  - Takes a lot of work
  - Belief it's not possible to present info graphically

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Why Tables?

- Tables:
  - Much easier to produce
  - Standard in teaching, presentation and publishing
  - Can aid replication studies
- Graphs:
  - Takes a lot of work
  - Belief it's not possible to present info graphically

Why Tables?

- Tables:
  - Much easier to produce
  - Standard in teaching, presentation and publishing
  - Can aid replication studies
- Graphs:
  - Takes a lot of work
  - Belief it's not possible to present info graphically

Why Graphs?

- Better at communicating empirical results
- Process of graph creation a feature, not a bug
- Most data and results can be presented graphically

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Why Graphs?

- Better at communicating empirical results
- Process of graph creation a feature, not a bug
- Most data and results can be presented graphically

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

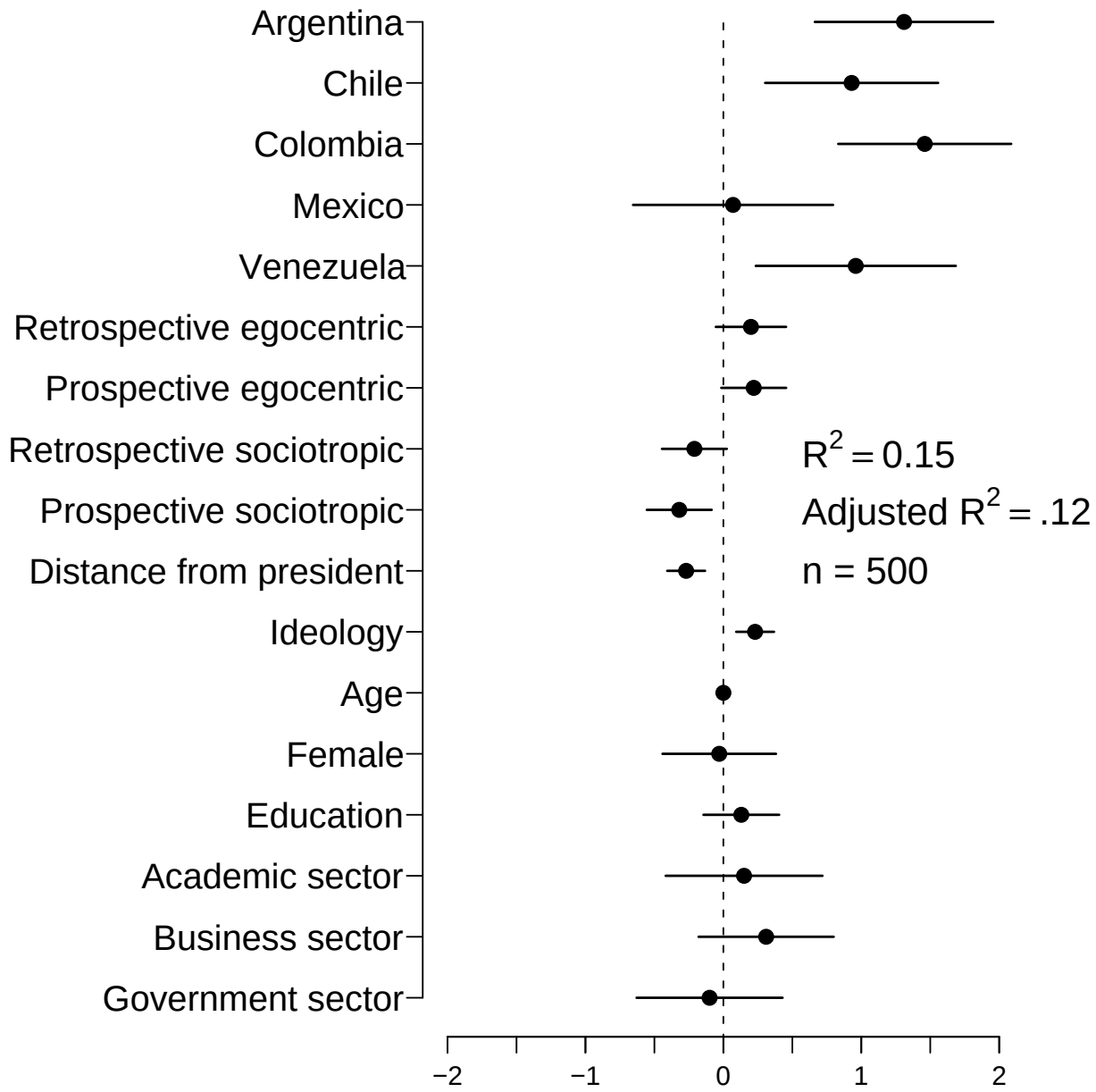
Multiple regression models

Conclusion

Why Graphs?

- Better at communicating empirical results
- Process of graph creation a feature, not a bug
- Most data and results can be presented graphically

Variable	Coefficient (Standard Error)
Constant	.41 (.93)
Countries	
Argentina	1.31 (.33)^{**B,M}
Chile	93 (.32)^{**B,M}
Colombia	1.46 (.32)^{**B,M}
Mexico	.07 (.32)^{**A,CH,CO,V}
Venezuela	0.96 (.37)^{**B,M}
Threat	
Retrospective egocentric economic perceptions	.20 (.13)
Prospective egocentric economic perceptions	.22 (.12)$^{\sharp}$
Retrospective sociotropic economic perceptions	-.21 (.12)$^{\sharp}$
Prospective sociotropic economic perceptions	-.32 (.12)*
Ideological distance from president	-.27 (.07)**
Ideology	
Ideology	.23 (.07)**
Individual Differences	
Age	.00 (.01)
Female	-0.03 (.21)
Education	.13 (.14)
Academic sector	.15 (.29)
Business sector	.31 (.25)
Government sector	-.10 (.27)
R^2	.15
Adjusted R^2	.12
n	500
**p $<$ .01, *p $<$ .05, $^{\sharp}$p $<$ .10 (two-tailed)	


Argentina
Chile
Colombia
Mexico
Venezuela
Retrospective egocentric
Prospective egocentric
Retrospective sociotropic
Prospective sociotropic
Distance from president
Ideology
Age
Female
Education
Academic sector
Business sector
Government sector
$R^2 = 0.15$
Adjusted $R^2 = .12$
n = 500
−2
−1
0
1
2

Some principles

- All graphs are comparisons
- Graphs aren't just for raw data; they're for inferences too
- Communication to self as well as others
- Graph + caption is a unit

Some principles

- All graphs are comparisons
- Graphs aren't just for raw data; they're for inferences too
- Communication to self as well as others
- Graph + caption is a unit

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Some principles

- All graphs are comparisons
- Graphs aren't just for raw data; they're for inferences too
- Communication to self as well as others
- Graph + caption is a unit

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Some principles

- All graphs are comparisons
- Graphs aren't just for raw data; they're for inferences too
- Communication to self as well as others
- Graph + caption is a unit

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Template

- Figure X shows ...
- Each point (or line) indicate ...
- Before making this graph, we did ... which didn't work because ...
- A natural extension would be ...

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Template

- Figure X shows ...
- Each point (or line) indicate ...
- Before making this graph, we did ... which didn't work because ...
- A natural extension would be ...

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Template

- Figure X shows ...
- Each point (or line) indicate ...
- Before making this graph, we did ... which didn't work because ...
- A natural extension would be ...

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Template

- Figure X shows ...
- Each point (or line) indicate ...
- Before making this graph, we did ... which didn't work because ...
- A natural extension would be ...

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

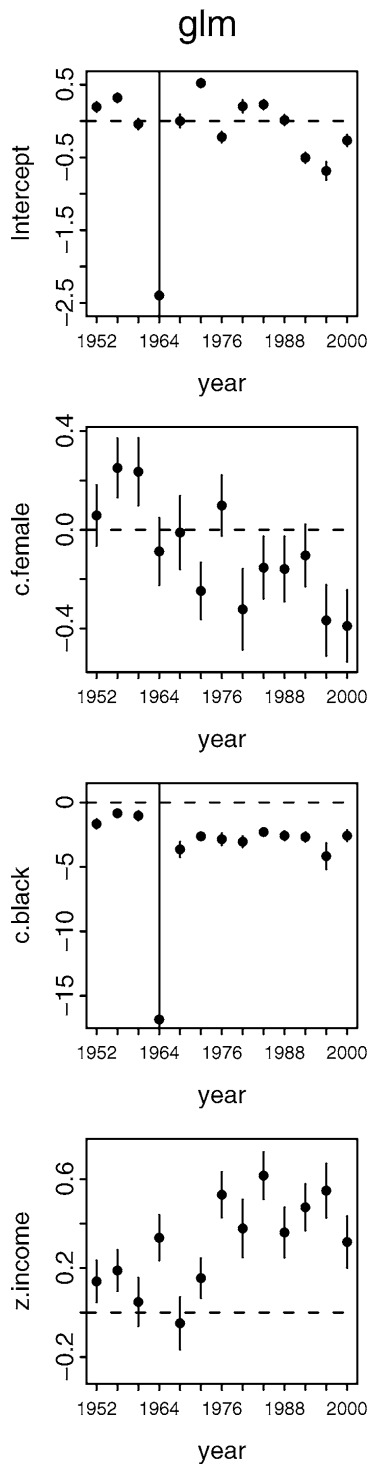
Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion



Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

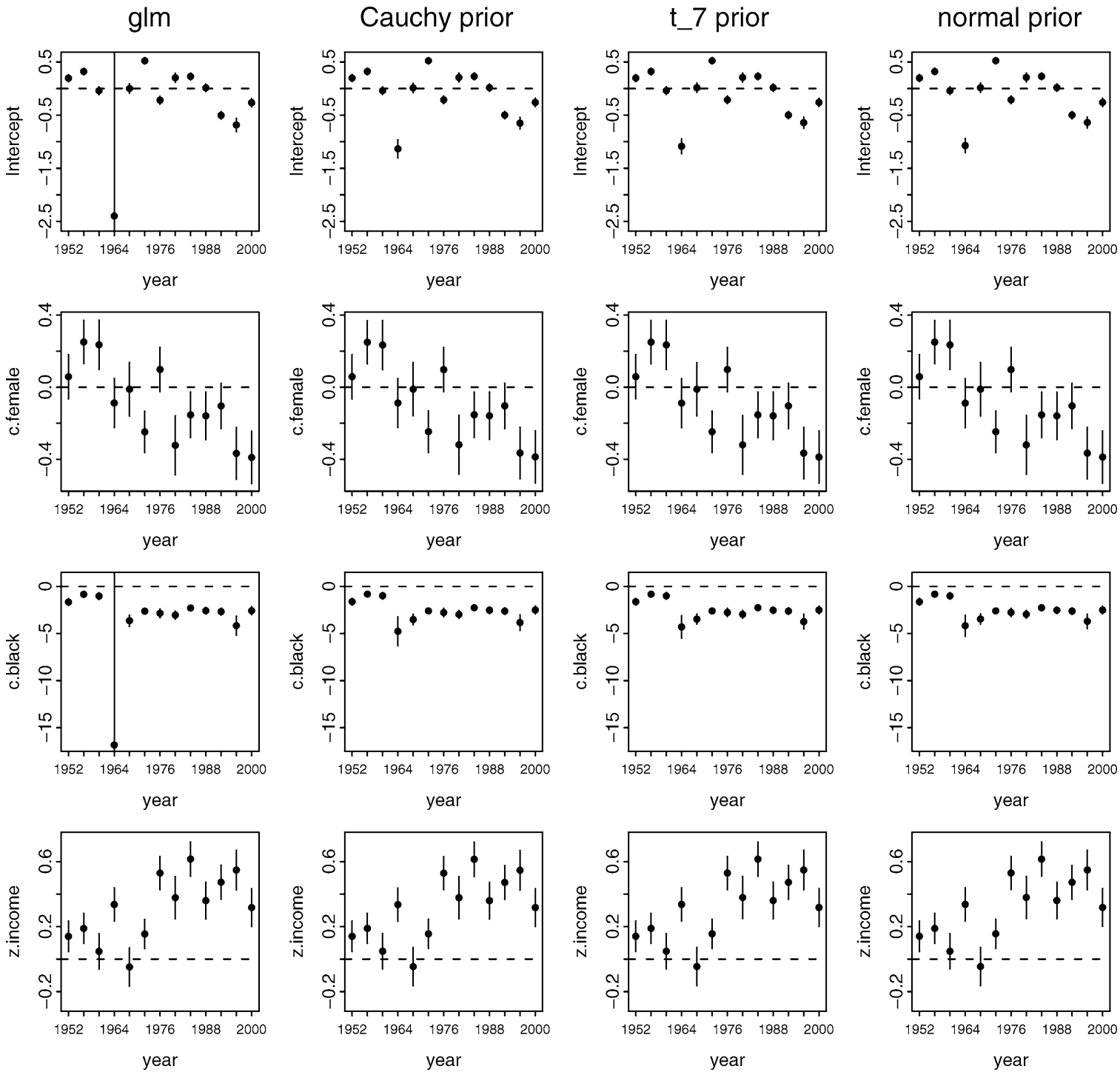
Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion



Improving the Presentation of Quantitative Results in Political Science

John Kastellec and Andrew Gelman

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

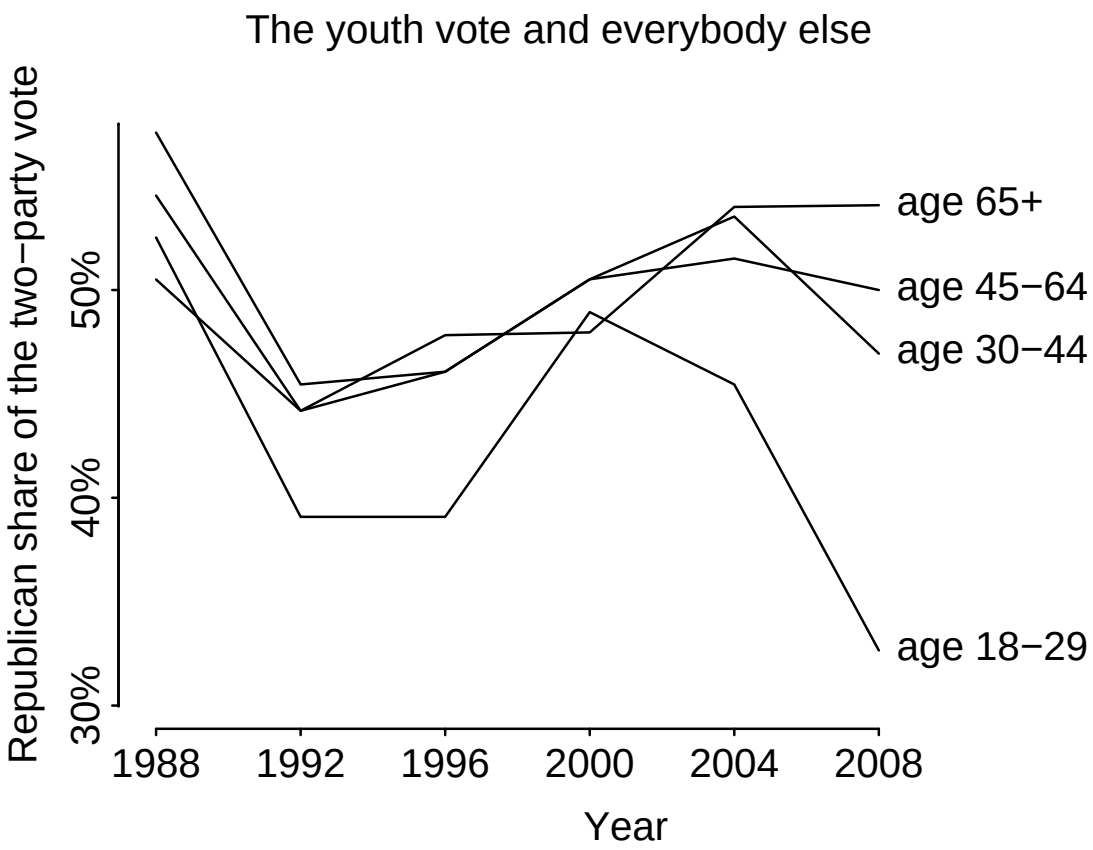
Peacekeeping

Sports fans

Multiple regression models

Conclusion

Age and voting



Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

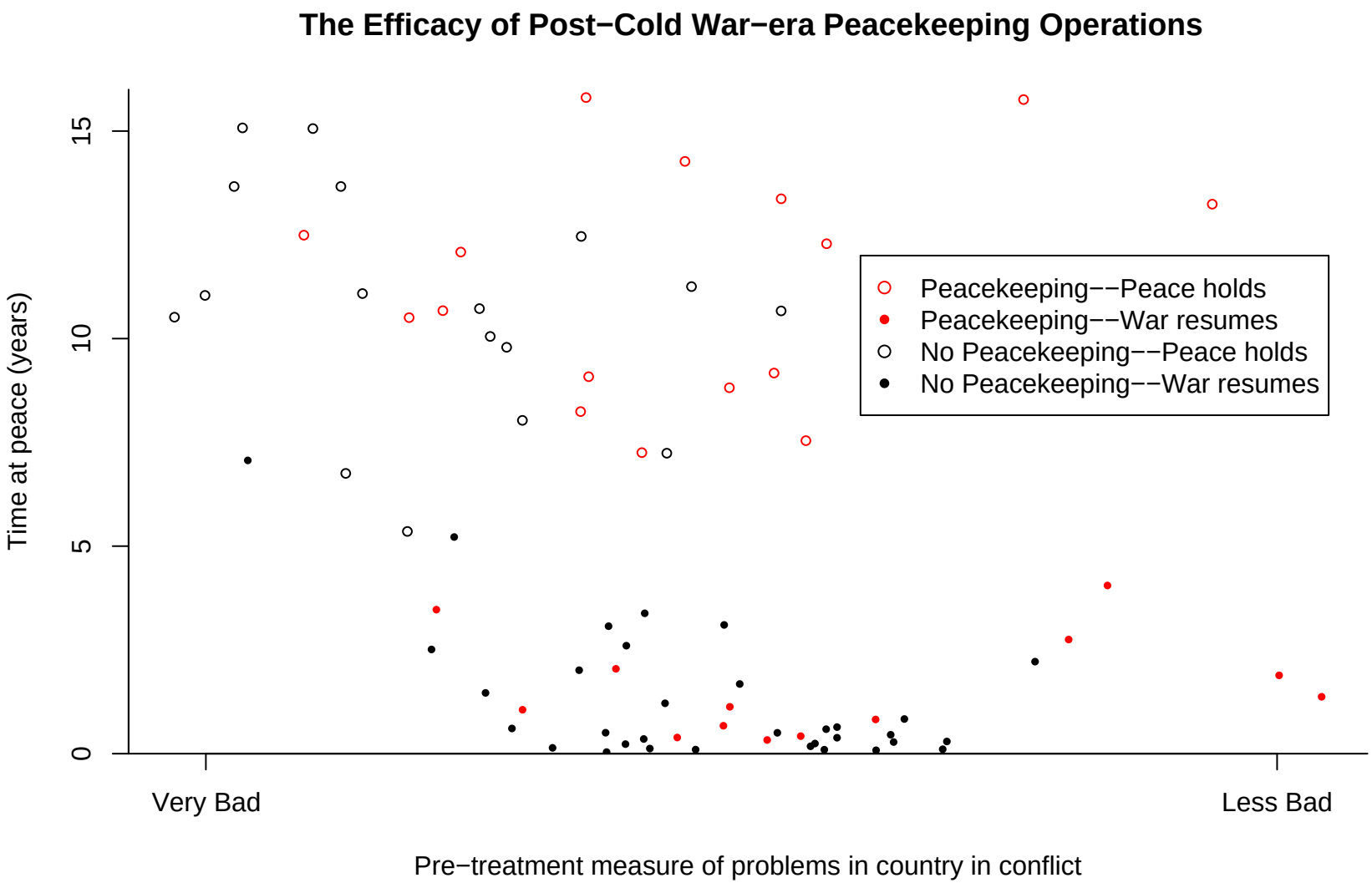
Peacekeeping

Sports fans

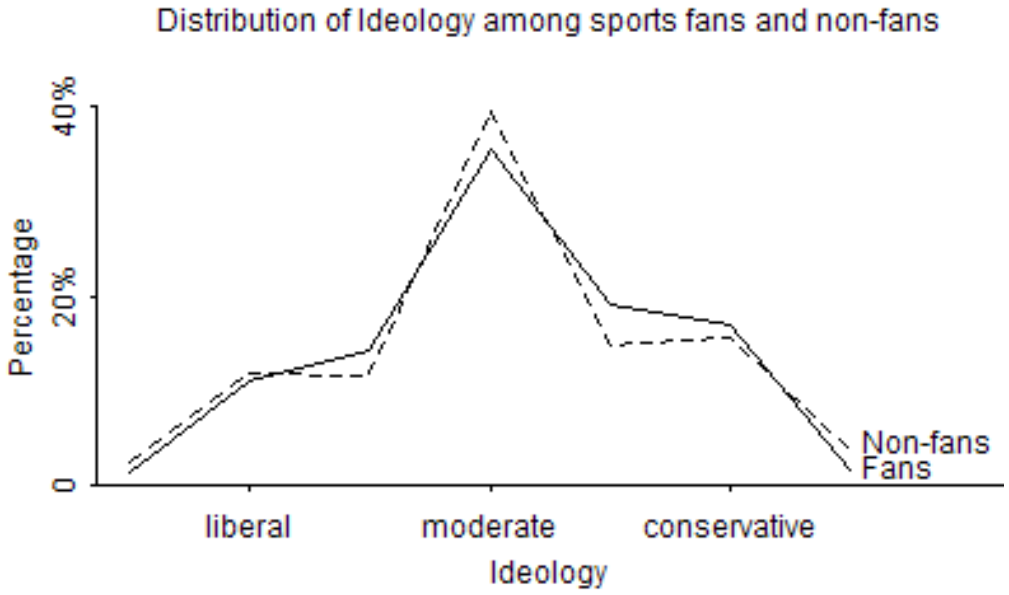
Multiple regression models

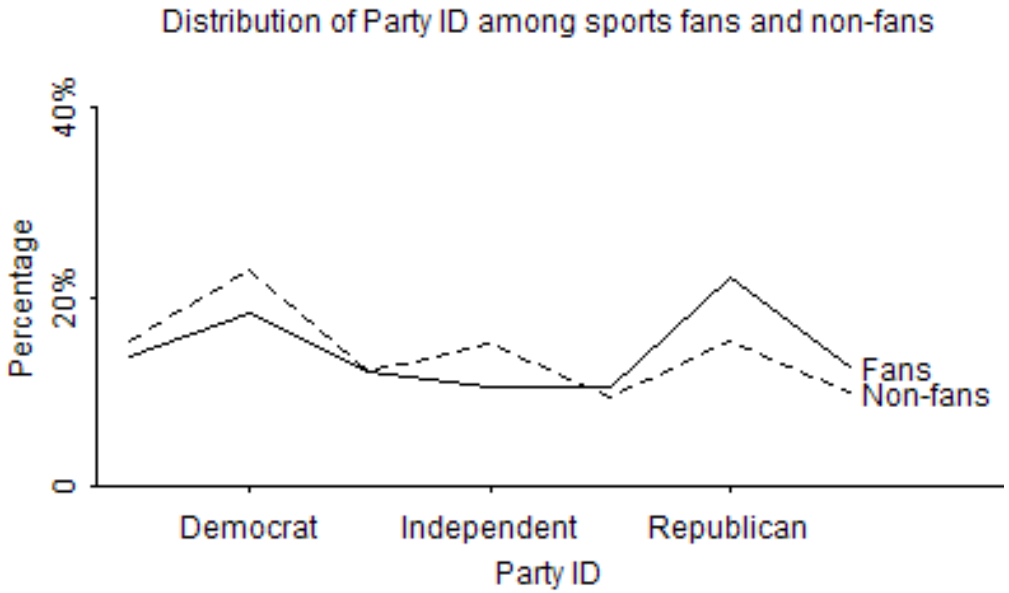
Conclusion

Peacekeeping



Ideology of sports fan versus non-fans





Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

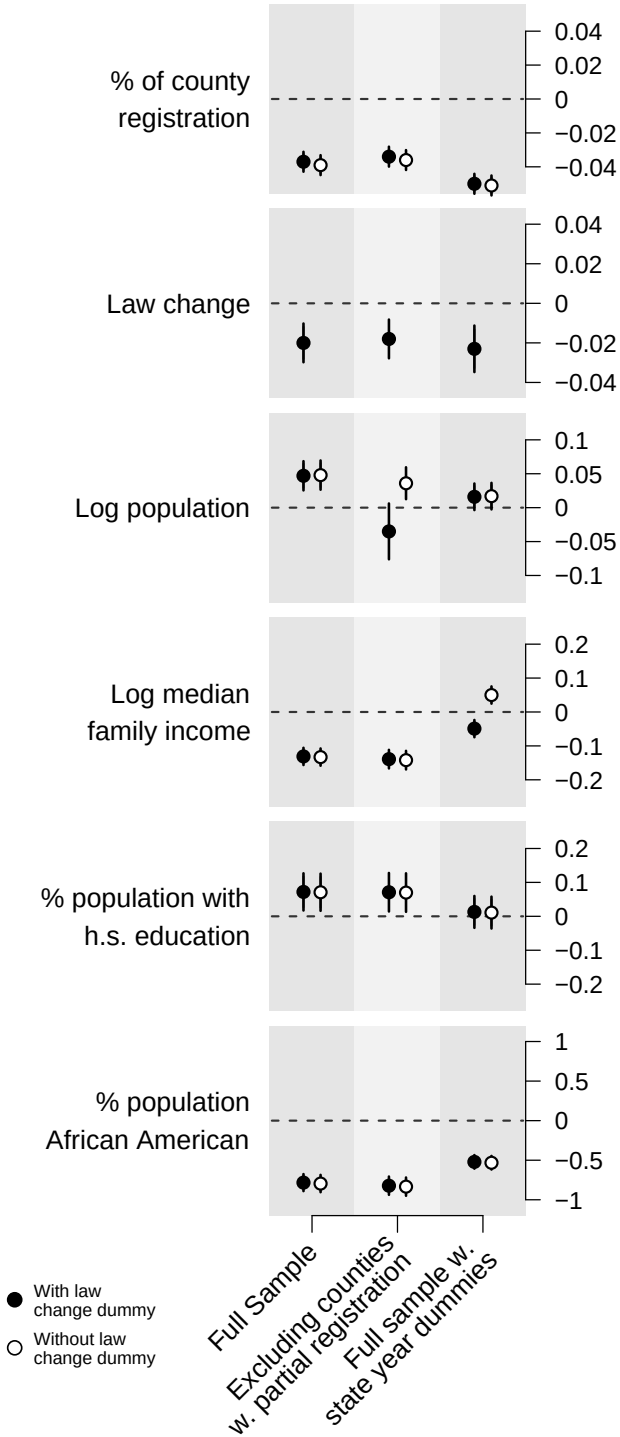
Multiple regression models

Conclusion

Multiple regression models: table

Dependent Variable = County-Level Turnout						
	Full sample (1)	Excluding counties w/ partial registration (2)	Full sample w/state-year dummies (3)	Full sample (4)	Excluding counties w/ partial registration (5)	Full sample w/state-year dummies (6)
% of county registration	-0.039**	-0.036**	-0.051**	-0.037**	-0.034**	-0.050**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Law change				-0.020**	-0.018**	-0.023**
				(0.005)	(0.005)	(0.006)
Log population	0.048**	0.036**	0.017	0.047**	-0.035**	0.016
	(0.011)	(0.012)	(0.010)	(0.011)	(0.021)	(0.010)
Log median family income	-0.133**	-0.142**	0.050**	-0.131**	-0.139**	-0.049**
	(0.013)	(0.014)	(0.013)	(0.013)	(0.014)	(0.013)
% population with h.s. education	0.071*	0.070*	0.011	0.072*	0.071*	0.013
	(0.028)	(0.029)	(0.024)	(0.028)	(0.029)	(0.024)
% population African American	-0.795**	-0.834**	-0.532**	-0.783**	-0.822**	-0.521**
	(0.056)	(0.059)	(0.044)	(0.055)	(0.059)	(0.044)
Constant	1.47**	1.70**	0.775**	1.45**	1.68**	0.819**
	(0.152)	(0.171)	(0.124)	(0.152)	(0.170)	(0.127)
R^2	0.91	0.91	0.94	0.91	0.91	0.94
N	3572	3153	3572	3572	3153	3572

Note. *p $<$ .05, **p $<$ .01. Huber-White standard errors in parentheses. Year dummies and state-year dummies are not reported.


% of county registration
0.04
0.02
0
−0.02
−0.04
Law change
0.04
0.02
0
−0.02
−0.04
Log population
0.1
0.05
0
−0.05
−0.1
Log median family income
0.2
0.1
0
−0.1
−0.2
% population with h.s. education
0.2
0.1
0
−0.1
−0.2
% population African American
1
0.5
0
−0.5
−1
Full Sample
Excluding counties w. partial registration
Full sample w. state year dummies
With law change dummy
Without law change dummy

Conclusion

- Software needs to be improved so that graphs are automatic
- Make data more available (aid replication)
- Change incentives: encourage people to use graphs

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Conclusion

- Software needs to be improved so that graphs are automatic
- Make data more available (aid replication)
- Change incentives: encourage people to use graphs

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion

Conclusion

- Software needs to be improved so that graphs are automatic
- Make data more available (aid replication)
- Change incentives: encourage people to use graphs

Introduction

Practice in Political Science

Principles

Examples

Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

Conclusion