Improving the Presentation of Quantitative Results in Political Science

John Kastellec and Andrew Gelman

Columbia University

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Overview

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

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

Practice in Political Science

### Principles

### Examples

#### Coefficients & standard errors

Graphs for methodological research

Age and voting

Peacekeeping

Sports fans

Multiple regression models

### Conclusion

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Standard Error)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constant</strong></td>
<td>.41 (.93)</td>
</tr>
<tr>
<td><strong>Countries</strong></td>
<td></td>
</tr>
<tr>
<td>Argentina</td>
<td>1.31 (.33)**B,M</td>
</tr>
<tr>
<td>Chile</td>
<td>93 (.32)**B,M</td>
</tr>
<tr>
<td>Colombia</td>
<td>1.46 (.32)**B,M</td>
</tr>
<tr>
<td>Mexico</td>
<td>.07 (.32)**A,CH,CO,V</td>
</tr>
<tr>
<td>Venezuela</td>
<td>0.96 (.37)**B,M</td>
</tr>
<tr>
<td><strong>Threat</strong></td>
<td></td>
</tr>
<tr>
<td>Retrospective egocentric economic perceptions</td>
<td>.20 (.13)</td>
</tr>
<tr>
<td>Prospective egocentric economic perceptions</td>
<td>.22 (.12)</td>
</tr>
<tr>
<td>Retrospective sociotropic economic perceptions</td>
<td>-.21 (.12)</td>
</tr>
<tr>
<td>Prospective sociotropic economic perceptions</td>
<td>-.32 (.12)</td>
</tr>
<tr>
<td>Ideological distance from president</td>
<td>-.27 (.07)**</td>
</tr>
<tr>
<td><strong>Ideology</strong></td>
<td></td>
</tr>
<tr>
<td>Ideology</td>
<td>.23 (.07)**</td>
</tr>
<tr>
<td><strong>Individual Differences</strong></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.00 (.01)</td>
</tr>
<tr>
<td>Female</td>
<td>-0.03 (.21)</td>
</tr>
<tr>
<td>Education</td>
<td>.13 (.14)</td>
</tr>
<tr>
<td>Academic sector</td>
<td>.15 (.29)</td>
</tr>
<tr>
<td>Business sector</td>
<td>.31 (.25)</td>
</tr>
<tr>
<td>Government sector</td>
<td>-.10 (.27)</td>
</tr>
<tr>
<td><strong>R²</strong></td>
<td>.15</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.12</td>
</tr>
<tr>
<td>n</td>
<td>500</td>
</tr>
</tbody>
</table>

**p < .01, *p < .05, ‡p < .10 (two-tailed)**
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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
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• Figure X shows ...
  • Each point (or line) indicate ...
  • Before making this graph, we did ... which didn’t work because ...
  • A natural extension would be ...
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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 ...

Conclusion
Figure X shows ...

Each point (or line) indicate ...

Before making this graph, we did ... which didn’t work because ...

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

The youth vote and everybody else

<table>
<thead>
<tr>
<th>Year</th>
<th>Republican share of the two-party vote</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>30%</td>
</tr>
<tr>
<td>1992</td>
<td>40%</td>
</tr>
<tr>
<td>1996</td>
<td>50%</td>
</tr>
<tr>
<td>2000</td>
<td>45%</td>
</tr>
<tr>
<td>2004</td>
<td>50%</td>
</tr>
<tr>
<td>2008</td>
<td>40%</td>
</tr>
</tbody>
</table>

- age 18–29
- age 30–44
- age 45–64
- age 65+
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The Efficacy of Post–Cold War–era Peacekeeping Operations

Pre–treatment measure of problems in country in conflict

Time at peace (years)

Peacekeeping−−Peace holds
Peacekeeping−−War resumes
No Peacekeeping−−Peace holds
No Peacekeeping−−War resumes

Peacekeeping

Ideology of sports fan versus non-fans

Distribution of Ideology among sports fans and non-fans

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Ideology</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>liberal</td>
</tr>
<tr>
<td>20%</td>
<td>moderate</td>
</tr>
<tr>
<td>40%</td>
<td>conservative</td>
</tr>
</tbody>
</table>

Distribution of Party ID among sports fans and non-fans

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Party ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>Democrat</td>
</tr>
<tr>
<td>20%</td>
<td>Independent</td>
</tr>
<tr>
<td>40%</td>
<td>Republican</td>
</tr>
</tbody>
</table>
## Multiple regression models: table

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

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