Can Civilian Attitudes Predict Civil War Violence? Evidence from Afghanistan

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Australian Society for Quantitative Political Science

Lyall, Blair, & Imai. “Explaining support for combatants during wartime: A survey experiment in Afghanistan.” American Political Science Review


Blair & Imai. “Statistical analysis of list experiments.” Political Analysis

Bullock, Imai, & Shapiro. “Statistical analysis of endorsement experiments: measuring support for militant groups in Pakistan” Political Analysis


Statistical software: R packages list and endorse
Methodological Motivation: Sensitive Questions

- Survey is used widely in social sciences
- Validity of survey depends on the accuracy of self-reports

- **Sensitive questions** $\Rightarrow$ social desirability, privacy concerns
- Prejudice, illegal behavior, support for militants
- Lies and nonresponses $\Rightarrow$ potential bias

- Survey “experiments” as a solution:
  1. Randomization: Randomized response method
  2. Aggregation: **List experiment** (item count technique)
  3. Cueing: Endorsement experiment

- Problems of indirect measures and proposed solutions:
  1. Measurement error $\Rightarrow$ *comparing* two measures
  2. Statistical inefficiency $\Rightarrow$ *combining* two measures
Empirical Application: Attitudes and Civil War Violence

- How do we measure civilian attitudes in a conflict setting?
- Current efforts in Afghanistan rely on direct questions:
  1. USAID (TCAPF): “Who do you believe can solve your problems?”
  2. ISAF (ANQAR): “Over the past 6 months, do you think the Taliban have grown stronger, grown weaker, or remained the same?”

- Why are direct questions a bad idea?
  1. Threats to enumerators and respondents
  2. Nonresponse, social desirability bias
  3. Interviews are public
  4. Danger of selection bias in sampling locations (role of gatekeepers)

- ANQAR (November-December 2011): 50% refusal rate

- Do “hearts and minds” matter?
- Do attitudes predict subsequent behavior?
  - Most studies use prior violence to predict future violence
  - They ignore or dismiss the role of civilian attitudes
Public Nature of Interviews

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Attitudes and Violence

December 9, 2013
## Sampling Design

- **Location:** 13 Pashutun dominated provinces in the south
- **Time period:** Jan 18 – Feb 3, 2011
- **Multi-stage sampling:** province → district → village → individual
- **Respondents:** 2745 male respondents in 204 villages, 16+ years

<table>
<thead>
<tr>
<th>Provinces</th>
<th>Districts</th>
<th>Villages</th>
<th>Individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>total</td>
<td>sample</td>
<td>total</td>
</tr>
<tr>
<td>Helmand</td>
<td>13</td>
<td>5</td>
<td>1,578</td>
</tr>
<tr>
<td>Khost</td>
<td>13</td>
<td>5</td>
<td>880</td>
</tr>
<tr>
<td>Kunar</td>
<td>15</td>
<td>5</td>
<td>818</td>
</tr>
<tr>
<td>Logar</td>
<td>7</td>
<td>3</td>
<td>641</td>
</tr>
<tr>
<td>Urozgan</td>
<td>5</td>
<td>3</td>
<td>514</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>53</strong></td>
<td><strong>21</strong></td>
<td><strong>4,431</strong></td>
</tr>
<tr>
<td>8 nonsampled</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pashtun provinces</td>
<td>112</td>
<td>0</td>
<td>10,383</td>
</tr>
<tr>
<td>Other 21 provinces</td>
<td>233</td>
<td>0</td>
<td>20,786</td>
</tr>
</tbody>
</table>
Violence Data

- Declassified data from ISAF: Geocoded, time stamped
- ISAF: Cache Found, Direct Fire, Escalation of Force, Search/Attack
- Violence in numbers: one year prior to the survey

<table>
<thead>
<tr>
<th>Provinces</th>
<th>Violence initiated by Taliban</th>
<th>Violence initiated by ISAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helmand</td>
<td>11,806</td>
<td>2,074</td>
</tr>
<tr>
<td>Khost</td>
<td>779</td>
<td>257</td>
</tr>
<tr>
<td>Kunar</td>
<td>1,015</td>
<td>166</td>
</tr>
<tr>
<td>Logar</td>
<td>681</td>
<td>137</td>
</tr>
<tr>
<td>Uruzgan</td>
<td>849</td>
<td>314</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,130</strong></td>
<td><strong>2,948</strong></td>
</tr>
</tbody>
</table>
Script for the control group:

A recent proposal calls for the sweeping reform of the Afghan prison system, including the construction of new prisons in every district to help alleviate overcrowding in existing facilities. Though expensive, new programs for inmates would also be offered, and new judges and prosecutors would be trained. How do you feel about this proposal?

Strongly agree; Agree; Indifferent; Disagree; Strongly disagree; Don’t Know; Refuse to answer
Script for the treatment group:

A recent proposal by ISAF calls for the sweeping reform of the Afghan prison system, including the construction of new prisons in every district to help alleviate overcrowding in existing facilities. Though expensive, new programs for inmates would also be offered, and new judges and prosecutors would be trained. How do you feel about this proposal?

Strongly agree; Agree; Indifferent; Disagree; Strongly disagree; Don’t Know; Refuse to answer
Endorsement Experiments

- Indirect questioning technique
- Ask respondents to rate their support for a set of policies endorsed by randomly assigned political actors
- Compare with the “control” group which has no endorsement

Selected policies should be:
1. related to each other so that responses can be combined
2. well known so that DK is minimized and no learning occurs
3. actually endorsed by actors so that endorsements are credible and no deception occurs
4. supported by some and opposed by others so that ceiling and floor effects can be avoided

Carefully selected four “reform” policies: Direct elections, Prison reform, Independent election commission, Anti-corruption reform
### Data from the Endorsement Experiments

The table below presents data from the endorsement experiments conducted in various provinces in Afghanistan. The data includes responses to questions about Direct Elections, Prison Reform, Independent Election Commission, and Anti-Corruption Reform. The responses are categorized into Strongly agree, Agree, Indifferent, Disagree, Strongly disagree, Don't Know, and Refused. The data is presented for different provinces with varying sample sizes:

- **Helmand** (N = 2754)
- **Khost** (N = 630)
- **Kunar** (N = 396)
- **Logar** (N = 486)
- **Urozgan** (N = 387)

The table also includes columns for Taliban, ISAF, and Control groups. The data visualizations show the distribution of responses across these groups.

### Table

<table>
<thead>
<tr>
<th>Province</th>
<th>Sample Size</th>
<th>Direct Elections</th>
<th>Prison Reform</th>
<th>Independent Election Commission</th>
<th>Anti-Corruption Reform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helmand</td>
<td>(N = 2754)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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### Attitudes and Violence

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Item response theory to combine questions:

$$\Pr(Y_{ij} = 1 \mid T_i = k) = \Phi(\alpha_j + \beta_j(x_i + s_{ijk}))$$

- \(\alpha_j\): average popularity of policy \(j\)
- \(\beta_j\): how much policy \(j\) differentiates pro- and anti-reform respondents
- \(x_i\): “ideal point” = how pro-reform respondent \(i\) is
- \(s_{ijk}\): support level for combatant \(k\) in policy \(j\)

Quantities of interest: \(E(s_{ijk}/SD_x)\)

Multi-stage sampling \(\Rightarrow\) Multi-level modeling

- \(s_{ijk}\) indep. \(\sim N(\lambda_k,\text{village}[i] + Z_i^t \lambda_k^Z, \omega_k^2,\text{village})\)
- \(\lambda_k,\text{village}[i]\) indep. \(\sim N(\lambda_k,\text{district}[i] + V_{\text{village}[i]}^t \lambda_k^V, \omega_k^2,\text{district})\)
- \(\lambda_k,\text{district}[i]\) indep. \(\sim N(\lambda_k,\text{province}[i] + W_{\text{district}[i]}^t \lambda_k^W, \omega_k^2,\text{province})\)

Same multi-level structure for ideal points \(x_i\)
Script for the control group:

I’m going to read you a list with the names of different groups and individuals on it. After I read the entire list, I’d like you to tell me how many of these groups and individuals you broadly support, meaning that you generally agree with the goals and policies of the group or individual. Please don’t tell me which ones you generally agree with; only tell me how many groups or individuals you broadly support.

Karzai Government; National Solidarity Program; Local Farmers
_script for the treatment group:

I’m going to read you a list with the names of different groups and individuals on it. After I read the entire list, I’d like you to tell me how many of these groups and individuals you broadly support, meaning that you generally agree with the goals and policies of the group or individual. Please don’t tell me which ones you generally agree with; only tell me how many groups or individuals you broadly support.

Karzai Government; National Solidarity Program; Local Farmers; ISAF
Validation using List Experiments

- Need for validation $\implies$ **Multiple measurement strategy**
- Two measures should give similar results

What is the probability of supporting ISAF?

1. **List:** prob. of saying yes to the sensitive item
2. **Endorsement:** prob. of endorsement having a positive effect on support for policy

These probabilities should be similar!

They can be estimated with a new multivariate regression method

Endorsement and list experiments can even be combined for a joint analysis

Identification assumptions for list experiments:

1. **No Design Effect:** The inclusion of the sensitive item does not affect answers to control items
2. **No Liars:** Answers about the sensitive item are truthful
Descriptive Comparison: Overall

Control Group

\[
\begin{align*}
\rho &= 0.16 \\
\tau &= 0.10
\end{align*}
\]

ISAF Treatment Group

\[
\begin{align*}
\rho &= 0.52 \\
\tau &= 0.43
\end{align*}
\]
Descriptive Comparison: Question by Question

**Direct Elections (p < .01)**
- Treatment Group
  - ρ = 0.44
  - τ = 0.37
- Control Group
  - ρ = 0.18
  - τ = 0.14

**Prison Reform (p = 0.26)**
- Treatment Group
  - ρ = 0.12
  - τ = 0.10
- Control Group
  - ρ = 0.09
  - τ = 0.08

**Election Commission (p < .01)**
- Treatment Group
  - ρ = 0.44
  - τ = 0.38
- Control Group
  - ρ = 0.10
  - τ = 0.07

**Corruption Reform (p < .01)**
- Treatment Group
  - ρ = 0.50
  - τ = 0.42
- Control Group
  - ρ = 0.04
  - τ = 0.03
Effects of Taliban and ISAF Victimization

Victimization

by Taliban

by ISAF

Effects on Probability of Supporting ISAF

Endorse

List

Combined

List

Combined

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Much of public opinion research assumes direct link between attitudes and behavior.

Policy makers rely on the same assumption:
- “winning hearts and minds” as a counterinsurgency strategy
- billions of dollars for providing services and economic assistance

Skepticisms:
- survey measures are not reliable
- only reflect civilians’ desire to ensure their safety and attract continued economic assistance and services
- attitudes are driven entirely by battlefield dynamics

Existing studies predict future violence using prior violence and ignore civilian attitudes.

Can civilian attitudes predict civil war violence?
Strong Association Between Attitudes and Violence

- Unit of analysis: village
- Linear regression model:
  \[
  (\text{# of future attacks}) = \alpha + \beta(\text{# of past attacks}) + \gamma(\text{support}) + \epsilon
  \]
- Two types of attacks: IED and other attacks
- Distance window: 15km from each village center
- Time window: 5 months before and after the survey

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Robust Association between Attitudes and Violence

IED Attacks

Non-IED Attacks

Distance window (km)

Time window (months)
Test based on the Out-of-Sample Forecasting

- Is this association between attitudes and future violence real?

- **Out-of-sample forecast:**
  1. Obtain “forecasting equation” using surveyed villages as before
  2. Obtain “support equation” by regressing support on village characteristics using surveyed villages
  3. Use “support equation” to estimate support for non-surveyed (out-of-sample) villages based on their characteristics
  4. Forecasting future violence using “forecasting equation” and estimated support for non-surveyed villages
  5. Compare these forecasts with actual violence level

- Compare the forecasting performance with that of
  1. the model with prior violence alone
  2. the model with prior violence plus village characteristics

- Random sampling enables scaling up from 204 to 14,606 villages

- Performance measures: mean absolute error, mean squared error
Support Estimates Improve Forecasting by 20 – 30%

Prediction Improvement due to Support Measure

IED Attacks

Non-IED Attacks

Time window (months)

Distance window (km)
Covariates by Themselves Don’t Improve Forecasting
Concluding Remarks

- Challenges of eliciting truthful responses to sensitive questions
- Endorsement experiments: indirect questioning method
- Need for validation $\implies$ multiple measurements
- Statistical methods for comparing and combining list and endorsement experiments
- Open-source R packages list and endorse

- Civilian attitudes are powerful predictor of civil war violence
- Future research agenda:
  - From association to causality in dynamics of civil war
  - 4 wave panel survey underway
  - Causal effects of economic assistance on violence
Future of Empirical Political Science Research

• Past:
  1. national election studies and opinion polls
  2. government statistics
  3. small-scale data hand-coded by researchers

• Now and Future:
  1. More of the aforementioned data: product-level trade data
  2. Surveys and experiments conducted by researchers
  3. Administrative records: 150 million voter files
  4. Text as data: legislative bill texts
  5. Geocoded event data: Automated newspaper event coding
  6. Geocoded boundary data: state and administrative borders
  7. Social media data: Twitter
  8. Images and videos: satellite imagery, fMRI, pictures, campaign ads

Data, Data, and More Data!
What We Need

- **Quantitative methods skills:**
  1. Statistics and machine learning: prediction, causality
  2. Research computing: web-scraping, cluster computing, database management

- **Integration of qualitative knowledge:**
  1. Emergence of microdata $\implies$ Importance of contextual knowledge
  2. Knowledge of history and culture, language skills, field work

- **Increasing significance of theory:**
  1. Big data require interesting questions and good theory
  2. Need to know where to look and how to interpret
The project website for papers and software:

http://imai.princeton.edu/projects/sensitive.html

Email for comments and suggestions:

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