

Can Civilian Attitudes Predict Civil War Violence? Evidence from Afghanistan

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Project Reference

- Hirose, Imai, & Lyall. “Can civilian attitudes predict civil war violence?” *Working Paper*
- Lyall, Blair, & Imai. “Explaining support for combatants during wartime: A survey experiment in Afghanistan.” *American Political Science Review*
- Imai. “Multivariate regression analysis for the item count technique.” *Journal of the American Statistical Association*
- 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*
- Blair, Imai, & Lyall. “Comparing and combining list and endorsement experiments: Evidence from Afghanistan.” *American Journal of Political Science*
- 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** \implies social desirability, privacy concerns
- Prejudice, illegal behavior, support for militants
- Lies and nonresponses \implies 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** \implies *comparing* two measures
 - ② **Statistical inefficiency** \implies *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

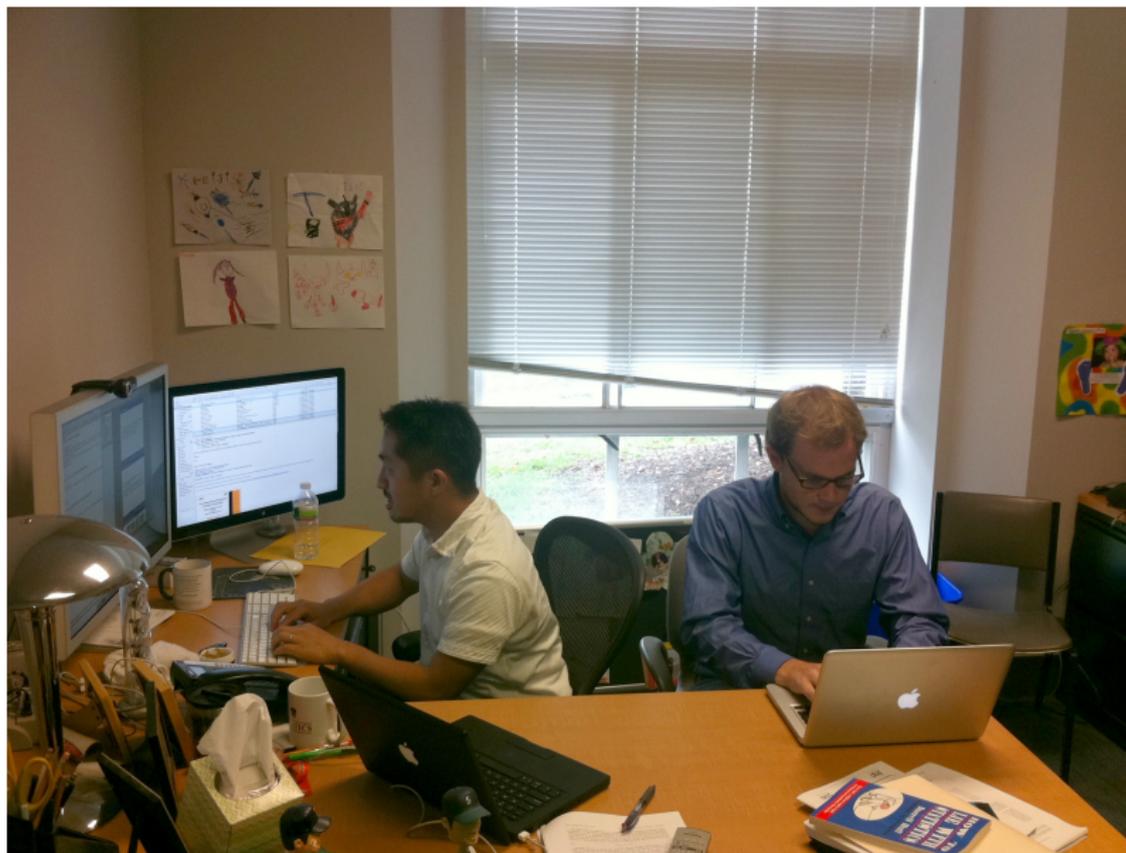
Public Nature of Interviews



Negotiated Access



Princeton Battlefield



Sampling Design

- Location: 13 Pashtun 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

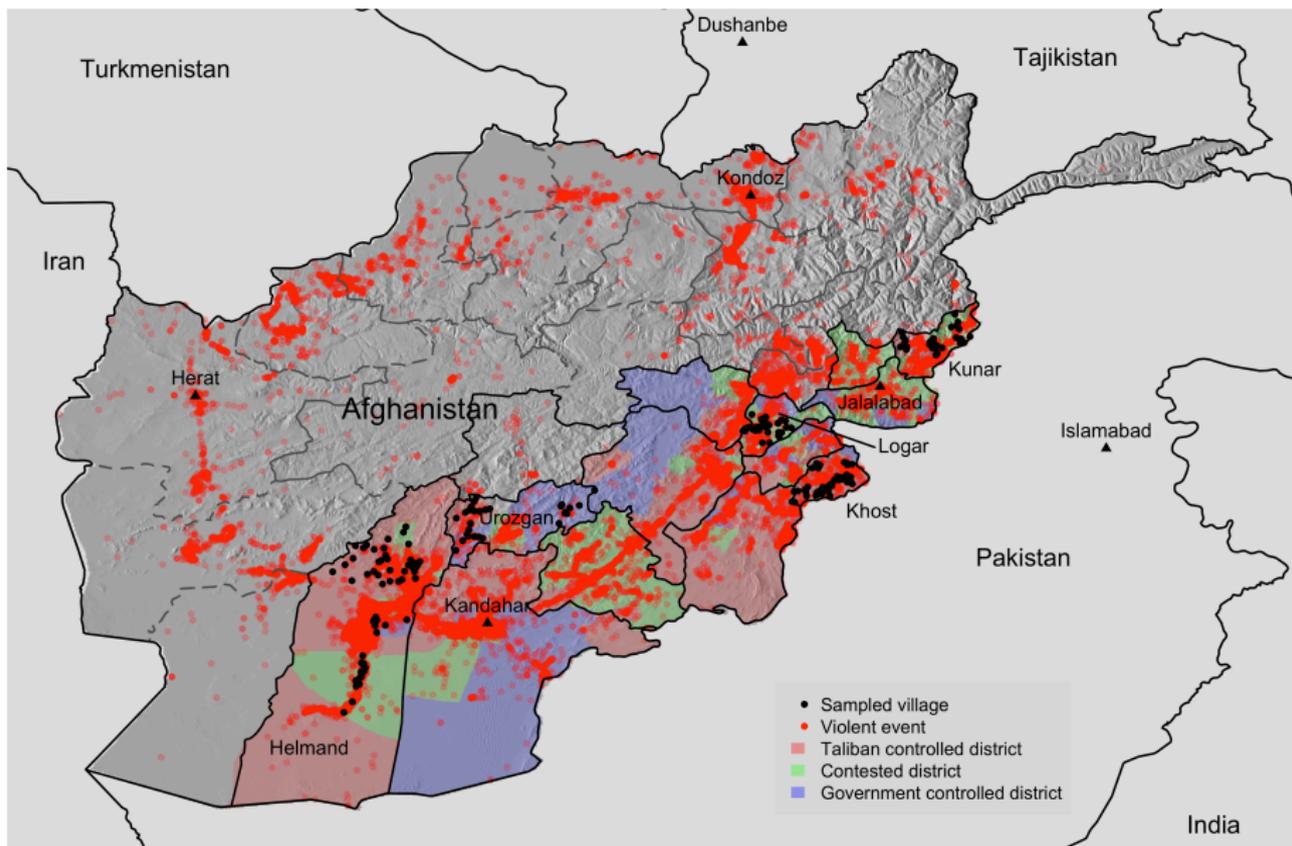
Provinces	Districts		Villages		Individuals	
	total	sample	total	sample	total	sample
Helmand	13	5	1,578	61	1,411,506	855
Khost	13	5	880	45	754,262	630
Kunar	15	5	818	30	548,199	396
Logar	7	3	641	40	384,417	486
Urozgan	5	3	514	28	324,100	387
Total	53	21	4,431	204	3,422,484	2,754
8 nonsampled Pashtun provinces	112	0	10,383	0	6,156,571	0
Other 21 provinces	233	0	20,786	0	14,903,729	0

Violence Data

- Declassified data from ISAF: Geocoded, time stamped
- ISAF: Cache Found, Direct Fire, Escalation of Force, Search/Attack
- Taliban: Assassination, Attack, Direct Fire, IED Explosion, IED False, IED Founded/Cleared, IED Hoax, Indirect Fire, Mine Found, Mine Strike, SAFIRE, Security Breach, Unexploded Ordinance
- Violence in numbers: one year prior to the survey

Provinces	Violence initiated by	
	Taliban	ISAF
Helmand	11,806	2,074
Khost	779	257
Kunar	1,015	166
Logar	681	137
Uruzgan	849	314
Total	15,130	2,948

Surveying in the Heartland of Insurgency



Endorsement Experiments

- 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

Endorsement Experiments

- Script for the **treatment group**:

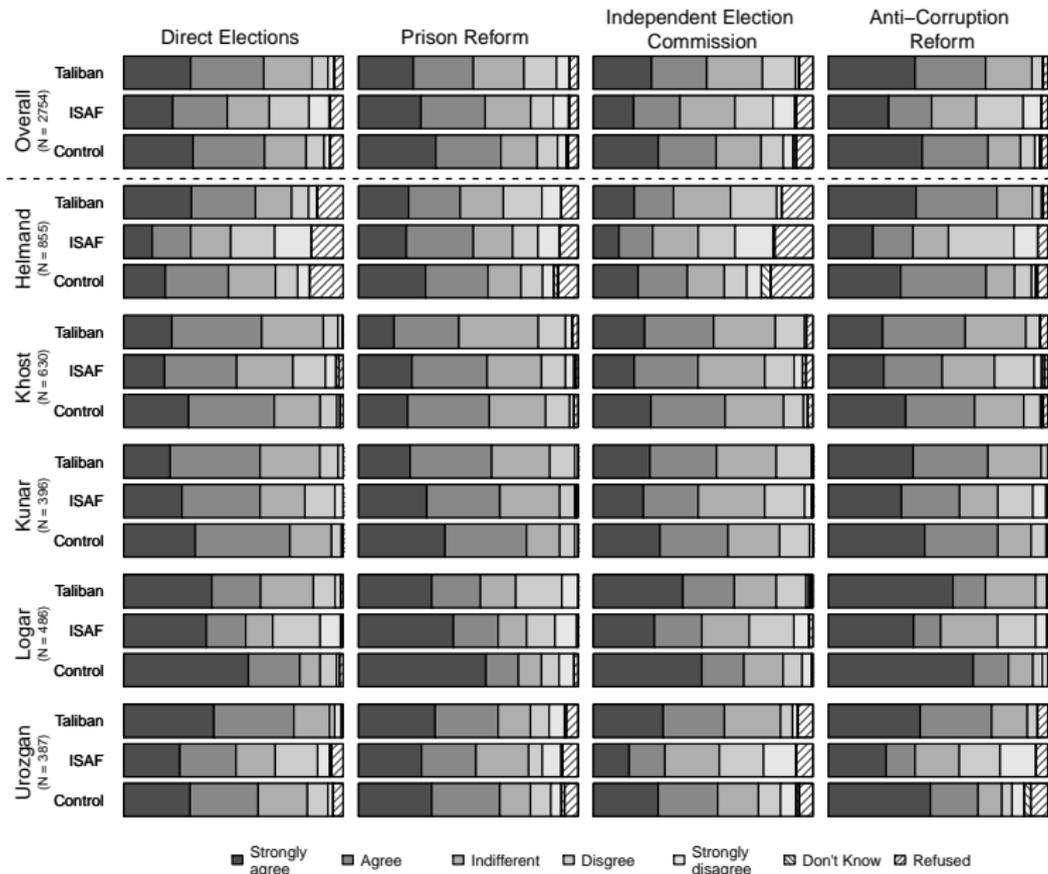
A recent proposal **by ISAF** calls for the sweeping reform of the Afghan prison system, including the construction of new prisons in every district to help alleviate overcrowding in existing facilities. Though expensive, new programs for inmates would also be offered, and new judges and prosecutors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



Statistical Analysis of Endorsement Experiments

- **Item response theory** to combine questions:

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

- α_j : average popularity of policy j
 - β_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: $\mathbb{E}(s_{ijk}/SD_x)$
 - Multi-stage sampling \implies **Multi-level modeling**

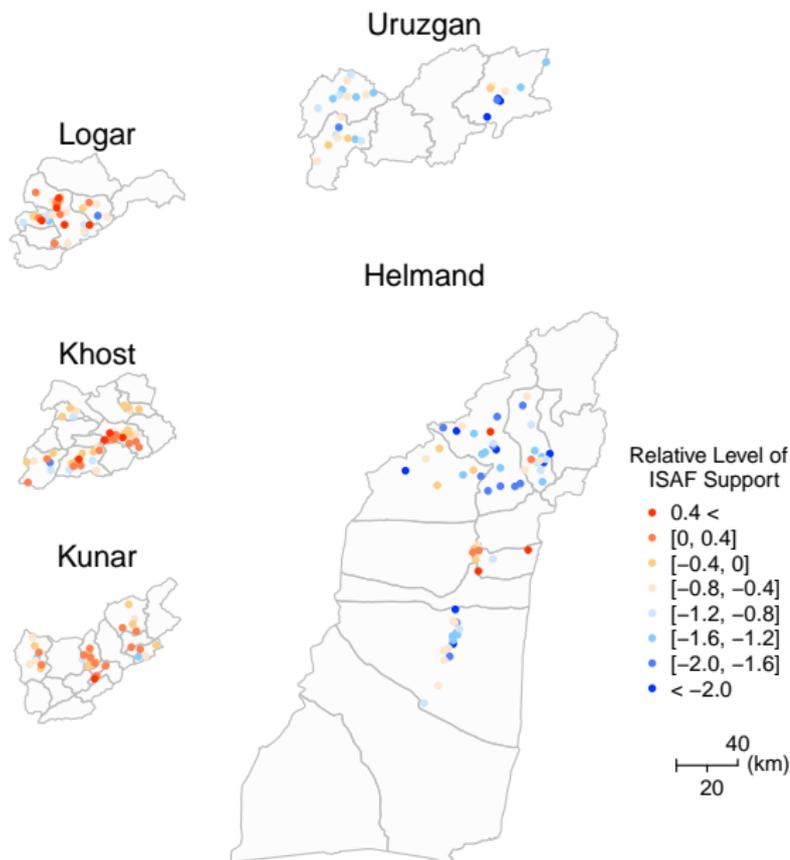
$$s_{ijk} \stackrel{\text{indep.}}{\sim} \mathcal{N}(\lambda_{k,\text{village}[i]} + \mathbf{Z}_i^\top \lambda_k^Z, \omega_{k,\text{village}}^2)$$

$$\lambda_{k,\text{village}[i]} \stackrel{\text{indep.}}{\sim} \mathcal{N}(\lambda_{k,\text{district}[i]} + \mathbf{V}_{\text{village}[i]}^\top \lambda_k^V, \omega_{k,\text{district}}^2)$$

$$\lambda_{k,\text{district}[i]} \stackrel{\text{indep.}}{\sim} \mathcal{N}(\lambda_{k,\text{province}[i]} + \mathbf{W}_{\text{district}[i]}^\top \lambda_k^W, \omega_{k,\text{province}}^2)$$

- Same multi-level structure for ideal points x_i

Village-Level Relative Support for ISAF (vs. Taliban)



List Experiments

- 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

List Experiments

- 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**

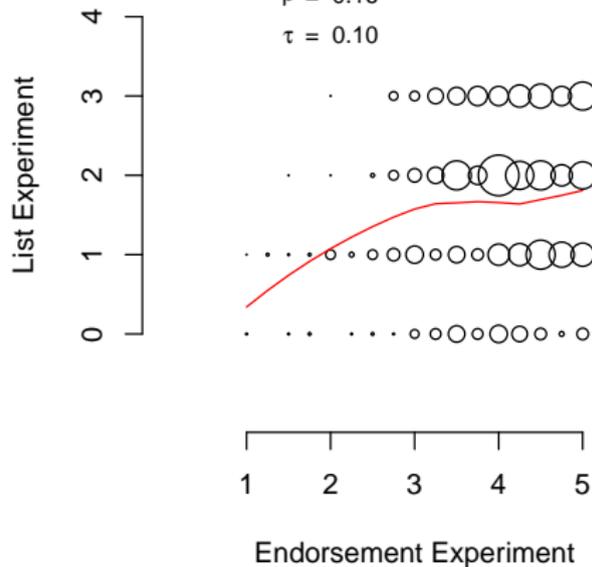
Validation using List Experiments

- 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

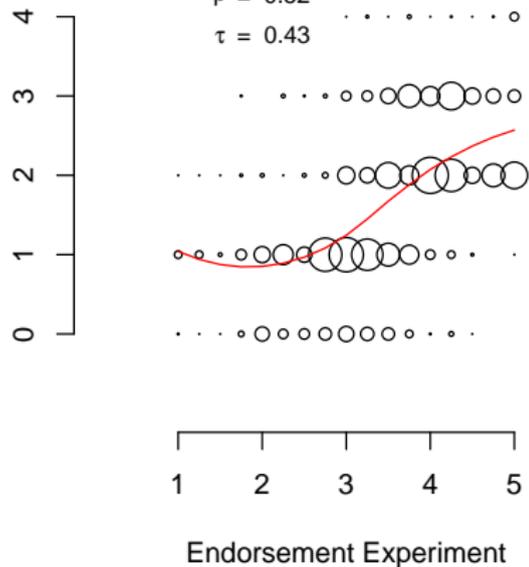
Control Group

$\rho = 0.16$
 $\tau = 0.10$

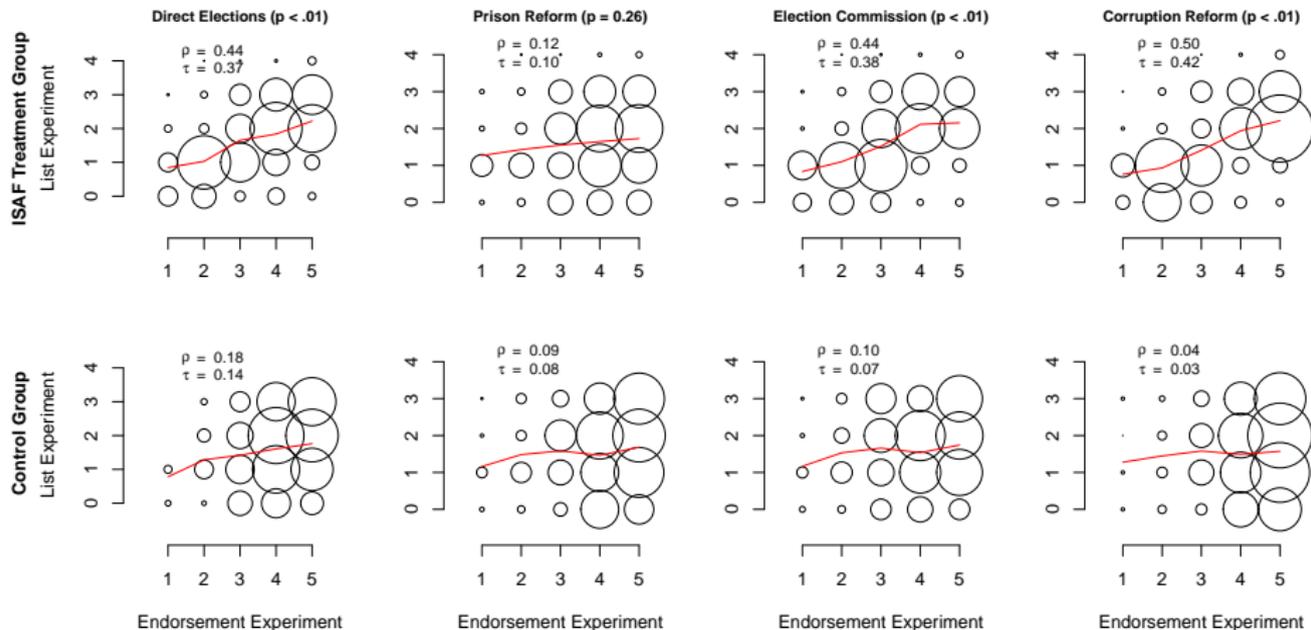


ISAF Treatment Group

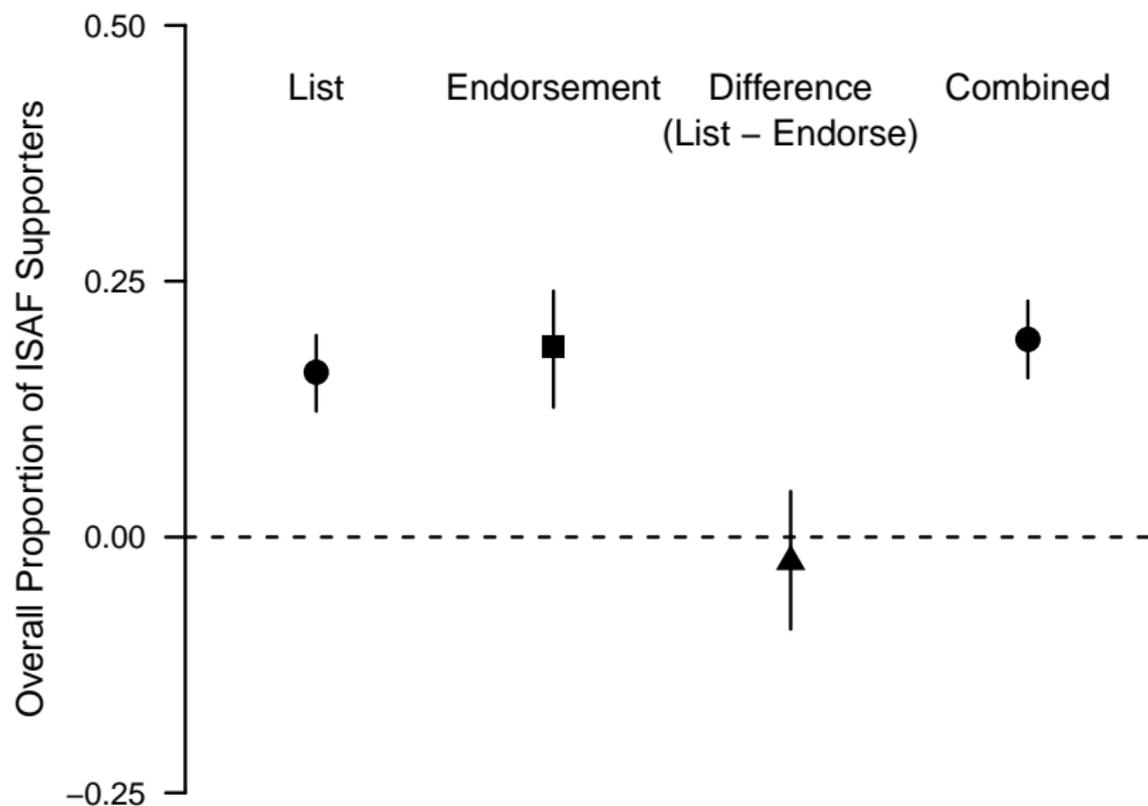
$\rho = 0.52$
 $\tau = 0.43$



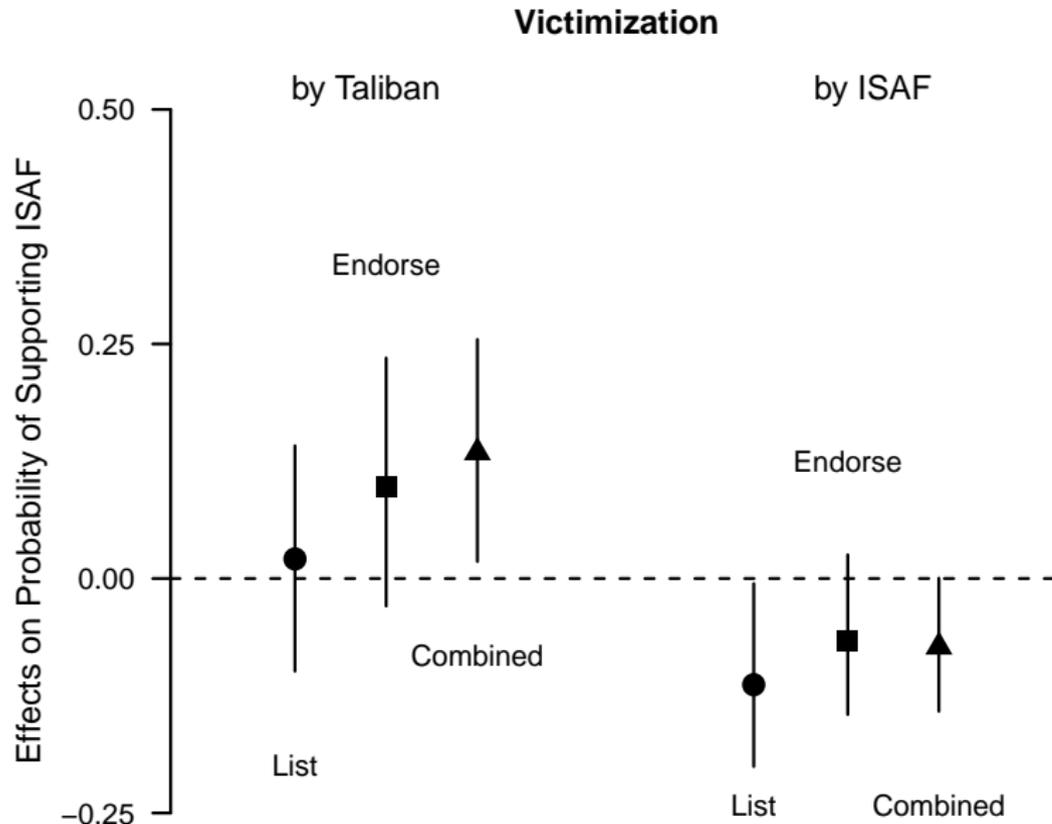
Descriptive Comparison: Question by Question



Overall Proportion of ISAF Supporters



Effects of Taliban and ISAF Victimization



Do Attitudes Predict Behavior?

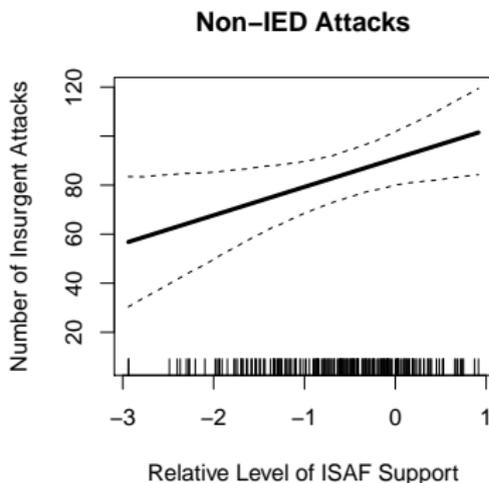
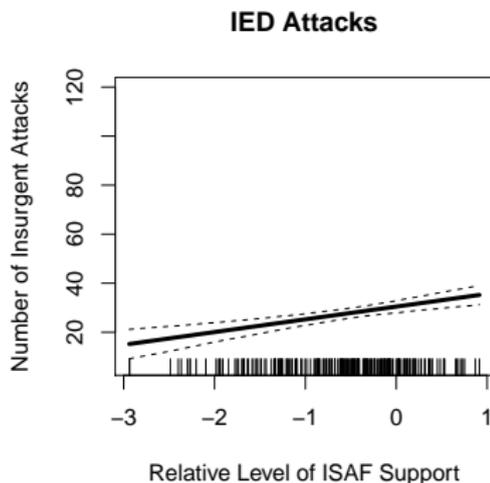
- Much of public opinion research assumes direct link between attitudes and behavior
- Policy makers rely on the same assumption:
 - “winning hearts and minds” as a counterinsurgency strategy
 - billions of dollars for providing services and economic assistance
- Skepticisms:
 - survey measures are not 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

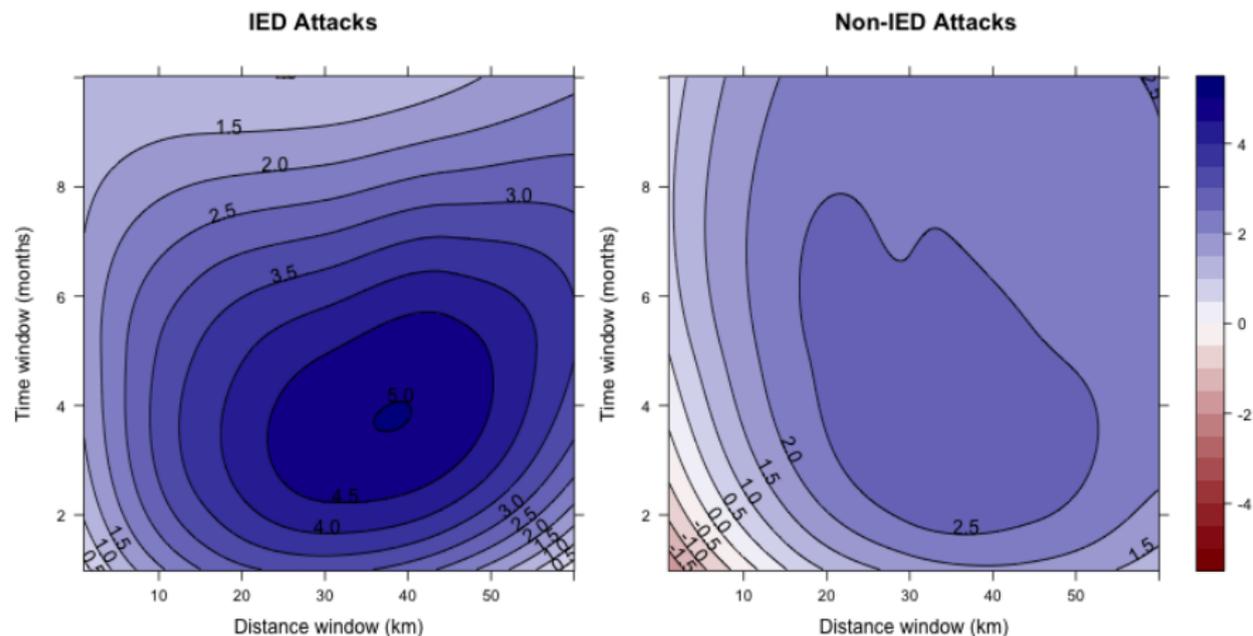
- Unit of analysis: village
- Linear regression model:

$$(\# \text{ of future attacks}) = \alpha + \beta(\# \text{ of past attacks}) + \gamma(\text{support}) + \epsilon$$

- Two types of attacks: IED and other attacks
- Distance window: 15km from each village center
- Time window: 5 months before and after the survey



Robust Association between Attitudes and Violence



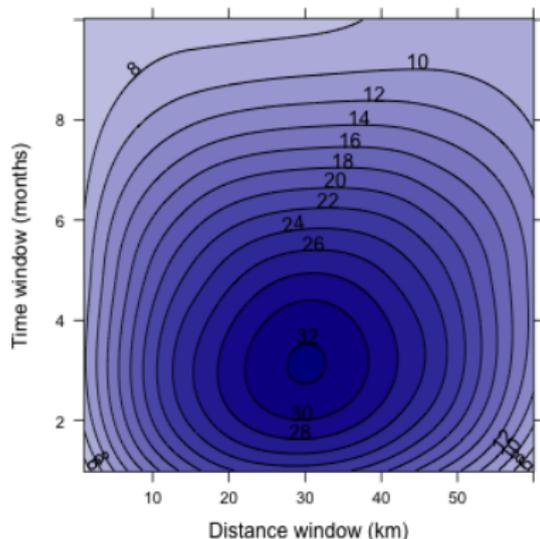
Test based on the Out-of-Sample Forecasting

- 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

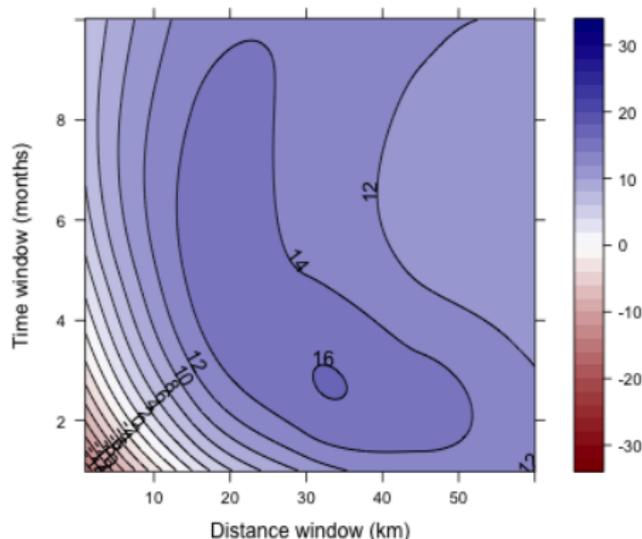
Support Estimates Improve Forecasting by 20 – 30%

Prediction Improvement due to Support Measure

IED Attacks



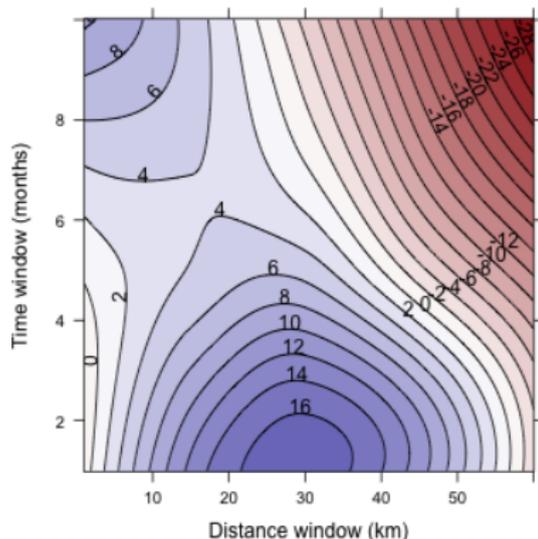
Non-IED Attacks



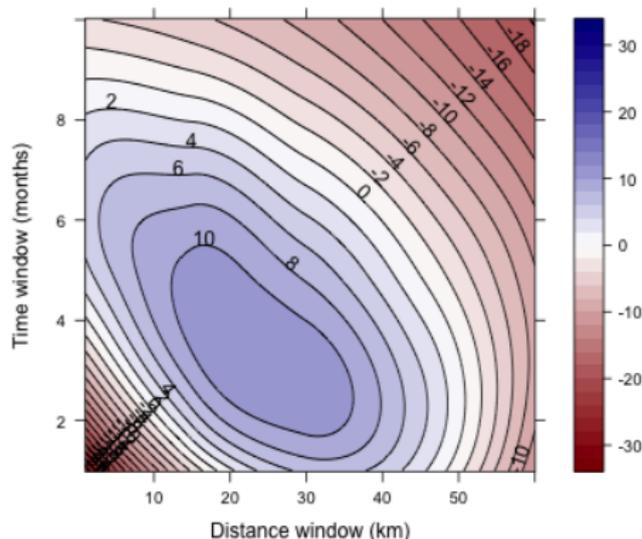
Covariates by Themselves Don't Improve Forecasting

Prediction Improvement due to Covariates

IED Attacks



Non-IED Attacks



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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