

# Using Survey Experiments to Measure Support for Combatants in Afghanistan

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# Motivation

- Survey is used widely in social sciences
- Validity of survey depends on the accuracy of self-reports
- **Sensitive questions**  $\implies$  social desirability, privacy concerns
- Racial prejudice, corruption, support for political actors
- 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**
- Goal of the project:
  - 1 Develop statistical methods for analyzing these experiments
  - 2 Develop recommendations for designing these experiments
  - 3 Measure support for militants and foreign troops

# Measuring Support for Combatants in Afghanistan

- Measuring “Hearts and Minds”
- Current efforts:
  - ① USAID: “Who do you believe can solve your problems?”
  - ② International Security Assistance Force (ISAF): “Over the past 6 months, do you think the Taliban have grown stronger, grown weaker, or remained the same?”
- How do we measure support for Taliban and the ISAF?
- Direct questioning is impossible
  - ① Threats to enumerators and respondents
  - ② Nonresponse, social desirability bias
- Other challenges:
  - ① Interviews are public
  - ② Negotiated access to sites

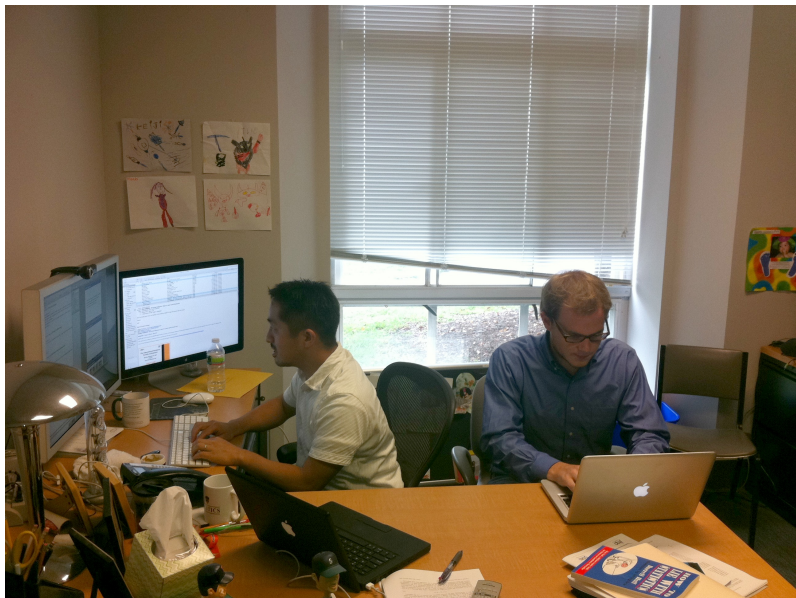
# Public Nature of Interviews



# Negotiated Access



# A Battlefield in Princeton, New Jersey



# The Survey Design

- **Goal:** Estimate support levels at the individual, village, district, and province levels
- **Multi-stage sampling design** (Jan 18 – Feb 3, 2011):

Provinces	Districts		Villages		Individuals	
	total	sample	total	sample	total	sample
Helmand	13	5	568	61	1,411,506	855
Khost	13	5	405	45	754,262	630
Kunar	15	5	262	30	548,199	396
Logar	7	3	365	40	384,417	486
Uruzgan	6	3	262	28	324,100	387
Total	54	21	1,862	204	3,422,484	2,754

- Sampling locations: 204 *rural* villages in 5 Pashtun-dominated provinces
- Respondents: 2745 male respondents, 16+ years

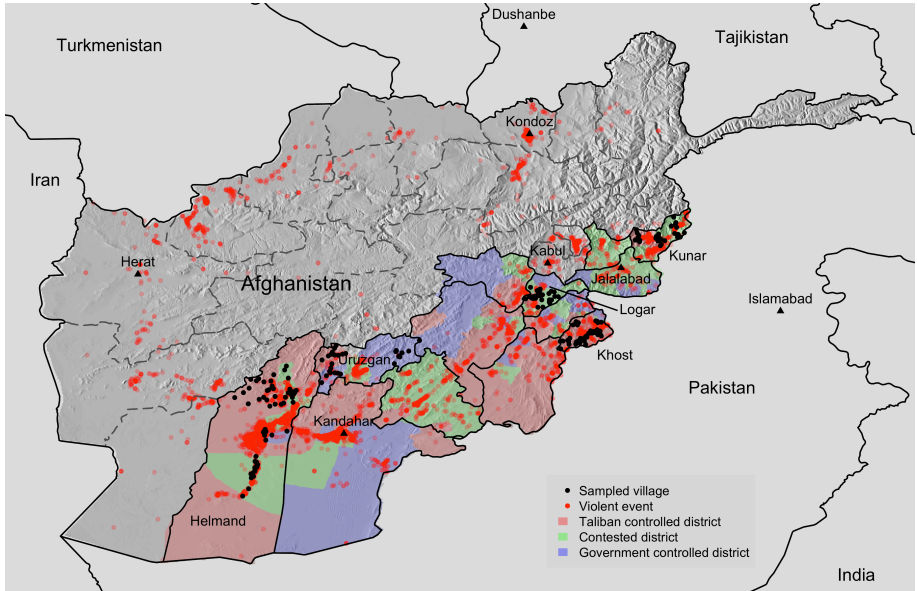
# Violence in Numbers (During Year 2010)

- **Violent attacks:** declassified data from ISAF (up to May 15, 2010)
  - 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
- **Civilian casualties:** ISAF, media reports, human rights groups

Provinces	Violent attacks initiated by		Civilian casualties caused by		
	Taliban	ISAF	Taliban	ISAF	unknown
Helmand	4,444	179	271	75	93
Khost	406	3	80	10	2
Kunar	733	12	26	4	2
Logar	132	0	13	0	1
Uruzgan	314	3	31	30	8
Total	6,029	197	421	119	106



# Sampling in the Heartland of Insurgency



# 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

- The 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

- 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

- The script for a **treatment group**:

A recent proposal **by the Taliban** 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

# Selecting Endorsement Experiment Questions

- Selected policies should be (Bullock, Imai, and Shapiro):
  - ① *related* to each other (so that responses can be combined)
  - ② *well known* by respondents (so that DK is minimized and no learning occurs)
  - ③ *actually endorsed* by political actors (so that questions are taken seriously)
  - ④ *supported by some and opposed by others* (so that ceiling and floor effects can be avoided)
- Carefully selected four “reform” policies:
  - ① Direct elections
  - ② Prison reform
  - ③ Independent election commission
  - ④ Anti-corruption reform
- Detailed justification for each policy: e.g., prison reform
  - Notoriously corrupt and inefficient
  - Similar proposals by the Taliban and ISAF
  - 48% of Afghans have no faith in prisons (Asia foundation)



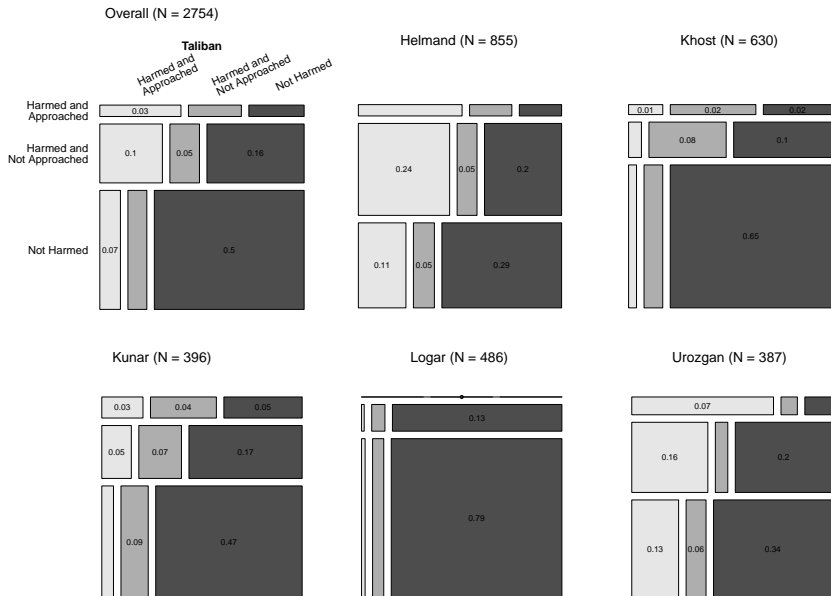
# Measuring Personal Exposure to Violence

- Self-reported measures at the self/family and *manteqa* levels:
  - Over the past year, have you or anyone in your family suffered harm due to the actions of foreign forces (the Taliban)?
  - Over the past year, have you heard of anyone in your *manteqa* suffer harm due to the actions of foreign forces (the Taliban)?
- “harm” refers to physical injury and property damage
- Combatant identity; Personal vs. indirect experience
- Different from ISAF’s violence event count data but closer to civilian casualty data
- Not sensitive: few DKs and refusal

# Harm Mitigation Efforts by the Combatants

- Indirect and safe questioning about compensations received:  
(If yes to the above question) Have you heard whether foreign forces (the Taliban) approached those who suffered harm?
- ISAF: one-time solatia and condolence payments
- Taliban: funeral oration, modest monthly payments, basic staples
- Measured both at the self/family and manteqa levels

# Distribution of Personal Exposure to Violence





# Endorsement Experiments Framework

- $N$  respondents
- $J$  policy questions
- $K$  political actors
- $Y_{ij} \in \{0, 1\}$ : response of respondent  $i$  to policy question  $j$
- $T_{ij} \in \{0, 1, \dots, K\}$ : political actor randomly assigned to endorse policy  $j$  for respondent  $i$
- For the Afghan experiment, an individual receives the same treatment across policies  $T_i = T_{ij}$
- Covariates measured prior to the treatment

- Multiple questions  $\implies$  **item response theory**

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

- $\alpha_j$ : 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
- $s_{ijk}$ : influence of endorsement by group  $k$

- Support level:**

$$\frac{\partial}{\partial s_{ijk}} \Pr(Y_{ij} = 1 \mid T_{ij} = k) > 0$$

where

$$s_{ijk} = \begin{cases} s_{ijk}^* & \text{if } \beta_j \geq 0 \\ -s_{ijk}^* & \text{otherwise} \end{cases}$$

# The Proposed Model (Continued)

- Multi-stage sampling  $\implies$  Multi-level modeling

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

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

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

- Same hierarchical structure for ideal points  $x_i$
- “Noninformative” hyper prior on  $(\alpha_j, \beta_j, \delta, \theta_k, \omega_{jk}^2, \Phi_k)$
- Interpretation:
  - spacial model vs. factor analysis
  - learning vs. support

- **Average support** level for each group  $k$

$$\tau_{jk}(Z_i) = Z_i^\top \lambda_{jk} \quad \text{for each policy } j$$

$$\kappa_k(Z_i) = Z_i^\top \theta_k \quad \text{averaging over all policies}$$

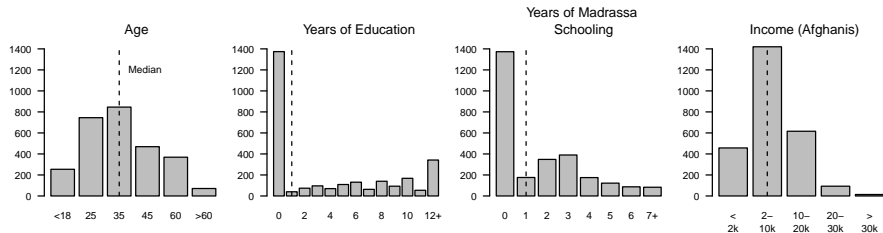
- Standardize them by dividing the (posterior) standard deviation of ideal points
- **Proportion of supporters** for each group  $k$

$$\Pr(\kappa_k(Z_i) > 0)$$

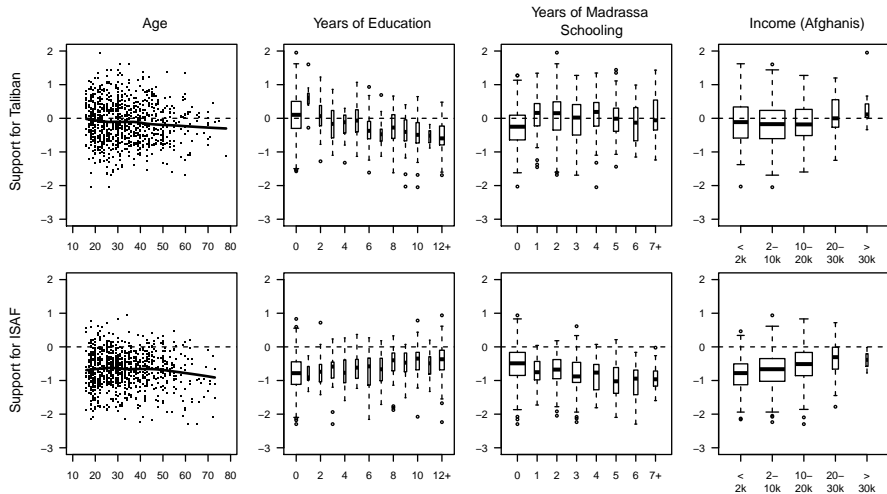
# Model Specification and Fitting

- Model without covariate
- Models with covariates
  - Individual: demographics, exposure to violence, encounter with ISAF
  - Village: altitude, population, violent attacks,
  - District: ISAF's control, aid, opium, Taliban sharia court
- Missing response modeled conditional on covariates
- Non-informative prior
- Markov chain Monte Carlo with multiple chains

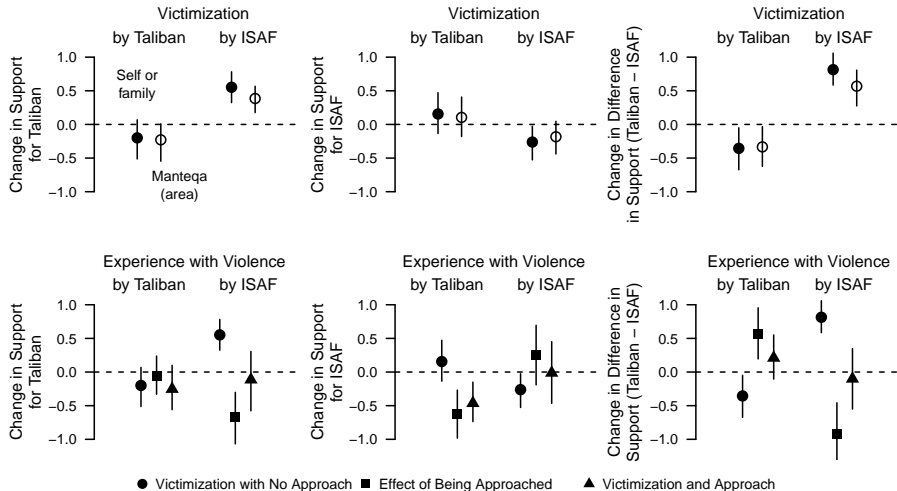
# Our Average Respondent



# Individual-Level Bivariate Relationships

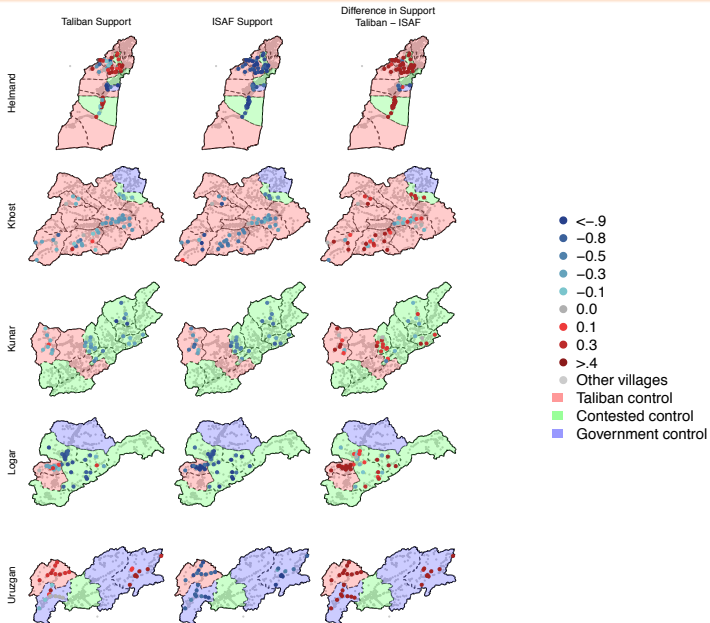


# Effects of Victimization and Restitution





# Village Level Estimates



# List Experiments

- Endorsement experiments seem to have worked quite well
- An alternative survey experiment: list experiment
- A more direct measure (Imai JASA; Blair & Imai PA)
- Control script:

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

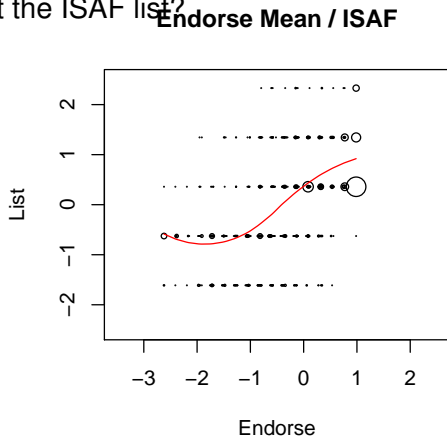
- Endorsement experiments seem to have worked quite well
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I'm going to read you a list with the names of different groups and individuals on it. After I read the entire list, I'd like you to tell me how many of these groups and individuals you broadly 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; Taliban

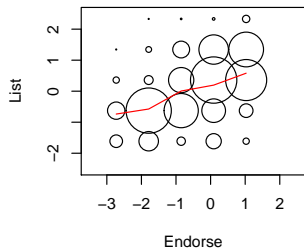
# Comparison with List Experiments

- Challenges for list experiments in Afghanistan
  - 1 Illiteracy: median years of education = 0
  - 2 Public nature of interviews
- Result: *Massive* floor and ceiling effects for the Taliban list
- What about the ISAF list?

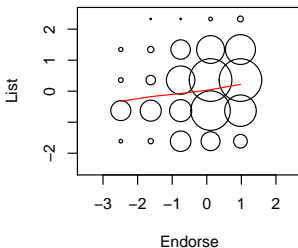


# Comparison by Policy Questions

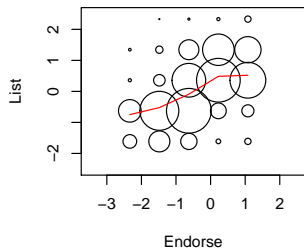
### Endorse 1 ISAF



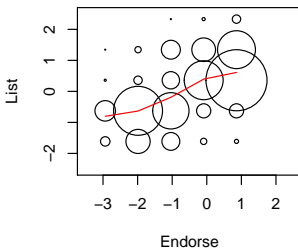
### Endorse 2 ISAF



### Endorse 3 ISAF

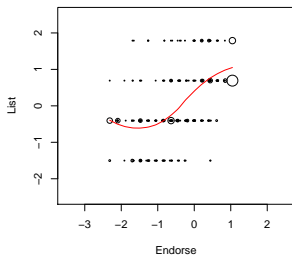


### Endorse 4 ISAF

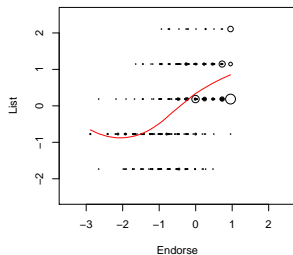


# Comparison by Provinces and Districts

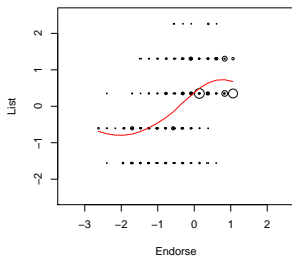
Violent provinces ISAF



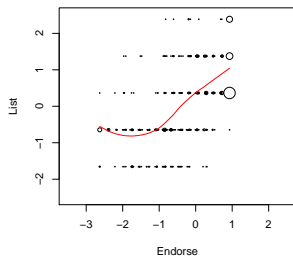
Non-violent Provinces ISAF



Taliban-controlled districts ISAF



Other-controlled districts ISAF



# Concluding Remarks

- Challenges of eliciting truthful responses to sensitive questions:
  - ① Bias reduction vs. Information loss
  - ② Role of statistics = efficient design and analysis
  - ③ Difficulty of validation  $\implies$  multiple measures, “ground-truthing”
  - ④ Art of survey research + General methodological guidelines
- Research agenda:
  - ① Development of statistical methods for analyzing list and endorsement experiments
  - ② Formally and empirically comparing and combining randomized response, and list and endorsement experiments
  - ③ Open-source software: `list` (with G. Blair) and `endorse` (with Y. Shiraito)
  - ④ Applications around the world (with collaborators): Afghanistan, Columbia, Mexico, Nigeria, Pakistan and United States

The project website for papers and software:

**<http://imai.princeton.edu/projects/sensitive.html>**

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