Information Operations Increase Civilian Security Cooperation and Support for Reintegration

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Motivation

- Information operations are at the core of modern warfare:

  "The battlefield is not necessarily a field anymore. Its in the minds of the people. Its what they believe to be trust that matters" —Admiral Michael Mullen
- More than 250 million invested in various campaigns in AFG and Iraq.
- Yet we little (no) rigorous evidence evaluating the effectiveness of IO/PSYOPS in the context of an ongoing insurgency where the target is adversely inclined to message sender.

Overview

- We **study** whether and how psychological operations influence civilian attitudes and behaviors.
- We **investigate** these impacts in Afghanistan using confidential military surveys (conducted by multiple actors in parallel) as well as declassified military records covering combat, neutralization, and intelligence activities.

Results, part i

We find robust evidence that:

- Evidence from Garmser Radio-in-a-Box (RIAB) program yields consistent evidence that PSYOPS exposure increases IED neutralizations (net detonations) and civilian collaboration with ISAF/Afghans.
- Exposure to government counter-IED campaign increases (hypothetical) willingness to report IEDs.
- These effects are substantially enhanced among individuals with preexisting exposure to government institutions or with pro-government sentiments.

Results, part ii

We find robust evidence that:

- Exposure at the district-wave level strongly correlates with increasing tips regarding roadside bombs (conditional on IED trends).
- Intensity of intelligence reports (IEDs/tactical) strongly correlated with counterinsurgent effectiveness: increasing bomb neutralizations, weapon cache seizures, safe house raids, and combatants captured.

Results, part iii

We find robust evidence that:

- Exposure to positive messaging about government's reintegration program increases civilian tolerance of former fighters moving to community (even if they've killed/injured a civilian).
- Decreasing marginal return to messaging frequency.
- Limited gains from targeting idiosyncratic preferences/trust for/in alternative sources of information.

Context

Information Operations in Afghanistan

- We study INFOOPS/PSYOPS in Afghanistan, where ISAF has used information campaigns to raise awareness of various threats and shape public opinion towards coalition forces.
- Afghans were critical to the PSYOPS campaign, often developing messaging side-by-side with ISAF.
- US DoD commissioned RAND study of PSYOPS; relied on interviews and anecdotal/informal assessments of effectiveness. Claimed mixed results.

Poster

Messages

"The Taliban IED attack in Safar today killed innocent Muslim children; tell us where the IEDs are before they hurt more of your sons and daughters"

"The Taliban we killed today were in the middle of placing an IED that could have killed your sons and daughters"

"Our operation to the south this week brings even greater security to the region; the Taliban have all fled to Pakistan"

Data

Data

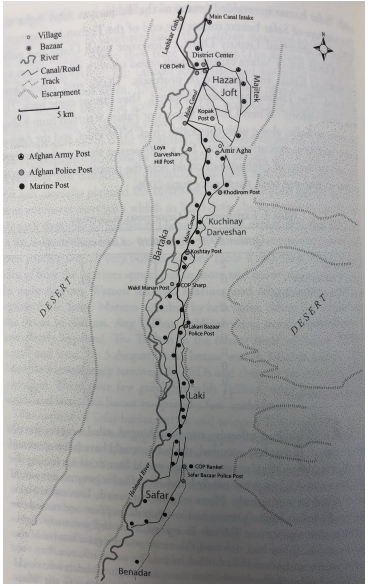
- Throughout the campaign (and after), ISAF has conducted ongoing national surveys and gathered intelligence reports.
- We rely on two surveys: Afghanistan Nationwide Quarterly Assessment Research (ANQAR) and FOGHORN. Both conducted by ACSOR. Province :: District :: Villages :: Households.
- We pair these data with significant activity (SIGACTS) reports. Typically only include combat operations. Our release included counterinsurgent missions and intelligence reports.

Study 1: Roadside bombs

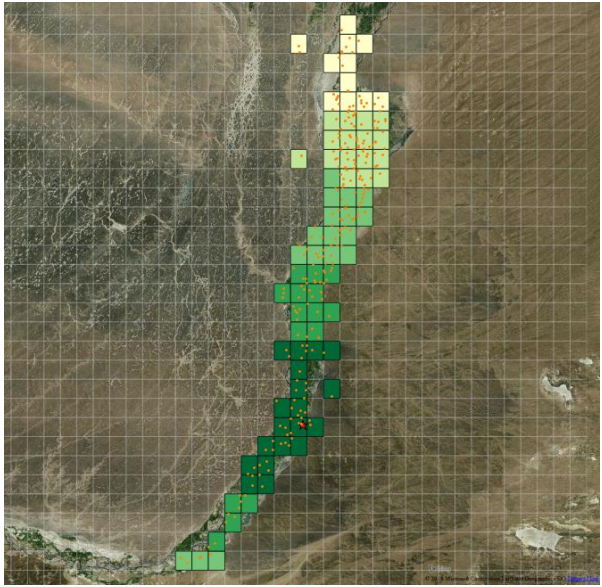
Overview

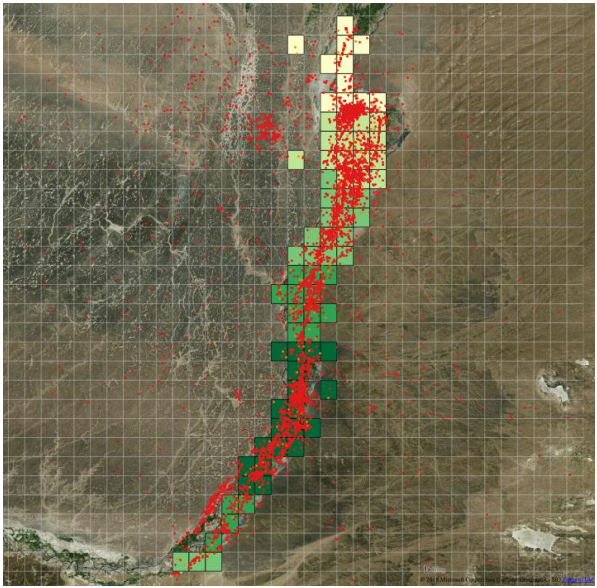
- Exploit geographic natural experiment to evaluate impact of messaging on tipping and COIN outcomes at microlevel. Tradeoff: strong internal validity vs. (weak) external validity.
- Investigate link between messaging exposure and willingness to share information about roadside bombs. Tradeoff: Respondent-level evidence vs. biased self-reports.
- Evaluate impact of local exposure (measured via survey) on flow of tips (measured as behavioral outcome via military records). Tradeoff: Behavioral outcomes but difficult to assess impact on tactics.
- Link high frequency panel data from military records on intel reports and COIN outcomes. Tradeoff: panel design with plausible identifying assumptions (external validity) vs. internal validity (see first bullet).

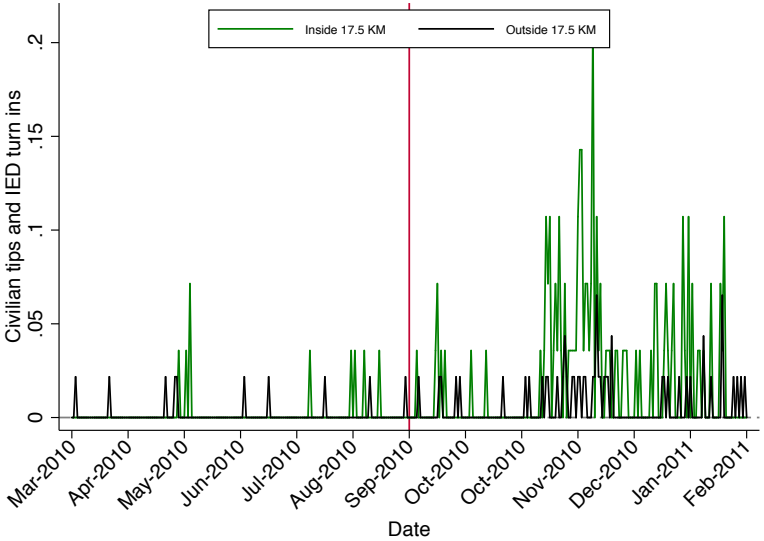
Geographic natural experiment: RIAB

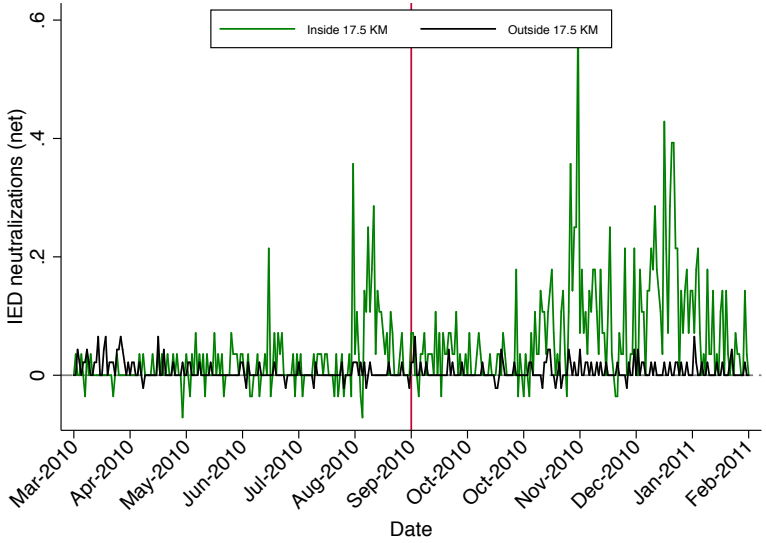

Village
Bazaar
River
Canal/Road
Track
Escarpment
0
5 km
Afghan Army Post
Afghan Police Post
Marine Post
Main Canal Intake
Leader Canal
District Center
FOB Delhi
Hazar Joft
Majitek
Main Canal
Kopek Post
Loya Darveshan Hill Post
Amir Agha
Khodrom Post
Kuchinay Darveshan
Bariaka
Kushtay Post
Wakil Manan Post
COP Sharp
DESERT
DESERT
Lakari Bazaar Police Post
Laki
COP Ranket
Safar Bazaar Police Post
Helmand River
Safar
Benadar


COP Rankel






Inside 17.5 KM
Outside 17.5 KM
Civilian tips and IED turn ins
0
.05
.1
.15
.2
Mar-2010
Apr-2010
May-2010
Jun-2010
Jul-2010
Aug-2010
Sep-2010
Oct-2010
Oct-2010
Nov-2010
Dec-2010
Jan-2011
Feb-2011
Date

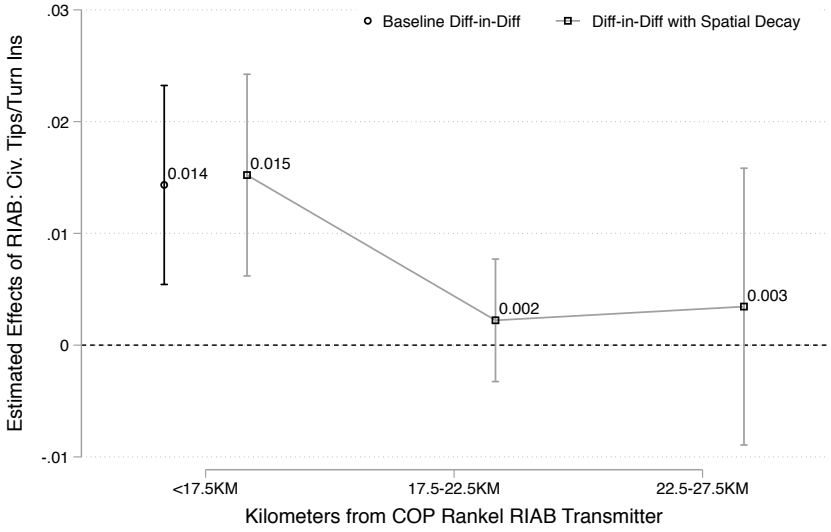

Inside 17.5 KM
Outside 17.5 KM
IED neutralizations (net)
0
.2
.4
.6
Mar-2010
Apr-2010
May-2010
Jun-2010
Jul-2010
Aug-2010
Sep-2010
Oct-2010
Oct-2010
Nov-2010
Dec-2010
Jan-2011
Feb-2011
Date

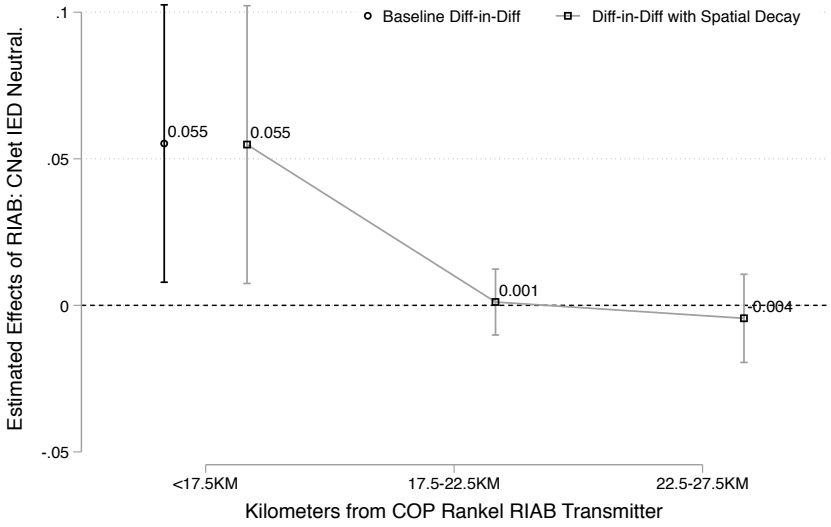
Garmser specification: combat / intel data

We estimate the following least squares model:

$$outcome_{gd} = \alpha + \beta_1 post \times exposure_{gd}^{bw} + \mu_g + \eta_d + \epsilon \quad (1)$$

where $outcome_{gd}$ is the sum of net neutralizations or civilian collaobration in grid cell g on day d with 180 window before/after RIAB established. We can vary the spatial bandwidth (from 15 to 40 kilometers from transmitter site). Standard errors are clustered by grid cell.


Baseline Diff-in-Diff
Diff-in-Diff with Spatial Decay
Estimated Effects of RIAB: Civ. Tips/Turn Ins
.03
.02
.01
0
-.01
0.014
0.015
0.002
0.003
<17.5KM
17.5-22.5KM
22.5-27.5KM
Kilometers from COP Rankel RIAB Transmitter


Baseline Diff-in-Diff
Diff-in-Diff with Spatial Decay
Estimated Effects of RIAB: CNet IED Neutral.
.1
.05
0
-.05
0.055
0.055
0.001
-0.004
<17.5KM
17.5-22.5KM
22.5-27.5KM
Kilometers from COP Rankel RIAB Transmitter

Robustness

We account for:

- Time-varying effects of patrol base proximity.
- Accounting for lags in combat activity (close combat, insurgent detention).
- Accounting for longer lags in combat activity.
- Allowing impact of trends in troop operations to vary with treatment.
- Addressing potential correlation between radio programming and military aid delivery (using CERP).
- Randomization inference suggests main results highly unlikely to arrise by chance.

Study 1 Recap: RIAB Evidence

We find evidence that:

- Installation and operation of a radio tower that broadcast messages re. roadside bombs (and other topics) increased tipping substantially.
- These tips led to a substantial increase in bomb neutralizations.

Assessing External Validity via Survey Data

Main specification: survey data

We estimate the following least squares model:

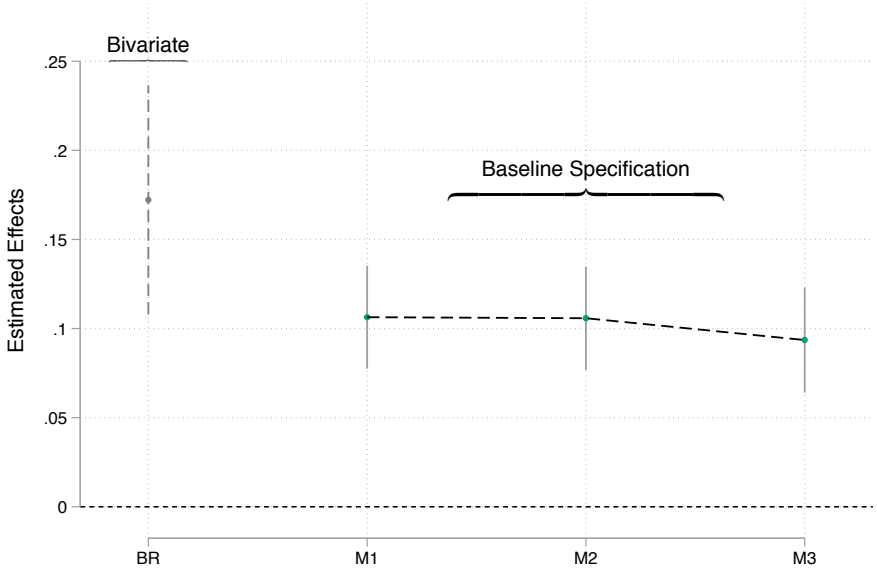
$$tips_i = \alpha + \beta messaging_i + \theta X_i + \epsilon \tag{2}$$

where $tips_i$ is the respondent i's willingness to report roadside bombs and $messaging_i$ is an indicator for exposure to counter-IED messaging in the prior six months. Standard errors are clustered by administrative district and models are adjusted using sampling weights.

Table 1: Impact of psychological messaging exposure on civilian's willingness to provide tips about deployed roadside bombs

	(1) Basic Model	(2) Baseline Model w. Fixed Effects + Demo. Controls	(3) Baseline Model w. Village Security	(4) Baseline Model w. Political and Security Controls
Messaging Exposure	0.172***	0.106***	0.106***	0.0936***
	(0.0328)	(0.0147)	(0.0148)	(0.0150)
SUMMARY STATISTICS				
Outcome Mean	0.482	0.482	0.482	0.482
Outcome SD	0.500	0.500	0.500	0.500
PARAMETERS				
District + Wave Fixed Effects	No	Yes	Yes	Yes
Demographic Controls	No	Yes	Yes	Yes
Village Insecure	No	No	Yes	Yes
Police Patrols Weekly	No	No	No	Yes
Govt. going Wrong Direction	No	No	No	Yes
Terr. Control (Govt./Ins./Mixed)	No	No	No	Yes
MODEL STATISTICS				
N	24620	24620	24620	24620
Clusters	339	339	339	339

Notes: Outcome of interest is willingness to report insurgents planting IEDs. Unit of analysis is individual survey respondent. Baseline models include administrative district fixed effects (using ESOC boundaries), survey wave fixed effects, and demographic controls (age, education, gender, ethnicity, socio-economic status). See table notation for additional details. Standard errors are clustered at the district level and presented in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.


Bivariate
Baseline Specification
Estimated Effects
.25
.2
.15
.1
.05
0
BR
M1
M2
M3

Behavioral outcomes

Main specification: survey + intel data

We estimate the following least squares model:

$$tips_{dw} = \alpha + \beta_1 messaging_{dw} + \beta_2 messaging_{dw}^2 + \theta X_{dw} + \epsilon \quad (3)$$

where $tips_{dw}$ is the sum of IED tips in district d in the six months prior to wave w. $messaging_{dw}$ and $messaging_{dw}^2$ capture the percentage of respondents (from 0 to 100) reporting exposure to government messaging and the square of this term. The square is added to capture non-linearity. X_{dw} varies by model. Standard errors are clustered by district.

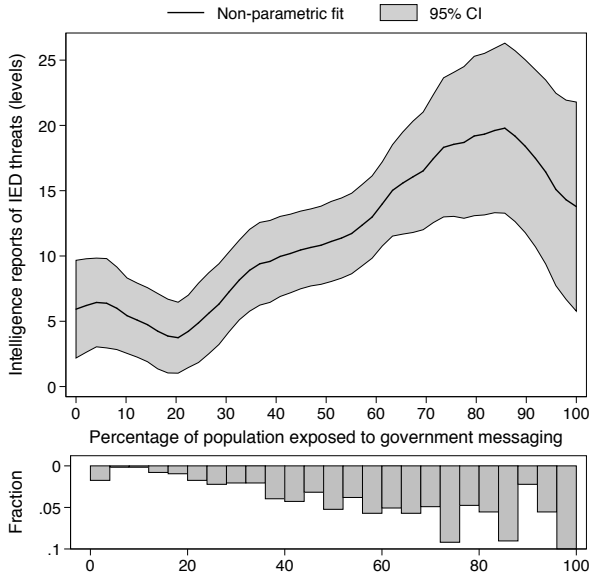
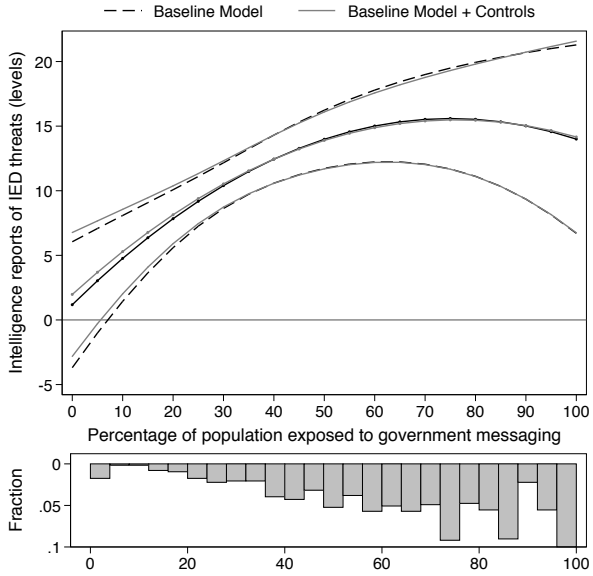

Non-parametric fit
95% CI
Intelligence reports of IED threats (levels)
0
5
10
15
20
25
0
10
20
30
40
50
60
70
80
90
100
Percentage of population exposed to government messaging
Fraction
0
.05
.1
0
20
40
60
80
100

Table 2: Impact of psychological messaging exposure on civilian tips about roadside bombs documented in military records

	(1) Baseline Model w. IED deton. + FC Trends	(2) Baseline Model w. Informant Kill. Trends	(3) Baseline Model w. Combat Trends	(4) Baseline Model w/o Collab. Outlier (Kabul)
Messaging Exposure	0.384***	0.382***	0.355***	0.361***
	(0.100)	(0.1000)	(0.1000)	(0.0916)
Messaging Exposure^2	-0.00256***	-0.00255***	-0.00233**	-0.00278***
	(0.000936)	(0.000923)	(0.000969)	(0.000779)
Summary Statistics				
Outcome Mean	13.89	13.89	13.89	12.41
Outcome SD	33.97	33.97	33.97	21.48
Parameters				
IED Detonations	Yes	Yes	Yes	Yes
IED Neutralizations	Yes	Yes	Yes	Yes
Informant/Recruit Killings	No	Yes	Yes	Yes
Close Combat Trends	No	No	Yes	Yes
Remote Combat Trends	No	No	Yes	Yes
Exclude Outlier (Kabul)	No	No	No	Yes
Model Statistics				
N	631	631	631	629
Clusters	339	339	339	338

Notes: Outcome of interest is tips reporting the location of implanted roadside bombs. Unit of analysis is district-wave. Data on intelligence records and combat activity (SIGACTS) were declassified by the US Department of Defense and are calculated using the six month window prior to each survey wave (consistent with survey wording regarding messaging exposure). Data on messaging exposure is drawn from the ANQAR survey and calculated by district-wave as a percentage of the population reporting exposure. See table notation for additional details. Standard errors are clustered at the district level and presented in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.


Baseline Model
Baseline Model + Controls
Intelligence reports of IED threats (levels)
20
15
10
5
0
-5
0
10
20
30
40
50
60
70
80
90
100
Percentage of population exposed to government messaging
Fraction
0
.05
.1
0
20
40
60
80
100

Battlefield outcomes

Main specification: intel data

We estimate the following least squares model:

$$y_{dt} = \alpha + \beta_1 tips_{dt-1} + \mu_d + \eta_t + \gamma X_{dt} + \epsilon \tag{4}$$

where y_{dt} is the number of counterinsurgent actions in district d in week t. μ_d is a district fixed effect; η_t denotes a week-of-year fixed effect; X_{dt-1} is a vector of district-week specific control variables, including trends in tips and combat activity. Standard errors are clustered by district.

Table 3: Impact of civilian tips on battlefield outcomes

	(1) Baseline Model Roadside Bombs Found/Cleared	(2) Baseline Model Weapon Caches Found/Cleared	(3) Baseline Model Tactical Safe House Raids	(4) Baseline Model Insurgents Captured and Detained
Tips about IED deployment, Lagged	0.0153**	0.0147***		
	(0.00777)	(0.00360)		
All Tactical Tips, Lagged			0.00289***	0.0421**
			(0.000849)	(0.0182)
Summary Statistics				
Outcome Mean	0.236	0.0769	0.00689	0.0785
Outcome SD	1.187	0.583	0.106	0.491
Parameters				
District Fixed Effect	Yes	Yes	Yes	Yes
Week Fixed Effect	Yes	Yes	Yes	Yes
IED Detonation Trends	Yes	Yes	Yes	Yes
Close Combat Trends	Yes	Yes	Yes	Yes
Remote Combat Trends	Yes	Yes	Yes	Yes
Model Statistics				
N	171936	171936	171936	171936
Clusters	398	398	398	398

Notes: Outcome of interest varies by column and is noted in each model heading: (1) roadside bombs found and neutralized (cleared); (2) weapon caches (depots) found and neutralized (cleared); (3) tactical safe house raids yielding actionable intelligence about insurgent operations; (4) insurgents captured and detained by security forces. In (1) and (2) the explanatory variable is the number of tips about IED deployment lagged by one week. In (3) and (4), we investigate the number of tactical tips (including all combat activity) lagged by one week. Unit of analysis is district-week from 2006 to 2014. Data on intelligence records and combat activity (SIGACTS) were declassified by the US Department of Defense. All models include district (unit) and week (time) fixed effects. See table notation for additional details. Standard errors are clustered at the district level and presented in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Study 2: Preparing for post-conflict reintegration

Study 2 Overview

- Use additional data to conduct within case out-of-context replication.
- Explore highly relevant and timely campaign: messaging in support of peace agreement with Taliban.
- Investigate additional effects: messaging frequency, media preferences.
- **Results** messaging increases tolerance; decreasing marginal return to high frequency messaging; weak/no returns to targeted messaging.

Bottom line

- PSYOPS can be used to effectively alter civilian attitudes and behaviors.
- These attitudinal/behavioral changes can substantially improve battlefield outcomes.
- Messaging that is moderately frequent and leverages existing local institutions yield benefits; limited returns to high resolution targeting.

Appendix

Table 4: Impact of psychological messaging exposure on civilian's willingness to provide tips about deployed roadside bombs, accounting for potential survey effects

	(1) Baseline Model	(2) Baseline Model w. Survey Comprehension	(3) Baseline Model w. Survey Comfort	(4) Baseline Model w. Number Present During Survey
Messaging Exposure	0.0936***	0.0936***	0.0933***	0.0932***
	(0.0150)	(0.0150)	(0.0150)	(0.0150)
SUMMARY STATISTICS				
Outcome Mean	0.482	0.482	0.482	0.482
Outcome SD	0.500	0.500	0.500	0.500
PARAMETERS				
District + Wave Fixed Effects	Yes	Yes	Yes	Yes
Demographic Controls	Yes	Yes	Yes	Yes
Village Insecure	Yes	Yes	Yes	Yes
Police Patrols Weekly	Yes	Yes	Yes	Yes
Govt. going Wrong Direction	Yes	Yes	Yes	Yes
Terr. Control (Govt./Ins./Mixed)	Yes	Yes	Yes	Yes
Survey Effects				
Understood Survey	No	Yes	Yes	Yes
Comfortable w. Survey	No	No	Yes	Yes
Number Present	No	No	No	Yes
MODEL STATISTICS				
N	24620	24620	24620	24620
Clusters	339	339	339	339

Notes: Outcome of interest is willingness to report insurgents planting IEDs. Unit of analysis is individual survey respondent. Baseline models include administrative district fixed effects (using ESOC boundaries), survey wave fixed effects, and demographic controls (age, education, gender, ethnicity, socio-economic status). See table notation for additional details. Standard errors are clustered at the district level and presented in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Estimating treatment effect bounds using the Oster coefficient stability test

		Panel A: Baseline Regression Diagnostic Information	
		(1)	(2)
Treatment Variable	Outcome Variable	Baseline effect (Std. error), [R^2]	Controlled effect (Std. error), [R^2]
Messaging	IED Reporting	0.172*** (0.0328) [0.025]	0.0936*** (0.0150) [0.248]
Messaging	Reint. Tolerance	0.105*** (0.0148) [0.011]	0.0740*** (0.0128) [0.129]

		Panel B: Oster Coefficient Stability Test Results	
		(3)	(4)
Treatment Variable	Outcome Variable	Effect for R_{max} $((\beta_{R_{max}} - \beta_{ctrl})^2)$ [R_{max}]	Alt. Effect for R_{max} $((\beta_{R_{max}} - \beta_{ctrl})^2)$ [R_{max}]
Messaging	IED Reporting	0.0378 (.00311) 0.375]	3.172 (9.48) [0.375]
Messaging	Reint. Tolerance	0.050 (.000569) [0.195]	3.349 (10.7) [0.195]

Notes: Bounds for treatment effects are estimated using the Oster coefficient stability test [**?**]. R_{max} set at 1.5 (exceeds 1.3 threshold in [**?**]). Model specifications are drawn from least and most conservative main specifications. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

PSYCHOPS/RESULTS: Study 2

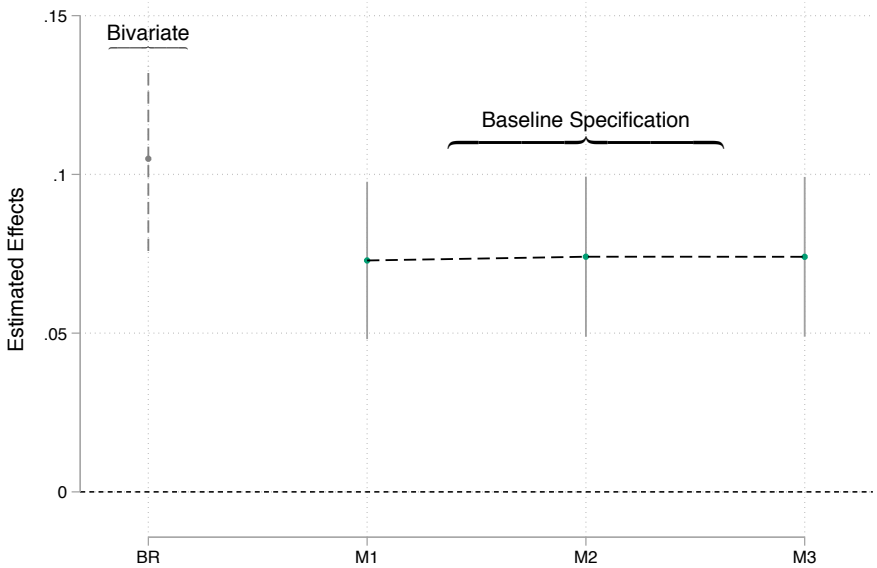
Study 2 Overview

- Use additional data to conduct within case out-of-context replication.
- Explore highly relevant and timely campaign: messaging in support of peace agreement with Taliban.
- Investigate additional effects: messaging frequency, local social capital, media preferences.

Table 6: Impact of psychological messaging exposure on civilian's support for reintegration of former combatants

	(1) Basic Model	(2) Baseline Model w. Fixed Effects + Demo. Controls	(3) Baseline Model w. Community Safety	(4) Baseline Model w. Insurgent Attack and Institution Controls
Messaging Exposure	0.105***	0.0729***	0.0741***	0.0740***
	(0.0148)	(0.0126)	(0.0129)	(0.0128)
SUMMARY STATISTICS				
Outcome Mean	0.485	0.485	0.485	0.485
Outcome SD	0.500	0.500	0.500	0.500
PARAMETERS				
District + Wave Fixed Effects	No	Yes	Yes	Yes
Demographic Controls	No	Yes	Yes	Yes
Community Security	No	No	Yes	Yes
Infra. Attack Frequency	No	No	No	Yes
Taliban Public Services	No	No	No	Yes
Taliban Taxation	No	No	No	Yes
MODEL STATISTICS				
N	26410	26408	26408	26408
Clusters	294	294	294	294

Notes: Outcome of interest is support for rebel reintegration within their community. Unit of analysis is individual survey respondent. Baseline models include administrative district fixed effects (using survey sampling units), survey wave fixed effects, and demographic controls (age, gender, ethnicity, employment status). See table notation for additional details. Standard errors are clustered at the district level and presented in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.


.15
.1
.05
0
Estimated Effects
Bivariate
Baseline Specification
BR
M1
M2
M3

Heterogeneous effects: messaging frequency

Table 7: Heterogeneous impacts of psychological messaging frequency on civilian's support for reintegration of former combatants

	(1) Baseline Model	(2) Baseline Model w. Radio and TV Ownership	(3) Baseline Model w. Shura Participation	(4) Baseline Model w. Reintegration Shura Activity
Messaging Exposure, Monthly	0.0588***	0.0573***	0.0565***	0.0482***
	(0.0140)	(0.0140)	(0.0139)	(0.0136)
Messaging Exposure, Weekly	0.0933***	0.0898***	0.0894***	0.0806***
	(0.0164)	(0.0163)	(0.0163)	(0.0166)
Messaging Exposure, Daily	0.110***	0.106***	0.105***	0.0947***
	(0.0318)	(0.0313)	(0.0312)	(0.0305)
Summary Statistics				
Outcome Mean	0.485	0.485	0.485	0.485
Outcome SD	0.500	0.500	0.500	0.500
F Test of Coefficient Equality				
Pr(Weekly > Monthly)	0.979	0.972	0.974	0.972
Pr(Daily > Monthly)	0.952	0.946	0.944	0.939
Pr(Daily > Weekly)	0.714	0.710	0.701	0.687
Parameters				
District + Wave Fixed Effects	Yes	Yes	Yes	Yes
Demographic Controls	Yes	Yes	Yes	Yes
Community Security	Yes	Yes	Yes	Yes
Infra. Attack Frequency	Yes	Yes	Yes	Yes
Taliban Public Services	Yes	Yes	Yes	Yes
Taliban Taxation	Yes	Yes	Yes	Yes
Additional Parameters				
Radio + TV ownership	No	Yes	Yes	Yes
Shura Attendance	No	No	Yes	Yes
Reintegration Shura Activity	No	No	No	Yes
Model Statistics				
N	26408	26408	26408	26408
Clusters	294	294	294	294

Notes: Outcome of interest is support for rebel reintegration within their community. Unit of analysis is individual survey respondent. Baseline models include administrative district fixed effects (using survey sampling units), survey wave fixed effects, and demographic controls (age, gender, ethnicity, employment status). See table notation for additional details. Standard errors are clustered at the district level and presented in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Heterogeneous effects: media preferences/trust

Table 8: Heterogeneous impacts of psychological messaging on civilian's support for reintegration of former combatants with respect to use of trusted and non-trusted sources of information transmission

	(1) Baseline Model	(2) Baseline Model w. Radio + TV Ownership	(3) Baseline Model w. Trusted Sources of Information	(4) Baseline Model w. Shura Participation
Messaging Exposure, Most Trusted Source	0.0787***	0.0760***	0.0761***	0.0756***
	(0.0135)	(0.0133)	(0.0135)	(0.0135)
Messaging Exposure, Not Most Trusted Source	0.0651***	0.0633***	0.0630***	0.0616***
	(0.0165)	(0.0166)	(0.0165)	(0.0165)
Summary Statistics				
Outcome Mean	0.485	0.485	0.485	0.485
Outcome SD	0.500	0.500	0.500	0.500
F Test of Coefficient Equality				
Pr(Trust Source > Non-Trust Source)	0.821	0.806	0.811	0.825
Parameters				
District + Wave Fixed Effects	Yes	Yes	Yes	Yes
Demographic Controls	Yes	Yes	Yes	Yes
Community Security	Yes	Yes	Yes	Yes
Infra. Attack Frequency	Yes	Yes	Yes	Yes
Taliban Public Services	Yes	Yes	Yes	Yes
Taliban Taxation	Yes	Yes	Yes	Yes
Additional Parameters				
Radio + TV ownership	No	Yes	Yes	Yes
Trusted Sources of Information	No	No	Yes	Yes
Shura Attendance	No	No	No	Yes
Model Statistics				
N	26408	26408	26408	26408
Clusters	294	294	294	294

Notes: Outcome of interest is support for rebel reintegration within their community. Unit of analysis is individual survey respondent. Baseline models include administrative district fixed effects (using survey sampling units), survey wave fixed effects, and demographic controls (age, gender, ethnicity, employment status). See table notation for additional details. Standard errors are clustered at the district level and presented in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.