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Austin L. Wright

Luke N. Condra

Jacob N. Shapiro

Andrew C. Shaver

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CIVILIAN ABUSE AND WARTIME INFORMING*

Austin L. Wright†, Luke N. Condra‡, Jacob N. Shapiro§, Andrew C. Shaver¶

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Abstract

Civilian support is central to the success of counterinsurgent campaigns. Harm to civilians, and who harms them, influences when and with whom non-combatants collaborate. Drawing on newly declassified military records and a novel instrumental variables approach, we find robust, direct evidence that civilians respond to victimization by insurgents by providing intelligence to security forces in Afghanistan. These results clarify the conditions under which civilian casualties can shape the course of internal war, with implications for future research on political violence.

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† *Corresponding author.* Assistant Professor, Harris School of Public Policy, The University of Chicago, Chicago, IL 60637. Email: austinlw@uchicago.edu

‡Assistant Professor, Graduate School of Public and International Affairs, University of Pittsburgh, Pittsburgh, PA 15260. Email: lcondra@pitt.edu

§Professor, Department of Politics and Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton, NJ 08540. Email: jns@princeton.edu

¶Ph.D. Candidate, Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton, NJ 08540. Email: ashaver@princeton.edu

1 Introduction

What are the strategic effects of civilian victimization in civil war? Classic theories of counterinsurgency (Galula, 1964; Thompson, 1966), as well as modern theories of the strategic logic of violence (Kalyvas, 2006; Valentino, 2014), assert that civilians condition their support of armed actors on how they are treated.One particularly valuable component of non-combatant support is the provision of local intelligence on insurgent activity, including rebel recruitment, force movement, and planned attacks. As Kalyvas (2006, 174) notes, "[i]t is widely accepted that no insurgency can be defeated unless the incumbents give top priority to and are successful in building an intelligence organization." Civilian abuse, therefore, can shape the course of internal conflict through its effects on civilian sharing of sensitive information, especially when there is a significant power asymmetry between the two sides.

Recent research leverages increased access to conflict microdata to test implications of these theoretical arguments. Berman and Matanock (2015) review this research agenda, noting that direct evidence of theories of asymmetric conflict centered around civilian sharing of information is largely missing. Instead, researchers have focused on testing the observable implications of informational theories. Scholars have found a range of evidence consistent with these theories, showing that: (1) in surveys from Afghanistan, self-expressed willingness to inform is linked to coethnicity with security services (Lyall, Shiraito and Imai, 2015); (2) in Iraq, technological changes—which reduce the risks to informing—are associated with lower intensity of insurgent activity (Shapiro and Weidmann, 2015); and (3) insurgent-initiated violence in Iraq at the district level is lower in the week following insurgent attacks that injure or kill non-combatants in that district, and higher in weeks after Iraqi or American forces did so (Condra and Shapiro, 2012). The latter finding is consistent with civilians responding to harm from insurgents by withdrawing their support and sharing intelligence with security forces.

Yet the observable implications of a shift in wartime informing are often consistent with other explanations of violent outcomes. A decline in insurgent activity following an incidental civilian casualty could also be due to active opposition to rebel control, a refusal to pay "revolutionary taxes" to fund insurgent operations, or a significant decline in recruitment (Berman, Shapiro and Felter, 2011, 811). Similarly, counterinsurgent operations that cause harm to non-combatants provide insurgents with a persuasive tool for mobilizing the civilian population against government forces. Under these conditions, successful insurgent attacks could increase following state-initiated harm because the military does not have the intelligence to thwart these rebel attacks, or because the insurgents simply have more fighters they can deploy and the financial capacity to coordinate more attacks.

In this article, we address three main weaknesses of prior work. First, we provide direct quantitative evidence on the effects of insurgent violence on civilian wartime informing for a much longer time period and at much finer geographic precision than in previous studies.[1] The only study to date providing direct evidence of the effect of civilian abuse on information sharing is Shaver and Shapiro (2016), who use declassified data on calls to a tip hotline during the Iraq War, and find that calls increase after insurgent-caused civilian casualties, and decrease after coalition-initiated attacks harm civilians. But they examine a short, unique period of the Iraqi insurgency—the 54 weeks leading up to and immediately after the U.S. troop surge—and aggregate combat events by relatively large administrative units (province). In contrast, we study wartime informing between 2003 and 2014, and at the (geographically smaller) district-level in Afghanistan. The data document more than 270,000

[1]This is important because territorial control (Kalyvas, 2006), battlefield losses (Wood, 2014*a*), and distribution of power between insurgents and the government (Wood, 2014*b*) have all ebbed and flowed during the course of the Afghan conflict. The temporal scope of our study helps guard against finding a "false positive" driven by distinct but correlated phenomena.

events, including: insurgent activity, harm to civilians, and the provision of local intelligence to security forces.Moreover, the data are collected systematically by security forces, not derived from media sources, which avoids concerns about reporting biases in data collected from newspapers and other media, both in Afghanistan and in other conflicts (Weidmann, 2016).[2]

Second, we examine the relationship between civilian harm and wartime informing in a new conflict, whose features make it highly likely that a positive finding would generalize to other conflicts. Previous work suggests Afghanistan is a "hard" test of theories of wartime informing. Experimental evidence there indicates that non-combatants may be particularly reticent to inform on insurgents at all (Lyall, Shiraito and Imai, 2015). The country's harsh terrain, the mixed urban/rural nature of the insurgency, and low population density make it more difficult for the government to capitalize on insurgent missteps and gather information from the population. As such, the evidence we provide likely underestimates the consequences of civilian harm in other asymmetric conflicts.

Third, we introduce a new identification strategy that exploits the high precision of our data compared to previous efforts and increases confidence in the causal nature of results. Previous research has relied on a plausible, but largely unverifiable, assumption that, conditional on appropriate controls, civilian killings in the course of attacks on military forces are "as if" random. In addition to estimating models consistent with previous research as a benchmark, we exploit a well-known fact about asymmetric conflicts: insurgent attacks are easier to coordinate under the cover of darkness. We construct a novel, high-precision measure of nighttime luminosity using original data on nighttime cloud cover and nightly moon brightness. We find robust evidence that the intensity of insurgent operations that harm civilians responds to nighttime luminosity.

[2]Weidmann (2016, 210-211) describes the military records used in our study as the "universe" of insurgent-initiated combat activity.

Our baseline results reveal that civilian abuse by rebels significantly increases the flow of local intelligence to security forces. Our preferred specification indicates that a one standard deviation increase in insurgent attacks harming civilians is associated with a 24.7% increase in informant tips above the average weekly level. Our instrumental variable (IV) estimates yield even stronger results. These findings indicate that information sharing following civilian abuse by insurgents at least triples over the weekly mean, leading to roughly two more tips per week in small districts and more than 65 additional pieces of intelligence in large districts. These substantive outcomes survive a number of robustness checks, and highlight the importance of civilian harm in shaping the contours of internal conflict.

The rest of the paper is organized as follows. The next section details the empirical strategy. The third section presents the fixed effects and IV results. The final section concludes.

2 Empirical Design

This section discusses the setting of our investigation, reviews the novel military records used to track civilian abuse and wartime informing, and introduces our identification strategy.

2.1 Setting

Afghanistan is a particularly informative context for directly testing information-sharing theories. It is a "hard" test in the sense that several factors could weaken the causal link between civilian abuse and intelligence sharing. The insurgency is predominantly situated in rural areas, with limited operations taking place in larger population centers. Taliban operations are also not as spatially concentrated as urban insurgencies. Local intelligence in this context may be less useful and, accordingly, might attract fewer counterinsurgent resources (Berman and Matanock, 2015). Terrain ruggedness along the border with Pakistan limits the ability of host nation forces to respond quickly to intelligence reports, and institutional frictions across the various troop contributing nations may have further undermined the efficiency of intelligence capabilities in Afghanistan. Previous research suggests that civilians in Afghanistan are least responsive (if at all) to harm inflicted by insurgent actors (Lyall, Blair and Imai, 2013), and experimental evidence also reveals that civilians in Afghanistan may be particularly unlikely to share information with government forces (Lyall, Shiraito and Imai, 2015). The features of this conflict imply a weak treatment effect, so if we find evidence consistent with the theory, it is very likely to exist in other conflicts with similar asymmetries but that are more urban and where responding to information is easier.

2.2 Data

The newly declassified military records on insurgent activity, harm to civilians, and intelligence reports were compiled by International Security Assistance Force (ISAF) and host nation forces starting in 2003. These records of significant activities (SIGACTS) cover nearly the entire duration of Operation Enduring Freedom, which ceased on December 31, 2014. These data are the most complete account of security operations in Afghanistan currently in the public domain.[3]

We observe details on about 97,006 intelligence collection events. Although anonymous channels exist for sharing information in Afghanistan, the military records we study draw on a number of intelligence streams, including direct civilian-to-security force interactions and cultivated sources.[4] Our data include records on 120,247 direct fire, 28,974 indirect fire, and 38,205 IED explosion events. To measure civilian abuse by insurgents, we isolate all insurgent-initiated attacks that caused either a civilian injury or death. Following previous

[3]See SI-B.1. We describe the data in greater detail in [Author] and [Author] 2017.

[4]We do not observe the means of collection (in-person, hotline, etc.). Some reports may have been captured via signals. Former ISAF officials indicate these events were unlikely to be released with our records request. If present, however, these records would likely bias our results toward zero.

literature, we treat injuries and deaths as casualty events. Our data also distinguish between incidental violence and selective harm to collaborators; we focus on the former in our analysis.[5] We restrict our analysis to insurgent-inflicted harm to civilians because while our data account for all insurgent-initiated engagements with coalition and host nation forces that also injure or kill civilians, we have not been able to obtain similarly systematic records of government harm to civilians due to the sensitivity of such information.

We supplement our military records with high frequency data on climatic conditions, including nighttime cloud cover and nightly moon brightness, as well as daily rainfall accumulation and temperature readings. We detail these measures in Supporting Information.

2.3 Identification Strategies

We conduct our analysis at the district level because this is the level at which ISAF and Afghan Government forces were organized during the campaign. Taliban units were also organized around districts. We sum all collected intelligence reports, all insurgent attacks with civilian casualties, and all insurgent operations—including direct line-of-sight attacks, indirect mortar and rocket engagements, and improvised explosive device (IED) detonations—by district-week and standardize per 1,000 district inhabitants.

We identify the effect of civilian abuse by insurgents on information sharing with security forces using two different identification strategies.

We begin with the assumption that, conditional on appropriate controls for trends in the conflict, collateral damage to civilians caused by insurgent attacks on military forces is "as if" randomly assigned. This approach is the benchmark specification in previous work. After conditioning out district and week-of-year fixed effects, as well as short-run trends in overall violence, we identify the residual variation in civilian abuse that is arguably random.

[5] Results are robust to including the latter type in our analysis. See discussion and results in SI-J.

Our base model is captured by equation 1:

$$Y_{dt} = \alpha + \beta_1 CIVCAS_{dt} + \mu_d + \eta_t + \gamma X_{dt} + \epsilon_{dt} \tag{1}$$

where Y_{dt} is the number of intelligence reports shared with counterinsurgents in district d in week t; $CIVCAS_{dt}$ is the sum of insurgent attacks resulting in civilian abuse in a given district; μ_d is a district fixed effect; η_t denotes a week-of-year fixed effect; X_{dt} is a vector of district-week enemy force operation controls, included in all specifications; and ϵ_{dt} is the error term. The regression is weighted by population. In all models we cluster standard errors at the district level, and regressions are weighted by district population.

Yet assuming that occurrence of collateral damage is plausibly random is strong and largely unverifiable. Although qualitative accounts of close range combat yield evidence in favor of this assumption, we implement a second approach.

We instrument for insurgent-initiated civilian abuse using a naturally occurring and randomly assigned constraint on armed group coordination: nighttime luminosity. Mobilizing forces under the cover of darkness is characteristic of irregular, asymmetric insurgencies, where rebels are not capable enough to coordinate attacks openly. The importance of nighttime luminosity to insurgent tactics is threefold. First, under low light conditions, it is easier for insurgents to position fighters, set up ambushes, and emplace IEDs without arousing suspicion. Low light conditions enable fighters to cloak their movements from traditional ground-based surveillance techniques, particularly forces that lack night vision capabilities. "The Taliban's knowledge of the terrain and the cover of darkness assures they own the night," notes Cronin (2012, 51), "[n]ight has been the ally of every insurgent force. It is when they move to set up for their daytime operations, their ambushes, their IEDs." Second, cloud density in the middle and upper layers of the atmosphere make satellite and drone-based detection of suspicious activity difficult and unreliable. Although insurgents may not be able to directly infer the degree of sensor disruption due to clouds, they do observe the intensity of moon light striking the ground in their area of operation each night.

Importantly, our identification strategy conditions out all variation in moon phases that are common to all Afghan districts in the same week. Third, when there is more cloud cover, insurgents can plan attacks more carefully and kill fewer civilians.

Our first stage regresses the number of insurgent attacks causing civilian casualties per district-week on the average intensity of nighttime luminosity for each district, by week. We estimate equation 2:

$$CIVCAS_{dt} = \alpha + \beta_1 NT - Luminosity_{dt} + \mu_d + \eta_t + \gamma X_{dt} + \epsilon_{dt} \tag{2}$$

The parameters in equation 2 follow equation 1, with several exceptions. In addition to the factors above, X_{dt} includes district-week averages of daytime rainfall accumulation and temperature levels. We include these parameters to address any exclusion restriction concerns regarding the correlation between nighttime climatic conditions and other weather patterns that may be correlated with increased aggression (temperature) or unstable affective conditions (rainfall) (Hsiang, Burke and Miguel, 2013). From equation 2, we derive $\widehat{CIVCAS}_{dt}$. We then estimate equation 3:

$$Y_{dt} = \alpha + \beta_1 \widehat{CIVCAS}_{dt} + \mu_d + \eta_t + \gamma X_{dt} + \epsilon_{dt} \tag{3}$$

where the point estimate on $\widehat{CIVCAS}_{dt}$ is the quantity of interest, the number of insurgent attacks resulting in civilian casualties in the current district-week. Information sharing, Y_{dt}, is measured as in equation 1 above, and the regression is weighted by population. Our covariates X_{dt} include district and year-week fixed effects, as well as district-week measures of average rainfall and temperature. Robust standard errors are clustered at the district level.

3 Results

We review our main results in this section. We find that civilian abuse by insurgents is associated with a significant increase in collaboration with state security forces. These results are robust and substantial.

Table 1 shows the estimated impact of civilian abuse on wartime informing using equation 1. Across all specifications in Table 1, there is a statistically significant association between insurgent attacks that result in civilian casualties and the number of tips that counterinsurgents receive from civilians. The estimated coefficient on civilian abuse is stable across specifications, and indicates that a one standard deviation increase in civilian abuse is associated with a 22.8% to 24.7% increase in informant reports over the weekly mean level. A one standard deviation increase in insurgent attacks causing civilian harm is equivalent to .415 more civilian casualty events per week in an average sized district. We perform a standard diagnostic and confirm in table SI-24 that population weights improve the precision of our estimates.

In tables SI-2 and SI-3, we adopt alternative measures of the outcome, by winsorizing and logging intelligence flows, respectively, to ensure that our results are robust to conflict measures common in the literature and are not driven by outliers. The benchmark specification in table SI-2 indicates a one standard deviation increase in civilian abuse is associated with a 33.9% increase in wartime informing. The same specification in table SI-3 estimates a 20.5% increase in collaboration following a comparable shock. The results are also unaffected by sequentially excluding provinces from the sample (see figure SI-1). Our results also hold if we control for selective killings of informants and security force recruits (table SI-20). In table SI-7, we demonstrate that these findings are robust to using a first differences approach as well. We find a statistically and substantively significant increase in collaboration following increases in abuse.

In tables SI-4, SI-5, and SI-6 we substitute our district-week measure of overall insurgent violence for a long-run (12 week) moving average of violence levels at the district level. We do this to establish that our results are insensitive to including longer run conflict dynamics that may influence the cultivation of informant networks. If anything, our main results understate the consequences of civilian abuse for information sharing by non-combatants.

To increase confidence in the causal interpretation of our results, we now turn to our IV estimates of equations 2 and 3. We begin by assessing the relevance of our instrument—nighttime luminosity—to the production of rebel attacks that cause harm to civilians. These results are reported in table SI-8. Our results indicate that the severity of civilian abuse is significantly, negatively associated with the intensity of moon light breaking through cloud cover at night, consistent with our expectations.We find consistent effects in our supplemental tests as well (tables SI-15 and SI-18). These results empirically confirm what military practitioners have discussed for decades: insurgents coordinate attacks under the cover of darkness.

We next turn to our second stage results, reported in table 2. These findings indicate that information sharing following civilian abuse by insurgents at least triples over the weekly mean, leading to roughly two more tips per week in small districts and more than 65 additional pieces of intelligence in large districts. Population weights improve the precision of our IV estimates (table SI-25). We observe comparably scaled responses if we instead winsorize (table SI-14) or log transform (table SI-17) our outcome of interest. These results are insensitive to sequentially dropping provinces from the estimating sample (see figure SI-2), and accounting for selective killings (table SI-21). In our preferred specification, the Kleibergen-Paap F statistic is 15.05, well above the standard threshold of 10. Importantly, in the case of an equal number of instruments and endogenous variables (our model specification), two stage least squares (our methodological technique) is median unbiased even when the Kleibergen-Paap F statistic is below 10, which is what we observe in some of our secondary and supplemental results.

Our main results attempt to address potential concerns about exclusion restriction violations through weather conditions related to nighttime cloud cover and broader patterns in insurgent violence correlated with civilian abuse. We focus on two weather conditions—temperature and rainfall—that previous research indicates are most likely to violate the exclusion restriction. We include high frequency measures of these conditions in all main and supplemental models.

We also attempt to account for potential violations of the exclusion restriction by incorporating a district-week specific measure of overall violence as an exogenous covariate in the first and second stages of our IV models. Reasonably, this might raise secondary concerns about the potential endogeneity of overall violence and information sharing. We address these concerns by modifying equations 2 and 3 to include overall violence as an endogenous regressor and add a second instrument to our model—the square of nighttime luminosity. These results are presented in tables SI-11 and SI-12.

The results of this alternative approach are reported in table SI-10. We find that the main effect of civilian abuse increases significantly relative to our baseline specification. Importantly, we find little evidence that overall levels of violence have any meaningful effect on collaboration. Once we take into account the importance of civilian abuse, general violence exposure has a negligible impact on wartime informing.

4 Conclusion

We have shown direct evidence of a meaningful causal link between civilian abuse and wartime informing. Non-combatants punish insurgents for harming civilians by sharing intelligence with security forces, consistent with theories of counterinsurgency and information-sharing during conflict. We highlight several promising avenues for future research. The willingness of civilians to share information may be mediated by the type, intensity, and spatial proximity of combatant abuse. Information-sharing might influence other wartime dynamics, including the resolve and capacity of insurgents to fight and the ability of rebels to credibly bargain with state rivals. Finally, winning local support for counterinsurgent campaigns is a core motivation of military aid provision. Yet we still know relatively little about how civilian sympathies, and insurgent strategy, respond to these aid interventions.

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Table 1: Impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces

	Column 1	Column 2	Column 3
Rebel Attacks w/ CIVCAS	0.263***	0.244***	0.243***
	(0.0643)	(0.0595)	(0.0594)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.0007	.0007	.0007
Treatment Std. Dev.	.0043	.0043	.0043
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.266	0.276	0.275

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 2: Instrumental variables estimates of impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces

	Column 1	Column 2	Column 3
$\widehat{\text{Rebel Attacks}}$ w/ CIVCAS	5.114***	5.903**	5.742**
	(1.863)	(2.416)	(2.375)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.0007	.0007	.0007
Treatment Std. Dev.	.0043	.0043	.0043
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
Kleibergen-Paap F	15.05	9.585	9.650

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

SUPPORTING INFORMATION

— For Online Publication Only —

A Explanation of baseline tables

In this section, we detail the model sequence in the main results. Column 1 presents results from our baseline, population-weighted fixed effects model, which regresses incidents of information sharing on insurgent attacks that resulted in civilian casualties in a district-week. The model controls for the total number of direct fire attacks, indirect fire attacks, and IEDs detonated, and clusters standard errors at the district level. It includes district and year-week fixed effects. Column 2 adds regional-command-specific (RC) time trends to this baseline model. Specifically, the model in Column 2 includes the interaction of a RC dummy (e.g., Regional Command East, West, North, South) with a linear year trend. This is to account for any linear changes in the conflict specific to each regional command, such as the accumulation of insurgent capabilities in opium producing regions. In Column 3, we add a regional command-year fixed effect. In these models, all variation we study is demeaned by district, week-of-year, and regional command-year. This allows us to address macroscale changes in coalition and host nation force composition, such as coalition troop rotations and annual revisions to rules of engagement.

B Data details

B.1 Conflict Data

The data on insurgent activities, civilian casualties, and information received by ISAF and Afghan forces was received, processed, and released by [AUTHOR] and [AUTHOR] (2017). The data were declassified and released to them by the U.S. Department of Defense and provide the precise timing and locations (often accurate to the nearest minute and within several meters, respectively) of hundreds of thousands of incidents of insurgent violence throughout the Afghanistan war (early 2003 through the end of 2014).

The dataset is constructed from reports provided by U.S., Afghan, and other ISAF military and police units and includes more than 200,000 observations of attacks perpetrated by insurgents with corresponding details on the weaponry used. The dataset also includes tens of thousands of specific incidents of information received by counterinsurgent forces about insurgents. These include specific threats posed by insurgents, frequently identified by the specific attack type (e.g. direct fire, indirect fire, improvised explosive device) as well as reported locations of insurgents. Finally, the dataset includes a variety of details related to the target type, target identity, and outcome of insurgent attacks. The completeness of outcome details increased over time and was systematically collected during the period covering more than 85% of combatant activity. We demonstrate robustness to sampling only this period in tables SI-28 and SI-29.

B.2 Climatic data

The baseline climate reanalysis was prepared by The National Centers for Environmental Prediction (NCEP) and the Department of Energy using state-of-the-art assimilation techniques (Saha et al., 2010). We derive daily measures of cloud cover, temperature (in Kelvin), and accumulated rainfall (measured in millimeters) by administrative district.[6] Our night-time cloud cover density measure is calculated at 1030 PM local time, whereas temperature and rainfall readings are taken at 1030 AM local time. Cloud cover density is calculated on a fractional scale, from 0 to 1. Our data on moonlight intensity is drawn from digital archives at the United States Naval Observatory's Astronomical Applications Department.

[6]We rely on the administrative district shapefile compiled by the Empirical Studies of Conflict group.

This measure captures the fraction of potential light output the moon produces each night. We then calculate a measure of nighttime luminosity by weighting the intensity of moonlight by the density of clouds each night, for each administrative district. We then calculate the weekly mean value of this parameter, as well as the weekly mean value of temperature and rainfall.

C Summary statistics

Table SI-1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Civilian casualties	0.0438	0.2716	0	13	247104
Civilian casualties PC	0.0007	0.0043	0	0.5	247104
Violence trend	0.7516	3.6674	0	267	247104
Violence trend PC	0.0118	0.0542	0	3.0135	247104
Intel reports PC	0.006	0.0238	0	2.6061	247104
Intel reports, winsorize	0.3633	1.508	0	20	247104
Intel reports, log(+1)	0.1491	0.4333	0	4.7185	247104
Nighttime luminosity, weekly mean	0.3357	0.2666	0	0.9614	247104
Temperature (Kelvin), weekly mean	293.5308	13.5377	255.6271	325.3973	247104
Rainfall (MM per measure), weekly mean	0.2612	0.5894	0	12.9857	247104
District population (in thousands)	63.8326	170.6748	2	3289	247104

Notes: Samples replicate main specifications.

D Baseline results with alternative outcome measures

In the main analysis, we measure the outcome of interest—information sharing—per 1,000 district inhabitants. This transformation adjusts for the varying population scales (and conflict intensities) of each district. In the Supporting Information, we present the results from alternative model specifications for both the two-way fixed effects estimations and the IV estimations to show that the results are robust to different ways of accounting for the non-normal distribution of the dependent variable. In the first alternative specification, we winsorize the dependent variable at the 99th percentile. In the other alternative specifications, we perform a log transformation, adding one to all units. Results are unaffected.

Table SI-2: Impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces, winsorized at the 99th percentile

	Column 1	Column 2	Column 3
Rebel Attacks w/ CIVCAS	0.454***	0.441***	0.441***
	(0.0769)	(0.0716)	(0.0716)
Summary Statistics			
Outcome Mean	.3633	.3633	.3633
Outcome Std. Dev.	1.508	1.508	1.508
Treatment Mean	.0438	.0438	.0438
Treatment Std. Dev.	.2716	.2716	.2716
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.348	0.367	0.366

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, winsorized at the 99th percentile. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-3: Impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces, log transformed (plus one)

	Column 1	Column 2	Column 3
Rebel Attacks w/ CIVCAS	0.113***	0.110***	0.110***
	(0.0154)	(0.0140)	(0.0140)
Summary Statistics			
Outcome Mean	.1491	.1491	.1491
Outcome Std. Dev.	.4333	.4333	.4333
Treatment Mean	.0438	.0438	.0438
Treatment Std. Dev.	.2716	.2716	.2716
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.396	0.410	0.409

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, log transformed (plus one). Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

E Estimates with long-runs trends in violence

Table SI-4: Impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces, with long-run trends in violence

	Column 1	Column 2	Column 3
Rebel Attacks w/ CIVCAS	0.324***	0.471***	0.305***
	(0.0596)	(0.0652)	(0.0583)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.0007	.0007	.0007
Treatment Std. Dev.	.0043	.0043	.0043
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence 12 Week Trend	Yes	No	Yes
District Violence 12 Week Trend^2	No	Yes	Yes
Reg. Command Trends	No	No	No
Reg. Command-Year FE	No	No	No
Model Statistics			
Number of Observations	190080	190080	190080
Number of Clusters	396	396	396
R^2	0.271	0.257	0.272

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. Model across columns replicates baseline specification. All regressions are weighted by district population. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-5: Impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces, winsorized at the 99th percentile, with long-run trends in violence

	Column 1	Column 2	Column 3
Rebel Attacks w/ CIVCAS	0.478***	0.671***	0.444***
	(0.0738)	(0.0734)	(0.0718)
Summary Statistics			
Outcome Mean	.3633	.3633	.3633
Outcome Std. Dev.	1.508	1.508	1.508
Treatment Mean	.0438	.0438	.0438
Treatment Std. Dev.	.2716	.2716	.2716
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence 12 Week Trend	Yes	No	Yes
District Violence 12 Week Trend^2	No	Yes	Yes
Reg. Command Trends	No	No	No
Reg. Command-Year FE	No	No	No
Model Statistics			
Number of Observations	190080	190080	190080
Number of Clusters	396	396	396
R^2	0.353	0.339	0.355

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, winsorized at the 99th percentile. Model across columns replicates baseline specification. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-6: Impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces, log transformed (plus one), with long-run trends in violence

	Column 1	Column 2	Column 3
Rebel Attacks w/ CIVCAS	0.123***	0.179***	0.108***
	(0.0145)	(0.0134)	(0.0135)
Summary Statistics			
Outcome Mean	.1491	.1491	.1491
Outcome Std. Dev.	.4333	.4333	.4333
Treatment Mean	.0438	.0438	.0438
Treatment Std. Dev.	.2716	.2716	.2716
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence 12 Week Trend	Yes	No	Yes
District Violence 12 Week Trend^2	No	Yes	Yes
Reg. Command Trends	No	No	No
Reg. Command-Year FE	No	No	No
Model Statistics			
Number of Observations	190080	190080	190080
Number of Clusters	396	396	396
R^2	0.403	0.389	0.409

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, log transformed (plus one). Model across columns replicates baseline specification. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

F First differences estimates

Table SI-7: Impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces, first differences

	Column 1	Column 2	Column 3
Rebel Attacks w/ CIVCAS	0.0416**	0.0397**	0.00963**
	(0.0193)	(0.0178)	(0.00442)
Outcome			
Outcome measure	Intel per 1000 residents	Winsorize, 99th Perc.	log(intel.+1)
Summary Statistics			
Outcome Mean	.006	.3633	.1491
Outcome Std. Dev.	.0238	1.508	.4333
Treatment Mean	.0007	.0438	.0438
Treatment Std. Dev.	.0043	.2716	.2716
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Reg. Command Trends	No	No	No
Reg. Command-Year FE	No	No	No
Model Statistics			
Number of Observations	242352	242352	242352
Number of Clusters	396	396	396
R^2	0.0159	0.0147	0.0122

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, with varying transformations by column. Model across columns replicates baseline specification. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

G Instrumental variables estimates

Table SI-8: First stage results of IV estimation in Table 2

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.000545***	-0.000477***	-0.000480***
	(0.000141)	(0.000154)	(0.000155)
Summary Statistics			
Outcome Mean	.0007	.0007	.0007
Outcome Std. Dev.	.0043	.0043	.0043
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.209	0.216	0.216

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-9: Reduced form results of IV estimation in Table 2

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.00279***	-0.00282***	-0.00276***
	(0.000904)	(0.000992)	(0.000990)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.264	0.274	0.274

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

H Instrumental variables estimates with violence trends as endogenous parameters

Table SI-10: Instrumental variables estimates of impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces

	Column 1	Column 2	Column 3
$\widehat{\text{Rebel Attacks w/ CIVCAS}}$	3.756**	4.442**	4.360**
	(1.583)	(2.080)	(1.997)
$\widehat{\text{Violence Trend}}$	0.0268	0.00960	0.00641
	(0.0998)	(0.121)	(0.110)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.0007	.0007	.0007
Treatment Std. Dev.	.0043	.0043	.0043
Trend Mean	.0118	.0118	.0118
Trend Std. Dev.	.0542	.0542	.0542
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
Kleibergen-Paap F	7.859	5.702	6.019

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-11: First stage results of IV estimation in Table SI-10 , civilian casualty events

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.000985***	-0.000839**	-0.000939***
	(0.000348)	(0.000330)	(0.000349)
Nighttime Luminosity^2	-0.00000520	-0.0000197	0.0000588
	(0.000296)	(0.000251)	(0.000262)
Summary Statistics			
Outcome Mean	.0007	.0007	.0007
Outcome Std. Dev.	.0043	.0043	.0043
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Treatment^2 Mean	.1837	.1837	.1837
Treatment^2 Std. Dev.	.2336	.2336	.2336
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.106	0.132	0.132

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-12: First stage results of IV estimation in Table SI-10 , district violence trends

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.0292***	-0.0258***	-0.0287***
	(0.00622)	(0.00550)	(0.00614)
Nighttime Luminosity^2	0.0158***	0.0135***	0.0159***
	(0.00472)	(0.00352)	(0.00400)
Summary Statistics			
Outcome Mean	.0118	.0118	.0118
Outcome Std. Dev.	.0542	.0542	.0542
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Treatment^2 Mean	.1837	.1837	.1837
Treatment^2 Std. Dev.	.2336	.2336	.2336
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.341	0.395	0.395

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-13: Reduced form results of IV estimation in Table SI-10

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.00448***	-0.00397**	-0.00428**
	(0.00173)	(0.00194)	(0.00193)
Nighttime Luminosity^2	0.000403	0.0000424	0.000358
	(0.00144)	(0.00132)	(0.00131)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Treatment^2 Mean	.1837	.1837	.1837
Treatment^2 Std. Dev.	.2336	.2336	.2336
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.234	0.250	0.250

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

I Supplemental instrumental variables estimates

Table SI-14: Instrumental variables estimates of impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces, winsorized at the 99th percentile

	Column 1	Column 2	Column 3
$\widehat{\text{Rebel Attacks}}$ w/ CIVCAS	5.715**	7.383**	7.265**
	(2.396)	(2.907)	(2.882)
Summary Statistics			
Outcome Mean	.3633	.3633	.3633
Outcome Std. Dev.	1.508	1.508	1.508
Treatment Mean	.0438	.0438	.0438
Treatment Std. Dev.	.2716	.2716	.2716
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
Kleibergen-Paap F	8.966	8.526	8.465

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, winsorized at the 99th percentile. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-15: First stage results of IV estimation in Table SI-14

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.0250***	-0.0244***	-0.0244***
	(0.00836)	(0.00834)	(0.00837)
Summary Statistics			
Outcome Mean	.0438	.0438	.0438
Outcome Std. Dev.	.2716	.2716	.2716
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.270	0.275	0.275

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, winsorized at the 99th percentile. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-16: Reduced form results of IV estimation in Table SI-14

	Column 1	Column 2	Column 3
NIGHTTIME LUMINOSITY	-0.143***	-0.180***	-0.177***
	(0.0531)	(0.0533)	(0.0531)
SUMMARY STATISTICS			
Outcome Mean	.3633	.3633	.3633
Outcome Std. Dev.	1.508	1.508	1.508
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
PARAMETERS			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
MODEL STATISTICS			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.344	0.362	0.362

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, winsorized at the 99th percentile. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-17: Instrumental variables estimates of impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces, log transformed (plus one)

	Column 1	Column 2	Column 3
$\widehat{\text{Rebel Attacks}}$ w/ CIVCAS	1.784**	2.023**	1.986**
	(0.718)	(0.797)	(0.790)
Summary Statistics			
Outcome Mean	.1491	.1491	.1491
Outcome Std. Dev.	.4333	.4333	.4333
Treatment Mean	.0438	.0438	.0438
Treatment Std. Dev.	.2716	.2716	.2716
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
Kleibergen-Paap F	8.966	8.526	8.465

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, log transformed (plus one). Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-18: First stage results of IV estimation in Table SI-17

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.0250***	-0.0244***	-0.0244***
	(0.00836)	(0.00834)	(0.00837)
Summary Statistics			
Outcome Mean	.0438	.0438	.0438
Outcome Std. Dev.	.2716	.2716	.2716
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.270	0.275	0.275

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, log transformed (plus one). Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-19: Reduced form results of IV estimation in Table SI-17

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.0447***	-0.0493***	-0.0484***
	(0.0145)	(0.0141)	(0.0140)
Summary Statistics			
Outcome Mean	.1491	.1491	.1491
Outcome Std. Dev.	.4333	.4333	.4333
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.392	0.406	0.406

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces, log transformed (plus one). Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

J Accounting for selective killings

Our military records include information on selective killings of police and military recruits and suspected informants and government collaborators. Although we lack a means of causally identifying the effect of these killings on civilian intelligence sharing, we use a district-week measure of selective killings as a regression parameter. The results below (tables SI-20 and SI-21) are consistent with the main tables 1 and 2.

Table SI-20: Impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces, conditional on intensity of selective killings

	Column 1	Column 2	Column 3
Rebel Attacks w/ CIVCAS	0.231***	0.213***	0.213***
	(0.0611)	(0.0568)	(0.0568)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.0007	.0007	.0007
Treatment Std. Dev.	.0043	.0043	.0043
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Targeted Killings	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.266	0.276	0.276

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-21: Instrumental variables estimates of impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces, conditional on intensity of selective killings

	Column 1	Column 2	Column 3
$\widehat{\text{Rebel Attacks}}$ w/ CIVCAS	5.536***	6.429**	6.219**
	(2.138)	(2.788)	(2.713)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.0007	.0007	.0007
Treatment Std. Dev.	.0043	.0043	.0043
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Targeted Killings	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
Kleibergen-Paap F	12.92	8.438	8.568

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-22: First stage results of IV estimation in Table SI-21, conditional on intensity of selective killings

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.000491***	-0.000429***	-0.000434***
	(0.000137)	(0.000148)	(0.000148)
Summary Statistics			
Outcome Mean	.0007	.0007	.0007
Outcome Std. Dev.	.0043	.0043	.0043
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Targeted Killings	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.234	0.239	0.239

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-23: Reduced form results of IV estimation in Table SI-21, conditional on intensity of selective killings

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.00272***	-0.00276***	-0.00270***
	(0.000896)	(0.000984)	(0.000982)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Targeted Killings	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.265	0.275	0.275

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

K Weighted least squares diagnostics

A standard weighted least squares diagnostic is to compute and compare coefficient estimates from unweighted and weighted models. If the population weights are used to improve precision, it is expected that model results without population weights are relatively less precise (have wider confidence intervals) but otherwise substantively similar to weighted model results. Relative to tables 1 and 2, tables SI-24 and SI-25 are markedly less precise. Notice that the Kleibergen-Paap F statistics also decline, further validating our decision to weight the regressions using per capita outcomes.

Table SI-24: Impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces

	Column 1	Column 2	Column 3
Rebel Attacks w/ CIVCAS	0.131**	0.125**	0.125**
	(0.0636)	(0.0606)	(0.0606)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.0007	.0007	.0007
Treatment Std. Dev.	.0043	.0043	.0043
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.217	0.233	0.233

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are unweighted. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-25: Instrumental variables estimates of impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces

	Column 1	Column 2	Column 3
$\widehat{\text{Rebel Attacks}}$ w/ CIVCAS	5.290	7.427	7.462
	(5.335)	(6.758)	(6.843)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.0007	.0007	.0007
Treatment Std. Dev.	.0043	.0043	.0043
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
Kleibergen-Paap F	1.421	1.528	1.498

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are unweighted. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-26: First stage results of IV estimation in Table SI-25

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.000294	-0.000301	-0.000299
	(0.000247)	(0.000243)	(0.000244)
Summary Statistics			
Outcome Mean	.0007	.0007	.0007
Outcome Std. Dev.	.0043	.0043	.0043
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.139	0.141	0.141

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are unweighted. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-27: Reduced form results of IV estimation in Table SI-25

	Column 1	Column 2	Column 3
Nighttime Luminosity	-0.00155	-0.00223**	-0.00223**
	(0.000959)	(0.00103)	(0.00104)
Summary Statistics			
Outcome Mean	.006	.006	.006
Outcome Std. Dev.	.0238	.0238	.0238
Treatment Mean	.3357	.3357	.3357
Treatment Std. Dev.	.2666	.2666	.2666
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	247104	247104	247104
Number of Clusters	396	396	396
R^2	0.217	0.232	0.232

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are unweighted. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-28: Impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces (sample: 2010-2014)

	Column 1	Column 2	Column 3
Rebel Attacks w/ CIVCAS	0.153***	0.160***	0.159***
	(0.0520)	(0.0525)	(0.0525)
Summary Statistics			
Outcome Mean	.0014	.0014	.0014
Outcome Std. Dev.	.0062	.0062	.0062
Treatment Mean	.0128	.0128	.0128
Treatment Std. Dev.	.0351	.0351	.0351
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	102960	102960	102960
Number of Clusters	396	396	396
R^2	0.319	0.325	0.325

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table SI-29: Instrumental variables estimates of impact of insurgent-initiated civilian casualties on wartime informing by civilians to security forces (sample: 2010-2014)

	Column 1	Column 2	Column 3
$\widehat{\text{Rebel Attacks w/ CIVCAS}}$	4.997**	5.926**	5.496**
	(2.148)	(2.588)	(2.375)
Summary Statistics			
Outcome Mean	.0014	.0014	.0014
Outcome Std. Dev.	.0062	.0062	.0062
Treatment Mean	.0128	.0128	.0128
Treatment Std. Dev.	.0351	.0351	.0351
Parameters			
District FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District Violence Trend	Yes	Yes	Yes
Rain/Temp. Controls	Yes	Yes	Yes
Reg. Command Trends	No	Yes	No
Reg. Command-Year FE	No	No	Yes
Model Statistics			
Number of Observations	102960	102960	102960
Number of Clusters	396	396	396
Kleibergen-Paap F	7.867	5.897	6.257

Notes: Outcome of interest is intelligence reports shared with local and foreign security forces standardized by population. All regressions are weighted by district population. Regional command designations are assigned to districts and used for calculating linear time trends (column 2) and command-by-year fixed effects (column 3). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

L Sensitivity to excluding provinces sequentially

In this section, we demonstrate that the main results are robust to sequentially excluding provinces from the estimating sample. In figure SI-1, we replicate column 1 from table 1. In figure SI-2, we repeat column 1 in table 2. In all specifications, the effect of civilian abuse is statistically significant and positive, indicating that wartime informing increases following rebel attacks that cause harm to non-combatants. This version of the test is conservative since the analysis relies on district level variation and we instead exclude parent administrative units. Although the point estimate remains statistically significant by conventional standards, excluding Hilmand province influences the results substantively. This is unsurprising given the concentration of combat events that take place in this region.

Figure SI-1: Sequentially excluding provinces from baseline analysis: equation 1 in table 1

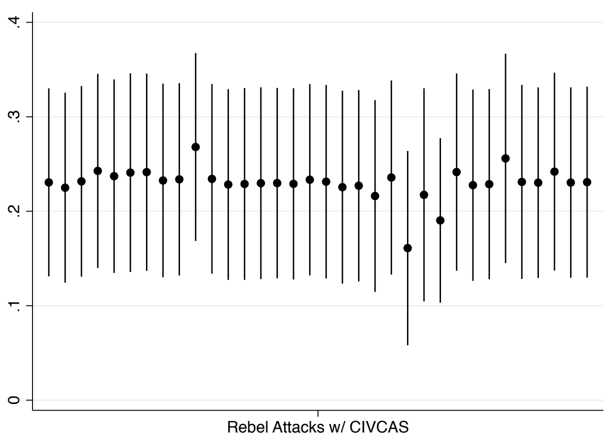

Figure SI-2: Sequentially excluding provinces from IV estimates: equation 3 in table 2