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The Effect of Civilian Casualties on Wartime Informing: Evidence from the Iraq War[*]

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Abstract:
Scholars of civil war and insurgency have long posited that insurgent organizations and their state enemies incur costs for the collateral damage they cause. We provide the first direct quantitative evidence that wartime informing is affected by civilian casualties. Using newly declassified data on tip flow to Coalition forces in Iraq we find that information flow goes down after government forces inadvertently kill civilians and it goes up when insurgents do so. These results confirm a relationship long posited in the theoretical literature on insurgency but never directly observed, have strong policy implications, and are consistent with a broad range of circumstantial evidence on the topic.

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1 Introduction

The effect of civilian casualties on wartime informing is of great interest to scholars of sub-state violence, many of whom have long highlighted the importance of information in insurgency campaigns. Most twentieth-century counterinsurgency theorists writing on the wars of decolonization argued that obtaining information on rebels from non-combatants was critical for government forces and that protecting the population from insurgents was critical to gaining that cooperation (Trinquier 1961; Galula 1964; Taber 1965; Clutterbuck 1966; Thompson 1966; Kitson 1977). More recently, Kalyvas (2006) argued that indiscriminate violence against civilians is counterproductive because it can turn civilians against the party causing them harm.[1] Berman et al. (2011b) explicitly model the relationship between harm and informing as part of a three-sided game in which civilians punish insurgents who create excessive costs by sharing information with government forces. Within this literature scholars have long posited that insurgent organizations and their state enemies incur costs for the collateral damage they cause, insurgents in terms of more informing and government forces in terms of less.

That basic argument can be restated as a general theory question and a more specific policy question. The general question is whether civilians strategically decide whether to provide information based on the behavior of insurgents and counterinsurgents. The specific policy question is whether civilian casualties affect information flow.

Indirect empirical evidence that the answers to both questions are 'yes' has been identified in a number of conflicts. U.S. government officials cited the potential for civilian casualties to harm cooperation from civilians as one reason for imposing more restrictive rules of engagement in Afghanistan in 2009. Condra and Shapiro (2012) show that in Iraq insurgent violence went up after Coalition-caused civilian casualties and down after insurgent-caused

[1]Though see Lyall (2009) for evidence to the contrary from the Chechen war.

ones, consistent with an informational reaction to abuse. Lyall et al. (2013a) show that self-reported victimization by the International Security Assistance Force (ISAF) correlates with lower support for ISAF and higher support for the Taliban, and Lyall et al. (2013b) show that manipulating the ethnicity of harm described in vignettes can shift expressed approval about informing. Shapiro and Weidmann (2015) provide evidence that plausibly exogenous increases in cell phone coverages led to lower insurgent violence during the Iraq war, which they attribute to greater information flow to counterinsurgents as the presence of mobile telecommunications lowered the risks of informing.

What is missing in these papers is direct evidence on information flow to counterinsurgents. None of these papers directly measures rates of informing. As one recent paper puts it, "despite its central role in civil war dynamics, the act of informing is still poorly understood, due mostly to the classified nature of informant tips" (Lyall et al., 2013b).

Using newly declassified data on weekly province-level tips collected by Iraqi and Coalition force during the Iraq war, we provide the first direct test of the influence of civilian harm on wartime informing. Our data span all thirteen provinces which experienced substantial violence over a 60-week period from June 2007 to July 2008.[2] We combine the data on tips with administratively-collected geolocated data on combat violence and press-based data on civilian casualties collected by Iraq Body Count which has been used in a broad range of previous work on Iraq (Alkhuzai et al., 2008; Boyle, 2009; Hicks et al., 2009; Berman et al., 2011a; Hicks et al., 2011b; Condra and Shapiro, 2012; Lewis et al., 2012; Diwakar, 2015). We buttress our quantitative analysis with anecdotes from rich qualitative documentation on intelligence collection in Iraq obtained through Freedom of Information Act (FOIA) requests.

Exploiting plausibly exogenous variation in civilian casualties occurring during combat

[2]The data are limited to this period because the government document from which the data were extracted covers only this period. The authors have requested data on information flow for the full war period, but the FOIA case officers with whom we have worked indicate that data for other periods of the war could not be located.

incidents due to the randomness inherent in weapons effects we find a robust relationship between indiscriminate violence and informing.[3] In our baseline model, an additional Coalition-caused civilian casualty leads to approximately .8 fewer tips in the next week, while an additional insurgent-caused one leads to approximately .5 more tips. These are lower bounds on the magnitude of the effects, as we show in extensive robustness checks other reasonable specifications provide larger estimates. We also show that controlling for a broad range of possible confounders, such as longer term trends in combat, mostly strengthen the estimates. These effects, while modest in magnitude, are substantively significant. In the median week in which insurgents caused civilian casualties, they killed four civilians, predicting two additional tips to Coalition forces. That is a substantial number (roughly 10% of the weekly mean) since single tips often resulted in raids that led to the capture of both large numbers of weapons and prominent insurgents. These results are also consistent with prior work indicating that informing should be more sensitive to government-caused civilian casualties (e.g. Condra and Shapiro, 2012; Lyall et al., 2013a): the drop in tip flows following a single government-caused casualty is roughly 60% larger than the increase following an insurgent one. The difference, however, is only modestly significant statistically, t=1.48, p=.16 in our conservative baseline model using clustered standard errors, though it is significant at the 95% level in some specifications.[4]

From a scientific standpoint, these results provide the first direct statistical evidence for a relationship scholars and practitioners have posited for more than 50 years. Our estimates reflect a causal effect to the extent that spikes in civilian casualties from week-to-week are

[3]Our panel data approach follows Condra and Shapiro (2012) in using a combination of fixed-effects and various controls to isolate civilian casualties arising from the randomness inherent in combat (for instance, sometimes civilians happen to be in the wrong place at the wrong time given the trajectory of a bullet or over-pressure pattern of an improvised explosive device).

[4]The potential relationship between information flow and subsequent civilian casualties is complicated; more tips may lead to more raids by counter-insurgents and thus fewer attacks thereby reducing civilian casualties but could also induce insurgents to substitute out of well-planned operations and into hasty ones, thereby increasing civilian casualties. The variation in tips induced by plausibly exogenous variation in past civilian casualties is not large enough to let us disentangle these effects.

conditionally independent of the next week's trend in informing. We carry out a large series of robustness checks to address identification concerns, showing that across a range of specifications the results are remarkably stable. That stability lends credence to a causal interpretation. Specifically, we analyze the relationship between changes in civilian casualties and subsequent changes in information sharing at the province-week level, conditioning out all time-invariant province-specific factors to identify off short-run within-province variance. Controlling for local trends in combat violence, past informing behavior, and prior killings of civilians only make the results starker (both substantively and statistically). The results are also robust to dropping any particular province and pass a temporal placebo test – conditional on controls current tips are uncorrelated with future civilian casualties. Our findings are unlikely, therefore, be driven by obvious confounders such as changes in Coalition force levels (these did not shift on a week-to-week basis), particular unit skill (the skill mix within a province or experience level of units would not shift week-to-week), time-varying trends in combat within provinces (controlling for 4-weeks of changes in combat intensity strengthens the results), differences in baseline civilian attitudes across provinces, the impact of past tipping on current civilian casualties (controlling for these leads to larger estimates), or slower moving province-specific trends in the conflict such as the spread of the Anbar Awakening which hit different provinces at different times (Biddle et al., 2012).

From a policy perspective, our findings reinforce the importance of minimizing collateral damage. In addition to the ethical imperative that combatants take all reasonable measures to avoid harming civilians, they appear to face strategic incentives to do so as well: in Iraq members of the public penalized parties who did not. Evidence from a variety of other conflicts strongly suggest that this dynamic is not isolated to Iraq.

This paper proceeds as follows: in the following section, we consider the possible effect(s) of civilian casualties on battlefield outcomes and why incidents of collateral damage should be expected to affect wartime informing. We then introduce our data and empirical strategy.

Finally, we present results and conclude with a discussion of policy implications.

2 Theory

A growing body of literature analyzes the effects of civilian victimization on battlefield outcomes during periods of insurgency. The effect of civilian casualties on wartime informing has long been central to discussions about the importance of information in insurgency campaigns. While the data do not admit a strong test of which mechanism drives the observed relationship between civilian casualties and informing, this section highlights that there are a host of reasons to expect informing to drop after government forces cause civilians harm and to increase after insurgents do so.

2.1 The Importance of Informing

A long tradition in both academic and professional literatures on insurgency focuses on the central role played by civilians deciding whether or not to share information about combatants (Tse-Tung (1961), Galula (1964), Lyall et al. (2013b), Irish Republican Army (1985), Kalyvas et al. (2006), Nagl (2009)). This line of reasoning emphasizes how the asymmetry of combat power in many non-state wars renders information about insurgent activities "a central resource in civil wars: counter-insurgents seek it, insurgents safeguard it, and civilians often trade it" (Lyall et al., 2013b). Berman et al. (2011b) formalize this interaction as a three-player game in which insurgents and counterinsurgents first simultaneously make investments—insurgents choose a level of anti-government violence which imposes costs on civilians; counterinsurgents choose a combination of military force which also imposes costs on civilians and non-kinetic programming (e.g. local aid projects), which provide benefits to them if the government gains control; and civilians then choose whether to share information with counterinsurgents. In equilibrium, insurgents maximize violence up to a ‘non-cooperation constraint’, the level of violence at which civilians decide they would rather inform to help the government gain control given community norms and insurgents’ ability to retaliate agains informers. The model implies that increases in insurgent harm to civilians make it more likely that civilians will inform while increases in the costs imposted by government military efforts makes them less likely to inform.

Drawing on this literature recent papers argue that incidents of civilian casualties should affect citizens’ willingness to inform. Condra and Shapiro (2012), for example, argue that: “collateral damage causes local noncombatants to effectively punish the armed group responsible by sharing more (less) information about insurgents with government forces and their allies when insurgent (government) forces kill civilians.” This view echoes that of participants in a number of conflicts outside Afghanistan and Iraq. Victor Corpus, a one-time communist rebel in the Philippines and later a general in the Armed Forces of the Philippines, described this dynamic eloquently.[5] Speaking of the impact of hurting civilians on rebel activity he said “That’s why the discipline of the guerrilla is very strict, because any violation of discipline that will cause the loss of popular support will diminish your team or be the end of you, because if the people are against you, we would get ambushed left and right.” From an insurgent perspective Corpus predicted that causing civilian casualties would lead to more informing. Speaking from the perspective of a government soldier he saw a symmetric relationship, recalling that: “Having been with the other side, I know that if you harmed one innocent civilian in an area, that whole area will become your enemy. For instance, in one village, you accidentally bomb and kill a child, the whole village will become your enemy.”

The investment by Iraqi and Coalition forces made in creating anonymous tips channels provides *prima facie* evidence that counterinsurgents in that conflict found tips useful.

[5]One of our colleagues interviewed General Corpus for a book project with Author. Interview by Author’s Colleague, August 14, 2015.

Telephone tip hotlines like the one shown in figure 1 were active throughout the war.[6] The United States established other platforms as well so that information could be discreetly transmitted to state forces; these included e-mail addresses as well as online internet web forms like that run by the Central Intelligence Agency throughout the Iraq war shown in figure 2.

[Insert figures 1 and 2 about here.]

Beyond the logical inference that these systems must have been useful given that they were maintained for so long, there is substantial evidence that tips served an important counterinsurgency function in Iraq. Internal government documents released to the authors describe anonymous tips collection programs during the recent Iraq war as "a critical information resource for both [Coalition Forces] and [the Government of Iraq] in combating terrorism" (U.S. Central Command, U.S. Department of Defense, 2007). Field reports link tips to battlefield success in a number of ways, including leading to: major cache discoveries such as "more than 450 deadly anti-tank mines... in the stronghold of support for radical cleric Muqtada al-Sadr's militia" (Garamone, 2007); discovery of bomb-making facilities (Miles, 2007); and arrests of "hundreds of key former Ba'athists and Al Qaeda and the eventual bombings that finally killed Zarqawi" (Castro, 2007); to highlight just a few.

A national tips hotline jointly run by the U.S. and Iraqi governments "was so effective, that units began to setup local regional tip centers... [and the] President (US), Vice-President (US), and SECDEF have all requested historical data for the program" (Multi-National Corps – Iraq, 2008). While it is unclear what proportion of operations carried out were based on tips received, those organizations that reported integrating tips into their intelligence cycle claimed they relied heavily on the channel. The tips program reportedly "provide[d] [Multi National Forces-Iraq's Strategic Counterintelligence Directorate (SCID)] with 80% of

[6] Indeed, one prominent counterinsurgent predicted in the 1960s governments would find it worthwhile to provide "would-be informers... a safe, anonymous way to convey information" (Galula, 2006).

its [human intelligence] sourcing and 100% of [its] operations" (U.S. Central Command, U.S. Department of Defense, 2007), and was considered "very successful" by American special operations forces targeting high priority individuals (U.S. Central Command, U.S. Department of Defense, 2007).

More recently, following the Islamic State's advances into Iraq, the country's central government reestablished tips lines so that residents of "Fallujah and Ramadi" may "report... suspected terrorist operations" (Al Shorfa, 2014, 2013; al Qaisi, 2014). In Afghanistan, less has been publicly reported about informing, but a similar pattern emerges. The former director of the Pentagon's Joint Improvised Explosive Device Defeat Organization (JIEDDO) reported six years into the Afghanistan war that in cases where "[C]oalition forces separate the enemy from the people... [w]e see tips go way up; we see bomb makers turned in; we see IED networks dissolve" (Tata, 2007). Reports from the field indicate that "IED finds were due directly to local national tips" (Cuomo and Gorman, 2010).

Across these conflicts, insurgents are reported to have taken actions to reduce informing through anonymous channels. In an apparent "effort by the insurgency to tie up the lines" in Iraq, prank callers attempted to overwhelm call center operators by "berat[ing] and threaten[ing them]. Women called to offer the operators sex or, they said, just to chat" (Semple, 2006). Consistent with this story, internal U.S. Government documents reveal that while calls to tips lines exceeded $5,000$ per day, "[t]hree out of four phone calls [received were] harrassment or death threats" (U.S. Central Command, U.S. Department of Defense, 2007). Similarly, billboards, which were used to promote tips lines in Iraq, "'hit a nerve with the insurgents' who regularly vandalize[d] [those] promoting the campaign" (Miles, 2004). In Afghanistan, the Taliban are reported to have "issued decrees ordering all cell phone towers to be turned off during nightly hours, in an attempt to prevent villagers from calling in tips to the military forces (Trofimov, 2010) and have attacked and destroyed cell phone towers for the same purpose (Shachtman, 2008)" (Shapiro and Weidmann, 2015).

To summarize, government forces and their allies in both Afghanistan and Iraq made investments which suggested they placed a great value on information flow from non-combatants and insurgents in both conflicts behaved as though they thought informing posed a significant threat.

2.2 Heterogeneous Response to Civilian Casualties

Intuitively state- and insurgent-caused civilian casualties might be predicted to operate in opposite ways for a number of reasons, and we are agnostic as to which mechanism is most important. Forward-looking civilians might change their beliefs about who will best represent their interests, for example. In that case state-caused casualties would adversely affect citizens' attitudes about the government, decreasing their willingness to share tips, while casualties caused by the insurgency might induce analogous sentiments towards insurgents and therefore increase tips to government. The desire for revenge might also affect willingness to inform in the same manner, particularly amongst civilians who suffer the loss of family member or friend. As Schumann and Ross (2010) explain, "individuals experience distress when they have been treated unfairly... [and] [r]evenge may enable victims to reduce their distress by restoring equity with the transgressor." Revenge can also provide the victim with a sense of psychological gratification (Crombag et al., 2003) in ways that are highly valued (DiGiuseppe and Tafrate, 2007). One way to exact revenge in an internal conflict is to help the enemy of the party that has hurt you.

In the context of civil wars like the one in Iraq, however, the actions taken to harm those who have hurt you carry asymmetric risk depending on whether that party is the insurgency or the government and its allies. Civilians harmed by the state can simply abstain from informing, enabling insurgents to conduct more attacks. Civilians who suffer at the hands of insurgents, however, must take a risky action to inform. Although revenge motives in some settings are found to be relatively insensitive to consideration of the potential risks (O'Connor and Adams, 2013; Carlsmith et al., 2002), the risks of informing versus abstaining from doing so were starkly different in Iraq. Not informing in Iraq was the normal thing to do; the vast majority of citizens did not inform, and there was no punishment for abstention.[7] Informing, however, could be quite risky. Although anonymous tips platforms allowed civilians to discreetly and relatively easily submit information about insurgents, such activities still carried with them some expected cost – if insurgents were successful in determining that an individual had informed (by, for instance, checking outgoing call records on his/her phone at improvised checkpoints), he or she would almost certainly be tortured and killed.[8] We would, therefore, expect a greater level of harm from insurgents would be required to generate the same reaction.[9]

Existing evidence is consistent with this expectation. Condra and Shapiro (2012) show there were asymmetric effects of civilian casualties in Iraq depending on whether the population in a given area was largely pro-government or pro-insurgency and argue that, in general, "killings by one side [can] have a different impact on subsequent violence than killings by the other." Lyall et al. (2013a) provide further evidence of such phenomenon, finding that: (a) self-reported harm inflicted by the International Security Assistance Force (ISAF) in Afghanistan is correlated with decreased support for ISAF and increased support for the Taliban; and (b) while reports of Taliban-inflicted harm have the analogous relationship, it is substantively much smaller and statistically insignificant. As we show, a similar asymmetry in magnitude existed in Iraq during the study period.

[7]Contrast this with the former East Germany, for example, where informing was pervasive and failure to participate was suspicious.

[8]In survey data used by the authors in separate research, citizens across Baghdad were asked during the war whether they had 'witnessed criminal behavior' within the past year and informed authorities in response. Amongst those citizens who had witnessed such behavior but elected not to inform, the largest number of them cited concern over revenge.

[9]It is also plausible that different segments of the population respond in fundamentally different ways to counterinsurgent-caused and insurgent-caused casualties. Were this the case, differential effects in reporting might be based in the different responses of these population segments to both types of casualties.

2.3 Predictions

Given this background, we articulate two simple predictions:

1. Coalition killings of civilians during combat incidents will lead to a decrease in tips while insurgent killings of civilians in such incidents will lead to a greater flow of tips.

2. The reaction to killings will be asymmetric, tip flow will drop more following a given level of Coalition-caused harm than it will increase following the same level of insurgent-caused harm.

Other expectations are reasonable, though not grounded in the literature on informing in civil war. For example, suppose that citizens who observe civilian casualties by any party are less likely to leave their homes and as a result tip less often because they literally have fewer possible tips – remaining indoors reduces opportunities to witness reportable insurgent activity. We would then see a negative association between changes in Coalition-caused civilian casualties and informing. But, were this dynamic driving the relationship then we would also expect a negative correlation between insurgent-caused civilian causalities and tips from the population. As we will see, that was not the case.[10]

3 Data

To test the relationship between civilian casualties and information flow in Iraq we take advantage of several kinds of administrative data collected by Iraqi and U.S. forces as well as data on civilian casualties developed by Iraq Body Count, a non-governmental organization that has been tracking civilian casualties in Iraq since the start of the war in 2003.

[10]Another possibility would be that as counterinsurgents shift to tactics that put civilians more at risk they also invest less in securing tips. That would lead to a negative correlation between Coalition-caused casualties and tips, which is what we see. Such changes, however, do not occur week-to-week and thus if the relationship we observe were driven by such tactical shifts it would be attenuated when we control for lags of combat violence or lags of tipping and, as we will see, the observed relationships become stronger when we add such controls.

3.1 "Tips" Data

Information supplied by local citizens on insurgents and/or their activities was collected and quantified by various elements of the Coalition and Government of Iraq throughout much of the war. Tips were collected from Iraqi citizens in a variety of ways.

A plurality flowed into the "Iraqi National Tips 1-3-0 Hotline [hereafter, '130 hotline'], an anonymous telephone hotline for reporting terrorist related activity" (U.S. Central Command, U.S. Department of Defense, 2007). The 130 hotline was established by Coalition forces in January 2005 and tranferred to Iraq's Ministry of Interior in November of 2007" (Multi-National Corps – Iraq, 2008).[11] The hotline was modeled after a similar program established by the British Army during the Troubles in Northern Ireland. In fact, a team of "police officers from Northern Ireland were drafted in to help to set up the service and train an Iraqi team to answer the calls 24 hours a day" (Haynes, 2007). The "[t]ips center," where incoming calls were received, was initially located in Iraq's Al Adnon palace, which was then part of the International (Green) Zone established by Coalition forces following their invasion (Multi-National Corps – Iraq, 2007). A subsidiary 130 tips center was also established in Basrah (Multi-National Corps – Iraq, 2007). While the 130 hotline was established to serve the whole of Iraq, in practice, the large majority ("90%") of legitimate tips reported through the hotline were specific to activities within the Baghdad area (Multi-National Corps – Iraq, 2007).

In addition to the 130 hotline, a number of regional channels were established to collect tips. Between "30 and 60" local and regional tips hotlines also operated during the conflict (Multi-National Corps – Iraq). Other data was collected by e-mail (Multi-National Corps

[11] Although the program was transferred, the 130 hotline was advertised as a host-nation program, and operators were Iraqi citizens including local police officers. The "1-3-0 Hotline Program is advertised as an anonymous, good Samaritan program run by Iraqis. [In contrast,] [t]he Rewards Program is almost by definition not Iraqi, not anonymous, and not necessarily appealing to good Samaritans. Tip programs do not want to confuse the message advertised, so tips stays away from the Rewards Program with respect to public image" (Multi-National Corps – Iraq).

– Iraq, 2008) or "initiated by a person" (Multi-National Corps – Iraq, 2007). Collectively, regional tips outnumbered those received through the 130 hotline U.S. Department of Defense (2007) (Figure 3). Broadly, non-130 hotline sources of tips received by telephone included: those called into Provincial Joint Coordination Centers; Iraqi police stations; and "[p]ersonal [c]ell [p]hones or [c]ommanders (Iraqi Police, Iraqi Army, Coalition Forces)" (Multi-National Corps – Iraq, 2007). Figure 3 shows examples of the reporting that Multi-National Command Iraq produced using data on these hotlines.

The 130 hotline was advertised to Iraqi citizens in a variety of ways. In addition to billboard advertisements mentioned previously, television commercials, leaflets, business cards, posters, stickers, and even cigarette lighters were all used to advertise tips channels (Military Information Support Team – Iraq). Figure 4 shows advertisements run to promote the 130 hotline.

[Insert figure 4 about here.]

Our data on tips to Coalition forces in Iraq are derived from various plots showing the weekly rate of useful tips (as defined below) by province.[12] The plots are in recently declassified reports prepared by Multi-National Corps – Iraq for internal briefings (Multi-National Corps – Iraq, 2008).[13] Figure 5 shows one such plot. To generate estimates of the underlying data from which the plots were constructed, each plot was digitized with Plot Digitizer (Huwaldt), which was then used to extract tip counts for each observation of each plot. The weekly data cover the period June 1, 2007 through June 27, 2008. Similar graphs were provided for all but five of Iraq's provinces. Three of the five missing provinces were in the Kurdish region, where there was very little combat and where Coalition forces were likely not engaged in efforts to recruit informants. The Muthanna and Dhi Qar provinces,

[12]Iraq has 18 provinces whose 2007 population ranged from 544,000 people in Dahuk in the Kurdish regions to Baghdad with 7.1M people. The median province had 1M people in 2007.

[13]The documents were released to the authors for the purposes of this and related studies through a Freedom of Information Act (FOIA) request.

both of which are relatively peaceful majority Shia provinces, are also missing. These gaps are unlikely to impact our conclusions. The 13 provinces covered in the data account for 99.1% of the combat incidents recorded by Coalition forces for the period under study and 99.0% of the civilian casualties recorded in the data described below.

[Insert figure 5 about here.]

Critically, the tips data we use do not count the raw number of calls placed to the tips lines—which would be a biased measure of information flow because of the insurgent efforts to flood the line with fake tips discussed above. Rather, the data record the number of tips classified by Coalition and Iraqi operators as valuable. Useful tips were classified into two types: "informational" defined as consisting of tips for which "[n]o immediate response [is] required; useful in developing intelligence and further research" (Multi-National Corps – Iraq, 2008); and "[P]reemptive" defined as consisting of tips "requir[ing] an immediate on-the-ground response" (Multi-National Corps – Iraq, 2008). We use the total number of useful tips for our analysis because he classification of useful tips into these two subcategories does not appear to have been consistent across time and between provinces.[14]

Importantly, Defense Department documents suggest that the determination of whether a given tip was valuable or not was not simply made at the time of receipt by the operator(s) who received it. Instead, the "result" of tips was also tracked. For instance, tips classified as "actioned" meant that they resulted in an "immediate on-the-ground response"; other tips were classified as "positive" after it was established that they had "[l]ed to [the] successful capture of [anti-Iraqi forces], arms or equipment, IED found and cleared, or attack prevented."(**?**). Because of this filtering process our results are unlikely to reflect the relationship between civilian casualties and level of effort to misleading tip-line operators.

[14]It is impossible to know what portion of tips were considered useful because data on total calls were not recorded outside of Basra province. Anecdotally our interviews suggest the level of fake tipping varied greatly over time and between provinces. In data from Basra where daily records of fake and nuisance calls were kept, Author (2016) finds the ratio of false to legitimate calls varied from as low as 10:1 on some days to as high as 240:1 on others.

Civilian Casualties

Data on civilian casualties (CIVCAS) come from Iraq Body Count (IBC), a non-profit organization that collects data on civilian casualties suffered in the Iraq War from press reports.[15] The data are based on media reports of incidents involving civilian casualties between December 2003 and the present. These data are widely considered the most reliable incident-level data on civilian casualties in Iraq and have been previously used in several studies (see e.g. Hicks et al., 2009, 2011a; Condra and Shapiro, 2012). We use the subset of these data covering our period.[16]

Civilian casualties in the IBC data can reliably be divided into four different categories following Condra and Shapiro (2012): (1) accidental killings of civilians by insurgents that occur in the course of attacking Coalition or Iraqi government targets, which we call insurgent-caused casualties; (2) accidental killings of civilians by Coalition forces in the course of combat incidents or attacks on insurgents, which we call coalition-caused casualties; (3) sectarian killings defined as killings of civilians conducted by an organization representing an ethnic group which did not occur in the context of attacks on Coalition or Iraqi forces; and (4) unknown killings, which did not occur in the context of a combat incident and where a clear perpetrator could not be identified. This last category captures much of the violence associated with ethnic cleansing, reprisal killings, and the like, where claims of responsibility were rarely made and bodies were often simply left abandoned.[17] Note that categories (1) and (2) are not defined by whom each side was trying to kill, any civilian deaths incident to combat are counted and assigned to the party reported as being responsible for causing the death.

[15] http://www.iraqbodycount.org.

[16] As with all data on wartime events the IBC data are incomplete and, in particular, are more likely to record multiple-casualty events than single-casualty ones (Price and Ball, 2014; Ball and Price, 2014). It is hard to see how changes in this 'event-size bias' could be correlated with changes in informing behavior, and thus the reporting patterns in the IBC data are unlikely to bias our estimates of the impact of civilian casualties on tips.

[17] Condra and Shapiro (2012) provide a rich set of diagnostics on these data.

Critically, the killings in the first two categories do not represent the intentional targeting of civilians. Rather, they represent accidents of war. The rates with which these killings happened certainly reflected the level of care the two sides took to avoid them, which varied from place-to-place on both sides, but they do not include acts of intimidation killing targeted at specific individuals. Because of the accidental nature of these events they are unlikely to include the violence which was a result of insurgent strategic action to forestall tips to Coalition and Iraqi forces. That kind of violence would be captured in the latter two categories of civilian casualties.

3.2 Covariates

Incidents of insurgent violence carried out against and recorded by Coalition forces are taken from "significant activity" (SIGACT) reports by Coalition forces that capture the location, date, time, and type of attack for attacks targeted against coalition, Iraqi Security Forces, civilians, Iraqi infrastructure and government organizations.[18] Population data are extracted from World Food Programme, UN (2008) surveys and the Landscan 2008 dataset, which provides girded population estimates at 30 arc-second resolution (approximately 500m x 500m) for the entire world.

3.3 Descriptive Statistics

Tip flow was substantial throughout the period under study, with Coalition forces receiving 24 useful tips in the median province/week. The numbers were highly variable, however, with some weeks exhibiting exceptionally high numbers of tips and others reporting no tips at all. As we show below, this skewed distribution does not drive our results. The time series were also extremely idiosyncratic across provinces, both in terms of levels and the shape of the time series, as figure 6 shows. We plot the number of tips per combat incident to normalize

[18]For further details see Berman et al. (2011b).

for the fact that the intensity of insurgent activity varied greatly across provinces. Given the skewed distribution of tips we show that all core results are statistically and substantively similar or stronger if we trim the tips time series at 3 standard deviations from the mean as well as if we remove Basrah and Baghdad.[19]

[Insert figures 6 and 7 about here.]

Insurgents were responsible for roughly twice as many civilian casualties in an average week as Coalition forces, 3.3 vs. 1.7 as table 1 shows. As is clear from the skewed distribution, and as can be seen in figure 7, the time series of civilian casualties was highly episodic.[20] There are weeks when both sides cause high numbers of civilian casualties, as well as weeks when only one side did, and these patterns are imperfectly correlated with overall combat intensity. The bivariate weekly correlation between combat incidents and Coalition-caused civilian casualties is roughly .46, and .49 with insurgent-caused casualties. These correlations, however, are heavily influenced by secular trends in the conflict. In differences the correlations drop substantially, to .29 for Coalition-caused incidents and to .07 for insurgent-caused ones.

[Insert table 1 about here.]

4 Empirical Strategy

To test the prediction that insurgent- (Coalition-)caused civilian casualties increased (decreased) information flow, we estimate the relationship between civilian casualties incident to combat operations and subsequent tip flow. Because telephone and e-mail tips channels

[19]The results of the trimmed regressions are insensitive to trimming at $+/-$ 3 s.d. from the median instead.

[20]Because we do have no strong reasons to expect substantial non-linearities in the response to civilian casualties and because both civilian-casualties time series exhibit a large number of zeros we do not log them.

would allow individuals to respond rapidly to observed civilian casualties, we adopt the province-week as our level of analysis. We expect to find that the number of tips responds to casualties from the previous week.

As figures 6 and 7 showed there were strong trends in both time series. We therefore estimate the following first-differences model:

$$(y_{j,t} - y_{j,t-1}) = \alpha + \beta_1(c^c_{j,t-1} - c^c_{j,t-2}) + \beta_2(c^i_{j,t-1} - c^i_{j,t-2}) + \beta_3(c^s_{j,t-1} - c^s_{j,t-2}) + \gamma_t + (\epsilon_{j,t} - \epsilon_{j,t-1}),$$

where, $y_{j,t}$ is the number of tips in province j during week t, $c^k_{j,t}$ is the count of civilian causalities in province j during week t attributable to source $k \in \{$Coalition (c), insurgents (i), sectarian (s)$\}$. Week fixed effects, γ_t, control for common responses to unobserved characteristics of each particular week (e.g. major terrorist attacks like the March 6 bombing in Baghdad's Karrada neighborhood which killed 68, wounded 120, and might have affected informing throughout the country). Differencing period t and period $t-1$ in this model eliminates unobserved trends in the individual provinces.[21]

Given that we are analyzing the weekly response of tips to weekly changes in killings, omitted variable bias from factors such as endogenous shifts in Coalition and insurgent capabilities (i.e. force levels or tactics) could only drive our results if those capabilities varied across very short time horizons. Short-term changes in force levels are implausible given what we know about the resource allocation process on both sides.[22] Similarly we have found no evidence of week-to-week changes in tactical procedures on either side, much

[21] In levels, both time series exhibit non-stationarity. In differences, this is not the case whether we look province-by-province using a Box-Pierce test or whether we use the common panel data unit root tests. We therefore estimate the relationship in first differences rather than using a province fixed-effect model. Details available from authors.

[22] On the Coalition side the authors have interviewed many officials responsible for force allocation decisions in 2006-8 and found no evidence of week-to-week responses to insurgent actions in terms of moving units. See also Lee (2012). On the insurgent side captured documents from some of the major insurgent groups operating during this period do not reflect a great deal of personnel mobility. On the latter point see documents on "AQ and Other Sunni Jihadist Groups in Iraq" here: https://www.ctc.usma.edu/programs-resources/harmony-program.

less ones that would predict opposite correlations for the two sides between casualties in one period and tips in the next. If such changes were driving the results, however, then controlling for past trends in combat incidents would attenuate the results (and as we will see they do not). Controlling for lagged changes in sectarian killings should account for intimidation killings by insurgents designed to prevent the population from cooperating with Iraqi and Coalition forces.

We cluster standard errors at the province to take into account the potential for serial correlation in the error term within provinces when assessing statistical significance. Because our dataset cover only 13 provinces, we assess statistical significance using the wild cluster bootstrap procedure developed by (Cameron et al., 2008) (hereafter, CGM), which allows for cluster-robust inference when the number of data groups is small. With only thirteen provinces we are well above the minimum of six clusters suggested by CGM based on monte carlo simulations. Because this procedure does not return an analytical p-value we report 95% confidence intervals throughout. In the appendix we also report heteroskedasticity-robust standard errors clustered at the province.

Substantively, this approach follows Condra et al. (2010) and Condra and Shapiro (2012) who leverage the randomness inherent in weapons effects to identify the impact of civilian casualties. Simply put, the consequences of any given combat engagement have a large random component; civilians sometimes suffer for being at the proverbial wrong place at the wrong time. We attempt to isolate the causal impact of those idiosyncratic week-to-week changes in civilian casualties from fighting between Coalition and insurgent forces by estimating first differenced regressions with a time fixed effect to account for secular trends in the war.

Identifying off of this randomness allows for causal inference. The idea is that differencing out the unit specific trends should remove any omitted variables that impact both the propensity for civilians to suffer in $t-1$ and the rate of information flow in t (e.g. differences in the progress of the Sunni Awakening across provinces). Because our analysis in this paper is at the province level, the first level administrative unit, as opposed to the district level, the lower level unit used in much of the prior work on the Iraq war, some of the randomness inherent in combat may be averaged out and there may be substitution across geography within provinces that we cannot control for. Put differently, this kind of "condition-on-place" strategy yields more credible causal inference the smaller the geographic unit. Since our comparisons are between a province in week t and the same province in week $t+1$, our units are not comparable to each other on potential outcomes (i.e. informing in the absence of casualties) as they would be if we were looking at smaller geographic units.[23] We therefore employ a rich set of controls to show that the coefficients change little or become larger as we control for potential sources of bias.

Our first-difference estimator will be consistent as long as $\Delta\epsilon_{j,t} = \epsilon_{j,t} - \epsilon_{j,t-1}$ is uncorrelated with changes in casualties from the prior week, $\Delta c^c_{j,t-1}, \Delta c^i_{j,t-1}$, and $\Delta c^s_{j,t-1}$. This assumption will not hold if changes in casualties respond to external events that might be correlated with changes in tips in the next period. For example, if casualties are a function of past tips, then tips from the past will be correlated with tips at t and casualties at $t-1$. Mean reversion could also cause a mechanical correlation between tips and casualties: casualties would decrease after a bad event even if tips remain the same, leading to a generally negative estimate of the correlation.

To address concerns for these types of bias in the first-difference estimator, we implement a series of controls for feedback from lagged values of y_j and c^k_j. We show that the estimated coefficients (β_1 and β_2) change little in magnitude and significance when controlling for potentially confounding factors from the past. This gives us confidence that casualties are uncorrelated with the potential sources of feedback. Controlling for past trends in killings of various kinds, both intentional by insurgents and accidental by both sides, for example,

[23]We thank a colleague for this phrasing of the inferential issue.

does little to change the core results which suggests that expectations about future deaths resulting from informing are unlikely to be driving the results. To address additional concerns for mean reversion bias, we control for sources of noise in the relationship between civilian casualties and tips. *A priori*, mean reversion is more likely to be substantial when causalities are prone to deviation from their mean. Thus, controlling for factors that plausibly add noise to the variation in casualties, such as the level of combat in a province at a given time, the population, and flexible polynomial interactions of these factors, should reduce any spurious results due to mean reversion. As we will see, none of these controls significantly alter the results.

5 Results

This section discusses our core results and their robustness.

5.1 Main Results

We find direct evidence for our first expectation in section 2.3. As table 2 shows, civilian casualties perpetrated by Coalition forces in a given week are associated with significant decreases in the number of tips supplied the week following, and the opposite is true for insurgent-caused casualties.

[Insert table 2 about here.]

To make it clear where the results are coming from we introduce our key treatment variables and then controls one column at a time: Column 1 includes only Coalition-caused killings and Column 2 insurgent-caused ones. Because the two time-series surely covary due to unobserved factors, Column 3 includes both, which increases the magnitude and significance of the anti-insurgent reaction. Column 4 introduces controls for changes in the intensity of sectarian violence in the previous week, and Column 5 adds in controls for changes in the intensity of combat in the prior week. To ensure the results are not driven by some unobserved set of locality specific shocks that span several weeks, Column 6 introduces contemporaneous changes in civilian casualties of all three types and combat incidents.[24] The coefficients move around little in terms of substantive or statistical significance in columns 4-6, though the significance of the anti-insurgent reaction falls below the 90% level when we include controls for contemporaneous combat incidents, tips, and civilian casualties. In general the results are extremely stable.

Our preferred parsimonious specification is presented in column 5 and includes both Coalition- and insurgent-caused civilian casualties as well as controls for the intensity of combat and intimidation by insurgents (measured as the previous week's changes in sectarian violence and combat incidents). In that model, an additional Coalition-caused death predicts roughly .8 fewer tips the week following.[25] Conversely, an additional civilian death attributable to insurgent action leads to an increase of approximately .5 tips in the following week. The difference between these effects is in the expected direction. The reaction to Coalition-caused deaths is larger, but the difference is modest in statistical significance (t=1.48, p=.16 using standard clustered s.e.). We therefore find modest evidence for our second expectation in section 2.3.

Interpreting the tactical significance of these effects directly from changes in the count of useful tips is not straightforward as tips themselves vary considerably in quality. Consider, for example, the various outcomes of tips received and reported by the Defense Department. In some instances, tips led to important though relatively minor successes, as when, for instance, "[a]n early morning tip from local residents led members of the 101st Airborne Division's 1st Brigade Combat Team to an area near Kirkuk, where they found two IEDs"

[24] Adding in changes in "Unknown" casualties does not change any of the results.

[25] Approximately 1.3 fewer tips can be expected in the week which has an increase of the average number of Coalition-caused civilian casualties in a province week ($.77 \times 1.7$).

(AFPS, 2006a). In other cases, tips led to very significant discoveries. One such tip, for instance, led Coalition forces to a "bomb-making factory in western Iraq... [complete with] 'quite a sizable selection of chemicals,' including canisters of chlorine, several 55-gallon barrels of nitric acid and several bags of fertilizer" (Miles, 2007). Other tips are more difficult to compare. In one instance, for example, a "tip from an Iraqi motorist led to the capture of a kidnapper and the freeing of a woman and her four children..." (AFPS, 2006b).

Nevertheless, the fact that plausibly-exogenous variation in civilian casualties appears to shift informing behavior is an important confirmation that (a) civilians decide strategically whether to provide information based on the behavior of combatants and (b) that civilian casualties by both sides affect information flow. And, as the next section shows, the relationship is remarkably stable to controlling for a wide range of potential confounding factors.

5.2 Robustness

The results presented above are robust to a broad range of alternative specifications. First, as discussed in the previous section, one concern with our approach is that unobserved factors influencing both trends in past civilian casualties and current tip flow could lead us to misattribute changes in tips to lagged changes in civilian casualties. One might worry, for example, that small movements of forces from one town to the next within a given province could trigger heightened fighting and that as the coalition begins to win people over, this generates more tips, while at the same time, the insurgents know they are losing ground, and plan more attacks that sometimes kill civilians. Alternatively the insurgents may begin winning an area, driving tipping down, whilst the coalition responds by fighting more and in the process producing more casualties.[26] Columns 1-3 of table 3 show these processes are unlikely to be driving the results. Such trends in combat would most likely be reflected in

[26] We thank a colleague for highlighting this possibility.

the aggregate levels of civilian harm and combat activity within a province, and thus if they were driving the results then controlling for those past trends would attenuate the results substantially. That is not the case. Our core results on Coalition and insurgent-caused casualties are substantively and statistically similar when including four lags of differences in civilian casualties (Table 3 Column 1 compared to Table 2 Column 5) or combat incidents (Table 3 Column 2), and the anti-Coalition reaction is estimated to be about 11% larger when controlling for past trends in tips (Table 3 Column 3).

[Insert table 3 about here.]

A second concern is that our results are simply an artifact of mean reversion or some other kind of cyclicality in the data. The fact that controlling for lagged changes in tip flow does not attenuate the results should ease any such concern. Since mean reversion is more likely to be substantial when causalities are prone to deviation from their mean, we can determine whether controlling for factors that plausibly add noise to the variation in civilian casualties attenuates the results. Column (4) does just that, adding what we call size controls which include the level of combat in a province over the previous eight weeks, the population of that province, and flexible polynomial interactions of these factors. Adding these controls again makes the results cleaner.

Combining multiple lags of changes plus size controls makes the result stronger still, as can be seen in Column 5. Both estimates become more than 30% larger than in our baseline specification when controlling for all past trends in past combat, civilian causalties, and informing, as well as the size of the province and overall levels of combat (Table 3 Column 5 compared to Table 2 Column 5). We, therefore, believe that the effect(s) of any unobserved feedback processes or mean reversion would be to attenuate the results. Table 2 represents a conservative presentation of the relationship between civilian casualties and tip flow.[27]

[27] In an alternative approach, we regress changes in tips on an exponentially weighted moving average

The results are also robust to addressing various additional potential confounding factors, as is shown in table 4. The first such concern is that common shocks affecting individual provinces for fixed periods might induce a correlation between changes in civilian casualties and changes in tips that is not due to civilians' response to idiosyncratic civilian casualty events and is not accounted for by simple differencing. To address this concern, Columns 1-3 control for province or province/period fixed-effects. Accounting for additional time-invariant differences between locations or time-varying common shocks in this manner makes little difference in terms of statistical significance, though the coefficient magnitudes do shift somewhat. To be specific, comparing Table 4 Column 3 compared to Table 2 Column 5 shows that allowing for province-specific mean shifts in every month attenuates the anti-insurgent effect and makes the anti-Coalition one stronger, though both remain statistically significant. Another way to control for differential time trends is to estimate the model with a cubic polynomial in time for each province. Doing so shifts in the model from Table 2 Column 5 shifts the coefficient on Coalition-caused casualties from -.77 to -.79 while changing the coefficients on insurgent-caused casualties from .47 to .46.[28] Unit specific time-trends such as the differential arrival of the Sunni Awakening in different provinces in 2007 are unlikely to be generating the result.

[Insert table 4 about here.]

A third potential source of inaccuracy in the results could be that the model is misspecified because we are treating provinces as equal units when in fact some are much larger. Under

(EWMA) of changes in civilian casualties. We construct this variable from casualty values over the preceding eight-week period, weighted by the standard decay of e^{-l-1}, where l is the lag order. If our findings were being driven by mean reversion, the results should be significantly attenuated by this approach. Instead, results under this specification are consistent with primary model results. When larger decay values are chosen, thus assigning more weight to previous periods, our results attenuate smoothly, as should be expected given our claim to be identifying off the randomness inherent in short-run conflict dynamics; if our assumptions about the data generating process are right than we are effectively averaging in noise by taking a moving average.

[28]Results available from authors.

this logic, in larger provinces the relationship between civilian casualties and tips is drawing on a larger sample of interactions and thus is more precise. If the relationship we are studying is heterogeneous across differently sized units, the weighted estimates will differ from the un-weighted estimates.[29] Columns 4 and 5 show that results using weighted least squares based on either population source are consistent with those of the primary specification. This should further alleviate any concern over possible model misspecification that might otherwise result from failure to model heterogeneous population effects (Solon et al., 2013).

A fourth concern is that the results may be driven by Shia provinces where there was a very different dynamic than the insurgency in mixed and Sunni provinces. Column 6 shows this was not the case. Restricting attention to mixed and Sunni provinces does not considerably impact the results. The coefficients increase, as might be expected given the higher rates of insurgent activity in mixed and Sunni areas, and the statistical significance of the results drops, as it should when the sample size is halved. But the core pattern of increased tips after insurgent-caused casualties and decreased tips after coalition-caused ones remains the same.

One might also be worried about outliers driving the results given the highly variable nature of how many civilian casualties each sides caused in any given week. Columns 7 shows that trimming the civilian casualties time series at $+/-$ 3 standard deviations from the mean strengthens the results, as does combining trimming with weighting in Column 8. In many settings, the natural specification to use would be the one that trims to reduce the influence of outliers and weights to give greater influence to areas with larger populations. Our core models thus represent conservative estimates.

Outlier provinces are also a potential concern. Table 6 shows the results are not driven by any particular province. Dropping each province from the sample and rerunning the model

[29]Common practice when a quantity is measured with more precision in larger units is to weight by population (see e.g. Greenstone and Hanna, 2014).

returns results consistent with table 2. Table 7 shows the results are robust to rescaling the tip numbers for the five Shia-majority provinces which potential made their figures based on daily averages for the week vs. total flows (the graphs appear to show non-integer numbers). Overall the results are remarkably stable and robust.

[Insert tables 6 and 7 about here.]

As the appendix tables show the statistical significance of the results is similar when standard errors for the primary set of regressions and all corresponding alternative variations introduced above are calculated traditional method of clustering at the province.

Finally, we perform a temporal placebo test in which we estimate the conditional correlation between changes in tip flow in period t and changes in Coalition- and insurgent-caused casualties in period $t + 1$. If our identifying assumptions hold we would expect past civilian casualties to affect information flow, but we would not expect contemporary values of information flow to be correlated with future values of accidental civilian casualties in an obvious way once we control for potential confounders.[30] These results, presented in table 8, show that in all but one of twelve results across six model specifications, leads of civilian causalities are not significantly correlated with tip flow. The confidence intervals on future changes in civilian casualties in the main specification, column 6, span zero to a great degree, while those on lagged civilian casualties, column 7, do not with the same controls.

[Insert table 8 about here.]

[30]The potential relationship between information flow today and civilian casualties tomorrow is of great interest for policy but is also quite complicated. More tips may lead to more interdictions and thus less attacks and fewer opportunities for insurgent-caused casualties, but increases in tips might also (a) enable Coalition forces to operate with more precision and thereby reduce future government-caused civilian casualties or (b) make the operational environment harder for insurgents leading them to operate with less precision thereby increasing insurgent-caused casualties. The variation in tips induced by plausibly exogenous variation in past civilian casualties is not large enough to let us disentangle these effects.

6 Conclusion

We have shown that in one very important civil conflict, there is a clear relationship between harm to civilians and wartime informing. Using newly declassified data on the flow of useful tips to Iraqi and Coalition forces, we found a robust relationship between civilian casualties and information flow. Tip flow decreased the week after Iraqi and Coalition forces mistakenly killed civilians during combat operations and it increase the week after insurgents did so. In standardized terms the results were meaningful but modest. A one standard deviation change in Coalition-caused casualties predicted 4.4 fewer tips in the next week (5.7×-.77), while a one standard deviation change in insurgent-caused casualties led to 3.3 additional tips in the next week (7.0×.47). These changes represent standardized treatment effects from .055 for insurgent-caused civilian casualties to .074 for Coalition-caused ones. The magnitude of these effects is modest but meaningful using common metrics for treatment effects.

A natural question arising from this analysis is: to what set of civil wars are these results relevant? The Iraq war during the study period was unusual in some respects. The most obvious difference from many civil wars is in the combat power available to both sides. It is a common trope that most intrastate conflicts involve a dramatic discrepancy in military power, at least in their early stages, but the scale of the discrepancy in Iraq during the study period was unusually large. Because U.S. and international forces fought with Iraqi government forces, the counterinsurgents forces writ large were highly mobile (they had ready access to helicopters and heavily armored road vehicles that could travel day or night in almost any weather) and benefited from levels of intelligence support, logistical capacity, and precision indirect fire power (artillery and air power) that far exceeded what is available to most states fighting insurgencies. Those capacities enabled them to effectively target any position in space at nearly any time if they had actionable intelligence. This case may therefore be an an outlier in terms of the potential for non-combatants to influence the trajectory of the conflict by sharing information. Concerns about the case being an outlier should, however, be attenuated by the fact that insurgents and counterinsurgents in many conflicts have expressed sentiments consistent with our results.

Our main contribution is thus to demonstrate the existence of an informational channel by which combatant behavior can impact conflict outcomes and to do so using data that until now has remained classified and thus unavailable for research. The relationship we observe is the expected one. Other scholars have found indirect evidence of this phenomenon previously. What is unique in this study is that we directly observe information flow and are able to benchmark the magnitude of the difference in non-combatant response to the two sides. Consistent with prior work, we find that government forces pay a higher price for inflicting the same level of harm, though the difference is statistically modest.

From a policy perspective these results clearly indicate that the U.S. military's focus in training and doctrine on avoiding harm to civilians is well placed. As Condra et al. (2010) observe, "in addition to moral and legal concerns, there may be military strategic value in reducing civilian casualties." Our results offer quantitative evidence that this is indeed the case. In contemporary counterinsurgency campaigns marked by the deployment of anonymous tips platforms, both the insurgency and its state challenger pay a price for harming civilians.

Figures

Figure 1: An Iraqi police officer at work in the “tips” call center established in Baghdad. Source: New York Times. Date (of article): November 5, 2006

Figure 2: CIA online tip submission form. The page linking to the weform thanks, in Arabic, those "brave individuals willing to provide information leading to the arrest of terrorists and the leaders of the extremist organizations..." (Author's translation.) Source: Central Intelligence Agency. Date (of web access): September 24, 2014

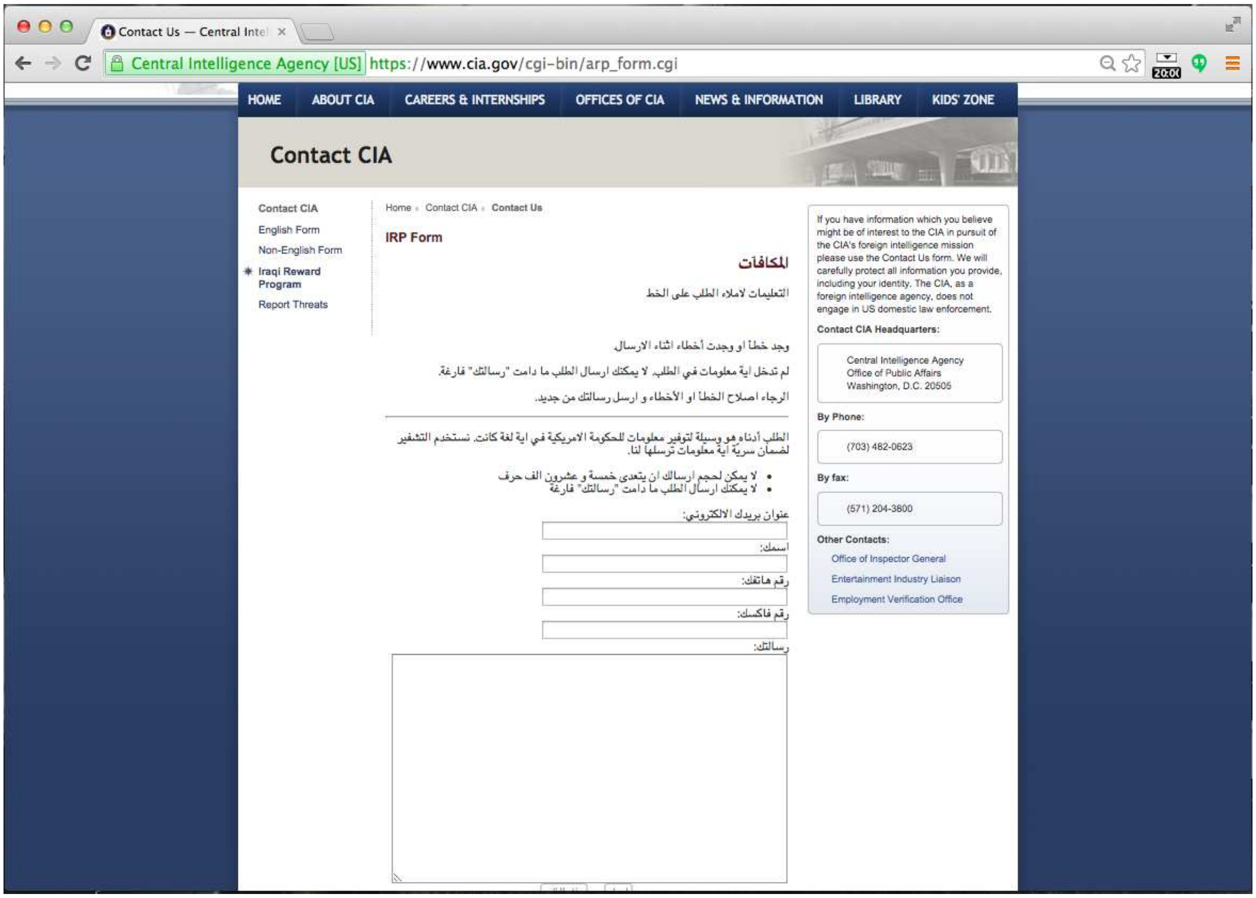


Figure 3: Iraq-wide National 130 and regional hotline tip numbers compared for the period from August 2006 to July 2007. Source: U.S. Department of Defense's Measuring Stability and Security in Iraq quarterly report. Date: September 2007.

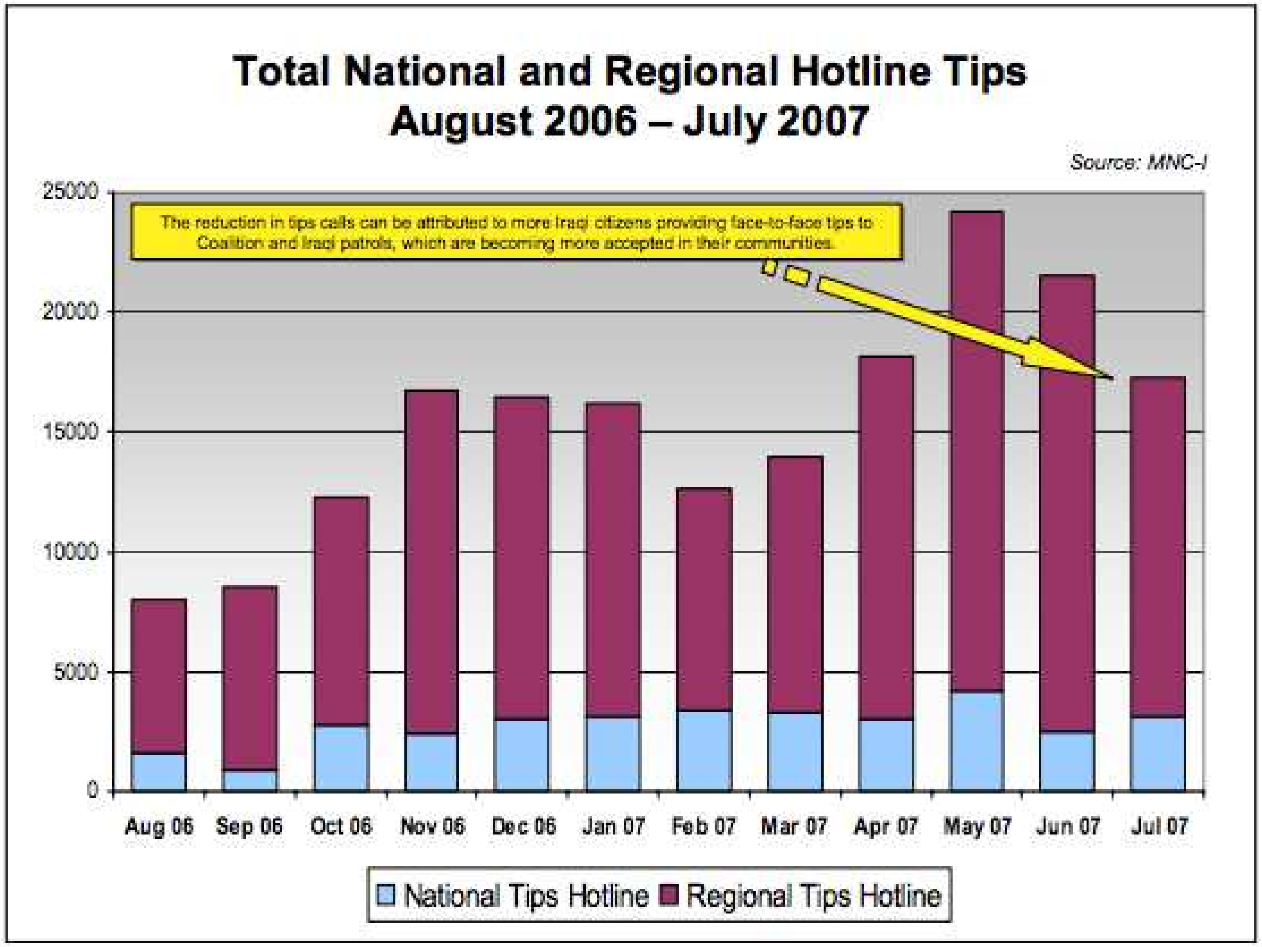


Figure 4: Advertisements for the national 130 tips hotline. Source (for all): U.S. Department of Defense. Date (of each): unknown

(a) “Your calls protect Iraq. For the eyes of Iraq... open your eyes. 130.” (Author’s translation.)

(b) “For their sake. For the sake of Iraq, open your eyes.” (Author’s translation.)

(c) “For their sake, keep your eyes on Iraq. Call 130.” (Author’s translation.)

Figure 5: Information and Pre-Emptive Tips Reported for Diyala Province between June 2007 and July 2008. Source: Multi-National Corps – Iraq. Date (of containing report): July 21, 2008

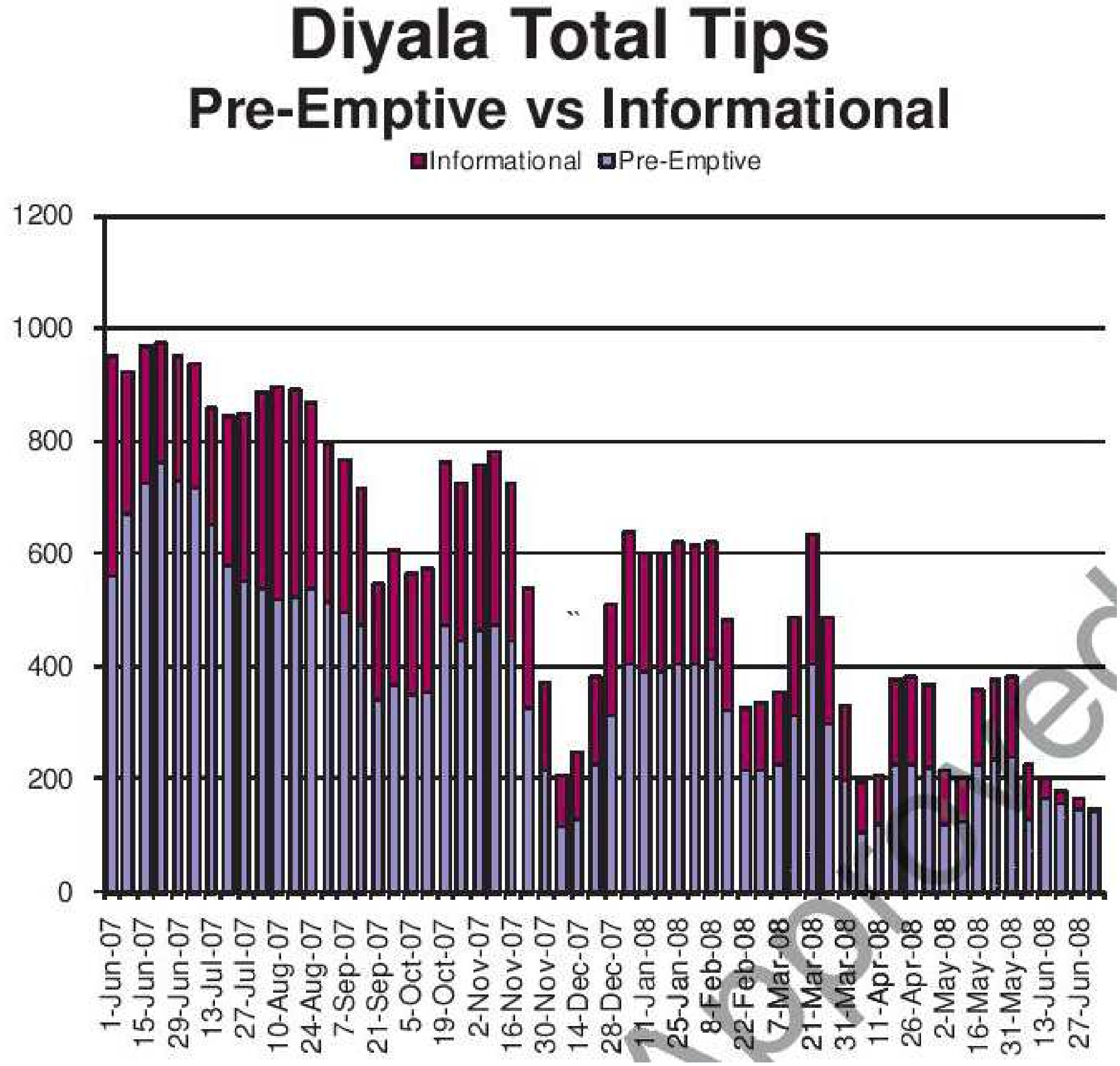


Figure 6: 'Useful' Tip Flow Over Time. Axes are scaled to highlight variation within, rather than scale of, information across time. Source: Multi-National Corps – Iraq.

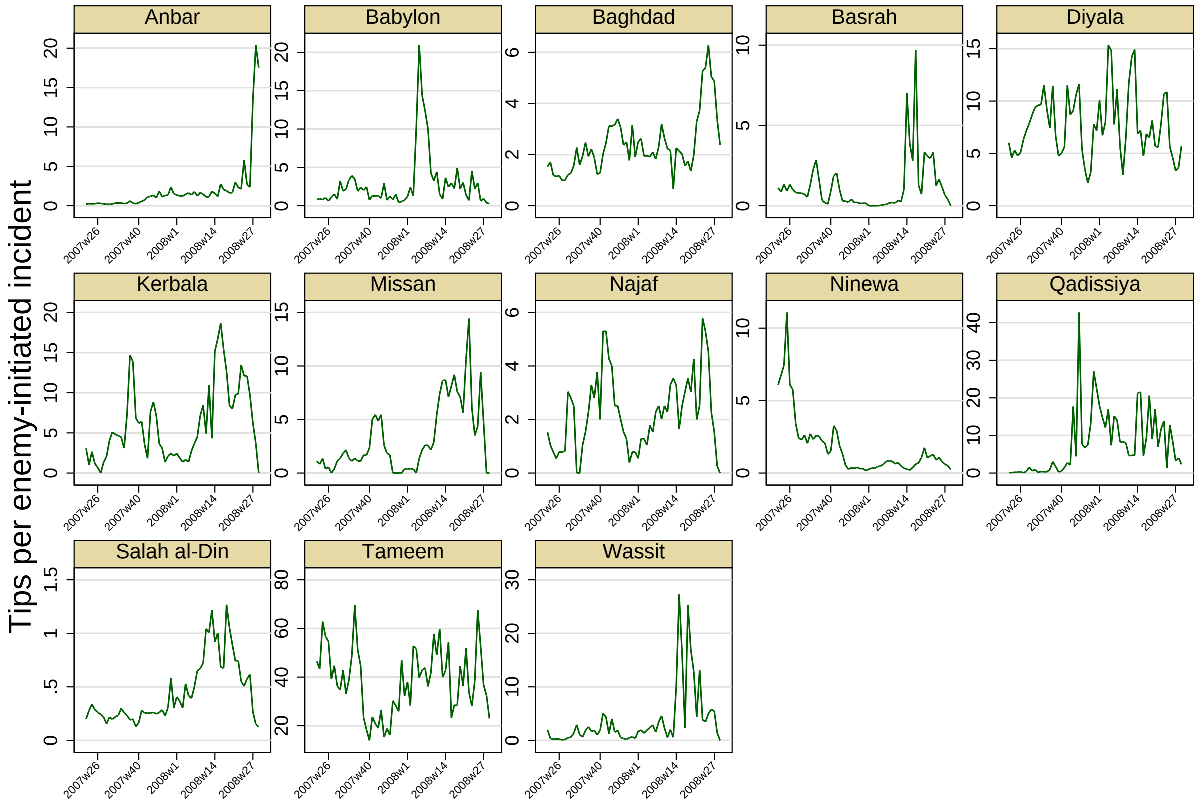
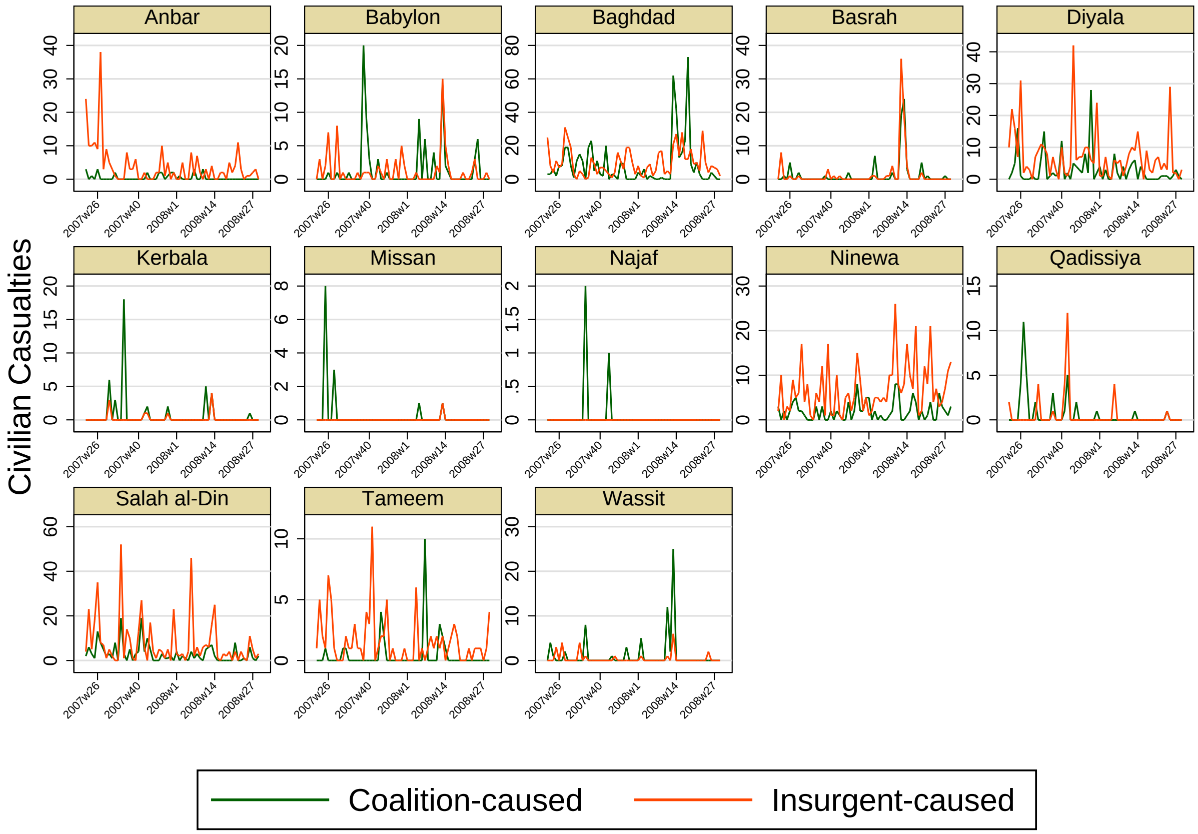


Figure 7: Civilian Casualties Over Time. Axes are scaled to highlight variation within, rather than scale of, casualties across time. Source: Iraq Body Count.



Tables

Table 1: Descriptives

	count	mean	p50	min	max	sd
Useful Tips	780	212	24	0	2930	428
Δ(Tips)	767	-5.6	-.24	-472	441	59
Combat Incidents	780	54.6	18	0	728	91
Δ(Combat Incidents)	780	-1.2	0	-409	462	32
Coalition-Caused Civilian Casualties	780	1.7	0	0	73	5.2
Δ(Coalition)	780	-.03	0	-64	62	5.7
Insurgent-Caused Civilian Casualties	780	3.3	0	0	52	6.2
Δ(Insurgent)	780	-.01	0	-51	52	7.0
Sectarian Violence Casualties	780	15.7	3	0	521	38
Δ(Insurgent)	780	-.46	0	-504	476	33.6

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC).

Table 2: Impact of Civilian Casualties on Information Flow

	(1) Tips Difference	(2) Tips Difference	(3) Tips Difference	(4) Tips Difference	(5) Tips Difference	(6) Tips Difference
Lagged FD of Coalition-Caused	-0.604		-0.723	-0.724	-0.773	-0.748
Civilian Casualties	(-0.93, -0.28)		(-1.03, -0.42)	(-1.03, -0.43)	(-1.11, -0.44)	(-1.15, -0.33)
Lagged FD of Insurgent-Caused		0.349	0.468	0.469	0.469	0.429
Civilian Casualties in $t-1$		(-0.04, 0.74)	(0.08, 0.86)	(0.08, 0.86)	(0.09, 0.85)	(-0.02, 0.88)
Sectarian casualties in $t-1$	No	No	No	Yes	Yes	Yes
Combat incidents in $t-1$	No	No	No	No	Yes	No
Period t controls	No	No	No	No	No	Yes
R-Squared	0.075	0.074	0.078	0.078	0.078	0.082
Observations	767	767	767	767	767	767
Clusters	13	13	13	13	13	13

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Standard errors are calculated using the CGM wild bootstrap procedure.

Table 3: Robustness to Controlling for Past Trends

	(1) Tips Difference	(2) Tips Difference	(3) Tips Difference	(4) Tips Difference	(5) Tips Difference
Lagged FD of Coalition-Caused	-0.718	-0.742	-0.863	-0.766	-1.016
Civilian Casualties	(-0.97, -0.46)	(-1.07, -0.41)	(-1.18, -0.51)	(-1.11, -0.43)	(-1.53, -0.47)
Lagged FD of Insurgent-Caused	0.885	0.459	0.449	0.468	0.677
Civilian Casualties	(0.19, 1.58)	(0.07, 0.85)	(0.14, 0.76)	(0.09, 0.85)	(0.14, 1.22)
4 lags of changes in civilian casualties	Yes	No	No	No	Yes
4 lags of changes in combat incidents	No	Yes	No	No	Yes
4 lags of changes in tips	No	No	Yes	No	Yes
Size controls	No	No	No	Yes	Yes
R-Squared	0.085	0.080	0.325	0.081	0.333
Observations	767	767	715	767	715
Clusters	13	13	13	13	13

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Regressions with lags add three lags of changes. Size controls include total violence over previous 8 weeks, sum of squared violence over last 8 weeks, Landscan population, Landscan population squared, and population interacted with total violence. Standard errors are calculated using the CGM wild bootstrap procedure.

Table 4: Robustness to Fixed Effects, Weighting, and Trimming

	(1) Province Fixed Effects	(2) Province/Quarter Fixed Effects	(3) Province/Month Fixed Effects	(4) WFP Weights	(5) Landscan Weights	(6) Sunni and Mixed	(7) Trimmed (No weights)	(8) Trimmed (LS weights)
Lagged FD of Coalition-Caused	-0.767	-0.689	-0.819	-0.782	-0.788	-1.116	-1.108	-1.532
Civilian Casualties	(-1.10, -0.44)	(-0.97, -0.41)	(-1.14, -0.50)	(-0.92, -0.64)	(-0.93, -0.65)	(-1.67, -0.56)	(-1.85, -0.39)	(-2.07, -0.99)
Lagged FD of Insurgent-Caused	0.469	0.312	0.299	0.689	0.721	0.679	0.604	0.866
Civilian Casualties	(0.09, 0.85)	(0.05, 0.55)	(0.03, 0.56)	(0.29, 1.09)	(0.32, 1.12)	(0.06, 1.30)	(0.14, 1.08)	(0.48, 1.26)
R-Squared	0.115	0.110	0.347	0.092	0.092	0.167	0.079	0.097
Observations	767	766	766	767	767	354	767	767
Clusters	13	13	13	13	13	6	13	13

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Trimmed regressions truncate civilian casualty variables at 3 s.d. from the mean. Results are almost identical in substantive and statistical significance if we also trim the tips time-series at $+/-$ 3 s.d. from the median. Standard errors are calculated using the CGM wild bootstrap procedure.

Table 5: Eight-Week Exponentially Weighted Average Model

	(1) Tips Difference	(2) Tips Difference	(3) Tips Difference	(4) Tips Difference	(5) Tips Difference	(6) Tips Difference
Weighted Average of	-3.962		-5.599	-5.616	-5.994	-5.664
Coalition-Caused Civilian Casualties	(-6.31, -1.50)		(-7.96, -3.13)	(-7.91, -3.19)	(-8.67, -3.26)	(-9.34, -1.80)
Weighted Average of		4.580	5.670	5.683	5.708	6.144
Insurgent-Caused Civilian Casualties		(-0.19, 9.40)	(0.84, 10.64)	(0.81, 10.67)	(0.88, 10.63)	(-0.01, 12.40)
Sectarian casualties	No	No	No	Yes	Yes	Yes
Combat incidents	No	No	No	No	Yes	Yes
Period t controls	No	No	No	No	No	Yes
R-Squared	0.074	0.075	0.078	0.079	0.079	0.082
Observations	767	767	767	767	767	767
Clusters	13	13	13	13	13	13

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Standard errors are calculated using the CGM wild bootstrap procedure.

Table 6: Robustness to Dropping Provinces

	(1) Anbar	(2) Babylon	(3) Baghdad	(4) Basrah	(5) Diyala	(6) Kerbala	(7) Missan
Lagged FD of Coalition-Caused	-0.790	-0.825	-0.640	-0.813	-0.681	-0.802	-0.796
Civilian Casualties	(-1.11, -0.47)	(-1.16, -0.49)	(-1.21, -0.09)	(-1.14, -0.48)	(-1.12, -0.21)	(-1.14, -0.45)	(-1.15, -0.43)
Lagged FD of Insurgent-Caused	0.488	0.482	0.311	0.493	0.399	0.484	0.483
Civilian Casualties	(0.10, 0.89)	(0.09, 0.88)	(-0.03, 0.63)	(0.10, 0.91)	(-0.05, 0.82)	(0.10, 0.87)	(0.10, 0.87)
R-Squared	0.085	0.085	0.082	0.085	0.085	0.085	0.084
Observations	708	708	708	708	708	708	708
Clusters	12	12	12	12	12	12	12

	(8) Najaf	(9) Ninewa	(10) Qadissiya	(11) Salah al-Din	(12) Tameem	(13) Wassit
Lagged FD of Coalition-Caused	-0.784	-0.822	-0.806	-0.760	-0.629	-0.798
Civilian Casualties	(-1.13, -0.42)	(-1.15, -0.50)	(-1.15, -0.45)	(-1.08, -0.43)	(-0.86, -0.39)	(-1.12, -0.46)
Lagged FD of Insurgent-Caused	0.481	0.439	0.480	0.711***	0.402	0.483
Civilian Casualties	(0.10, 0.87)	(0.06, 0.80)	(0.09, 0.86)	(0.32, 1.07)	(0.11, 0.70)	(0.10, 0.88)
R-Squared	0.085	0.083	0.084	0.085	0.097	0.085
Observations	708	708	708	708	708	708
Clusters	12	12	12	12	12	12

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Standard errors are calculated using the CGM wild bootstrap procedure.

Table 7: Robustness to Rescaling Tip Flow For Provinces that Potentially Reported Averages

	(1) Tips Difference	(2) Tips Difference	(3) Tips Difference	(4) Tips Difference	(5) Tips Difference	(6) Tips Difference
Lagged FD of Coalition-Caused	-0.507		-0.631	-0.632	-0.676	-0.661
Civilian Casualties	(-0.98, -0.03)		(-1.06, -0.19)	(-1.06, -0.19)	(-1.13, -0.20)	(-1.14, -0.14)
Lagged FD of Insurgent-Caused		0.386	0.489	0.490	0.490	0.374
Civilian Casualties		(0.01, 0.77)	(0.10, 0.89)	(0.10, 0.90)	(0.11, 0.89)	(-0.08, 0.84)
Sectarian casualties	No	No	No	Yes	Yes	Yes
Combat incidents	No	No	No	No	Yes	No
Period t controls	No	No	No	No	No	Yes
R-Squared	0.079	0.079	0.082	0.082	0.082	0.087
Observations	767	767	767	767	767	767
Clusters	13	13	13	13	13	13

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. For this table only tips were rescaled for Babil, Basrah, Maysan, Karbala, Najaf, and Wasit, the Shia-majority provinces which may have been reporting daily averages instead of weekly totals. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Standard errors are calculated using the CGM wild bootstrap procedure.

Table 8: Temporal Placebo Test

	(1) Tips Difference	(2) Tips Difference	(3) Tips Difference	(4) Tips Difference	(5) Tips Difference	(6) Tips Difference	(7) Tips Difference
Lead FD of Coalition-Caused	-0.448	-0.644	-0.341	-0.302	-0.017	-0.109	
Civilian Casualties	(-1.06, 0.16)	(-1.10, -0.20)	(-0.90, 0.22)	(-0.99, 0.40)	(-0.49, 0.47)	(-0.50, 0.29)	
Lead FD of Insurgent-Caused	0.086	0.196	0.079	-0.127	-0.223	-0.038	
Civilian Casualties	(-0.31, 0.48)	(-0.17, 0.55)	(-0.14, 0.30)	(-0.61, 0.36)	(-0.45, 0.01)	(-0.40, 0.33)	
Lagged FD of Coalition-Caused							-0.455
Civilian Casualties							(-0.73, -0.17)
Lagged FD of Insurgent-Caused							0.453
Civilian Casualties							(0.03, 0.87)
Lags of civilian casualties	No	Yes	No	No	No	Yes	Yes
Lags of combat incidents	No	Yes	No	No	No	Yes	Yes
Lags of tips	No	No	Yes	No	Yes	Yes	Yes
Contemporaneous controls	No	No	No	Yes	Yes	Yes	Yes
R-Squared	0.074	0.089	0.318	0.078	0.326	0.335	0.335
Observations	767	767	715	767	715	715	715
Clusters	13	13	13	13	13	13	13

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Columns 1 - 6 put lead changes in civilian casualties on the RHS, column 7 puts shows the lagged changes for comparison. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Standard errors are calculated using the CGM wild bootstrap procedure.

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A Appendix Tables

Table A.1: Impact of Civilian Casualties on Information Flow

	(1)	(2)	(3)	(4)	(5)	(6)
Lagged FD of Coalition-Caused	-0.604***		-0.723***	-0.724***	-0.773***	-0.748**
Civilian Casualties	(0.178)		(0.176)	(0.175)	(0.194)	(0.256)
Lagged FD of Insurgent-Caused		0.349	0.468*	0.469*	0.469*	0.429
Civilian Casualties		(0.228)	(0.223)	(0.223)	(0.220)	(0.299)
R-Squared	0.075	0.074	0.078	0.078	0.078	0.082
Observations	767	767	767	767	767	767
Clusters	13	13	13	13	13	13
Sectarian casualties	No	No	No	Yes	Yes	Yes
Number of combat incidents	No	No	No	No	Yes	Yes
Period t controls	No	No	No	No	No	Yes

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Robust standard errors, clustered at the province level are in parentheses. Significance is shown as $***p < .01; **p < .05; *p < .10$.

Table A.2: Robustness to Controlling for Past Trends

	(1)	(2)	(3)	(4)	(5)
Lagged FD of Coalition-Caused	-0.718***	-0.742***	-0.863***	-0.766***	-1.016***
Civilian Casualties	(0.138)	(0.191)	(0.192)	(0.198)	(0.313)
Lagged FD of Insurgent-Caused	0.885**	0.459*	0.449**	0.468*	0.677*
Civilian Casualties	(0.396)	(0.221)	(0.186)	(0.219)	(0.361)
R-Squared	0.085	0.080	0.325	0.081	0.333
Observations	767	767	715	767	715
Clusters	13	13	13	13	13
Lags of civilian casualties	Yes	No	No	No	Yes
Lags of combat incidents	No	Yes	No	No	Yes
Lags of tips	No	No	Yes	No	Yes
Size controls	No	No	No	Yes	Yes

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Regressions with lags add three lags of changes. Size controls include total violence over previous 8 weeks, sum of squared violence over last 8 weeks, Landscan population, Landscan population squared, and population interacted with total violence. Robust standard errors, clustered at the province level are in parentheses. Significance is shown as $***p < .01; **p < .05; *p < .10$.

Table A.3: Robustness to Fixed Effects, Weighting, and Trimming

	(1) Province FE	(2) Prov/Quarter FE	(3) Prov/Month FE	(4) WFP weights	(5) Landscan weights	(6) Sunni and Mixed	(7) Trimmed	(8) Trimmed and LS weights
Lagged FD of Coalition-Caused	-0.767***	-0.689***	-0.819***	-0.753***	-0.773***	-1.116**	-1.108**	-1.408***
Civilian Casualties	(0.195)	(0.163)	(0.212)	(0.125)	(0.138)	(0.391)	(0.408)	(0.320
Lagged FD of Insurgent-Caused	0.469*	0.312*	0.299*	0.680***	0.712***	0.679	0.604**	0.851***
Civilian Casualties	(0.220)	(0.150)	(0.165)	(0.206)	(0.215)	(0.408)	(0.255)	(0.215)
R-Squared	0.115	0.110	0.347	0.140	0.138	0.167	0.079	0.142
Observations	767	766	766	767	767	354	767	767
Clusters	13	13	13	13	13	6	13	13

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Trimmed regressions truncate civilian casualty variables at 3 s.d. from the mean. Results are almost identical in substantive and statistical significance if we also trim the tips time-series at +/− 3 s.d. from the mean. Robust standard errors, clustered at the province level are in parentheses. Significance is shown as $***p < .01; **p < .05; *p < .10$.

Table A.4: Eight-Week Exponentially Weighted Average Model

	(1)	(2)	(3)	(4)	(5)	(6)
Weighted Average of Coalition-Caused	-3.962***		-5.599***	-5.616***	-5.994***	-5.664**
	(1.291)		(1.349)	(1.333)	(1.497)	(2.330)
Weighted Average of Insurgent-Caused		4.580	5.670*	5.683*	5.708*	6.144
		(2.760)	(2.809)	(2.820)	(2.796)	(4.037)
Sectarian casualties	No	No	No	Yes	Yes	Yes
Combat incidents	No	No	No	No	Yes	Yes
Period t controls	No	No	No	No	No	Yes
R-Squared	0.074	0.075	0.078	0.079	0.079	0.082
Observations	767	767	767	767	767	767
Clusters	13	13	13	13	13	13

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from the MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Robust standard errors, clustered at the province level are in parentheses. Significance is shown as $***p < .01; **p < .05; *p < .10$.

Table A.5: Robustness to Dropping Provinces

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Province Dropped	Anbar	Babil	Baghdad	Basrah	Diyala	Kerbala	Missan	Najaf	Ninewa	Qadissiya	S-a-D	Tameem	Wassit
Lagged FD of Coalition-Caused	-0.790***	-0.825***	-0.640*	-0.813***	-0.681**	-0.802***	-0.796***	-0.784***	-0.822***	-0.806***	-0.760***	-0.629***	-0.798***
Civilian Casualties	(0.190)	(0.203)	(0.350)	(0.194)	(0.275)	(0.203)	(0.206)	(0.203)	(0.194)	(0.205)	(0.182)	(0.148)	(0.199)
Lagged FD of Insurgent-Caused	0.488*	0.482*	0.311	0.493*	0.399	0.484*	0.483*	0.481*	0.439*	0.480*	0.711***	0.402**	0.483*
Civilian Casualties	(0.238)	(0.228)	(0.195)	(0.241)	(0.256)	(0.230)	(0.229)	(0.230)	(0.228)	(0.228)	(0.217)	(0.176)	(0.230)
R-Squared	0.085	0.085	0.082	0.085	0.085	0.085	0.084	0.085	0.083	0.084	0.085	0.097	0.085
Observations	708	708	708	708	708	708	708	708	708	708	708	708	708
Clusters	12	12	12	12	12	12	12	12	12	12	12	12	12

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from the MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Robust standard errors, clustered at the province level are in parentheses. Significance is shown as $***p < .01; **p < .05; *p < .10$.

Table A.6: Robustness to Rescaling Tip Flow For Provinces that Potentially Reported Averages

	(1)	(2)	(3)	(4)	(5)	(6)
Lagged FD of Coalition-Caused	-0.507*		-0.631**	-0.632**	-0.676**	-0.661**
	(0.250)		(0.233)	(0.231)	(0.252)	(0.291)
Lagged FD of Insurgent-Caused		0.386	0.489*	0.490*	0.490*	0.374
		(0.231)	(0.231)	(0.232)	(0.228)	(0.293)
Sectarian casualties	No	No	No	Yes	Yes	Yes
Combat incidents	No	No	No	No	Yes	Yes
Period t controls	No	No	No	No	No	Yes
R-Squared	0.079	0.079	0.082	0.082	0.082	0.087
Observations	767	767	767	767	767	767
Clusters	13	13	13	13	13	13

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful tips are calculated from MNC-I briefing slides. Combat incidents are drawn from the MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Robust standard errors, clustered at the province level are in parentheses. Significance is shown as $***p < .01; **p < .05; *p < .10$.

Table A.7: Robustness to Weighting Casualties by District Population

	(1) Tips Difference	(2) Tips Difference	(3) Tips Difference	(4) Tips Difference	(5) Tips Difference	(6) Tips Difference
Lagged FD of Coalition-Caused	-0.526		-0.597	-0.583	-0.653	-0.659
Civilian Casualties (Weighted)	(-0.79, -0.26)		(-0.83, -0.35)	(-0.80, -0.36)	(-0.91, -0.39)	(-1.00, -0.31)
Lagged FD of Insurgent-Caused		0.369	0.477	0.469	0.475	0.441
Civilian Casualties (Weighted)		(0.01, 0.75)	(0.11, 0.86)	(0.10, 0.85)	(0.10, 0.85)	(-0.11, 0.99)
Weighted Sectarian casualties	No	No	No	Yes	Yes	Yes
Combat incidents	No	No	No	No	Yes	No
Period t controls	No	No	No	No	No	Yes
R-Squared	0.074	0.073	0.076	0.076	0.076	0.079
Observations	767	767	767	767	767	767
Clusters	13	13	13	13	13	13

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Useful are tips calculated from MNC-I briefing slides. Combat incidents are drawn from the MNF-I SIGACT-III database. Civilian casualties are from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Casualties are weighted by the square root of district population over one thousand, using World Food Programme population estimates. Standard errors are calculated using the CGM wild bootstrap procedure.

B Iraq Body Count Data

The IBC data on civilian casualties used in this study were constructed using media reports. Recent scholarship on reporting biases in media focus and possible effects on statistical results at the cross-national level may raises concerns about possible non-random measurement error in the IBC data (Weidmann, 2015; Hollenbach and Pierskalla, 2015). We believe such bias is unlikely to drive our results as all the arguments we could think of for reporting bias would point in the same direction in terms of tip flow and civilian casualties regardless of the party responsible, whereas we find heterogeneous effects of civilian casualties on tip flow depending on the perpetrator. For example, an area receiving more troops could see both more combat and more reporters due to the press embedding process. If the increased troops were also going out to collect information we would see a spurious positive correlation between casualties reported and tips. Alternatively, areas getting increased cell phone coverage might see more reporting because it's easier for news to get out and more tips because it's safer to inform, again creating a positive correlation between all kinds of civilian casualty reporting and useful tips. Given the stability of our results to including various controls that would account for some of these common factors we believe it extremely unlikely that this kind of bias is a problem. Moreover, the reporting underlying the IBC data drew on local press who operated widely throughout the war, and the intensity of Western reporting seems unlikely to have varied much week-to-week (which is what would be required to drive spurious results given our econometric approach).

However, to address general concerns about IBC data quality, we compare those IBC data with administrative data recently released by the U.S. Department of Defense that identifies the target of attacks in Iraq.These newly-released data are based on instances of violence against civilians observed directly by or locally reported to military forces deployed by the United States, Iraq's central government, and their coalition partners during the war. These forces were deployed across Iraq, and their reporting was not affected by the availability of cellular communications technologies or the presence of embedded reporters, both of which could lead to mistakes in media reporting. If the variation in the IBC data on non-combat killings of civilians are broadly consistent with these administrative sources, then concerns about them having systematic measurement error should be reduced.[31]

To assess that consistency we regress coalition recorded incidents of attacks on civilians against incidents of attacks on civilians reported in the IBC dataset. If the IBC data have little systematic measurement error, then we expect the count of sectarian and unknown incidents in the IBC data to correlate positively with the Defense Department data and to explain a significant proportion of total model variability. We do not, however, expect such results for coalition and insurgent caused incidents that occurred during combat because combatants themselves would have been identified as the target in such cases.[32]

And indeed, as table B.2 that expectation is borne out. As column 7 shows, approx-

[31]Measurement error orthogonal to our outcome of interest is, of course, an issue of statistical precision and not one of bias.

[32]The military's data were constructed such that only one target is identified per incident, excluding the identification of any secondary and tertiary targets of any given event.

imately 64% of the variation in Defense Department's data count of incidents targeting civilians is explained by the model in which sectarian casualties is the only regressor. The rates of coalition- and insurgent-caused casualties are not significantly correlated with rates of civilian casualties in the administrative data, which is as it should be if those data capture the equivalent of the IBC sectarian and unknown categories. These results provide greater confidence in the validity of the IBC data for measuring the week-to-week within-province variation in civilian casualties (which is the variation our analytical strategy is leveraging).

Table B.1: Province-Week SIGACTS-IBC Correlations

	(1) Incidents of Civilian Targeting	(2) Incidents of Civilian Targeting	(3) Incidents of Civilian Targeting	(4) Incidents of Civilian Targeting	(5) Incidents of Civilian Targeting	(6) Incidents of Civilian Targeting	(7) Incidents of Civilian Targeting
Incidents of Coalition-Caused	-0.094					-0.323*	
Civilian Casualties	(0.163)					(0.176)	
Incidents of Insurgent-Caused		0.028				0.021	
Civilian Casualties		(0.191)				(0.172)	
Sectarian Incidents			0.248***			0.252***	
			(0.023)			(0.025)	
Unknown Incidents				0.164		0.115	
				(0.112)		(0.114)	
Sectarian + Unknown					0.234***		0.424***
					(0.018)		(0.049)
Constant	5.280**	5.230**	2.989***	5.178**	3.001***	2.944***	2.053**
	(2.154)	(2.198)	(0.958)	(2.209)	(1.102)	(1.055)	(0.914)
Week Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	No
Governorate Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	No
R-Squared							0.534
Overall R-Squared	0.726	0.726	0.764	0.728	0.764	0.766	
Within R-Squared	0.203	0.203	0.314	0.207	0.313	0.320	
Observations	780	780	780	780	780	780	780
Clusters	13	13	13	13	13	13	13

Note: The variable Sectarian+Unknown includes both sectarian and unknown observations in the IBC data. Its significance is evidence that the unknowns in IBC include observations which the SIGACT data classfies as targeting civilians.

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Combat incidents in which civilians were tageted based on MNF-I SIGACT-III database. Civilian casualties from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Robust standard errors, clustered at the province level in parentheses. Significance shown as $***p < .01; **p < .05; *p < .10$.

Table B.2: Province-Month SIGACTS-IBC Correlations

	(1) Incidents of Civilian Targeting	(2) Incidents of Civilian Targeting	(3) Incidents of Civilian Targeting	(4) Incidents of Civilian Targeting	(5) Incidents of Civilian Targeting	(6) Incidents of Civilian Targeting	(7) Incidents of Civilian Targeting
Incidents of Coalition-Caused	-0.146					-1.193**	
Civilian Casualties	(0.352)					(0.464)	
Incidents of Insurgent-Caused		0.389				0.310	
Civilian Casualties		(0.341)				(0.362)	
Sectarian Incidents			0.341***			0.358***	
			(0.024)			(0.024)	
Unknown Incidents				0.281		0.149	
				(0.223)		(0.248)	
Sectarian + Unknown					0.320***		0.452***
					(0.028)		(0.060)
Constant	21.647***	18.931***	13.350***	21.237***	13.606***	12.426***	8.011*
	(5.861)	(6.022)	(3.450)	(5.843)	(3.631)	(3.328)	(3.685)
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	No
Governorate Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	No
R-Squared							0.639
Overall R-Squared	0.781	0.782	0.852	0.783	0.851	0.860	
Within R-Squared	0.266	0.271	0.506	0.274	0.500	0.530	
Observations	182	182	182	182	182	182	182
Clusters	13	13	13	13	13	13	13

Note: The variable Sectarian+Unknown includes both sectarian and unknown observations in the IBC data. Its significance is evidence that the unknowns in IBC include observations which the SIGACT data classfies as targeting civilians.

Notes: Unit of analysis is the province-week, 1 June 2007-18 July 2008. Combat incidents in which civilians were tageted based on MNF-I SIGACT-III database. Civilian casualties from Iraq Body Count as coded by the Empirical Studies of Conflict Project (ESOC). Robust standard errors, clustered at the province level in parentheses. Significance shown as $***p < .01; **p < .05; *p < .10$.