Too Late to Apologize? Collateral Damage, Post-Harm Compensation, and Insurgent Violence in Iraq

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Scholars of the micro-dynamics of armed conflict largely agree that collateral damage – the unintentional killing or harming of civilian noncombatants – is not only morally reprehensible, but often strategically costly for combatants in war. The theoretical logic behind this is relatively straightforward: civilian communities can join or aid multiple different parties in armed conflicts, and killing or harming them alienates them from the perpetrator and pushes them toward its rivals or opponents. Indeed, this idea is now buttressed by a variety of detailed empirical studies from different conflicts, including Vietnam, the Palestinian territories, Iraq, and Afghanistan (Kalyvas 2006, Kalyvas and Kocher 2007, Condra and Shapiro 2012, Benmelech, Berrebi, and Klor 2015, Schutte 2016). As summarized in one such effort, the empirical record demonstrates that "both sides pay a cost for causing collateral damage" (Condra and Shapiro 2012, p. 184).

However, this dynamic is of little surprise to most combatants, who already understand it well and undertake a number of actions after collateral damage to mitigate these costs. Chief among these is the practice of giving "condolence payments" – that is, providing material compensation to civilians for damage inflicted. Indeed, this tactic is widespread. In the case of the U.S., it dates to WWI (Witt 2007) and has been used in every major intervention since then (Borch 2001). Today, the scale of these efforts is substantial: a report by the Government Accountability Office (GAO) shows that the U.S. military distributed more than $20 million in these payments in Iraq in 2005 alone (GAO 2007). Meanwhile, a number of other countries such as Iraq, Afghanistan, Pakistan, Colombia, and Israel have also provided compensation to wartime victims (CIVIC 2013), as have prominent militant groups such as the Afghan Taliban and even branches of Al Qaeda. In sum, the use of material compensation in an effort to mitigate the impacts of collateral damage is a common feature of modern war.

Do these payments work? This question has significant implications not only for national and international security policy, but also for our theoretical understanding of how civilians react to material incentives after they experience harm. In this research note, I examine these dynamics during the heart of the Iraq War, which pitted the U.S.-led Coalition and the Iraqi national government against Sunni Arab insurgents (and, at times, Shi'a Arab militias) seeking territorial and political

control. Specifically, I use micro-level conflict event data available via the Empirical Study of Conflict Iraq War database (ESOC-I) (Berman, Shapiro, and Felter 2011, Condra and Shapiro 2012). This allows me to combine detailed data on 193,264 Iraqi insurgent attacks with 19,961 incidents of collateral damage and 4,046 Coalition condolence payments in Iraq from 2004 to 2008. Using these data, I build on previous studies testing the impact of collateral damage on insurgent attacks (Condra and Shapiro 2012) and offer the first effort to analyze how post-harm mitigation shapes patterns of wartime violence.

This analysis reveals that Coalition condolence payments do reduce local rates of insurgent violence, and their impact is substantial. Indeed, calculations based on the model suggest that a $1-2,000 boost in condolence payment spending in a given district yields one fewer insurgent attack in that district over a six month period. Moreover, this effect is consistent across different types of compensation, as both sustainable "in-kind" assistance programs and pure cash transfers diminish insurgent attacks (with no statistically significant difference between them). These patterns are consistent with rationalist models of armed conflict in which civilians accurately recognize and respond to conflict events in ways that maximize their odds of survival (Popkin 1979, Kalyvas 2006). In this framework, post-harm compensation acts as a "costly signal" of the selectivity of violence and unintentionality of harm, leading civilians to rationally update their beliefs about the relevant event. In so doing, it shifts their judgments about the perpetrator's "type,"[1] disrupting the process of alienation that would otherwise facilitate more opponent attacks.

These results have two primary sets of implications. From a policy perspective, they provide empirical evidence that there is not only a normative justification for combatants to compensate civilian victims, but a strategic one as well. Indeed, the study reveals that civilian compensation is among the most successful tactics in the commander's toolkit and that it should be prioritized after any incident of collateral damage. Additionally, from a theoretical perspective, the findings add another layer to the growing debate over civilian populations in warzones. Specifically, they show that – even with the strong grievances that arise after civilian casualties – relatively subtle

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1. I thank an anonymous reviewer for this phrasing.

signals of intent by out-group actors elicit greater civilian collaboration. In other words, the results suggest that civilians are not blinded to countervailing signals by biases or grievances, and that – while their initial or baseline attitudes are not unimportant – they can and do rationally update in the face of new and relevant pieces of information about combatant behavior.

Empirical Context:

I examine the impact of post-harm civilian compensation during the heart of the Iraq War from 2004-08. After the initial invasion of Iraq in 2003, the country quickly devolved into a protracted conflict in which foreign Coalition forces and the Iraqi national government fought Sunni Arab insurgents aiming to gain political control over the country. Moreover, the situation was further complicated by Shi'a Arab and Kurdish militias struggling for power as well as rampant sectarian cleansing and violence. The Iraqi case is especially useful for us because of the unique availability of detailed, disaggregated event data on 4,046 condolence payments by one of the key parties to the conflict – the Coalition – over space and time, plus data on collateral damage incidents and insurgent attacks with which they can be combined.

Our dependent variable is the number of insurgent attacks as captured by the military's "Significant activity" (SIGACT) database. SIGACT includes information about the location, date, time, and type of attack for 193,264 insurgent attacks against Coalition forces, the Iraqi national government, Iraqi Security Forces, and civilians from February 2004 through December 2009. Yet it is worth noting that the data do not contain Coalition raids and operations during which no insurgents returned fire, so they measure insurgent-initiated attacks or firefights with insurgent forces. Moreover, they most likely undercount attacks against civilians and other kinds of "soft targets" when Coalition forces are absent (Berman, Shapiro, and Felter 2011). However, since our main interest is in insurgent activity directed against Coalition troops, these are second-order concerns here.

The primary independent variable of interest in the analysis is Coalition condolence payments. Data for these come from the U.S. Army Corps of Engineers Iraq Reconstruction Management System (IRMS). The data contain the start and end dates, project type, funding organization, and

amount of a wide range of reconstruction projects from March 2003 through December 2008 in Iraq by the Coalition. Reconstruction spending was initially dominated by the $18.4 billion Iraq Relief and Reconstruction Fund (IRRF), an all-purpose fund which focused on large-scale infrastructure and security projects early in the conflict. As these funds diminished, however, they were increasingly replaced by small community-level programs run by the State Department or the Department of Defense (DoD). Chief among these are the USAID's Economic Support Fund (ESF) which focuses on economic and social welfare initiatives, and DoD's Commander's Emergency Response Program (CERP), which allows local military officers to allocate funds to a wide range of small-scale initiatives within their areas, from building schools or roads to paying local militias or civilians.

Notably for our purposes, the data contain information on the two main types of post-harm compensation dispensed by the Coalition. First, they include data on 2,945 *condolence payments*, or compensation for injury, death, or property damage by Coalition forces. These payments were disbursed by brigade-level military officers as part of CERP and are the main type of post-harm compensation by the military in Iraq.[2] Second, the data contain information on 1,101 Marla Ruzicka Iraq War Victims Fund payments. Dispensed by USAID rather than DoD, *Ruzicka payments* provide civilians "in-kind" vocational training and livelihood assistance as opposed to cash transfers after suffering harm at the hands of Coalition forces. This follows a line of thinking that such tailored assistance programs yield a greater beneficial impact on civilian communities than simple cash transfers to victims or their families (Tracy 2007, CIVIC 2009).

While the DoD condolence payments and USAID Ruzicka payments were not the only avenues to compensate civilians after harm in Iraq, they were the most important. Indeed, a 2007 GAO report on post-harm compensation examined all of the programs used for such purposes in Iraq (GAO 2007). CERP condolence payments were the most prominent, with roughly $21.5 million spent on such payments in fiscal year (FY) 2005 alone and another $7.3 million in FY2006. Meanwhile,

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2. In fact, this data combines 2,066 "condolence payments" (ostensibly for injury or death) with 879 "battle damage payments" (ostensibly only for property damage). However, government documents indicate that this distinction was meaningless in practice, with some units reporting compensation for property as battle damage payments and others as condolence payments (GAO 2007). I thus combine them.

over $17.8 was spent on the Ruzicka payments from 2005 through mid 2007, suggesting a broadly similar yearly outlay. Two other programs were used in Iraq. One (the State Department's claims program) was modest, with outlays in the thousands per year.[3] The other (the Foreign Claims Act or FCA) was substantial, but became overshadowed by the more flexible CERP and Ruzicka programs as it was legally circumscribed to only cover events that occurred outside "combat" – which has been interpreted quite broadly in Iraq and Afghanistan.[4] In sum, we can be reasonably confident that the data used cover the two most central types of post-harm compensation used during the Iraq War.[5]

Of course, in order to investigate the impact of post-harm compensation on insurgent attacks, we will also have to include information on the harm that precipitated it in the first place. To that end, I use data on collateral damage incidents from the Iraq Body Count (IBC), an Iraqi NGO dedicated to tracking Iraqi civilian casualties during the war through international and local media reporting plus hospital records, morgue figures, and other sources of data (Sloboda et al. 2013). These data include the date, location, actors, and tactics of 19,961 incidents of collateral damage, accounting for 59,245 total civilian casualties from March 2003 through June 2009. These data were cleaned by Condra and Shapiro (2012) and attributed using event descriptions to Coalition, insurgent, sectarian, or unknown forces. Like the insurgent violence and civilian compensation data, the incidents are geo-located by district. Validity checks suggest that unknown killings and imprecise locations (about 10% of the sample) are not merely a function of reporting biases driven by violence levels (Condra and Shapiro 2012).

Figure 1: Insurgent Violence, Coalition Collateral Damage, and Post-Harm Compensation Over Time in Iraq, 2004-08
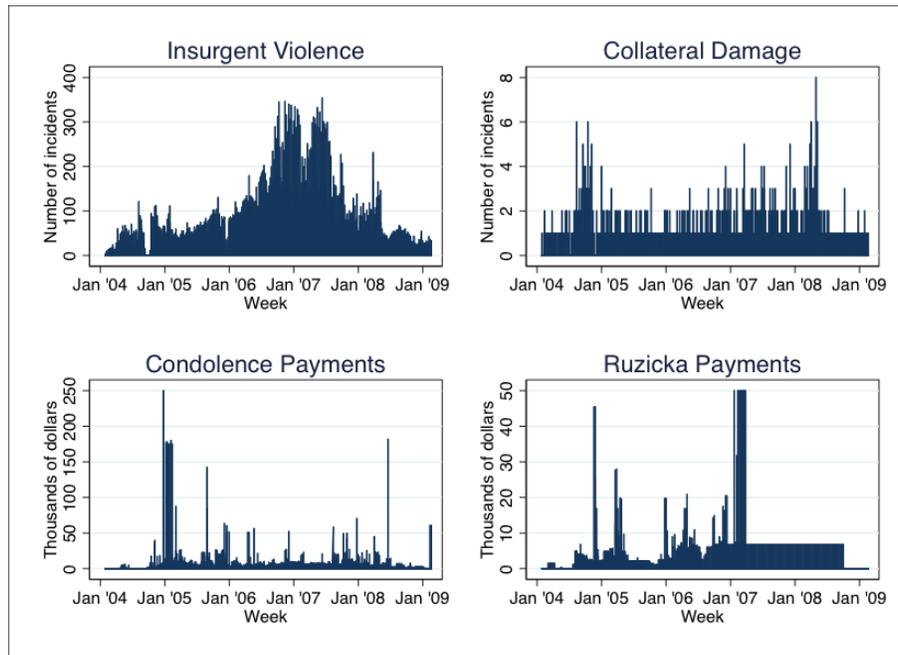
Notes: figure shows weekly numbers of insurgent attacks and Coalition collateral damage incidents as well as weekly spending on condolence payments and Marla Ruzicka payments in Iraq from 2004-08. Insurgent attack data come from the Significant activity (SIGACT) database while collateral damage data come from the Iraq Body Count (IBC) and civilian compensation data from the Iraq Reconstruction Management System (IRMS). The topmost spike in both the condolence and Ruzicka payments was truncated in order to make the other variation more visible. Results are robust to inclusion or exclusion of these outliers.

Descriptive Analysis:

Figure 1 plots the weekly numbers of insurgent attacks (via SIGACT), collateral damage incidents by Coalition forces, condolence payments by Coalition forces, and Marla Ruzicka payments by Coalition forces across Iraq from 2004 through 2008. As is apparent, the level of insurgent at-

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3. Indeed, this program was used mainly to compensate civilians who were harmed by the security details for diplomatic personnel. There were just 8 claims approved for $26 thousand in Iraq through most of FY2007.

4. Indeed, the GAO audit reports figures that would amount to an outlay of roughly $3.25 million per year on FCA claims, a nontrivial sum but below the two main programs outlined above. Moreover, government documents show that there were only 16 approved claims under the FCA from January 2005 to June 2006, while there were several hundred approved condolence payments in that time span in our data. For more on the FCA's limitations, see Witt 2007.

5. The GAO report also speaks to data quality. Specifically, its authors checked the condolence payment documentation from one unit in 2007 against quarterly reporting provided by the Office of the Assistant Secretary of the Army, finding a discrepancy of just $30 (GAO 2007). This provides confidence that they are a reasonable approximation of actual compensation spending.

tacks trended steadily upward as the conflict grew from 2004 through 2007, spiking particularly after the bombing of the Golden Mosque in Samarra in early 2006 by Al Qaeda in Iraq (AQI). Finally, violence began to fall off in mid-2007 as the mix of the "Surge" (the deployment of 30,000 more Coalition forces and change in their use) and the "Anbar Awakening" (the realignment of Sunni Arab tribes and nationalist insurgents against AQI) kicked in and started to pacify the situation (Biddle, Friedman, and Shapiro 2012). The figure thus effectively highlights the broad ebbs and flows of the conflict during this period. In spatial terms, the violence is heavily concentrated in Baghdad and other Sunni Arab-dominated governorates in the western and northern portions of the country such as Al-Anbar, Nineveh, and Salah al-Din.

Meanwhile, the top-right quadrant presents the weekly plot of collateral damage incidents by Coalition troops from 2004-08. The amount of Coalition collateral damage does not mirror the overall trend in insurgent violence. Instead, this plot is relatively stable over time, with slight peaks in late 2004 (during the battles for Fallujah) and early 2008 (during the middle of the Surge). This is consistent with the observation by Condra and Shapiro (2012) that there is a significant level of randomness in the numbers of collateral damage incidents over time due to "weapons effects," civilian locations and actions during Coalition clashes with insurgent troops, and other sources of unpredictable variation. Spatially, while Coalition collateral damage is elevated in Baghdad and contested Sunni Arab dominated governorates, it is much more evenly dispersed than insurgent violence across the different regions of the country.

Finally, the bottom two quadrants show the amount spent per week (thousands of dollars) on condolence payments and Ruzicka payments by the Coalition to Iraqi civilians over time. Looking first at condolence payments, we can see that there was little compensation in the first year while the program was still in its infancy (Tracy 2007), followed by a large spike in early 2005 (after the Second Battle of Fallujah) after which the series smooths out and becomes reasonably constant. Turning to the Ruzicka payments, the series is somewhat lumpier, with sharp peaks in early 2005, 2006, and particularly 2007 after which point it flattens out substantially. In fact, the plot ceases to

fluctuate in mid-2007 and remains flat for over a year.[6] Overall, these two plots indicate that the USAID-funded Marla Ruzicka payments and DoD-funded condolence payments were indeed quite independent, drawing from different organizational budgets and constraints. Spatially, condolence payments are concentrated in Al-Anbar and to a lesser extent in Baghdad and Karbala, while Ruzicka payments are primarily clustered in Baghdad and secondarily in Sunni Arab areas. Both series show little apparent relationship with the macro-level trends in insurgent violence.

Empirical Strategy:

In this section, I turn toward the task of assessing how Coalition post-harm compensation impacts insurgent violence. The study spans from the start of 2004 through the end of 2008 and covers all 104 districts across Iraq. The unit of analysis is the district-half year, which yields 1040 (10*104) total observations.[7] Using half-years affords ample time to capture the full civilian claims process and the subsequent effects of post-harm compensation, while also retaining a substantial number of observations for our analysis. Both insurgent violence and civilian compensation are divided by district population (or a transformation thereof) such that they represent SIGACTs per 1000 residents and spending per capita.[8] The logic of this is that the population of each district is likely linked to the violence perpetrated (and compensation received) within it in ways unrelated to the analysis, such as due to sheer scale (Condra and Shapiro 2012, Johnston and Sarbahi 2016).

6. While this looks puzzling at first glance, it simply reflects one larger Ruzicka project running continuously during this period. Unlike conventional condolence payments, which were in the form of cash hand-outs, many of the Ruzicka projects were more continuous in nature (i.e., jobs training or livelihood assistance for victims) and so were ongoing for months or even years at a time. That said, the project is recorded in the district of Karkh, which is excluded from the analysis due to reporting issues (see f.n. 11) and thus does not affect the empirical results.

7. There are at least three reasons why we should expect district level effects. First, districts are limited in size. Iraqi districts average a quarter million people, meaning they are about the size of small cities, large urban neighborhoods, or clusters of towns – a reasonable scale for local information spread. Second, news often moves locally and informally in warzones. Indeed, one recent study reveals that Iraqis within about 100 km of anti-ISIL airstrikes have more accurate beliefs about them than those further away (Silverman 2018). Third, other targeted actions often have substantial effects in war. For instance, one civilian casualty has been shown to noticeably boost insurgent violence in an Iraqi district (Condra and Shapiro 2012). If the logic behind a single mistake increasing violence is that it "loses the neighborhood," the logic behind post-harm compensation is that it brings the neighborhood back into the fold.

8. The choice of weighting SIGACTs per 1000 residents (as opposed to per capita, like post-harm compensation) has no statistical impact on the results, but is simply done for presentation purposes.

The Data-Generating Process

Below, I address the issue of identification in the study. I consider major threats to inference in this context and explore the data-generating process qualitatively and quantitatively to see whether there is evidence for them. Perhaps the primary threat to inference in the study would be a "strategic selection story" in which post-harm compensation spending was a product of local Coalition troop quality. In this story, wiser Coalition units (and unit leaders) would do a better job of providing compensation to civilians they harmed in their operations, and would also be doing a superior job of winning over the local civilian populace and prosecuting the war in other ways. This would make it difficult to tell what was causing better outcomes in higher-compensation areas.

The key with this selection story (and most others) is that the provision of post-harm compensation hinges on the intentional decision-making of local Coalition troops (and commanders), and not on forces outside of their control. In fact, identifying the impact of condolence payments is greatly facilitated by the fact that the mechanisms by which they were made – and the amounts provided – were shaped by a variety of idiosyncratic financial, bureaucratic, and geographic constraints that are largely beyond the control of the soldiers on the streets and their local commanders.

First, the distribution of post-harm compensation is deeply shaped by local fiscal pressures. For example, in the case of condolence payments, the chance of compensation is shaped by not only the strategic allocation of CERP funds across districts but also whether those funds happen to be available when a claim is made. Indeed, CERP funds can be spent in dozens of areas, from building hospitals to roads to hiring security guards. Moreover, a survey of "reconstruction leaders" in Iraq found that while condolence payments are seen as an effective use of CERP funds, others like agriculture, water and sanitation, rule of law, and contract security are prioritized more (SIGIR 2012). This means that the provision of payments at any given moment is shaped by the degree to which funds are "left over" from other higher priorities and their (idiosyncratic) unit-level payment schedules. For example, one ex-claims officer in Iraq recalls an especially deserving victim who "did not receive compensation after his daughter died from a cluster munition because funds for condolence payments were unavailable when he visited the [Baghdad] convention center" (Tracy

2007, p. 18). Choices about whether to pay can thus often "turn on little more than the availability of funds" (Witt 2007, p. 1475) when a claimant walks in the door, rather the strategic thinking or understanding of local forces.

Second, the provision of post-harm compensation is shaped by bureaucratic factors like the inclination of the claims officer attached to the unit when a claim is filed (Tracy 2007). Indeed, CERP-based condolence payments are typically under the authority of a brigade-level (or higher) military commander, but in practice are approved by a Judge Advocate (JAG) – a military lawyer – with vast discretion to accept or reject them. A review of hundreds of claims obtained via an ACLU Freedom of Information Act (FOIA) request found that the process is plagued with inconsistencies, discrepancies, and ambiguities that "invest massive discretionary authority in U.S. claims person-nel" (Witt 2007, p. 1475). In other words, differences between JAGs are a key factor in the chances of a claim. In the words of Jonathon E. Tracy, an ex-JAG and claims officer himself: "I know plenty of lawyers who did not pay any condolence payments at all…There was no reason for it. It was clearly not combat, and the victim was clearly innocent, all the facts are there, witness statements, but they wouldn't pay them."[9] While this opens up the prospect that political or strategic factors may shape these personnel, they will not affect them all equally – some (like Tracy) may base their choices on the merits of the case, while others may make strategic calculations or award nothing at all. In this way, variation in the preferences of the bureaucratic personnel in charge of the case – as distinct from the local commander or the quality of the area's "troops" – play a key role.

Third, the provision of compensation also hinges on the proximity of the incident to the nearest Coalition center that processes civilian claims. In fact, most claims are initiated by civilians who bring them to the attention of local Coalition forces at Civil Military Operation Centers (CMOCs), but these can be miles away depending on where the incident occurred geographically in a given area of operation. For example, in Fallujah, the major CMOC after the invasion was a center run by the Marines near Camp Fallujah known as the Fallujah Liaison Team (FLT). Civilians seeking compensation in Fallujah had to visit the FLT to submit claims, regardless of whether the incident

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9. "Files on U.S. Reparations Give Hint on War's Toll," *New York Times,* April 11, 2007.

occurred ten blocks or ten miles away. This is key because studies have shown that the geographic proximity of local institutions such as police stations to citizens influences their willingness to come forward, report abuses, and seek assistance (Aiko 2015). Thus, the provision of compensation is likely to be shaped by where an incident happened to occur relative to a claims center, independent of the strategic thinking of local troops or leaders. In sum, qualitative information on the data-generating process suggests that the provision of compensation is strongly shaped by several factors quite divorced from strategic decision-making or at odds with it. This helps ease concerns about the most problematic types of selection bias driving any results.

Does a quantitative look tell the same story? In order to check, I estimate models with post-harm compensation as the DV. This allows me to analyze what predicts how much compensation an area gets. Specifically, I run two models, one predicting condolence spending per district*half year and the other predicting Ruzicka spending per capita per district*half year. I include in these models the following variables: lagged insurgent violence (SIGACTs), civilians killed by both the Coalition as well as the insurgents, other competing types of reconstruction spending from the same sources (that is, non-condolence small CERP spending and non-Ruzicka USAID spending), Coalition troop strength, population density, percent urban, U.S. PRT (Provincial Reconstruction Team, a measure of local Coalition expertise) presence in each district, and original data gathered for this study on CMOC presence in each district.[10] If compensation is driven by local counterinsurgent quality, we would expect it to be positively linked to other forms of small reconstruction spending as well as PRT presence. Meanwhile, we can also check whether it is affected by other forms of selection bias, such as a patronage logic of rewarding less violent areas (fewer previous SIGACTs). As in the main analysis below, all models are estimated in first differences, using OLS with district-level clustering and fixed effects.

Table 1 shows the results of the analysis. As can be seen, the payments are *not* going to areas that spend more on CERP generally or have a PRT presence. This is not consistent with the idea that

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10. In particular, I gathered data on the monthly presence or absence of a CMOC in each district from 2004-08. The data were gathered from a variety of sources including Wikileaks, ReliefWeb, and U.S. military websites such as www.marines.mil and www.dvidshub.net in addition to credible media reporting.

Table 1: The Predictors of Post-Harm Civilian Compensation in Iraq, 2004-08

	Condolence spending	Ruzicka spending
Violence		
Lagged SIGACTs/1000	0.02	-0.00
	(0.01)	(0.00)
Coalition collateral damage	0.01*	0.00
	(0.00)	(0.00)
Insurgent collateral damage	-0.00	0.00
	(0.00)	(0.00)
Reconstruction		
Other small CERP spending	-0.22	0.01
	(0.14)	(0.01)
Other USAID spending	0.11	-0.06*
	(0.07)	(0.03)
PRT presence	-0.03	0.01
	(0.03)	(0.01)
Access		
Coalition troop strength	0.05**	-0.00
	(0.02)	(0.00)
Population density	-0.04	0.13***
	(0.09)	(0.03)
Percentage urban	0.24*	0.11*
	(0.14)	(0.07)
CMOC presence	0.20*	0.02
	(0.12)	(0.01)
Fixed effects		
Half year fixed effects	Yes	Yes
District fixed effects	Yes	Yes
Sunni × half year	Yes	Yes
Constant	-0.07*	-0.01
	(0.04)	(0.01)
Observations	754	754
R^2	0.48	0.24

Notes: Results from first-differenced OLS regressions with clustering by district. Compensation and other spending is per capita while insurgent violence is per 1000 residents, both over six months. Standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

they are driven by local counterinsurgent quality, since small and targeted reconstruction spending

along with local civilian expertise have been both shown to be key parts of counterinsurgent gains

in Iraq (Berman et al. 2013). Similarly, they do not go to areas with more previous insurgent attacks (either toward the Coalition or Iraqi civilians), belying the notion that they are a reward to friendly or calm areas for good behavior.

In contrast, we can see that some of the variables do predict compensation. Indeed, other USAID spending *negatively* and significantly predicts Ruzicka spending, while other small CERP spending almost *negatively* and significantly predicts condolence spending (*p=0.11*). This lends support to the idea discussed above – that payment is often made only when there is funding "left over" from other higher organizational priorities, and that budgetary issues unrelated to the incentive to pay claims itself act as a key constraint on civilian compensation.

Additionally, we can see that the level of condolence spending is positively and significantly predicted by CMOCs, troop strength, and percentage urban. These variables can be understood as capturing the *accessibility* of compensation to civilians – after a collateral damage incident, it is easier to seek payment in areas with more Coalition forces or in urban centers with more bases (and CMOCs). This is consistent with the notion that variation in the geographic circumstances of civilians influences their ability to seek compensation, apart from strategic considerations. While we do not find this manifest itself in exactly the same way in the Ruzicka model, we do see that percentage urban and population density increase compensation, suggesting a similar dynamic at work (the lack of significant effects for troop strength and CMOCs here are unsurprising, as the payments are given by USAID and not the military). In sum, this analysis of the data-generating process provides little evidence that compensation is especially strategic in nature. Instead, it suggests that, conditional on collateral damage, compensation is shaped in important ways by factors like funding availability and geographic accessibility, further mitigating concerns about a strategic selection process confounding any results.

The Model:

In order to estimate the effect of compensation on insurgent violence, I use a panel regression strategy with a combination of first differencing and fixed effects. Indeed, the use of first differences allows us to focus only on changes in insurgent activity from one half year to the next within each dis-

trict, and ensures that the results are not driven by cross-sectional differences in insurgent violence or underlying political loyalties between districts. Furthermore, the use of fixed effects functions as a series of district-specific time trends that allows us to account for the divergent trajectory of each district throughout the course of the war. Finally, I include a number of key covariates representing conflict dynamics that vary over time. Thus, the base model is:

$$Y_{i,t} - Y_{i,t-1} = \alpha(c_{i,t} - c_{i,t-1}) + \beta(d_{i,t} - d_{i,t-1}) + \gamma(e_{i,t} - e_{i,t-1}) + G_y + H_i + I_{g,y} + \mu_{i,t}$$

where $Y_{i,t}$ is the level of insurgent attacks in district i at time t, $c_{i,t}$ is the spending on condolence payments in district i at time t, and $d_{i,t}$ is the spending on Ruzicka payments in district i at time t. Meanwhile, $e_{i,t}$ is a vector of other time-varying conflict dynamics including the amount of Coalition collateral damage, insurgent collateral damage, Coalition troops, other (non-condolence) small-scale CERP spending, other (non-Ruzicka) USAID spending, CMOC presence, and PRT presence in district i at time t. Finally, G_y is a set of half year fixed effects, H_i is a set of district fixed effects, and $I_{g,y}$ is a set of interactions between governorate-level vote shares for Sunni Arab parties in the 2005 parliamentary elections and half years meant to pick up broad sectarian shifts such as the Sunni Awakening. Table A1 in the Appendix reports a correlation matrix for the variables in the base model. Models are estimated with OLS unless otherwise specified.[11]

Base Results:

Table 1 shows the base results. The first model includes only the post-harm compensation, the second adds Coalition and insurgent collateral damage, the third adds other small CERP and USAID spending, and the fourth adds troop strength, CMOC presence, and PRT presence. As is clear, a naïve model with only the two types of post-harm compensation suggests that they have a limited or mixed impact on rates of insurgent violence: condolence spending has no impact, while Ruzicka spending does. Once we add in Coalition and insurgent collateral damage, however, another picture

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11. As in related studies (e.g., Berman et al. 2013, Condra and Shapiro 2012), the district of Karkh, which contains the international "Green Zone," is dropped from the analysis due to its use as a residual catch-all location for national rather than local projects.

emerges. Indeed, with collateral damage incidents included (columns 2-4), we see that both types of compensation significantly reduce insurgent violence. In particular, the coefficient on condolence spending is now significant, and the Ruzicka coefficient remains significant but is much larger. The shift occurs because, as noted above, post-harm compensation is dispensed after collateral damage incidents, which are known to amplify insurgent attacks (e.g., Condra and Shapiro 2012). When we do not control for this fact, it *looks like* condolence payments have a limited effect on insurgent attacks. However, once we have done so, we can see that this is no longer the case; they have a clear violence-reducing effect. This shows that, in order to identify the effect of post-harm compensation on insurgent violence, it is essential to control for the *harm that prompts it* in the first place.

We can also compare the effects of the two types of post-harm compensation. As noted above, some practitioners argue that sustainable and tailored assistance programs such as the Marla Ruzicka Iraq War Victims Fund are more effective in undoing the effects of collateral damage than simple one-off cash transfers (CIVIC 2009). Yet, while the coefficient on Ruzicka payments is substantially larger than the one on conventional condolence payments in the three models, a Wald test on the equality of the two shows that this difference is not statistically significant at conventional levels (for example, *p=0.37* in Model 3, the preferred specification). This suggests that both types of payments have similar effects – in other words, post-harm civilian compensation is effective in depressing insurgent violence regardless of how it is provided.

Looking at the covariates included in the model, we can see that Coalition collateral damage substantially increases insurgent attacks (replicating a core result of Condra and Shapiro 2012), although insurgent collateral damage does not have the opposite impact here. Meanwhile, other small CERP spending does not have a significant influence on insurgent violence in our model. And finally, the effect of Coalition troop strength is nearly significant in predicting more attacks as well (*p=0.12*), which may be due to heavier troop concentrations going toward more violent areas, giving insurgents more targets to attack, or simply observing and reporting more of the incidents (especially against Iraqis) that occur in their areas of operation.

In addition, we can also estimate the substantive impact of the compensation from this model.

Table 2: The Effect of Post-Harm Civilian Compensation on SIGACTs per Half Year

	SIGACTs	SIGACTs	SIGACTs	SIGACTs
Civilian Compensation				
Condolence spending per capita	-0.06	-0.39***	-0.50***	-0.52***
	(0.10)	(0.09)	(0.18)	(0.19)
Ruzicka spending per capita	-0.63**	-1.14**	-1.09**	-0.98**
	(0.28)	(0.45)	(0.44)	(0.48)
Conflict Dynamics				
Coalition collateral damage		0.03***	0.03***	0.03***
		(0.01)	(0.01)	(0.01)
Insurgent collateral damage		0.00	0.00	0.00
		(0.01)	(0.01)	(0.01)
Other small CERP spending			-0.15	-0.18
			(0.24)	(0.25)
Other USAID spending			-0.00	-0.00
			(0.00)	(0.00)
Coalition troop strength				0.05
				(0.03)
CMOC presence				-0.30
				(0.34)
PRT presence				0.01
				(0.10)
Fixed Effects				
Half year fixed effects	Yes	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes
Sunni×half year effects	Yes	Yes	Yes	Yes
Constant	-0.11**	-0.03	-0.03	0.09
	(0.05)	(0.03)	(0.03)	(0.14)
Observations	927	927	927	927
R^2	0.18	0.22	0.22	0.23

Notes: Results from first-differenced OLS regressions with clustering by district. Civilian compensation is per capita while insurgent violence is per 1000 residents, both over six months. Standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Indeed, the third column of Table 1 tells us that, within a given district, another dollar of condolence spending per capita yields 0.52 fewer insurgent attacks per 1000 residents over a six month period. This can be translated into more concrete terms by calculating the amount of spending needed to avert one insurgent attack in absolute terms. This shows that, in an average district, a $1,950

increase in condolence spending will stop one more insurgent attack over a six month period.[12] To better put this in context, the same calculations imply that one additional Coalition collateral damage incident leads to 8.3 more insurgent attacks over a six month period. This means that the cost of offsetting the typical Coalition collateral damage incident is about $16,185 ($1950*8.3) in condolence payment spending. While we would urge caution in deploying this specific point estimate without care, the results do clearly suggest that the impact of post-harm compensation is quite significant in substantive as well as statistical terms.[13]

Robustness Checks:

To increase our confidence in these results, I conduct a wide range of robustness checks. First, one key test to probe for endogeneity or omitted variables in time series or panel data is to lag the dependent variable on the LHS of the equation and analyze its relationship with the primary explanatory variable(s) on the RHS. If the condolence and Ruzicka payments predict (lower) *past* insurgent violence, this would suggest that the relationship may be reversed or entirely spurious. Yet the results of this test (see Appendix, Table A2) show that this concern is unfounded: neither type of post-harm civilian compensation predicts prior insurgent violence. Second, a related test to help guard against these issues is to flip the model and analyze whether the *lead* of insurgent violence predicts present civilian compensation. This would also suggest a potentially problematic relationship, as condolence payments might be sent to areas expected to be cooperative and peaceful in the future – in other words, there could be an "anticipation bias."[14] However, the results of this

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12. Since the average district population is 276,946, this means one additional dollar per capita equals an additional $276,946 per district. Thus, an additional $276,946 will stop 0.52 attacks/1000 residents over six months in an average district. Moreover, because the DV is attacks *per 1000 residents,* we multiply it by the number of thousands of residents per district (276.946). This means $276,946 will stop 0.52*276.946=144.012 attacks. The cost of averting one attack is then $276,946/142.012 =$1,950. The figure is $1,020 for Ruzicka payments.

13. One other natural question that arises from these results is whether post-harm compensation becomes less effective when the level of harm increases. In order to check, I interact both condolence and Ruzicka spending with the level of collateral damage in the model. The results (see Appendix, Figure A) show that greater levels of harm significantly diminish the impact of Ruzicka – but not CERP condolence – spending. One possible explanation for this is that when there are more extreme mistakes, it is more effective for the responsible party (Coalition troops) to make restitution itself than to have it outsourced to another agency (USAID and its local NGOs). However, more fully investigating the reasons for this difference is a task for future research.

14. I control for lagged insurgent violence as well in these models to ensure that future violence is not simply proxying for past violence and examine whether the anticipated change has an independent effect.

test (see Appendix, Table A2) also show no evidence that this is the case: future insurgent attacks do not predict present condolence payments. Together, these tests suggest that condolence payments are not driven by past or future (anticipated) insurgent violence, bolstering our confidence in the causal arrow in our relationship.

In addition to these tests, I include a rich set of additional covariates to ensure that the results are robust to other relevant factors. First, I add other major types of Coalition spending to the equation, including spending on (1) small (less than $50,000) non-CERP reconstruction projects, and (2) large (more than $50,000) non-CERP reconstruction projects. This ensures that the effect of condolence payments is not proxying for other categories of spending in a given district. Second, I include lagged measures of the conflict dynamics – that is, insurgent violence, collateral damage by both sides, and Coalition troop strength – into the model to account for any short-term trends in the fighting that might influence local patterns of violence and compensation. Third, I add the unemployment rate, population density, and urbanization percentage in each district in order to control for socioeconomic features of districts that could shape their propensity for violence as well as demands for compensation. Fourth, and finally, I include sectarian and unknown civilian killings in the model in order to account for the possibility that other types of victimization boost demands for compensation and amplify insurgent attacks. Across all these tests, the core results that both types of post-harm compensation significantly reduce insurgent attacks remain substantively unchanged (see Appendix, Table A3). The robustness of our primary results to this array of additional covariates helps substantially boost our confidence that post-harm compensation is in fact diminishing insurgent violence.[15]

Conclusion:

Despite efforts to avoid them, mistakes are inevitable in war. Whether an errant artillery shell, a botched checkpoint stop, or a simple car crash, even the best-organized and best-trained armies will

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15. As an additional test, I also replicate the analysis on monthly data, finding broadly similar results (see Appendix Table A4). In particular, both types of compensation have a consistently negative effect on rates of insurgent violence, with one strongly significant and the other very close (the combined effect is clearly significant). Overall, this further buoys confidence in our main findings.

kill some civilians in any prolonged engagement. From a moral perspective, it is widely recognized today that combatants have an obligation to provide compensation to these victims (Crawford 2013). Yet, with biases toward out-group populations and alternative ways to allocate scarce wartime resources (i.e., to the warfighting effort), they often neglect to do so. This study reveals that such neglect is strategically myopic. Indeed, there is a convincing strategic rationale for combatants to distribute post-harm compensation to civilian victims in warzones, as doing so significantly reduces enemy attacks and attempts to exploit their battlefield mistakes. Specifically, I found that the compensation provided by the Coalition to its civilian victims in Iraq from 2004-08 substantially reduced ensuing insurgent violence in affected areas. These results yield important policy implications in terms of giving combatants a compelling strategic rationale for compensating civilians they harm in war. In the American case, for example, they provide a strong basis for recommending the expansion of programs like the CERP condolence payments and USAID Marla Ruzicka Iraq War Victims Fund.

Moreover, the findings also contribute to the growing scholarly debate about what shapes the perceptions and reactions of civilians in warzones. Indeed, the emerging literature on the micro-dynamics of armed conflict has produced at least two main rival schools of thought about civilian populations in warzones. In one, they are best approximated as "rational peasants" who accurately recognize and react to conflict events in ways that increase their odds of survival (Popkin 1979, Kalyvas 2006). In another school of thought, they act more like "ethnic partisans" whose attitudes and behaviors are deeply shaped by group identities and who are heavily biased against out-group actors (Lyall 2010, Lyall, Blair, and Imai 2013). The debate largely hinges on the question of whether civilians rationally update in the face of new information in conflicts or interpret it in ways consistent with their existing beliefs, and it has some important implications for both scholars and policymakers focused on understanding and influencing conflict.

While no one study can resolve this debate, this article does aim to make a new entry and add a new layer to the discussion. By systematically examining the strategic effects of post-harm compensation by Coalition troops in the Iraq War from 2004-08, we can see whether (and when) civilians

react to combatants' signals about their intentions after battlefield mistakes in ways that impact their conflict behavior. Overall, the patterns in the data are best explained by a rationalist account of civilian reactions in which the compensation serves as a costly signal of the unintentionality of harm by the user of force, shifting civilians' expectations about the chance of future threats to their physical security emanating from the actor. This explanation best accounts for the fact that the compensation is effective in this case even though it is provided in the face of strong grievances (i.e., after collateral damage incidents) and comes from a foreign occupier (i.e., the "away team"). In sum, the study suggests that civilians can and do rationally update in the face of perpetrator signals like condolence payments.

Yet, there are some key limitations to the study that suggest opportunities for future research. First, future studies should explore whether civilian compensation by other actors and in other settings has similar consequences to those found here. One obvious place to start is to compare the results to those attributable to different forms of post-harm civilian compensation by international forces in Afghanistan. However, scholars should also look for ways to examine whether compensation by non-state groups – from Palestinian militants to African rebels to Latin American cartels – has a similar impact. Additionally, the effect of offering material compensation by combatants can be compared to the other ways in which they signal their intentions after mistakes, such as issuing apologies or punishing offenders.

Second, in order to gain empirical leverage on the question, I focused on the reactions of the civilian communities (districts in Iraq) directly targeted by the combatant signals. Yet, civilians who do not learn about these events through personal experience or local networks – for example, those who live in Baghdad and observe events unfolding in Basra, Mosul, or Erbil – may interpret them very differently. If the rationalist mechanism posited here is indeed at work, and we see the observed behavior because civilians are updating their beliefs about the local chances of harm from different combatants, those who do not live in these areas would not have an incentive to alter their beliefs or behaviors. While this may be less relevant in the case of condolence payments, which are not particularly likely to be communicated to a mass audience, many conflict events like airstrikes,

terrorist attacks, and others forms of violence are broadcast to millions of civilians in the conflict zone (and beyond). This means that the reactions of this wider audience may differ in key ways from those living directly in the "line of fire." Examining the reactions of these two different types of civilians to new information is a promising path for scholars who wish to deeply understand the nature of civilians' beliefs and behaviors in conflict environments.

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Too Late to Apologize Appendix:

Figure A1: Interactions of Post-Harm Compensation with Level of Collateral Damage
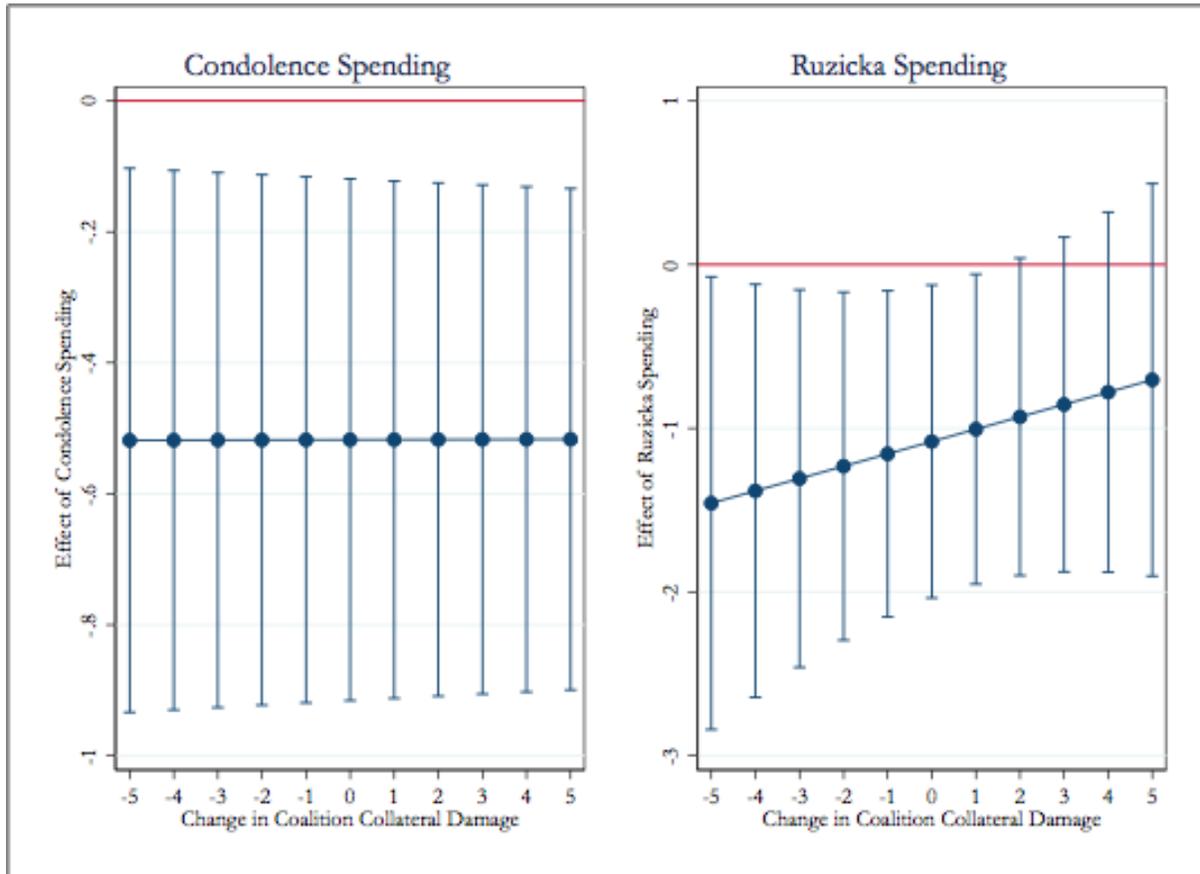
Note: Results are based on replication of preferred model in text (final column of Table 1), with interactions between condolence spending and Coalition collateral damage (left panel) or Ruzicka spending and Coalition collateral damage (right panel). Plots represent marginal effects of each type of compensation by amount of Coalition harm.

Table A1: Correlation Matrix for Post-Harm Compensation and Other Key Variables

Variables	SIGACTs per 1000	Condolence spending pc	Ruzicka spending pc	Coalition damage	Insurgent damage	Other small CERP pc	Other USAID pc	Coalition troops	CMOC presence	PRT presence
SIGACTs per 1000	1.000									
Condolence spending pc	0.100	1.000								
Ruzicka spending pc	0.085	0.053	1.000							
Coalition damage	0.279	0.292	0.049	1.000						
Insurgent damage	0.233	0.018	0.074	0.671	1.000					
Other small CERP pc	0.187	0.012	-0.008	-0.043	0.093	1.000				
Other USAID pc	-0.011	-0.001	0.001	-0.007	-0.001	-0.006	1.000			
Coalition troops	0.249	0.188	0.052	0.537	0.504	0.073	-0.004	1.000		
CMOC presence	0.046	0.021	0.017	0.230	0.287	0.033	-0.010	0.406	1.000	
PRT presence	0.195	-0.014	0.020	0.273	0.419	0.023	-0.004	0.391	0.385	1.000

Notes: figure shows bivariate correlations between post-harm compensation and other relevant conflict dynamics inclued in base model. Civilian compensation and other spending is per capita while insurgent violence is per 1000 residents. Unit of observation for all measures is district × half year

Table A2: Tests for Endogeneity and Anticipation Bias

	Lagged SIGACTs	Condolence spending	Ruzicka spending
Civilian Compensation			
Condolence spending per capita	0.49		0.01
	(0.43)		(0.01)
Ruzicka spending per capita	-0.55	0.14	
	(0.46)	(0.15)	
Conflict Dynamics			
Lead of insurgent violence		0.02	-0.00
		(0.02)	(0.00)
Coalition collateral damage	-0.01	0.01*	0.00
	(0.01)	(0.00)	(0.00)
Insurgent collateral damage	0.01**	-0.00	0.00
	(0.00)	(0.00)	(0.00)
Other small CERP spending	0.58	-0.27**	0.02
	(0.49)	(0.13)	(0.02)
Other USAID spending	-0.11	0.09	-0.07**
	(0.26)	(0.06)	(0.03)
Coalition troop strength	0.10	0.04*	-0.00
	(0.06)	(0.02)	(0.00)
CMOC presence	-0.07	0.19*	0.02
	(0.29)	(0.11)	(0.01)
PRT presence	-0.14	-0.04	0.01
	(0.12)	(0.03)	(0.01)
Lag of insurgent violence		0.02	-0.00
		(0.02)	(0.00)
Fixed Effects			
Half year fixed effects	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes
Sunni×half year effects	Yes	Yes	Yes
Constant	-0.16	-0.07	-0.01*
	(0.12)	(0.05)	(0.01)
Observations	824	721	721
R^2	0.23	0.57	0.21

Notes: Results are from first-differenced OLS regressions with clustering by district. Civilian compensation is per capita while insurgent violence is per 1000 residents, both over six months. Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A3: Replication of Base Results with Additional Covariates

	M1	M2	M3	M4	M5
Civilian Compensation					
Condolence spending per capita	-0.52***	-0.52***	-0.58**	-0.59**	-0.61**
	(0.19)	(0.19)	(0.24)	(0.25)	(0.26)
Ruzicka spending per capita	-0.98**	-1.01**	-1.39***	-1.56***	-1.01*
	(0.48)	(0.49)	(0.44)	(0.50)	(0.51)
Conflict Dynamics					
Coalition collateral damage	0.03***	0.03***	0.03***	0.03***	0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Insurgent collateral damage	0.00	-0.00	0.00	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Other small CERP spending	-0.18	-0.20	-0.33	-0.32	-0.30
	(0.25)	(0.25)	(0.29)	(0.29)	(0.29)
Other USAID spending	-0.00	-0.16	-0.15	-0.16	-0.18
	(0.00)	(0.06)	(0.24)	(0.25)	(0.25)
Coalition troop strength	0.05	0.06*	0.03	0.03	0.02
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
CMOC presence	-0.30	-0.37	-0.30	-0.29	-0.41
	(0.34)	(0.32)	(0.34)	(0.35)	(0.36)
PRT presence	0.01	-0.02	0.03	0.02	0.02
	(0.10)	(0.10)	(0.10)	(0.11)	(0.11)
Fixed Effects					
Half year fixed effects	Yes	Yes	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes
Sunni×half year effects	Yes	Yes	Yes	Yes	Yes
Additional Covariates					
Additional spending types (2)		Yes	Yes	Yes	Yes
Lagged conflict dynamics (4)			Yes	Yes	Yes
Socioeconomic attributes (3)				Yes	Yes
Additional violence types (2)					Yes
Constant	0.09	0.13	0.03	0.03	0.05
	(0.14)	(0.13)	(0.16)	(0.16)	(0.16)
Observations	927	927	824	754	754
R^2	0.23	0.24	0.28	0.28	0.29

Notes: Results are from first-differenced OLS regressions with clustering by district. Civilian compensation is per capita while insurgent violence is per 1000 residents, both over six months. Standard errors in parentheses.

*$p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Replication of Analysis on Monthly Data

	M1	M2	M3	M4
Post-Harm Compensation				
Condolence spending per capita	-4.48***	-5.20***		
	(1.39)	(1.34)		
Ruzicka spending per capita	-8.17	-8.81		
	(5.73)	(5.39)		
Combined spending per capita			-1.10***	-1.25***
			(0.29)	(0.28)
Conflict Dynamics				
Coalition collateral damage	-0.01	0.02	-0.01	0.02
	(0.03)	(0.03)	(0.03)	(0.03)
Insurgent collateral damage	-0.01	0.01	-0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Other small CERP spending	-3.44**	-4.02***	-3.10***	-3.57***
	(1.34)	(1.25)	(1.17)	(1.10)
Other USAID spending	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Coalition troop strength	-0.04	-0.04	-0.04	-0.04
	(0.09)	(0.09)	(0.09)	(0.09)
PRT presence	-0.12	-0.15	-0.12	-0.15
	(0.11)	(0.14)	(0.11)	(0.14)
CMOC presence	-0.27	-0.29	-0.27	-0.29
	(0.24)	(0.28)	(0.24)	(0.28)
Fixed Effects				
Half year fixed effects	Yes	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes
Sunni×half year effects	Yes	Yes	Yes	Yes
Additional Covariates				
All other covariates included		Yes		Yes
Constant	0.00	0.14	0.00	0.14
	(0.13)	(0.14)	(0.13)	(0.14)
Observations	6077	5504	6077	5504
R^2	0.03	0.06	0.03	0.06

Notes: Results are from first-differenced OLS regressions with clustering by district. Civilian compensation is per capita while insurgent violence is per 1000 residents, both per month. Independent variables are all lagged one month. Combined spending is sum of both types. Standard errors in parentheses. Results show that condolence spending has significant negative effect, while impact of Ruzicka spending is quite close (p=0.105 in M2). Combined effect is significant as well.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$