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Limited Intervention

Evaluating the Effectiveness of Limited Stabilization, Limited Strike, and Containment Operations—Online Appendix

Stephen Watts, Patrick B. Johnston, Jennifer Kavanagh, Sean M. Zeigler,
Bryan Frederick, Trevor Johnston, Karl P. Mueller, Astrid Stuth Cevallos,
Nathan Chandler, Meagan L. Smith, Alexander Stephenson, Julia A. Thompson

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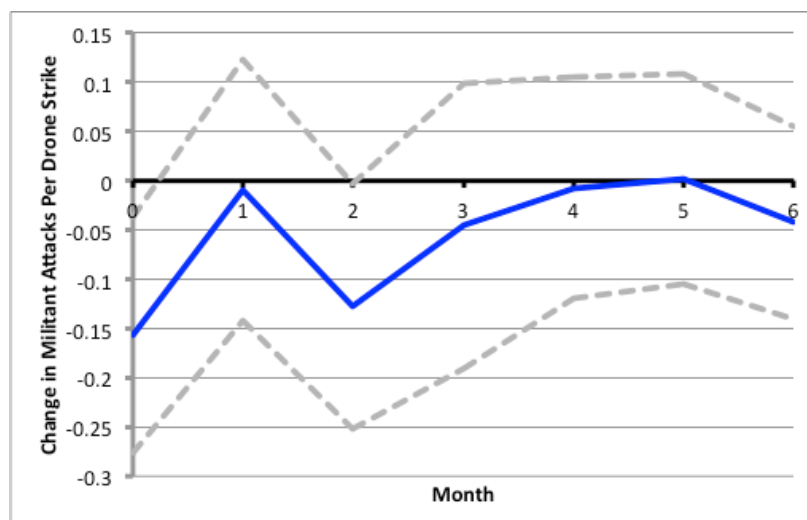
Online Appendix. Visualization of Limited Strike Statistical Results

This online appendix provides additional data visualization on the effects of drone strikes to complement the analysis presented in Chapter Three and Appendix B of the report *Limited Intervention: Evaluating the Effectiveness of Limited Stabilization, Limited Strike, and Containment Operations*. For an in-depth description of the data sets and statistical methodology used in our analysis, please see Appendix B. All figures in this online appendix represent the predicted change in militant attacks or statements by month, with the predicted levels indicated by solid blue lines and confidence intervals for those predictions indicated by dashed gray lines.

Drone Strikes and Terrorism

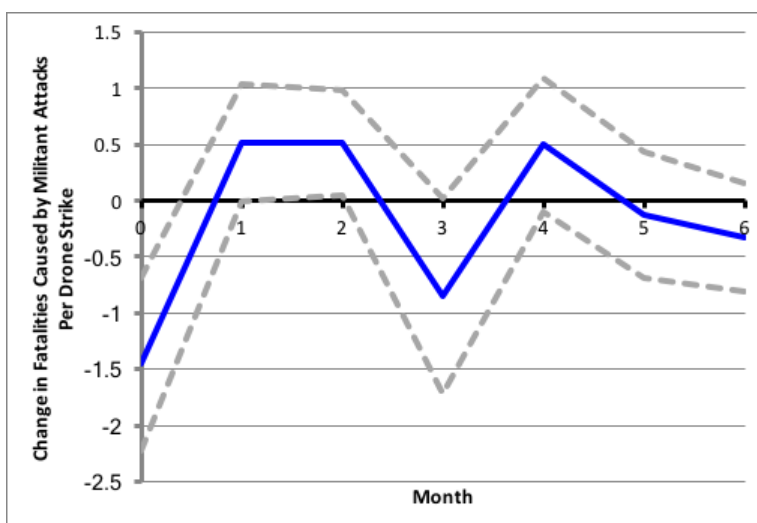
Consistent with the results presented in the main report, our results suggest that drone strikes have different effects on militant attacks in Yemen and Pakistan. In Pakistan, we see a decrease in the number of militant attacks following drone strikes. Figure 1 shows a near-term decline in militant violence, concentrated in the month of the strike. The effect is fairly small, however, amounting to a decrease of approximately one attack for every five drone strikes. In subsequent months, the effect is not statistically significant, but drone strikes never lead to an increase in violence, according to our analysis. Figure 2 shows that the effect of a drone strike on militant-caused fatalities is similar. There appears to be a decrease of about 1.5 fatalities in the month of the strike and no significant effect afterward.

Figure 1. Change in Militant Attacks in Months After Drone Strike in North Waziristan



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

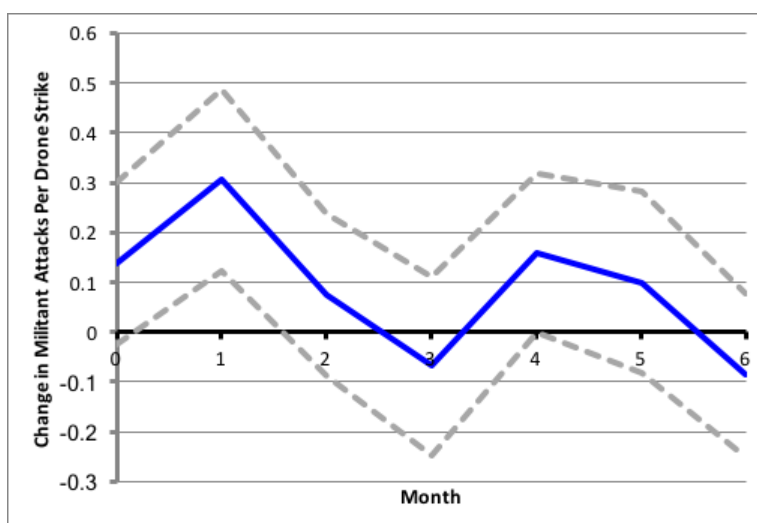
Figure 2. Change in Militant-Caused Fatalities in Months After Drone Strike in North Waziristan



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

In Yemen, however, we see the opposite effect—an increase in violence that endures through the medium term. Figure 3 shows that drone strikes are associated with a decline in militant attacks over the six post-strike months, by about one attack per two drone strikes.

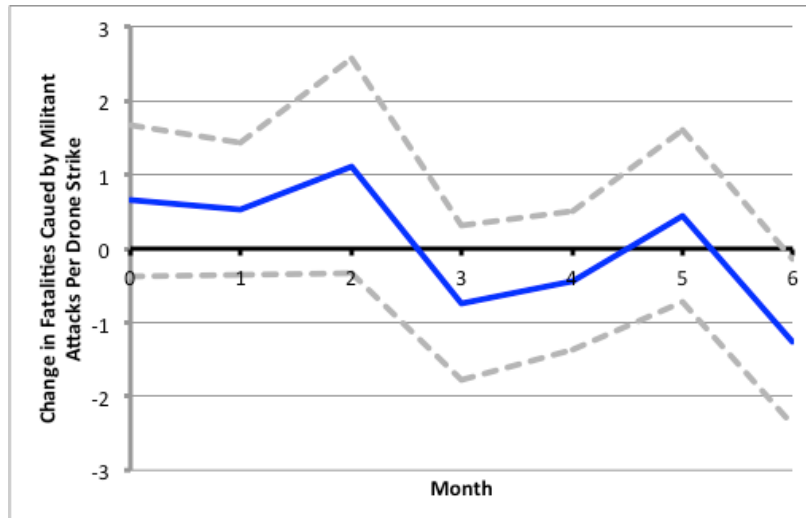
Figure 3. Change in Militant Attacks in Months Following Drone Strike in Yemen



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 4 further suggests that drone attacks do not have a significant effect on fatalities caused by civilian attacks.

Figure 4. Change in Militant-Caused Fatalities in Months After Drone Strike in Yemen



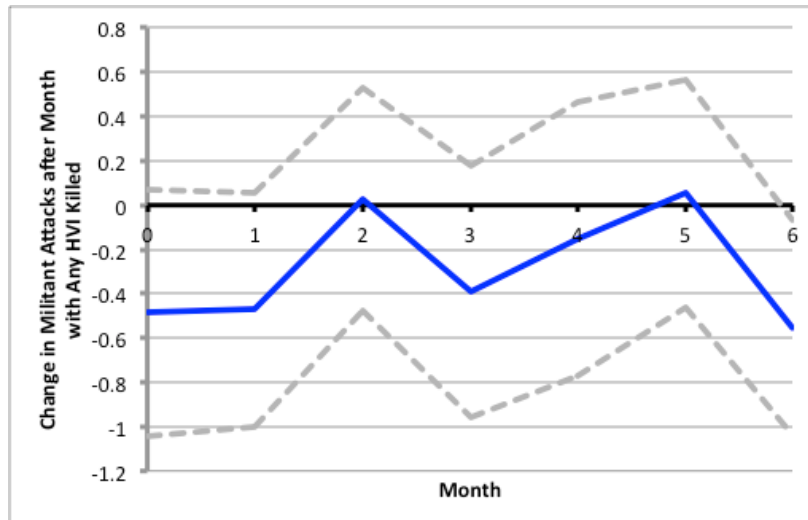
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Why do we see these two different effects? As described in the report, we suggest two possible explanations that likely operate in concert to drive this effect. First, the drone campaign in Pakistan was more intensive and more coordinated than that in Yemen. In Pakistan, there were not only more attacks but also more advance planning about people to target and where to launch these strikes. This might have contributed to the campaign's apparent ability to reduce violence, while the campaign in Yemen appears to have slightly increased the number of attacks. Second, in Pakistan, the U.S. campaign was supported by a local partner that was able to more effectively conduct supportive security operations against militant groups than was true in Yemen. Both of these factors likely contribute to the different effects of drones on militant violence in Yemen and Pakistan. Our results underscore the importance of the local context to the overall effectiveness of a drone campaign.

Removal of High-Value Individuals

The results for the effects of the removal of high-value individuals (HVIs) on militant violence are similar to those for drone strikes just described. HVI removal is associated with a reduction of violence in Pakistan but an increase in violence in Yemen. In both cases, the substantive effects are considerably larger than those for drone strikes more generally. However, once again, there are some differences across our two cases. In Pakistan (Figure 5), HVI removal does not seem to have a statistically significant effect on the number of militant attacks when viewed at the month level (although it does when considered at a more aggregate level. This is likely because of the noise or fluctuations in the month-to-month data).

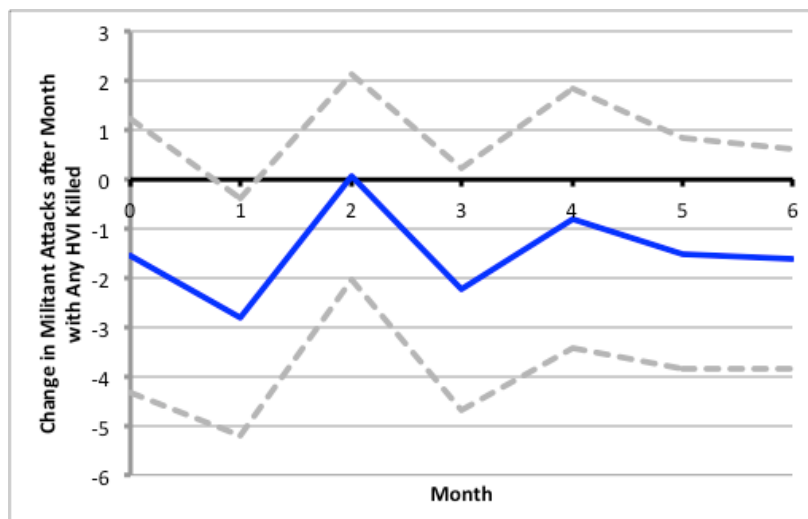
Figure 5. Change in Militant Attacks After Month with Any HVI Removal in North Waziristan



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

However, HVI removal does contribute to a reduction of three fatalities caused by militant attacks in the first month after the HVI removal, as shown in Figure 6. In general, then, there appears to be at least a near-term negative relationship between violence and HVI removal in Pakistan.

Figure 6. Change in Militant-Caused Fatalities After Month with Any HVI Removal in North Waziristan

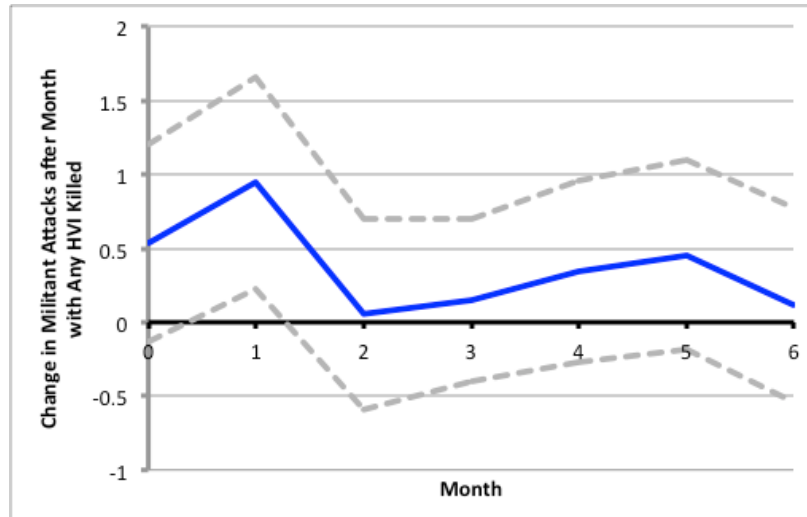


NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

In Yemen, however, HVI removal appears to increase militant attacks in the near term. This effect amounts to an increase of about one attack in the first post-strike month. However, as

shown in Figure 7, after this month, HVI removal does not appear to have a statistically significant effect on the number of militant attacks.

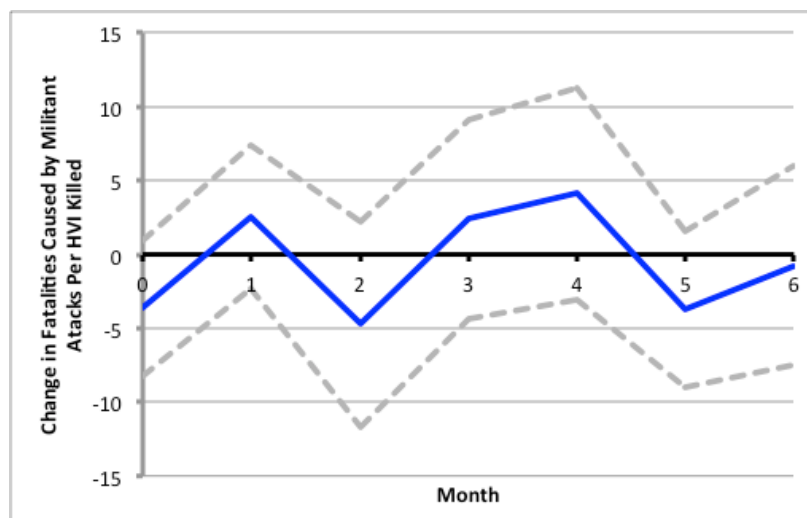
Figure 7. Change in Militant Attacks After Month with Any HVI Removal in Yemen



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

As above, Figure 8 also shows that HVI removal does not seem to have a statistically significant effect on the number of militant-caused fatalities in Yemen.

Figure 8. Change in Militant-Caused Fatalities After Month with Any HVI Removal in Yemen



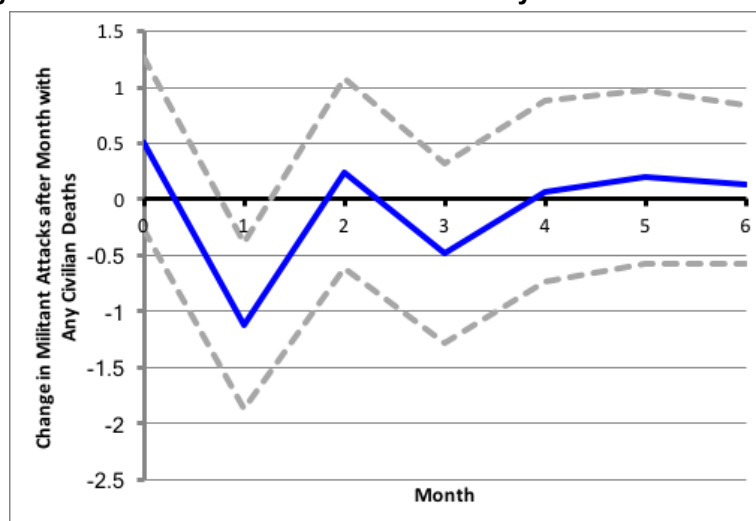
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Overall, then, our results suggest that HVI removals have the same overall effect on militant violence as do drone strikes: an increase in violence in Yemen and a decrease in violence in Pakistan. In this case, there were some differences in whether the statistically significant finding is observed in terms of attacks or fatalities, but these differences are most likely due to noise in the data and uncertainty about which militant deaths should be classified as “high-value” targeted killings. In addition, the overall size of this decrease in violence is relatively substantial, especially when compared with the much smaller effect of drone strikes generally on militant violence noted above. These findings are consistent with the results presented in the main body of the report.

Civilian Casualties

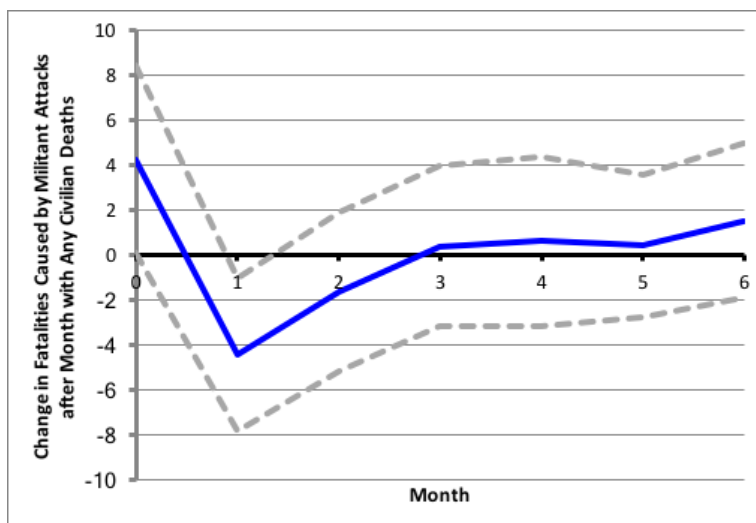
The effects of civilian casualties on militant violence in our two cases are consistent with our results for drone strikes more generally. An increase in civilian deaths leads to an increase in militant violence in Yemen, but it leads to a decrease in violence in Pakistan. This is somewhat different from our aggregated findings presented in the main report, but these differences are again likely because of noise in the data, as well as high uncertainty surrounding civilian fatalities because of drone strikes. Figure 9 shows that, in Pakistan, each month with any civilian casualty is followed by a decline of about one reported attack in the month following the civilian death, along with a reduction of about four militant-caused fatalities in this month (Figure 10). This evidence runs counter to the argument made by critics that civilian deaths cause a backlash likely to lead to an increase in the number of militant attacks. However, it is also worth noting that the effect of civilian casualties on militant violence occurs only in the near term; the effect is not statistically significant in any month but the first month following the strike.

Figure 9. Change in Militant Attacks After Month with Any Civilian Fatalities in North Waziristan



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

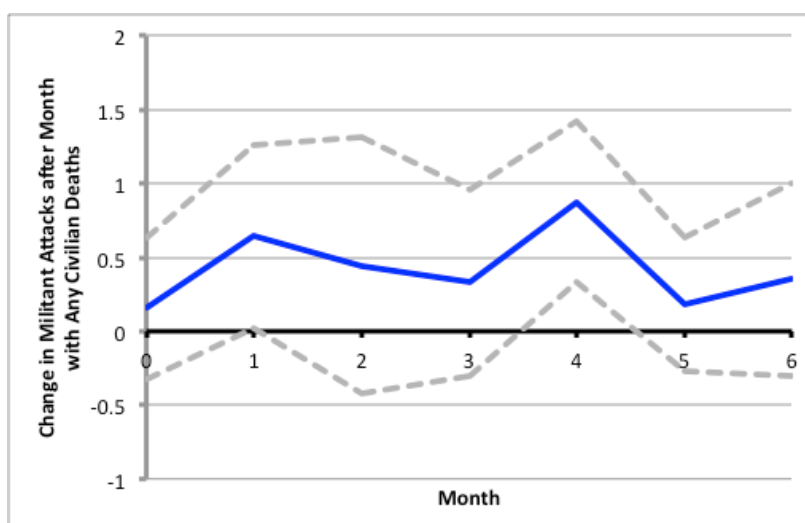
Figure 10. Change in Militant-Caused Fatalities After Month with Any Civilian Fatalities in North Waziristan



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

In Yemen, however, civilian casualties do seem to lead to an increase in the number of militant attacks. As shown in Figure 11, this increase seems to occur both in the near and medium terms. First, there is an increase of about 1.5 attacks over the first six post-strike months. This effect is more enduring than in Pakistan, lasting through the six-month post-strike period.

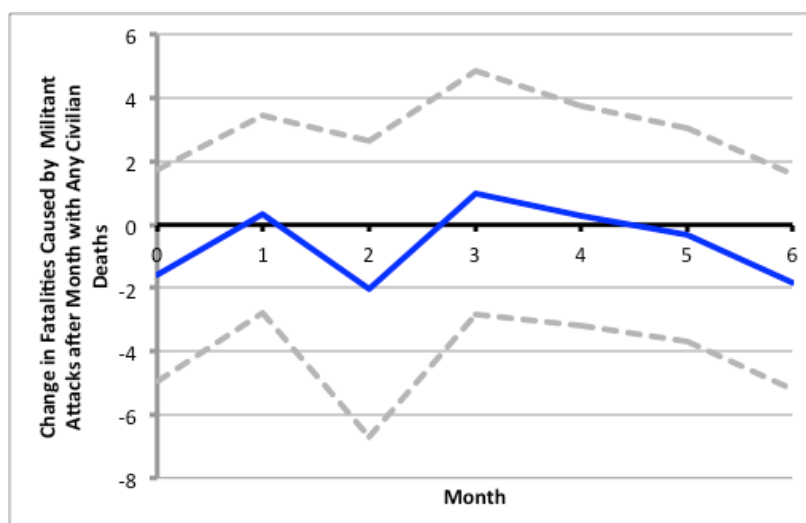
Figure 11. Change in Militant Attacks After Month with Any Civilian Fatalities in Yemen



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

As Figure 12 shows, however, in Yemen there was no evidence of a statistically significant relationship between drone-caused civilian fatalities and fatalities caused by militant attacks.

Figure 12. Change in Militant-Caused Fatalities After Month with Any Civilian Fatalities in Yemen



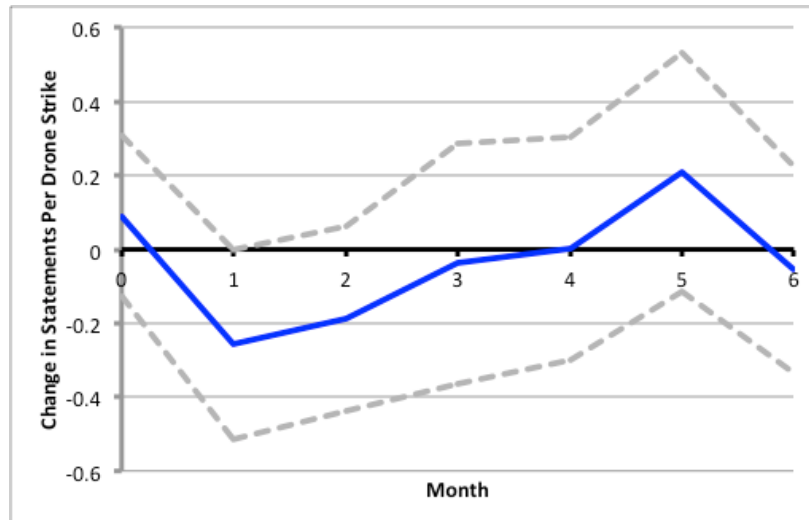
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

As above, we expect that the different results observed in Yemen and Pakistan reflect differences in their local contexts, as well as differences in the nature of the U.S. drone campaign in the two countries. The more intensive and coordinated campaign in Pakistan appears to have been better able to reduce militant attacks than the campaign in Yemen. It is significant that these results hold regardless of the outcome metric used and that they are largely consistent with the more-aggregated results presented in Chapter Three of the main report.

Drone Strikes and Propaganda

Similar to the results for militant violence, the effects of drone strikes on propaganda are different in Yemen and Pakistan. In Pakistan, drone strikes appear to decrease the number of statements, while in Yemen the number of statements is not affected by drone strikes. However, even where drone strikes are able to reduce the number of propaganda statements released, this decline is very small, much smaller than was the case for militant violence. Figure 13 shows that in Pakistan there appears to be a slight decline in the number of statements released in the month after the strike. It is worth noting that this effect exists only in the first post-strike month and is very small in size.

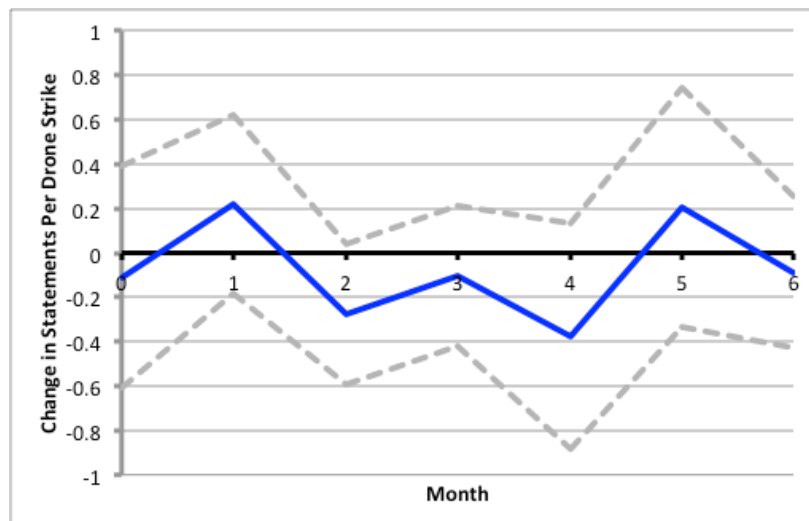
Figure 13. Change in Statements After Drone Strike in Pakistan



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 14 suggests that drone strikes did not have a statistically significant effect on propaganda output in Yemen, however.

Figure 14. Change in Statements After Drone Strike in Yemen

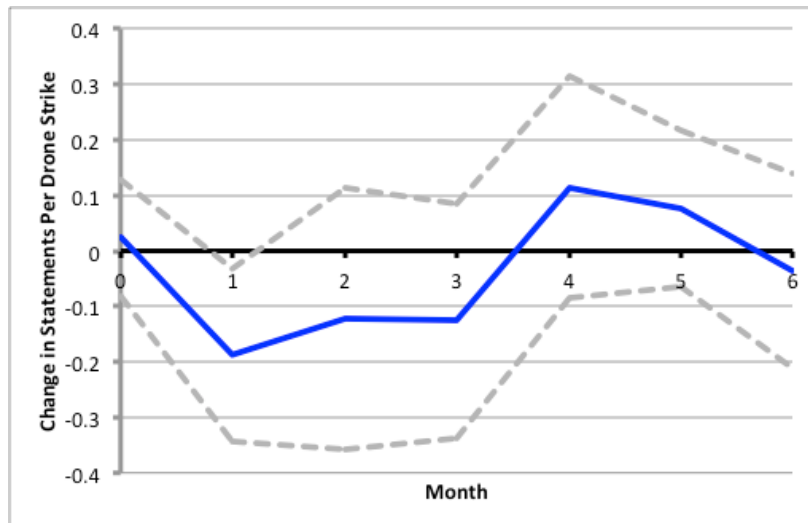


NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

As noted, we categorized our statements. We broadly define these as *ideological statements*, *calls to jihad*, *external activity*, and *internal organization*. In this appendix, we also consider the relationship between each independent variable and propaganda statements by type. There are some differences in the effect of drone strikes on propaganda output by statement type, but overall the results follow the same general pattern just described. For Pakistan, Figures 15–18

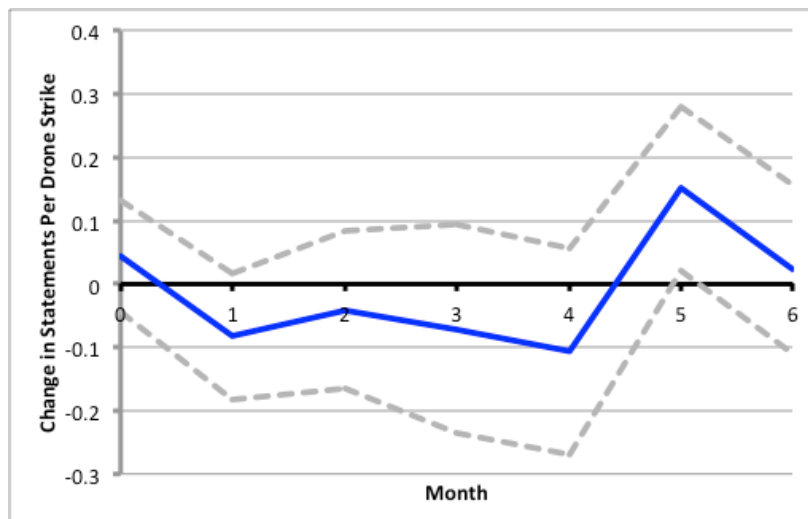
show that drones appear to have no effect on internal organization statements and external activity statements and lead to a small decrease in the first post-strike month in ideological statements (Figure 15). There is, however, a slight increase in the number of calls to jihad that occurs in the fifth post-strike month (Figure 16).

Figure 15. Change in Ideological Statements per Drone Strike in Pakistan



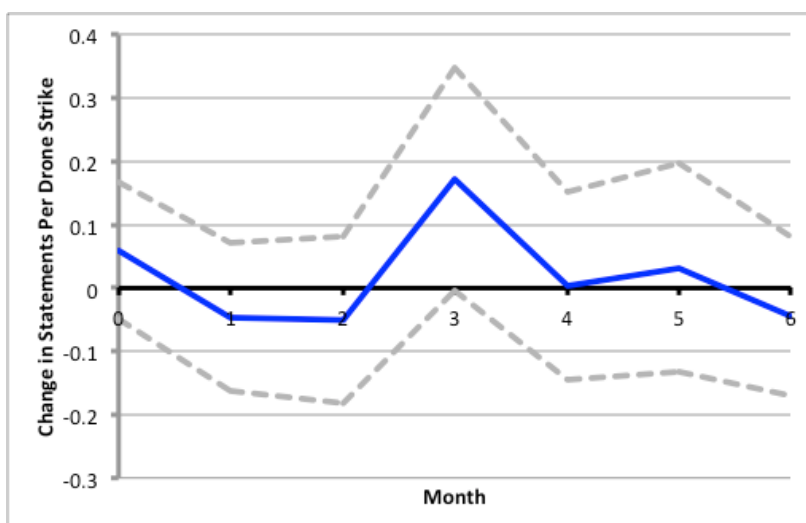
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 16. Change in Calls to Jihad per Drone Strike in Pakistan



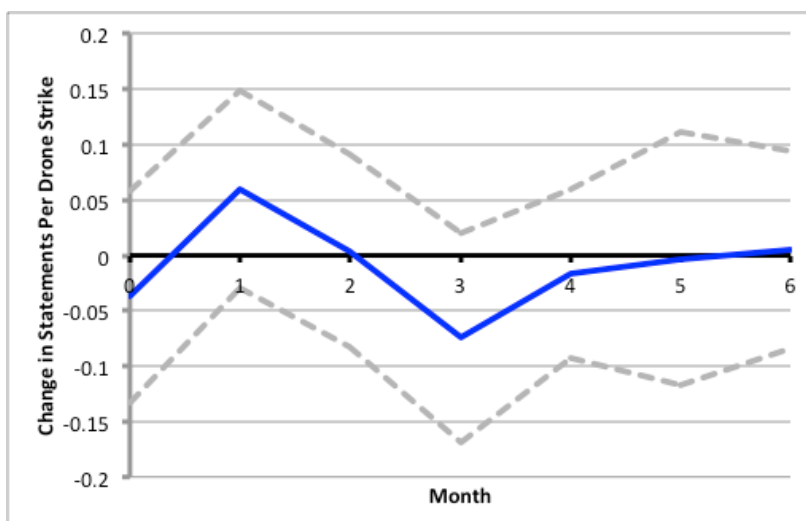
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 17. Change in External Activity Statements per Drone Strike in Pakistan



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

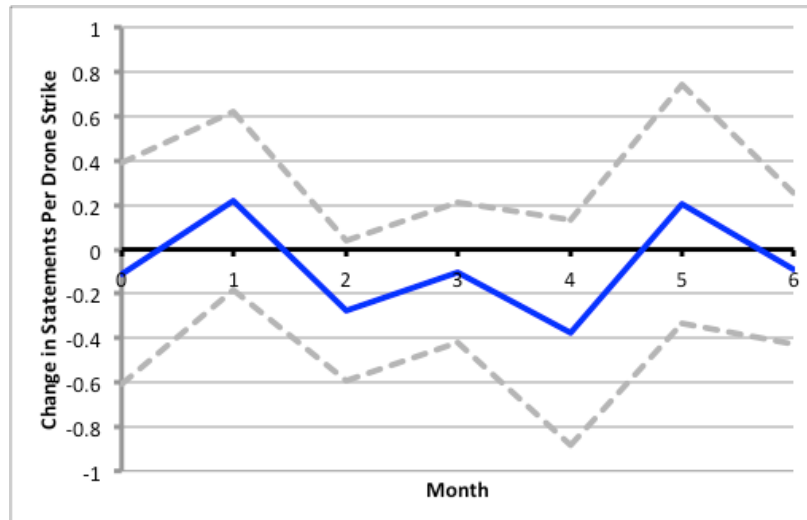
Figure 18. Change in Internal Organization Statements per Drone Strike in Pakistan



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

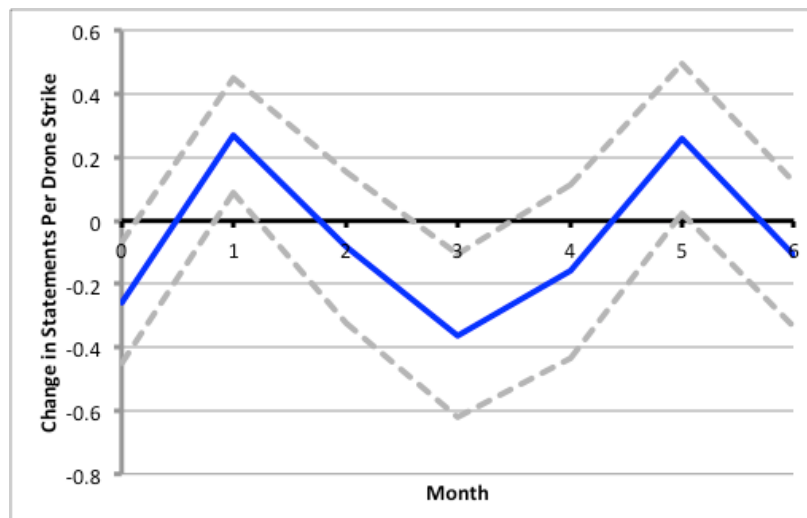
For Yemen, Figures 19–22 suggest that drones do not significantly affect the number of statements, regardless of statement type. Interestingly, for each statement type, drone strikes do appear to temporarily influence the output of propaganda. However, also in every case, we see offsetting effects—either an increase followed by a decrease or a decrease followed by an increase, leading to no overall net change in propaganda production. These fluctuations may be real changes, but it is more likely the changes reflect noise in the data.

Figure 19. Change in Ideological Statements per Drone Strike in Yemen



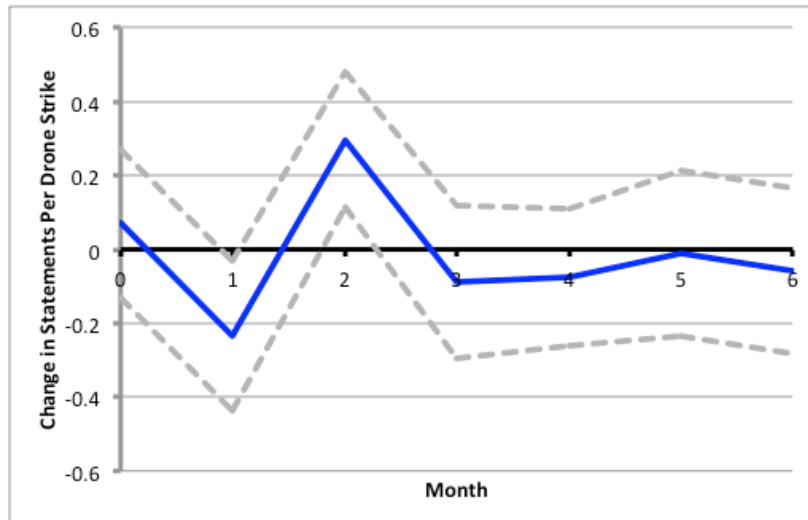
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 20. Change in Calls to Jihad per Drone Strike in Yemen



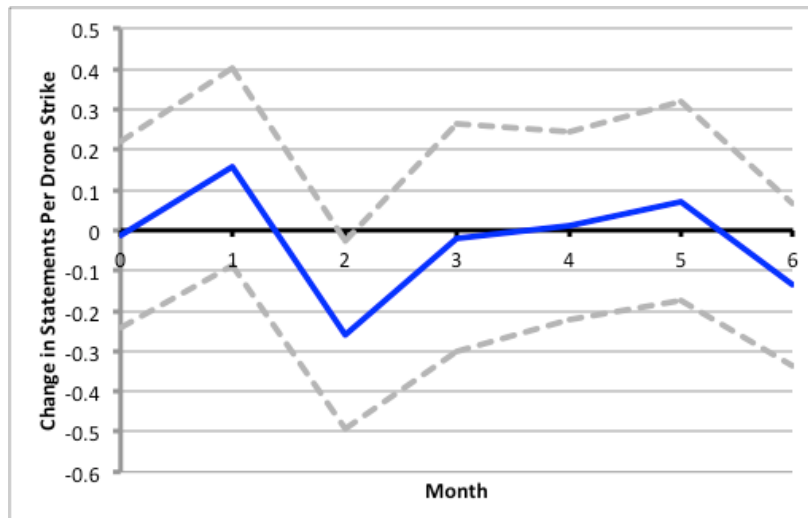
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 21. Change in External Activity Statements per Drone Strike in Yemen



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 22. Change in Internal Organization Statements per Drone Strike in Yemen



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

HVI Removal

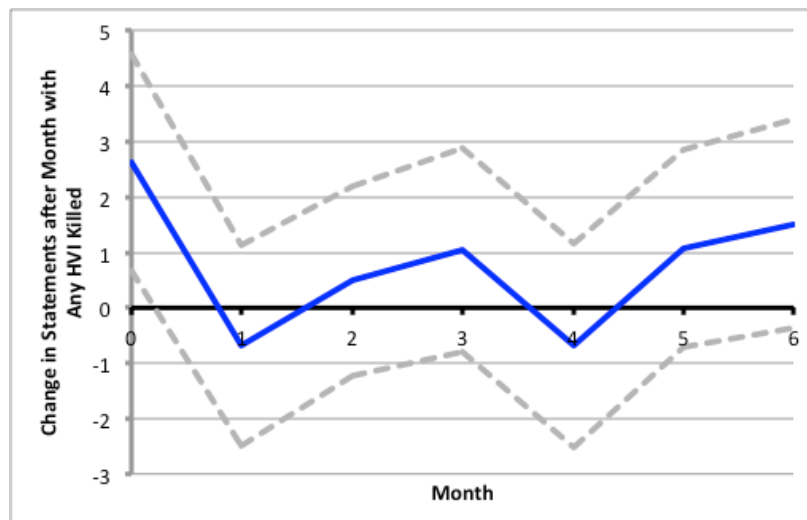
While HVI removal does seem to affect militant violence in both Yemen and Pakistan, it has little significant effect on the output of propaganda at the month level. This is true across statement types, with a few exceptions. Our results are once again consistent with the results presented about violence. Figure 23 shows that there is an increase in propaganda statements in the month of the HVI removal in Pakistan. This increase lasts only in the month of the strike and amounts to about three additional statements. This may be some evidence of the backlash effect

hypothesized by critics of targets strikes. However, Figure 24 shows no statistically significant relationship between HVI removal and the production of propaganda in Yemen.

For the most part, this result holds across statement types, with a few exceptions. First, in Pakistan, there is a one-statement increase in the fourth post-strike month following any month with an HVI removal, but there is a one-statement decrease in the number of ideological statements in this same month (Figures 23 and Figure 25, respectively). Thus, when we disaggregate the statements by types, we find little evidence of a large increase in statements post-HVI removal.

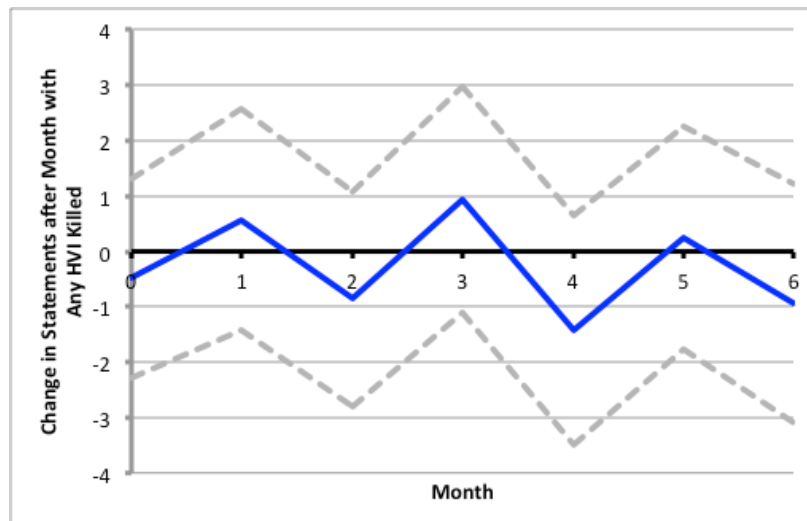
In Yemen, statements about internal organization appear to decline by about one statement in the fourth post-strike month following a leader removal (Figure 24). This effect is really very small and certainly does not represent substantial evidence for or against any of our hypotheses.

Figure 23. Change in Ideological-Statement Production After Month with Any HVI Fatalities in Pakistan



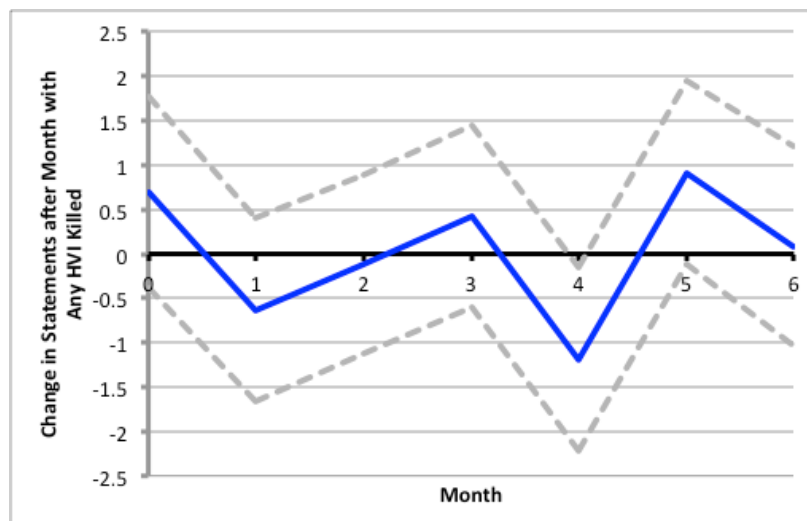
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 24. Change in Ideological-Statement Production After Month with Any HVI Fatalities in Yemen



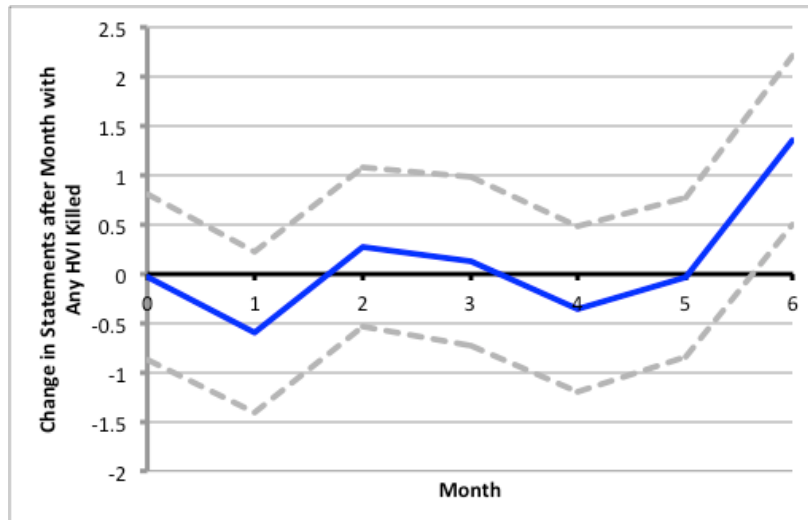
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 25. Change in Ideological Statements After Month with Any HVI Fatalities in Pakistan



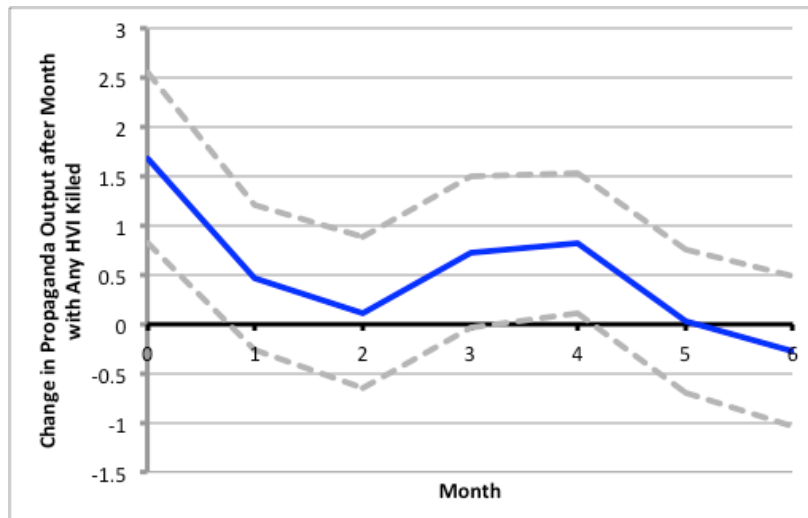
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 26. Change in Calls to Jihad After Month with Any HVI Fatalities in Pakistan



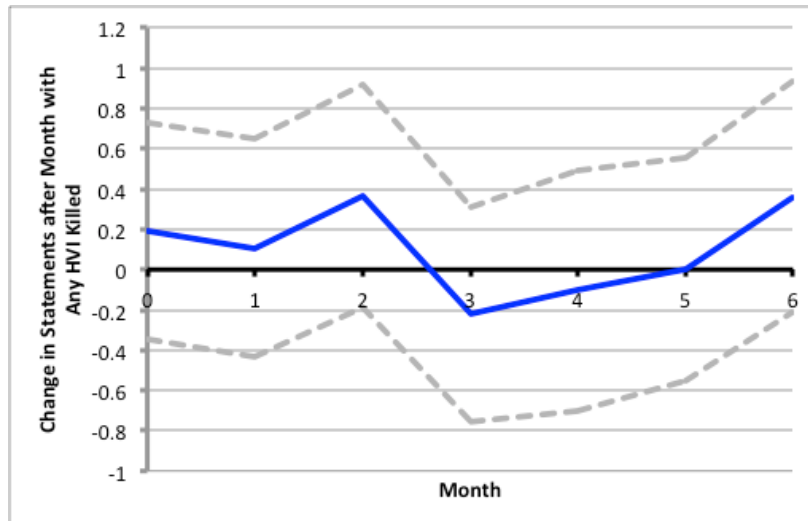
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 27. External Activity Statements After Month with Any HVI Fatalities in Yemen



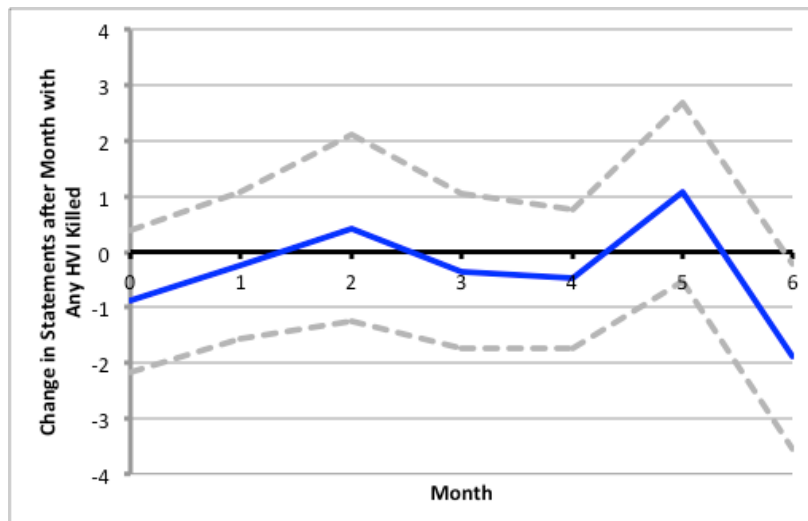
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 28. Change in Internal Organization Statements After Month with Any HVI Fatalities in Pakistan



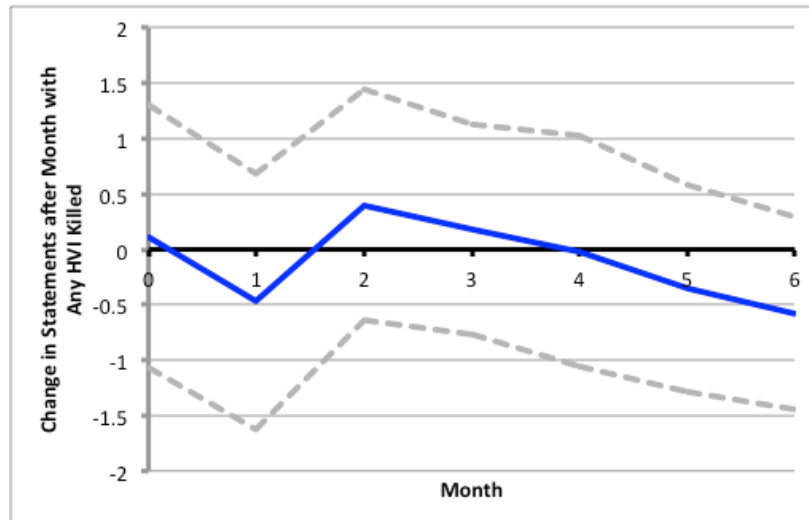
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 29. Change in Ideological Statements After Month with Any HVI Fatalities in Yemen



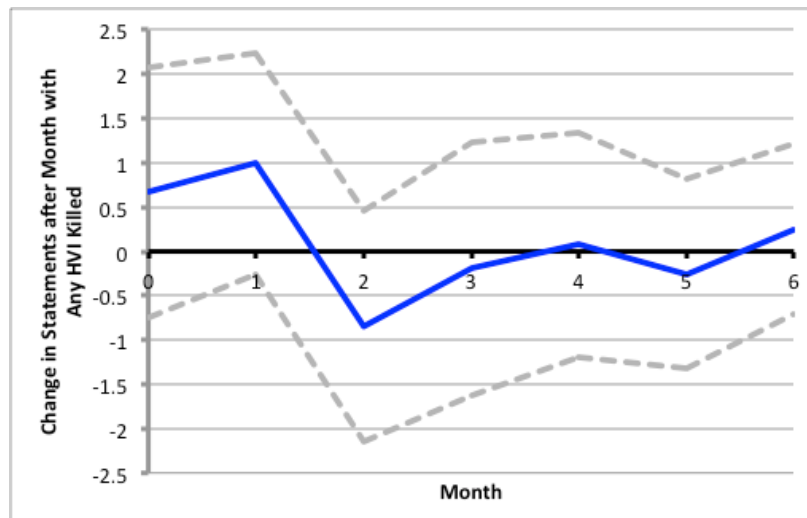
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 30. Change in Calls to Jihad After Month with Any HVI Fatalities in Yemen



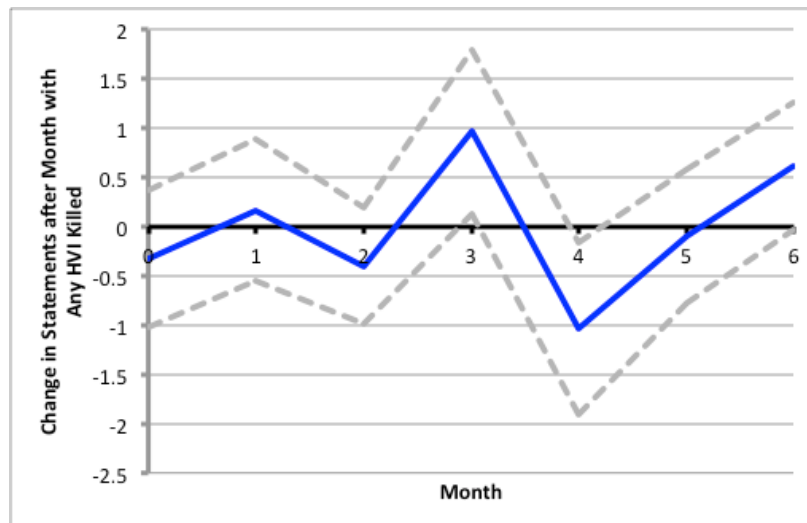
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 31. Change in External Activity Statements After Month with Any HVI Fatalities in Yemen



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 32. Change in Internal Organization Statements After Month with Any HVI Fatalities in Yemen

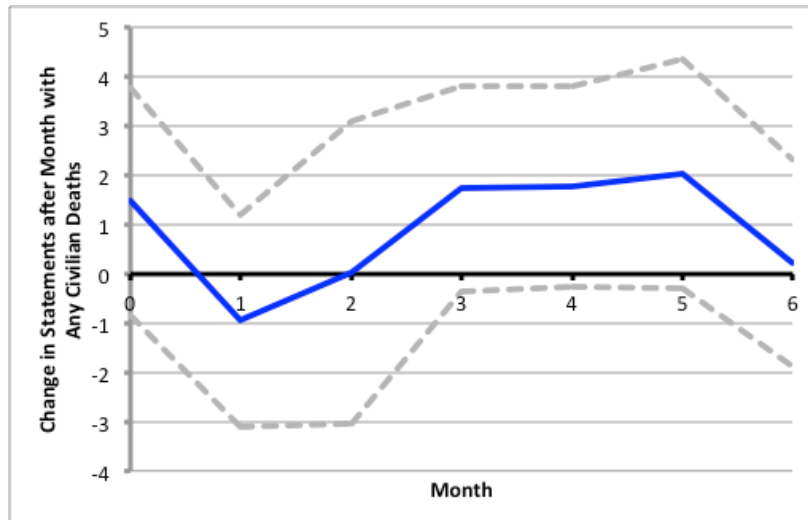


NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Civilian Fatalities

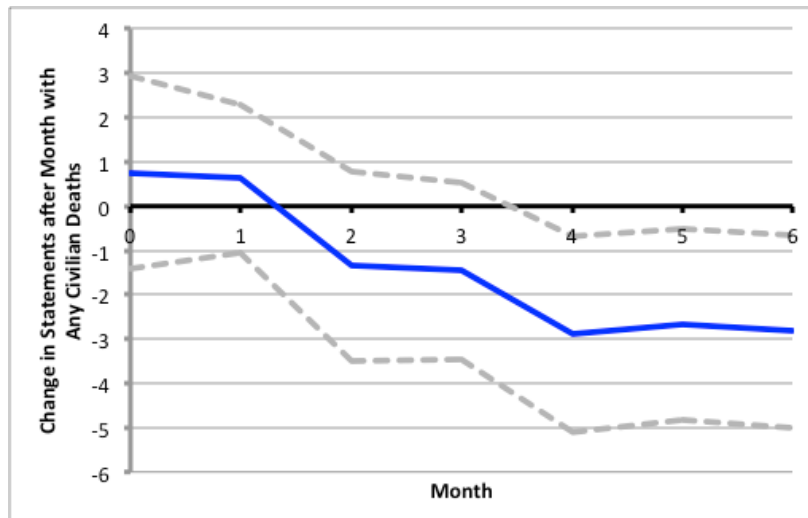
Our month-by-month results for the effect of civilian casualties on propaganda output are somewhat surprising and differ from the results that emerge when looking at aggregated effects and for our other independent variables, particularly in Yemen and particularly when looking at individual statement types. This is likely due to the limitations of the data on civilian fatalities, noted in the main report, and noise in the data rather than a truly different and unique finding. When we look at the overall change in statements after a month with civilian fatalities, we find that there is no significant relationship in Pakistan (Figure 33) but a significant decrease in Yemen, amounting to about nine fewer statements concentrated over the fourth through sixth post-strike month (Figure 34). Another possible explanation for this decrease is that something else is driving this pattern, some other contextual or environment change that is influencing the results in this case and that is not controlled for here because we could not use fixed effects (also noted in the main report). This might also explain why the effect is delayed until four to six months post-strike—when intervening factors are more likely to emerge.

Figure 33. Change in Statements After Month with Any Civilian Fatalities in Pakistan



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 34. Change in Statements After Month with Any Civilian Fatalities in Yemen

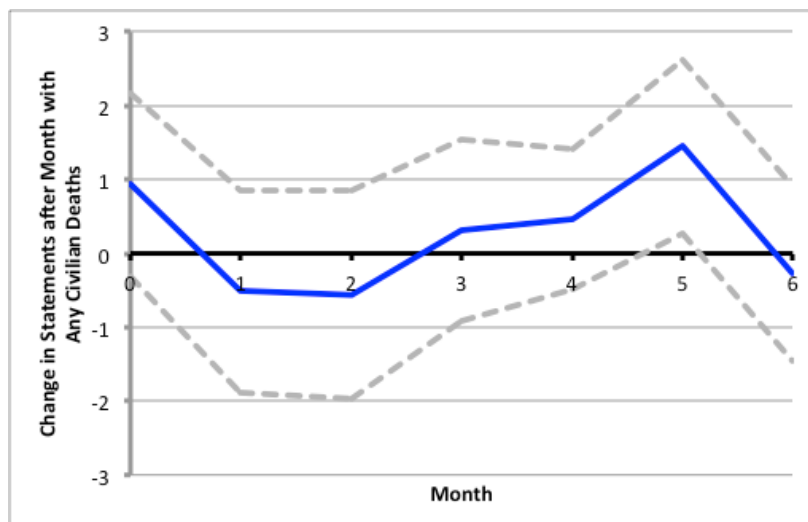


NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

There are also some differences by statement type. In the case of Pakistan, we see no significant result for internal organization statements and calls to jihad, but there is an increase of about 1.5 ideological statements in the fifth month after civilian deaths (Figure 35) and 1.5 external activity statements in the fourth month after civilian deaths (Figure 37). This increase may represent a true increase in propaganda after months with civilian deaths or it may be an artifact of data fluctuations or uncertainty. For Yemen, Figure 40 suggests a decrease of about one call to jihad in the first month after civilian deaths, and Figure 41 shows a two-statement decrease in external activity statements in the fifth month after civilian casualties. There also

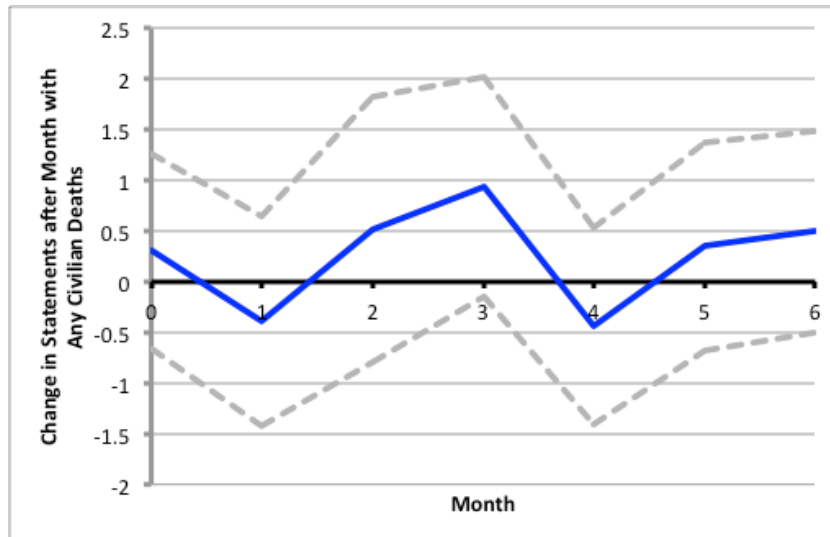
appears to be a slight net decrease in the number of internal organization statements (Figure 42). As in the case of Pakistan, this decrease may suggest that civilian fatalities result in a disruption of propaganda, but there is little theoretical reason to expect this outcome. As a result, the decrease may also be driven by data uncertainty or another factor that we cannot account for in our model. These results differ slightly from the aggregated results, where we found no meaningful effect of civilian casualties on propaganda, but, once again, the effects we observe are very small and emerge primarily when we disaggregate our statements into smaller categories. Thus, we remain confident about the overall results presented in the body of the report.

Figure 35. Change in Ideological Statements After Month with Any Civilian Fatalities in Pakistan



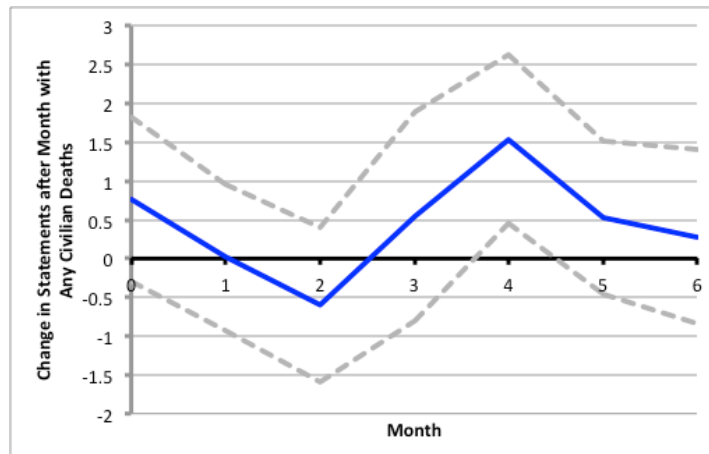
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 36. Change in Calls to Jihad After Month with Any Civilian Fatalities in Pakistan



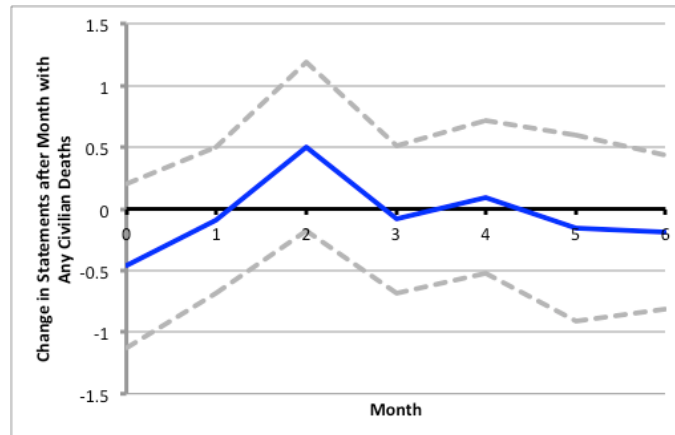
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 37. Change in External Activity Statements After Month with Any Civilian Fatalities in Pakistan



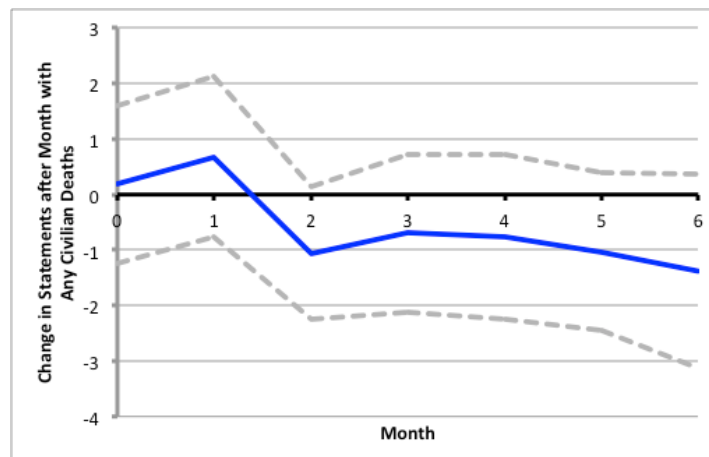
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 38. Change in Internal Organization Statements After Month with Any Civilian Fatalities in Pakistan



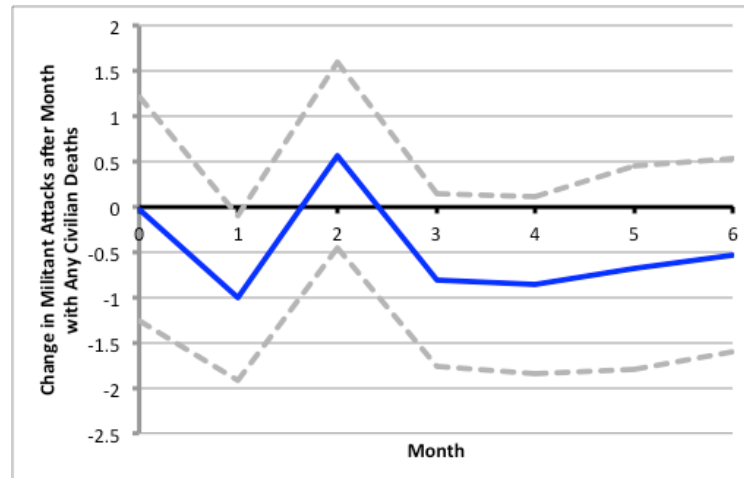
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 39. Change in Ideological Statements After Month with Any Civilian Fatalities in Yemen



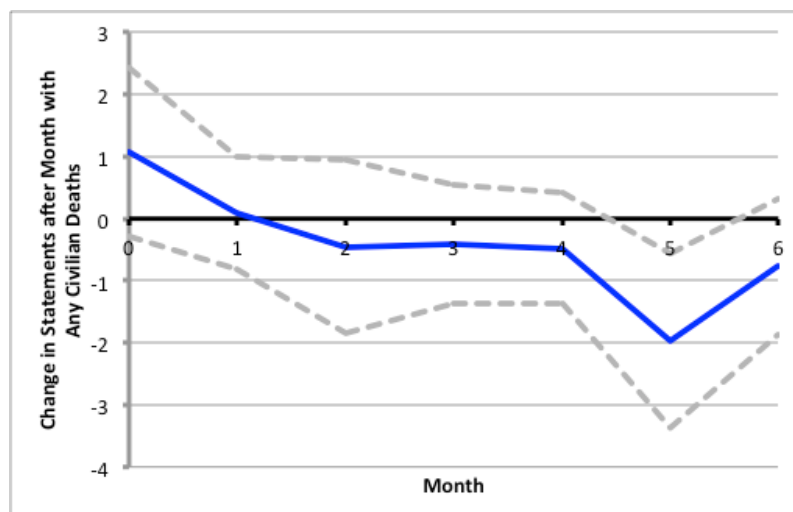
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 40. Change in Calls to Jihad After Month with Any Civilian Fatalities in Yemen



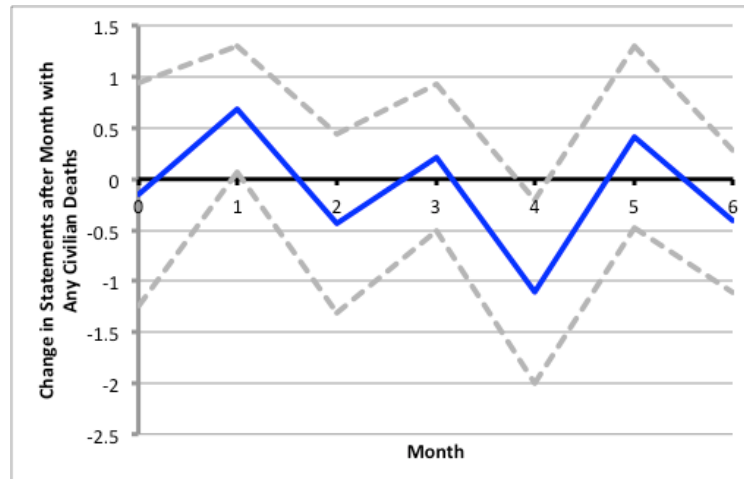
NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 41. Change in External Activity Statements After Month with Any Civilian Fatalities in Yemen



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.

Figure 42. Change in Internal Organization Statements After Month with Any Civilian Fatalities in Yemen



NOTE: The blue line represents the estimated effect, and the gray dashed lines are the 90 percent confidence intervals.