# Counterterror Strike Effects on Civilian Attitudes in Yemen

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Eoin A. Wilson-Manion

B.S. International Relations and Politics, Carnegie Mellon University

M.S. International Relations and Politics, Carnegie Mellon University

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**Abstract**

This project examines the effect of the United States' counterinsurgent/counterterror (CT) strikes on civilian attitudes towards the US. I conduct a statistical analysis, utilizing public opinion and attitudes data from the Arab Barometer, drone strike data from New America, and terrorism data from the START database. I take advantage of the timing of the Arab Barometer's third wave of public opinion surveys and the Obama administration's drone and airstrike campaign against Al Qaeda in the Arabian Peninsula (AQAP) and Ansar al-Sharia Yemen (ASY) between 2009-13 for a unique research opportunity. Using specific responses from the Arab Barometer survey, I create models to explain Yemeni individuals' negative attitudes toward the US based on the number of civilians killed by US counterterror strikes in their region. The results of the analysis ultimately show a significant and positive relationship, suggesting that more counterterror violence, especially the death of civilians, negatively affects Yemeni civilians' perceptions of the United States and increase the respondents' rate of believing that armed opposition to the US is justified.

**Introduction**

On September 2, 2012, explosives fell from the sky over Yemen's Al-Bayda' Governorate, destroying a Toyota Land Cruiser making its daily trip between Sabool and Rada'a. The first villagers arrived to witness a horrifying scene. "The bodies were charred like coal. I could not recognize the faces," said one man. "About four people were without heads. Many lost their hands and legs," (Tayler 2012). The strike was initially reported to have targeted Abdulraouf al-Dahab and other alleged Al Qaeda militants, but investigators, witnesses, and local leaders report that no fighters had been killed. Instead, at least twelve civilians were killed

1

in the attack. "Seven of the victims were breadwinners," according to Sabool's local sheik. "Now we have 50 people in our village with no one to care for them," (Tayler 2012). The strike in Al-Bayda' is one of dozens like it - devastating to locals but disputed by officials and hidden behind the United States' opaque counterterrorism program. Now, thanks to great efforts in investigative reporting on the US counterterrorism wars from New America and others, the scale of drone and air strikes' destruction in Yemen is being revealed. Strikes like the one in Al-Bayda' can devastate entire communities and motivate hatred for their perpetrators. Interviews with Yemeni civilians reveal that drones can further this sentiment: "These planes kill Yemenis in cold blood. What I am worried about is that Yemenis will become a volcano of hate against the US" (Al-Kohlani, Crisanti, and Merolla 2021, 12). This paper will examine the extent of the relationship between civilian deaths and resentment towards the US. Does this case represent a broader pattern? Does counterterror violence affect civilian attitudes and increase hostility toward the perpetrator?

## Definitions

*Strikes*

This paper will discuss at length the impact that exposure to counterterror strikes and their lethal consequences has on civilian attitudes about America. It is therefore worthwhile to define and explain what we mean by "strikes." The Central Intelligence Agency primarily directs the counterterror operations that happen outside America's borders. The CIA and the rest of the US counterterror apparatus often targets terrorists, especially those who are difficult to reach by other means, with lethal explosive strikes delivered from the air. For a number of reasons which are discussed later, Unmanned Aerial Vehicles (UAVs or drones) have gradually become the

instrument of choice for delivering these targeted attacks since the onset of the "war on terror." For the scope of this paper, we examine American counterterror strikes in Yemen between 2009 and 2013, which were delivered by UAV rather than conventional aircraft. Any future reference to "air strikes," "drone strikes," or simply "strikes" in Yemen is necessarily referring to an explosive payload delivered by UAV.

*Terrorism*

Any discussion of terrorists or terrorism also requires an explanation of the terms. For the sake of this paper, "terrorism" by common definition is a tactic of politically-motivated violence intended to scare and coerce a target audience. While specific demarcations of terrorist versus insurgent may be somewhat controversial, it is not necessary or within the scope of this analysis to argue for a semantic position. We will simply focus on the US counterterror campaign in Yemen between 2009 and 2013, which targeted Al Qaeda in the Arabian Peninsula and Ansar al-Sharia. As of April 2022, both groups are featured on the US State Department's official list of Foreign Terrorist Organizations.


**The US, Al Qaeda, and Counterterrorism in Yemen**

Al Qaeda in Yemen (AQY) was formed as an offshoot of Al Qaeda central in 2000 under the lead of Qaed Salim Sinan Al-Harithi, the man believed to be responsible for planning the bloody 2000 attack on the USS Cole. Two years later, America delivered its first drone strike in Yemen, killing Al-Harithi and the five other passengers in his car - including one American citizen (Bergen, Sterman, and Salyk-Virk 2021). AQY's membership and influence in Yemen declined until February 2006, when the group staged a high-profile prison break and freed twenty-three members, including multiple ranking members who would go on to revitalize AQY

(Stanford University, n.d.). Between 2006 and 2009, AQY carried out more attacks to greater success. In 2008, AQY struck the United States Embassy compound in in the capital of Sanaa with car bombs, killing sixteen people in total and marking the group's most significant action in years (Worth 2015).

A year later, AQY merged with the Saudi Al Qaeda branch, officially forming Al Qaeda in the Arabian Peninsula (AQAP) under the leadership of Nasir al-Wuhayshi, who had been freed in the aforementioned 2006 prison break. AQAP first claimed responsibility for the 2009 killing of four South Korean tourists with a suicide bomber in Shibam, southeast Yemen, and has continued executing attacks within and beyond Yemen since (Stanford University, n.d.). By 2011, AQAP formed an offshoot group known as Ansar al-Sharia in Yemen (ASY, meaning "supporters of Islamic law") in a kind of rebranding effort to capture the interest of Salafi-jihadists who felt marginalized by pro-democracy movements leading the Arab Spring in Yemen (al-Shishani 2012). ASY succeeded temporarily in controlling parts of southern Yemen, even providing things like water, electricity, and education services before being driven out by government forces and US strikes in June 2012 (Zelin 2014). In addition to the provisions of governing territory, Al Qaeda and its branches have consistently managed to produce modern media and propaganda spreading their message. AQAP specifically has maintained a magazine designed for Yemeni civilians (Sada al-Malahim) and an english-language magazine (Inspire) to reach western readers (Stanford University, n.d.). By 2013, President Obama claimed that AQAP was "the most active [group] in plotting against our homeland" (Obama 2013).

AQAP and its various branches in Yemen have demonstrated their capacity for organization, recruiting, outreach, and of course violence. Among other factors, the limited counterterror capabilities of the Yemeni government coupled with the country's remote terrain

for terrorists to hide in has resulted in a protracted struggle. Having proven their ability and intent to target the United States, AQAP and its affiliates became a high-priority target for America's counterterror apparatus. President Obama took office in 2009 and was faced with a number of attacks tied to AQAP on American and Yemeni targets. At the start of the Obama administration, the drone campaign in Yemen began in earnest and has continued since, with the most recent US strike reported by Agence France-Presse in November of 2021 (Bergen, Sterman, and Salyk-Virk 2021). Since the United States' first drone strike in Yemen on November 3, 2002, more than one thousand people have been killed by 376 US counterterror operations in the country, including more than one hundred civilians (Bergen, Sterman, and Salyk-Virk 2021). Polling data from Pew (June 2012) shows that drones were globally very unpopular around the time that Arab Barometer's survey data was collected, but still had approval from a majority (62 percent) of Americans.

"Despite [America's] strong preference for the detention and prosecution of terrorists," President Obama explained in a 2013 speech, drones have become the primary tool for the administration's "persistent, targeted efforts to dismantle specific networks of violent extremists," (Obama 2013). Conventional military action, or a boots-on-the-ground approach, poses risks and costs that targeted killing and drone strikes do not. Even conventional airstrikes are generally regarded as less precise and more destructive than drones, considering that they normally carry a much larger payload (Byman 2013). In the same speech, Obama (2013) claimed that conventional operations would cause "more US deaths, more Black Hawks down, more confrontations with local populations, and an inevitable mission creep in support of such raids that could easily escalate into new wars." The US understandably wants to avoid collateral damage and its consequences as much as possible, but Obama's speech belies the core

motivation for so many remote strikes: avoiding the political cost of dead American soldiers. Another "Black Hawk down" in Yemen could have spelled disaster for the President's popularity, as well as the administration's intentions to intervene in other conflicts and insurgencies. Ostensibly, the US policy in Yemen was that "there must be near-certainty that no civilians will be killed or injured" by drone strikes (Obama 2013). Despite this, civilian deaths and collateral damage have featured on headlines throughout the campaign against AQAP. Government and NGO accounts provide different reports on the exact numbers of civilians and militants killed in strikes, but diligent journalism and reporting from New America shows a ratio of about one civilian death for every eleven or twelve militants killed in Yemen. While the US administration is inherently wary of the domestic political backlash from policies, it has overlooked the international blowback effects. In particular, this paper seeks to demonstrate the significance of blowback in terms of anti-American sentiment among locals exposed to the impacts of drone strikes.

## Literature Review

The existing literature on this topic represents a growing field and does not provide a definitive consensus on the nature and magnitude of drone-related blowback effects. Most current empirical studies deal with drone strike effects in Pakistan, specifically the FATA/North Waziristan, where the United States has conducted a lengthy drone-intensive counterterror campaign against the local Taliban and data is relatively accessible (Mahmood and Jetter 2019; Saeed and Spagat 2021; Shah 2018; Silverman 2016). Other studies include quantitative and qualitative data from other parts of the Middle East/North Africa/Central Asia where drone strikes are often employed. Much of the ongoing scholarly discourse has indicated that drone-

focused CT campaigns are correlated with blowback effects, including increased sympathy for terrorist groups and increases in violence. Some authors contend that there is not enough evidence to draw a causal connection, and that other factors like government repression or terrorist's recruiting strategies are more relevant in driving support for terrorists (Shah 2018). Still others have offered various arguments for or against the strategic, political, and conceptual merits of drones, airstrikes, and cross-border targeted killings as an instrument of CT. I discuss some of the most relevant literature further in the section below, and the gaps in research that I hope to help fill with this analysis.

Like President Obama and the rest of the US counterterrorism apparatus, proponents of drone and air strikes point to their efficiency in terms of both financial and human costs. Drones, and airplanes to a lesser extent, enable access to targets that are physically distant from CT forces. It is a common sentiment that, despite criticism of the use of drones, they have become a necessity for combating terrorism and are superior to other military alternatives like the special forces raid that killed Osama Bin Laden. Supporters of drone-heavy CT policy like Daniel Byman (2013) claim that drones achieve goals "with fewer civilian casualties than many alternative methods would have caused," and operate under the assumption that "the United States simply cannot tolerate terrorist safe havens in remote parts of Pakistan and elsewhere," (Byman 2013, 32). Despite acknowledging the possibility that "drones kill thousands of innocent civilians, alienate allied governments, anger foreign publics, illegally target Americans, and set a dangerous precedent," drone proponents like Byman find that the benefits outweigh the costs (Byman 2013, 32). Especially in the post-9/11 world, leaders in the American security apparatus have been fearful of a perceived existential threat posed by sophisticated terrorist networks like Al Qaeda and its affiliates. Refuting claims of drones' net strategic benefit would require

counterfactual arguments beyond the scope of this paper, but it is important to recognize that these are assumptions underpinning the common political support for drones in the US. The analysis conducted in this paper will seek to challenge the idea that the costs of drone warfare as counterterrorism are as manageable as proponents say they are.

Other researchers have presented findings to suggest that drone strikes are not directly driving blowback effects. Using interviews, surveys, terrorist trial testimony, and scholarship on Muslim radicalization, Aqil Shah (2018) argues that there is not enough evidence to support a significant relationship between U.S. drone strikes and militant Islamist recruitment/motivation at either the local, national, or transnational level. According to Shah, recruitment is more closely driven by factors including Pakistan's state repression, weak governance, political and economic grievances, and forced recruitment strategies by militant groups. Through a diverse convenience sample of 167 well-informed interviewees in North Waziristan (the area most heavily targeted by drone strikes in Pakistan), the study finds that 71 percent of interviewees do not believe that drone strikes create new militants. Ultimately, Shah argues that claims of blowback effects as the primary driver of militant Islamism are based on anecdotal evidence, and that his more empirical analysis points to a set of factors that must be considered (Shah 2018). The nature of individual-level terrorist motivations and recruitment strategies is extremely complex and has been subject to decades of study, so it is reasonable to suggest that a combination of factors are involved in driving blowback. Though our hypothesis and findings ultimately contradict Shah's work, it is valuable to consider the nuance involved and to include multiple potentially causal or confounding factors in our analysis.

While drone supporters typically speak to the weapons' strategic benefits and minimization of unnecessary costs and risks in the short term, some analysts provide a contrary

perspective. Michael Boyle (2013) argues that drone strikes actually undermine America's goals of supporting capable governments; reliance on the US's unilateral drone campaigns signals local governments' weakness and undercuts their legitimacy and ability to compete with insurgents or terrorists for the loyalty of the population. Providing arms and military support to governments like Yemen and Pakistan while simultaneously undermining their legitimacy runs contrary to US goals for counterterrorism. This 'legitimacy gap' is a major part of the strategic logic against drone campaigns and other cross-border targeted killing. Alienating civilians from the counterterror cause and making allied governments appear weak makes the struggle for "hearts and minds" even more challenging. Dan Silverman's (2016) analysis of civilian attitudes in Pakistan in response to the US strike campaign there support Byman's ideas. Silverman finds that strikes increased support for the Taliban but not Al Qaeda, and that there were "substantial anti-American, anti-incumbent, and pro-militant effects on the Pakistani population" (Silverman 2016, 1). Alongside radicalizing effects, Silverman also finds that drone strikes increased Pakistani support for financial or humanitarian aid for counterterrorism.

Luqman Saeed and Michael Spagat (2021) also causally link blowback effects to the US drone campaign in northern Pakistan. The authors use weather patterns and cloud cover, as well as drone-base closures, as instrumental variables in their analysis because drone strikes require clear weather conditions and a place to launch from, but none of these factors should affect suicide bombing. The results of their analysis indicate a significant and positive relationship between drone strikes and subsequent suicide attacks; they estimate that "every three drone strikes cause more than one suicide bombing within a week on average" and that "each drone strike causes roughly 9 suicide bombing deaths on average," (Saeed and Spagat 2021, 25). Rafat Mahmood and Michael Jetter (2019) perform a similar analysis of Pakistani attitudes using the

weather as an instrumental variable to isolate drone strike effects, with similar findings to Saeed and Spagat (2021). Mahmood and Jetter (2019) calculate that each drone strike caused more than four additional terrorist attacks in the next seven days - or sixteen percent of all terrorism in Pakistan. The authors also find that drones increased expressions of anti-American sentiment or radicalism (Mahmood and Jetter 2019).

Most of the relevant literature evidently focuses on the US counterterror drone campaign in Pakistan, due mainly to the conflict's salience, the exclusive use of drones, and the availability of accurate data. Yemen has received comparatively little attention, which is why this analysis seeks to fill in the gap in coverage. This is not to say there are no interesting findings from Yemen, however. Sumaia A. Al-Kohlani et al. (2021) conducted a series of in-depth, semi-structured interviews with Yemeni civilians about their attitudes toward counterterrorism. The authors find important differences in the way Yemenis and academics understand and define terrorism; the majority of interviewees see both Al-Qaeda and America as terrorist organizations. More than three-quarters expressed opposition to drone strikes, 64 percent do not believe drones are effective for counterterrorism, and 84 percent believed that drone strikes in Yemen have decreased support for the U.S. The content analysis and use of specific quotes from interviewees show multiple cases of Yemenis believing that the U.S. is creating enemies and inspiring more terrorism. When questioned, two-thirds believed that drone strikes were increasing overall Yemeni sympathy for Al-Qaeda, and 16 percent said that strikes increased their personal sympathy for Al-Qaeda (Al-Kohlani, Crisanti, and Merolla 2021). The study's small sample size (only 63 individuals) limits the insights we can draw about Yemeni civilians' attitudes overall, but it provides crucial evidence that normal Yemeni civilians are perceiving blowback effects to CT, if not experiencing blowback themselves. Similar to the results from Silverman (2016) in

Pakistan, Al-Kohlani, Crisanti, and Merolla (2021) find that Yemeni civilians are not totally opposed to "help" from the US, but distinctly favor alternative financial or humanitarian assistance for countering terrorism.

## Theory & Hypothesis

Drones are generally supported by the logic that they do not necessitate a physical footprint like a major troop presence or conventional force would, they are able to access remote or impassable terrain, and they are able to deliver precise strikes often used to take out high-value targets. The United States has consistently and increasingly utilized drones in counterterror campaigns, especially in MENA and South Asia, for their virtues of practicality and political convenience. Generally speaking, these campaigns involve a non-state militant group competing against the local government (backed by the US) for the loyalty and support of the public. Insurgent and terrorist groups vary greatly in their structure and strategy, but almost all of them require a civilian base of support for funding and recruitment. This makes popular support or sympathy for militants a critical variable of interest for CT policy. Importantly, a blowback effect does not have to be supported by much of the public; it does not take many aggrieved locals to stage a violent retaliatory attack.

Some strikes miss their targets, and often kill civilians. Our data shows that eleven out of Yemen's twenty provinces experienced strikes between 2009-13. Civilians were killed by these strikes in six out of the twenty provinces. Eighteen out of the twenty experienced lethal terrorist violence, which in turn draws more attention from the US counterterror apparatus.

Experience and evidence suggest that drone strikes damage public perception of the US and the government it is supporting, and contribute directly to retaliatory terrorist attacks,

especially when they take innocent lives or cause significant collateral damage. Other civilians who see the violence inflicted by drones, or hear about it through the news, school, or personal connections are likely to have grievances and feel fearful or angry. In the face of terrorist violence like Al Qaeda's, strikes that kill more civilians are poorly received (Al-Kohlani, Crisanti, and Merolla 2021). The death of other innocent civilians may even be a radicalizing force for some or motivate terrorist groups to stage revenge attacks. As mentioned before, statistical analyses of US drone strikes against Taliban targets in the FATA region of Pakistan causally link drone strikes to lethal terrorist attacks that followed. Mahmood and Jetter (2019) find that a single drone strike leads to roughly four additional terrorist attacks in the following seven days - by their analysis drone strikes caused about 16 percent of all terrorist attacks and approximately 2,964 deaths in total. Additionally, their data suggest that drone strikes increase support for terrorists among the broader civilian population. Saeed and Spagat (2021) find that on average, each drone strike causes at least one suicide bombing within the following month, and that as many as one-third of all suicide bombings in the region between 2008-16. Though this literature focuses on different groups and conflicts, which necessarily involve different dynamics, it offers clear support to the notion that cross-border strikes can drive further terrorist activity. Even more interestingly, drone and airstrike campaigns in Pakistan have a counter-productive effect on the civilian population's perception of terrorist groups (Saeed and Spagat 2021; Silverman 2016). Though the dynamics of Pakistan and Yemen are different, and our analysis does not measure terrorist violence as a direct response to drones, we certainly expect to see an increase in anti-American sentiment.

There is also reason to believe that drone strikes are especially alienating to civilian populations because of how impersonal they are and that they can undermine CT objectives. CT

programs are in large part concerned with winning over the "hearts and minds" of civilians, whose support terrorist organizations rely on for recruitment, funding, or hiding. In Pakistan, Silverman (2016) found that cross-border targeted killings via drone strike increased anti-American and pro-militant sentiments among the Pakistani people. Al-Kohlani et. al (2021) interviewed Yemeni civilians, the majority of whom expressed opposition to drone strikes, did not think the strikes are effective for combating terrorism, and said that strikes had decreased their opinion of the US. Yemeni civilians' primary concerns with drone strikes revolved around innocent deaths, violation of sovereignty, and increased support for al-Qaeda. Among other negative sentiments, respondents were quoted saying that "today people believe that the US creates terrorists," and that "One day we may all become al-Qaeda because of these drone strikes" (Al Kohlani, Crisanti, and Merolla 2021, 12). The nature of strikes and cross-border targeted killings make them even more impersonal than a more conventional approach. Drones differ from other conventional airpower as well because they "can loiter above a target for hours, waiting for the ideal moment to strike." The ability of drones, unlike counterterror personnel, to hover and patrol an area for extended periods of time before delivering a lethal strike - literally out of the blue - gives civilians more reason to feel alienated, fearful and paranoid. Importantly, Al-Kohlani et al. (2021) and Silverman's (2016) findings both suggest that civilians are not fundamentally opposed to support or counterterrorism efforts from the United States, just the violent kind. Humanitarian or financial aid, or intelligence-sharing, for example, could represent more welcome options for continuing counterterrorism efforts.

Strikes that kill, injure, or otherwise victimize civilians should generate grievances among the population, especially those who are closely or personally affected. Affected civilians could plausibly see several different actors as the cause of their suffering: the terrorists, for

drawing the airstrikes with their violence; the government, for allowing strikes to take innocent lives; or the perpetrator of the strikes (in this and many other cases, the United States). The interviews from Al-Kohlani, Crisanti, and Merolla (2021) suggest that for most Yemenis, strikes directly generate more negative opinions of the US, and could be pushing some civilians to radical views, or from radicals to extremists. Silverman (2016) shows a similar pattern in Pakistan.

The mechanism driving civilians' alienation and radicalization is the attackers' identity in relation to the victims (Lyall, Blair, and Imai 2013). In-group and out-group violence have differing effects; out-group violence from the International Security Assistance Force (ISAF) in Afghanistan quickly generated civilian support for the Taliban, while in-group violence inflicted by the insurgents did not drive support for the ISAF. If the findings from Afghanistan are applicable to Yemen, where a similar foreign force (in this case the United States rather than ISAF) is inflicting harm on civilians as part of the effort to defeat an insurgent group (this time AQAP instead of the Taliban), we should expect to see a similar decline in support for the US correlated with harm against civilians. This asymmetrical effect of violence also means that harm inflicted by AQAP in Yemen should not be a significant influence on civilian attitudes towards the US. Other authors' findings that strikes can drive terrorist violence (Al-Kohlani, Crisanti, and Merolla 2021; Mahmood and Jetter 2019; Saeed and Spagat 2021) provides a compelling reason not to include terrorist violence in our modeling.

The theories supporting this analysis contend that drones create a combination of fear, resentment, and alienation among civilian populations. Since the United States is the perpetrator of all of the counterterror drone strikes in Yemen, these negative feelings are directed towards US counterterror efforts and the US in general. **I hypothesize that Yemeni civilians' opposition**

**to the United States will increase as a result of exposure to counterterror drone strikes that kill civilians.**

## Data and Methodology

To test the hypothesis, I collect data on American counterterror strikes and civilian attitudes during the same timeframe in Yemen and combine the data to examine differences between civilians who were exposed to drone strikes and who were not. The data for strikes is gathered from New America's in-depth report on the war in Yemen, and the analysis encompasses information on ninety-three strikes between 2009 and 2013 (Bergen, Sterman, and Salyk-Virk 2021). For the dependent variable and demographic information, I use survey response data from the Arab Barometer Wave III, conducted in Yemen between November 2 and December 4 of 2013. The attitudes survey data includes 1200 Yemeni citizens aged eighteen or above.

The timing of the United States' strike campaign against AQAP and the Arab Barometer's survey collection makes for a unique research design opportunity. While US counterterrorism strikes peaked in number around 2017, the best available data on attitudes and the last round of surveys before the onset of the Yemeni Civil War comes from 2013. The survey data reflects Yemeni civilians' attitudes after four years of strikes and a prolonged counter-terror interest from the US. It is also collected just before the start of the current Yemeni Civil War, which has seen terrible violence between Houthi rebels (backed primarily by Iran) and the Hadi government-in-exile (supported by a Saudi-led coalition and US-supplied arms). The violence and changing political dynamics of the civil war would likely make it more difficult to isolate the

effect of drone strikes. All this means that the survey response data specifically from 2013 should be best suited to reveal the effects of the US counterterror strike campaign.[1]

Our dependent variable of interest is *belief that armed opposition against the United States is justified* (henceforth *armed opposition*). The Arab Barometer Wave III survey asked individuals "Do you agree or disagree with the following statement: 'The United States' interference in the region justifies armed operations against the United States everywhere.'" Respondents agreed or disagreed on a four-point Likert scale, which I translated to numerical values. In other words, respondents stated whether or not they think the US deserves to be the
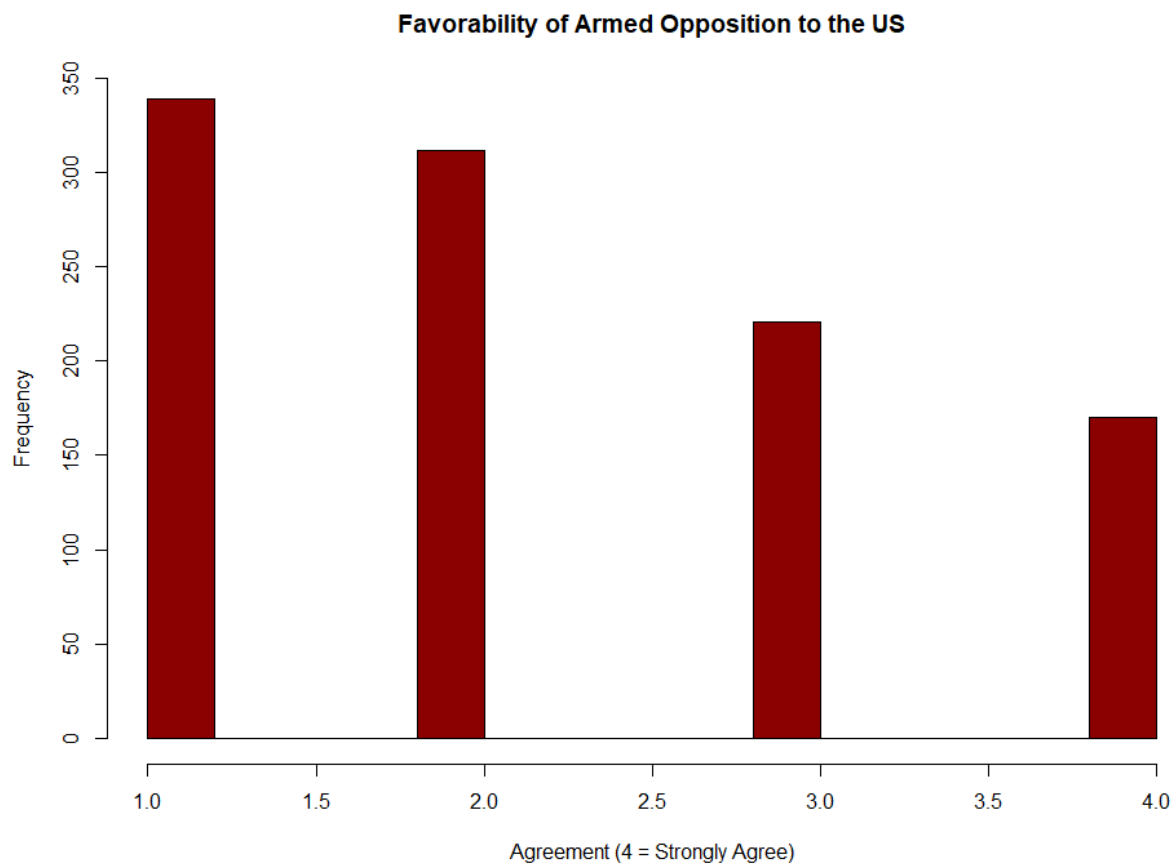
**Favorability of Armed Opposition to the US**



*Figure 1*

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[1] One slight inconvenience is the fact that the last surveys included in the data were conducted December 4, 2013, just eight days before a US drone strike infamously targeted a wedding convoy and killed twelve men.

target of armed attacks because of America's treatment of the Middle East. Respondents most frequently disagreed strongly, but several hundred still agree or strongly agree. *Figure 1* demonstrates these frequencies.

The primary independent variable we use to predict this is civilians killed by US strikes in the respondent's province since 2009 (henceforth referred to as *civilians killed*). This variable was created by matching locations and casualty reports from New America's data on US strikes to the provinces reported by Arab Barometer respondents. Since the number of casualties, especially civilian deaths, reported by the United States and various journalistic or watchdog organizations are often different (with official government figures almost always being lower than NGO estimates), the *civilians killed* variable was created using an average of the available death totals. The analysis includes all of the data since 2009 in an effort to achieve the largest possible sample size.
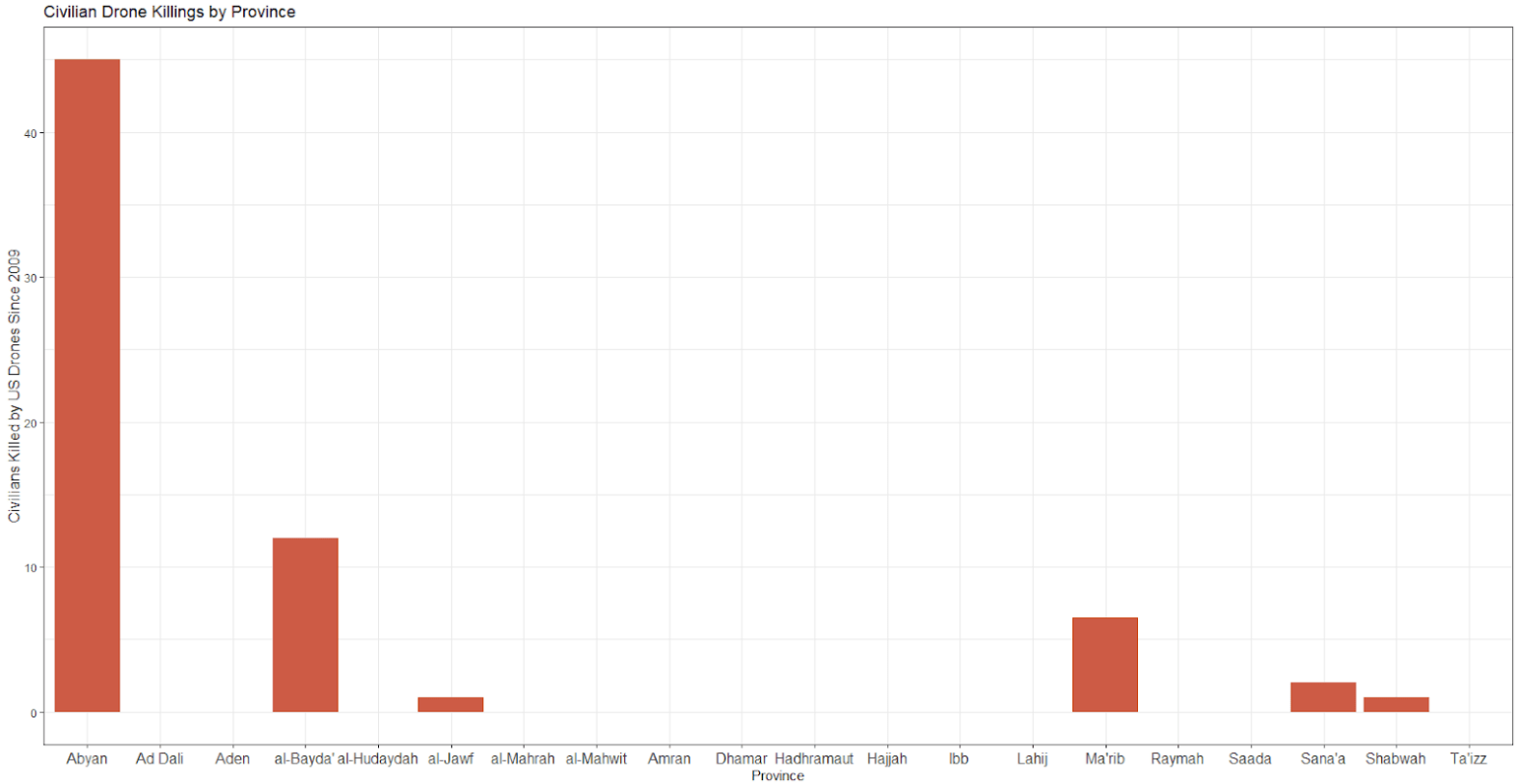
Civilian Drone Killings by Province



*Figure 2*

*Figure 2* shows the frequency of civilian deaths by US strike in each of Yemen's

provinces. Out of these twenty governorates, eighteen were subject to US counterterror strikes

and six experienced civilian deaths as a result of the strikes. Notable on the histogram is Abyan

province, with more than twice the number of civilian deaths as any other province. Abyan is a

province on the southern coast of Yemen that became a primary target for American drones due

to the extended presence of Al Qaeda-associated forces. In March of 2011, militants from AQAP

affiliate Ansar al-Sharia captured the cities of Jaar and Zinjibar and held them for over a year,

drawing the most intense counterterror strike campaign in the country.

For this analysis, I elected to use the number of civilians killed by US strikes as the main

IV, rather than the overall number of strikes, because I am most interested in the effect of the

kind of 'collateral damage' and loss of innocent life that the US counterterror apparatus claims to

avoid at all costs. Strikes that kill civilians should stand out in respondents' memories and elicit a more severe attitudinal response.

*Table 1*

| | Dependent variable: | |
|---|---|---|
| | Favorability of Armed Oppostition to the US | |
| | (1) | (2) |
| Civilians Killed | 0.014*** | |
| | (0.005) | |
| Strike Exposure | | 0.008 |
| | | (0.006) |
| Constant | 2.186*** | 2.193*** |
| | (0.034) | (0.036) |
| Observations | 1,042 | 1,042 |
| $R^2$ | 0.009 | 0.002 |
| Adjusted $R^2$ | 0.008 | 0.001 |
| Residual Std. Error (df = 1040) | 1.066 | 1.070 |
| F Statistic (df = 1; 1040) | 9.527*** | 2.012 |

Note: $^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

As is visible in *Table 1,* simple univariate linear regressions reflect this intuition. While the *strike exposure* variable is not statistically significant, the *civilians killed* variable is both positive and significant ($p<0.01$). The avoidable killing of innocent civilians, as part of a counterterror campaign or not, is bound to generate ill will towards the perpetrators. In the case of Yemen at least, civilian deaths are a more relevant predictor of anti-American sentiment, and so will be the primary independent variable for our models. However, since the *civilians killed* variable is more sparsely distributed and has less data points overall, I check for potentially confounding variables that statistically influence *strike exposure*. Later, I include *strike exposure*

19

as a control variable to determine whether exposure to drone strikes in general or civilian deaths in particular are motivating anti-American sentiment. I discuss the logic behind the control variables further in the following section.

**Control Variables**

There are countless factors influencing individuals' attitudes and survey responses, many of which are hidden from our analysis and potentially confounding the results. In order to capture the effect of strikes on civilian attitudes as accurately as possible given the available data, the modeling includes a few control variables derived from demographic questions in the Arab Barometer. These factors influence both respondents' likelihood of having counterterror drone strikes in their province and their propensity to believe that the US deserves armed opposition.

The first is *education*. This variable is derived from respondent's reported level of education on a nine-point scale, ranging from "Illiterate/No formal education" to "MA and above." There is some reason to believe that higher levels of education are (at least indirectly) related to participation in terrorist groups, and therefore the likelihood that individuals are proximate to a given counter-terror airstrike. Members of Islamist militant organizations are generally highly educated relative to the population they come from (Burke 2016). Especially when extremist operations run the risk of being foiled and threatening a group's security or secrecy, competence and intelligence are valuable characteristics for members of these groups. Education levels may also have an inverse effect, or none at all, on strike exposure. Kruger and Maleckova (2003) investigate individual motivations and characteristics that lead to joining terrorist groups, but they found little to no evidence to suggest a causal or direct connection between education levels and terrorism. Our data shows that *education* is negatively and

significantly correlated with the likelihood of strike exposure (*Table 2*). For the case of Yemen, this trend can be at least partially explained by the location of strikes. Drones are typically used to reach targets in remote regions inaccessible to other security forces, and less commonly target urban areas with higher concentrations of highly educated people. Additionally, higher education levels should increase individuals' informedness about the grievances of extremist groups. In our particular case, *education* is positively and significantly correlated with the view that armed opposition to the US is justified. Learning more about the political and military impact of the United States in Yemen and the rest of the world may encourage negative opinions about America. Education's significance in predicting both our independent and dependent variables of interest makes it necessary to include as a control.

Table 2

|  | *Dependent variable:* | |
|---|---|---|
|  | Strike Exposure | Favorability of Armed Opposition to the US |
|  | (1) | (2) |
| Education | -0.211[**] | 0.071[***] |
|  | (0.099) | (0.019) |
| Constant | 3.024[***] | 2.049[***] |
|  | (0.310) | (0.062) |
| Observations | 886 | 764 |
| $R^2$ | 0.005 | 0.017 |
| Adjusted $R^2$ | 0.004 | 0.016 |
| Residual Std. Error | 5.821 (df = 884) | 1.082 (df = 762) |
| F Statistic | 4.589[**] (df = 1; 884) | 13.538[***] (df = 1; 762) |
| Note: | | $^{*}p<0.1;$ $^{**}p<0.05;$ $^{***}p<0.01$ |

The second important factor we control for is *religiosity*. This variable is derived from respondents' answer to "Do you pray daily?" on a five-point spectrum from "Always" to "Never." Yemen is about 99 percent Muslim (the rest Jewish, Christian, Baha'i, or Hindu), with around two-thirds Sunni and one-third Shia population (US Central Intelligence Agency). In our data, higher levels of *religiosity* are correlated positively and significantly with likelihood of strike exposure and belief that armed opposition to the US is justified (*Table 3*). Considering that AQAP and ASY are Islamic militant groups espousing hardline beliefs based ostensibly in Islam, it is reasonable to find that the targets of counter-terror strikes would be more religious. The United States' prolonged military presence and influence efforts in the Islamic Middle East could explain the slight positive correlation here between *religiosity* and negative views of the US. In any case, *religiosity* is statistically confounding and therefore will be included in our modeling.

*Table 3*

| | Dependent variable: | |
|---|---|---|
| | Strike Exposure (1) | Favorability of Armed Opposition to the US (2) |
| Religiosity | 0.437** | 0.078* |
| | (0.217) | (0.043) |
| Constant | 0.381 | 1.855*** |
| | (1.011) | (0.201) |
| Observations | 1,190 | 1,036 |
| $R^2$ | 0.003 | 0.003 |
| Adjusted $R^2$ | 0.003 | 0.002 |
| Residual Std. Error | 5.609 (df = 1188) | 1.067 (df = 1034) |
| F Statistic | 4.054** (df = 1; 1188) | 3.252* (df = 1; 1034) |
| Note: | | *$p<0.1$; **$p<0.05$; ***$p<0.01$ |

The third control variable for our modeling is *political awareness*, specifically based on respondents' answer to "To what extent do you follow political news in your country?" Answers were given on a four-point scale ranging from "not at all" to "to a great extent." As shown below, this variable has a significant effect on both our dependent and independent variables of interest (*Table 4*). Similar to *education* and *religiosity* levels, individuals who follow political news in Yemen more closely are more likely to believe armed opposition to the US is justified. This is likely due to these individuals' heightened awareness of American military involvement and its human costs in Yemen and elsewhere in the world. Additionally, respondents in our data who follow politics more closely are less likely to be exposed to strikes. Individuals with better information about Yemen's political developments should be more aware of the threat of strikes and might do more to avoid them. Also, urban populations are usually more up to date on political news and happenings, and urban centers are less-commonly targeted by strikes.

Table 4

|  | Dependent variable: | |
|---|---|---|
|  | Strike Exposure | Favorability of Armed Opposition to the US |
|  | (1) | (2) |
| Political Awareness | -0.465$^{**}$ | 0.088$^{*}$ |
|  | (0.203) | (0.049) |
| Constant | 3.267$^{***}$ | 2.009$^{***}$ |
|  | (0.580) | (0.142) |
| Observations | 898 | 800 |
| $R^2$ | 0.006 | 0.004 |
| Adjusted $R^2$ | 0.005 | 0.003 |
| Residual Std. Error | 4.576 (df = 896) | 1.048 (df = 798) |
| F Statistic | 5.258$^{**}$ (df = 1; 896) | 3.230$^{*}$ (df = 1; 798) |
| Note: | | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 |

23

Finally, I include *strike exposure* in general as a control variable. Since the *civilians killed* variable is driven by strikes (no civilians can be killed where there is no strike) there is some potential for issues of multicollinearity when both variables are included, but controlling for overall strikes is the best available way to crystalize the effect of civilian killings relative to overall strikes. It remains possible that our control variables' significance in general and influence on the dependent and independent variables of interest are a result of coincidences in the survey data, but they are statistically impactful and therefore worthy of inclusion in our modeling.

## Main Results

*Table 5*

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | | | _Dependent variable:_ | | | |
| | | | Favorability of Armed Oppostition to the US | | | |
| Civilians Killed | $0.014^{***}$ | $0.017^{***}$ | $0.014^{*}$ | $0.019^{**}$ | $0.019^{**}$ | $0.055^{***}$ |
| | (0.005) | (0.005) | (0.007) | (0.008) | (0.008) | (0.015) |
| Political Awareness | | | $0.090^{*}$ | $0.149^{**}$ | $0.150^{**}$ | $0.140^{**}$ |
| | | | (0.049) | (0.059) | (0.059) | (0.059) |
| Religiosity | | 0.060 | 0.044 | | 0.011 | 0.019 |
| | | (0.050) | (0.052) | | (0.062) | (0.061) |
| Strike Exposure | | | | | | $-0.050^{***}$ |
| | | | | | | (0.018) |
| Education | | $0.071^{***}$ | | $0.069^{***}$ | $0.066^{***}$ | $0.061^{***}$ |
| | | (0.019) | | (0.021) | (0.021) | (0.021) |
| Constant | $2.186^{***}$ | $1.738^{***}$ | $1.777^{***}$ | $1.664^{***}$ | $1.616^{***}$ | $1.671^{***}$ |
| | (0.034) | (0.238) | (0.276) | (0.175) | (0.335) | (0.333) |
| Observations | 1,042 | 759 | 796 | 558 | 555 | 555 |
| $R^2$ | 0.009 | 0.034 | 0.009 | 0.039 | 0.038 | 0.051 |
| Adjusted $R^2$ | 0.008 | 0.030 | 0.006 | 0.034 | 0.031 | 0.043 |
| Residual Std. Error | 1.066 (df = 1040) | 1.072 (df = 755) | 1.045 (df = 792) | 1.051 (df = 554) | 1.049 (df = 550) | 1.043 (df = 549) |
| F Statistic | $9.527^{***}$ (df = 1; 1040) | $8.850^{***}$ (df = 3; 755) | $2.519^{*}$ (df = 3; 792) | $7.547^{***}$ (df = 3; 554) | $5.410^{***}$ (df = 4; 550) | $5.947^{***}$ (df = 5; 549) |

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Here we can examine the results from our linear regressions. *Table 5* shows the outputs for the six models we utilize in our analysis in order; model 1 is represented in the table by (1). First, *Table 5* shows the coefficients from model 1, the earlier univariate regression with no control variables. Here there is a positive and significant, though slight, correlation (0.014) between the number of civilians killed in a respondent's province and individual respondents' favorability toward armed opposition to the US. Of course, this model fails to account for the confounding variables discussed in the section above.

*Table 5* next shows the coefficient outputs from model 2, which includes our first two control variables discussed in the previous section: *religiosity* and *education*. At a first look, model 2 also shows a positive relationship between *civilians killed* and our dependent *armed opposition* variable. The coefficient remains significant and is even slightly more positive (0.017) than the simple regression. Model 2's r-squared value is notably higher than model 1, indicating greater explanatory power after the inclusion of controls. As a control variable, *education* remains a relatively strong and positive predictor (coef. 0.071) of *armed opposition* and helps with the model's overall predictive power. *Religiosity*, on the other hand, loses its significance in model 2.

Now we move onto the outputs for model 3. This time, we control for *religiosity* again but swap the *education* variable for *political awareness*. The coefficient for *civilians killed* is slightly smaller (0.014) and less significant, though still significant at the $p<0.1$ level. Like in model 2, the *religiosity* variable is insignificant with the inclusion of other variables. *Political awareness* is significant, with a correlation of 0.09 ($p<0.1$). While the coefficient and significance for our dependent variable of interest remains fairly constant, the explanatory power of model 3 shrinks compared to model 2. The r-squared value for model 3 (0.009) is no higher

than that from our earliest simple regression model. This suggests that *education* is a major

confounding factor and is vital to include as a control variable.

Next, we examine the results for model 4, this time dropping *religiosity* but including

both *education* and *political awareness* as controls. Here, the *civilians killed* variable has the

highest correlation with *armed opposition* yet (0.019) and is significant at the $p<0.05$ level. Both

of the control variables we include are significant and positively correlated with our dependent

variable. Interestingly, the coefficient for *political awareness* (0.149) is much higher than in

model 3, showing an increase of 65 percent. Model 4, like model 2, also has a much higher

explanatory power than model 3, this time with an r-squared value of 0.039. This is still

somewhat low, but again indicates the importance of including the *education* control variable.

*Table 5* next shows the results from model 5 with the previous three control variables

included. The coefficient (0.019) and significance ($p<0.05$) of our *civilians killed* variable is

consistent with the previous four models and shows robustness when modeled with different

combinations of control variables. The overall explanatory power of this combined model (r-

squared = 0.038) is as high as any of the previous iterations. Including *religiosity* this time has

very little effect on the coefficients or significance of other variables, but its coefficient is

notably smaller (0.011) when combined with the other two controls. *Religiosity* is not significant

at the $p<0.1$ level in any of the multivariate regressions, but still seems relevant as a potential

confounding variable. Model 5 is similar in overall explanatory power to model 4, but also

accounts for any latent effects of religiosity.

Finally, and most interestingly, model 6 includes *strike exposure* as a control variable in

order to distinguish the impact of strikes in general versus the impact of strikes that kill civilians.

*Strike exposure* is significant ($p<0.01$) and, unlike the other controls, has a negative coefficient (-

0.05). Including *strike exposure* also increases the coefficient of our main *civilians killed* variable by more than twofold, to 0.055. The significance of *civilians killed* also increases somewhat, while the significance and magnitude of the other control variables' effects are unchanged in model 6. This model also seems to have the highest (though still admittedly low) overall explanatory power, with an r-squared value of 0.051. Including *strike exposure* as a control seems to make the model more powerful and clarify the importance of civilian deaths specifically in driving favorability of armed opposition to the US.
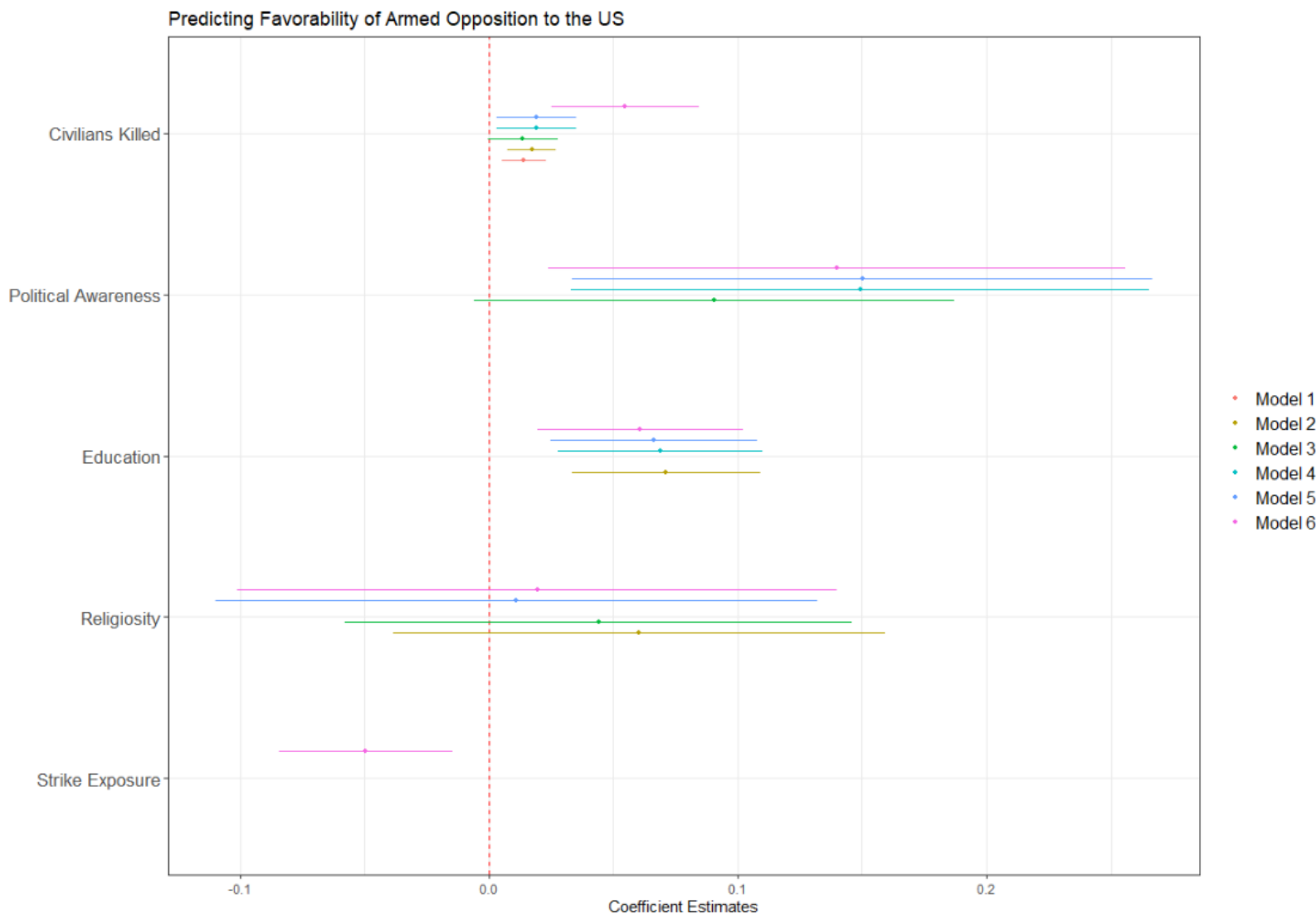


*Figure 3*

The coefficients from all six models are displayed here in the dot-and-whisker plot (*Figure 3*) with 95% confidence intervals. Presented visually, it is easy to see that the number of civilians killed in a respondent's province is consistently a positive predictor of Yemeni civilians' favorability toward armed opposition to the United States. All six models' coefficients for civilians killed are relatively tightly grouped and show small confidence intervals, though for model 6 with overall *strike exposure* included, the effect of *civilians killed* is noticeably more positive. Model 6 is especially relevant for demonstrating that *strike exposure* in general does not seem to motivate anti-American sentiment, but rather has the opposite effect. At the same time, model 6 shows a higher coefficient for *civilians killed*, indicating that strikes which kill civilians specifically motivate individuals to agree with armed opposition to the US. **These results mean that we can reject the null hypothesis and demonstrate that drone strikes which kill civilians significantly increase respondents' negative attitudes toward the US.**

As indicated by the results above, *religiosity* does not have a consistent or significant effect. Education seems to have a steady and positive effect and is robust to changes in the other variables. *Political awareness* seems to have the strongest positive effect on the dependent variable, though the confidence interval is large compared to the other metrics. In model 3, the impact of *political awareness* appears to drop notably, but recall that model 3 does not include *education* and demonstrated little predictive power compared to the other multivariate regressions. Models 4, 5, and 6 show very similar results for all of the variables included (*civilians killed, political awareness,* and *education*), demonstrating the relevance of all three of these variables.

Further visualizing the differing impact of our four main independent variables, *Figure 4* shows an added variables plot for the composite model 5. In these charts, the red line shows the

association between each independent variable and our *armed opposition* variable, while holding the value of all other independent variables constant. *Civilians killed* stands out as the steepest line, indicating a relatively powerful influence on respondents' sentiment towards the US. *Figure 4* does show that some extreme values in the data from provinces where many civilians were killed could be having a concerningly large effect on the results. These data points, however, are necessary to include as they capture the worst and most violent influences on civilians. Both *education* and *political awareness* show a positive slope as well, consistent with the coefficients from model 5. *Religiosity* stands out because of its lack of effect, showcasing a nearly horizontal line. Including *religiosity* should be accounting for some otherwise-confounding influence in the model, but alone it is a weak predictor of Yemeni civilians' attitudes towards the US.
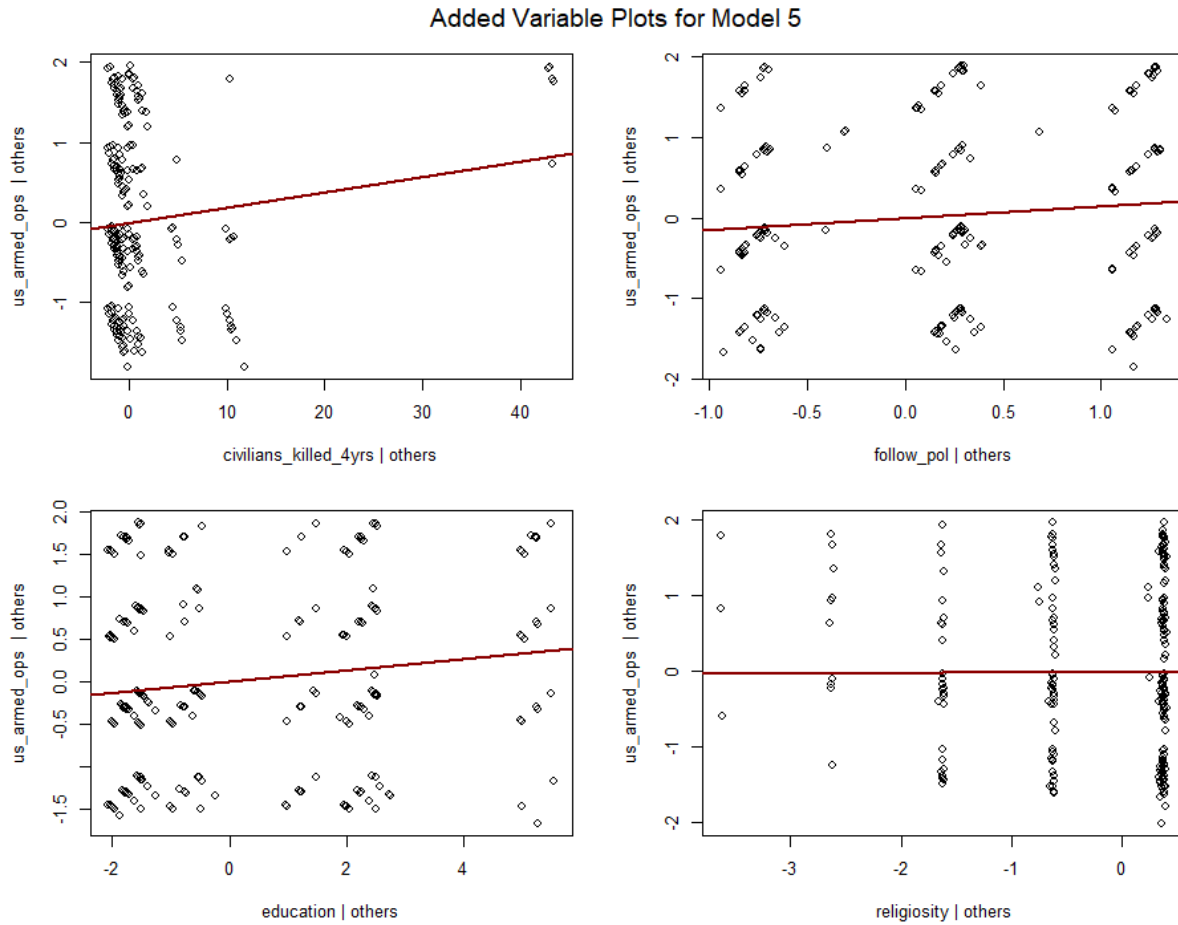
Added Variable Plots for Model 5



*Figure 4*

Overall, our modeling supports our hypothesis and the existing literature that finds negative impacts of drone strikes. Where the death of civilians is the primary driver of anti-American sentiment, the effect increases for individuals who are more well-informed and more educated. This intuitively makes sense and suggests that the more Yemeni civilians are aware of the destructive power of US drone policy, the more severe the blowback effects are.

## Conclusion

The goal of this paper has been to deepen our understanding of the influence that the use of drones has had on civilian attitudes towards America and its counterterrorism policies. The

existing literature and theory on civilian attitudes explain the various ways in which

counterterror efforts can have counterproductive effects, and the original statistical analysis

performed here supports this theory. Ultimately, our findings show that killing Yemeni civilians

with drones has a demonstrably negative impact on other civilians' views of the US.

Counterterror drone strikes in general do not appear to motivate anti-American attitudes, but

increased exposure to strikes *which kill civilians* is positively and significantly correlated with

survey respondents' agreement that the US deserves armed opposition as a result of its

operations in the Middle East.

      This study narrowly examines the effect of US strikes in Yemen between 2009 and 2013,

mainly in order to take advantage of the timing of the Arab Barometer survey and to utilize the

best available data. The theory supporting this paper's findings, however, draws on experiences

and investigations of other countries like Pakistan and Afghanistan. I believe that the findings

here should be externally valid and generalizable to a large degree, especially considering the

fairly widespread international distaste for America's style of drone warfare. This paper seeks to

help fill a gap in knowledge about the true cost of drone strikes and I hope that policymakers and

other researchers will better account for drone strikes' unintended consequences and blowback

effects. While drones appear to be deeply entrenched as an instrument of American CT policy

and each subsequent administration's favorite tool for assassinating enemies of the state, there is

still room to dial back the intensity and reliance on drone strikes for CT. Drone strikes that kill

civilians especially can damage counter-terrorists' relationship with the civilian population. In

Yemen's contest against AQAP for civilians' loyalty, this is a threatening and counterproductive

trend, but there are certainly some plausible policy adjustments and soft-power alternatives.

Thinking back to the findings from Silverman (2016) and subsequently Al-Kohlani, Crisanti, and

Merolla (2021), we can imagine counterterrorism efforts that instead offer humanitarian and financial relief to proactively support local populations, or intelligence-based support that helps local governments fight terrorism without sending American drones to do the work. For the time being, it feels like wishful thinking to suppose the US counterterror apparatus would put down its most lethal tool. There is hope, however, for drone opposers in the new Biden administration. In the spring of 2021, the Biden administration announced new limitations and restrictions on the use of drone strikes outside conventional battlefields and marked a low point in America's use of drones for counterterrorism (Savage and Schmitt 2021). At a minimum, increases in oversight and higher requirements for authorization of strikes should encourage better decision making and lessen the use of drones as a panacea for CT operations overseas. Finding a way to actually ensure that innocent civilians are not targeted or accidentally killed by drones would almost certainly mitigate some of the negative attitudinal effects demonstrated in this research. Improved transparency, though sometimes challenging to balance with security objectives, can also help to keep US officials accountable and ensure more oversight.

This analysis offers a novel contribution to the study of drones and blowback effects but is still extremely limited in scope. Most of all, I hope to see more in-depth and statistical analysis of drone effects and counterterror missions around the world. Using the data from this project alone, I and other researchers could incorporate more layers of analysis, including time variation, additional demographic characteristics and interactions, or more complex techniques for modeling. Another iteration of this study could incorporate Yemeni attitudes from before 2009 and aim to demonstrate a change in responses before and after the onset of the US drone campaign. More detailed, specific, or timely survey data could give new insights into the mechanisms driving anti-American sentiment. Data from other conflicts could reveal more about

how drones differ from conventional military operations or covert task forces. Further case studies could demonstrate the potential for alternative counterterror methods. In any case, the "American way" of conducting drone-first counterterrorism certainly deserves more thorough investigations. This paper is just one of many that will be needed to affect meaningful policy change moving forward.

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