

Wolves in Sheep's Clothing: Assessing the Effect of Gender Norms on the Lethality of Female Suicide Terrorism forthcoming in *International Organization* *

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Abstract

Although a substantial body of research argues that women provide terrorist organizations with important tactical benefits, few studies draw out the implications of this argument or examine whether female recruits affect the outcomes of terrorist operations. Using data on individual suicide attacks from 1985-2015, I show that an attacker's gender influences the lethality of an attack. This effect is conditional upon the gender norms of the state in which the attack occurs, however. The results demonstrate that a female advantage is only more apparent in societies where a woman's role in public life is limited; attacks by female suicide attackers are more deadly in countries where women are largely absent from the workforce, civil society and protest organizations. This article also assesses whether counterterrorists eventually adapt to the use of female suicide terrorists. The results demonstrate that female attack lethality is declining with time, suggesting that security forces eventually adapt to women's participation in terrorism. These findings are consequential because they highlight the effect of persistent gender biases on counterterrorism efforts.

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Introduction

In March 2018, Indraneel Rajah, Singapore’s Senior Minister of State for Law, announced a controversial decision; searches of female terror suspects would no longer be conducted only by other women. When believed to pose an imminent security threat, women suspected of terrorism could now be checked by any police officer on hand, male or female. According to Rajah, this policy reversal was justified given the “well-recorded history of the use of women in terror attacks,” which has been motivated by “a perceived unwillingness on the part of security officers to search women.”¹ To justify her ruling, she cited the spate of recent attacks conducted by Boko Haram as well as the idea that “Al-Qaeda repeatedly exploited a cultural taboo against the searching of women, allowing their female suicide bombers to pass through checkpoints without being searched.”² Further, she acknowledged that such a lackadaisical approach toward potential female terror suspects could prove deadly.

Female suicide terrorism is both a domestic and a transnational issue. For example, such attacks have vexed U.S. forces stationed in Iraq since the start of the Iraq War. According to Davis, more than 800 people were killed by female suicide bombers in Iraq within a decade of the invasion.³ Female suicide attackers have been implicated in more than fifty successful attacks with a number directly targeting U.S. forces.⁴ In one high profile case, a Belgian woman, Muriel Degauque, traveled to Baghdad to attack a U.S. convoy in 2005. Scores of women have committed similar attacks across Iraq. In 2003, three U.S. Marines were killed by female suicide attackers while manning a checkpoint. Five people died in a female-led attack on an American military office in 2005, followed by an attack on a U.S. patrol the next month.⁵

The increasing number of women used against U.S. targets in Iraq could be explained by their relative ease in operating. Um al Harith, a would-be female suicide bomber, underscored this point when she revealed her planned suicide mission against U.S. troops with her husband, remarking that “[t]he guards just stare when a woman walks past, and they never search women. So I would go inside [the base] first wearing a suicide vest. And when they all gathered around me I would blow myself up.”⁶ According to RAND analyst Farhana Ali, “[w]omen are able to

¹“Searches of Women by Male Officers to be Done with Strict Regard to Decency,” *Channel NewsAsia*. March 19, 2018.

²Ibid. Suicide terrorism is a premeditated act of political violence by non-state actors that targets non-combatants in an attempt to influence policy and purposefully results in the death of the attacker.

³Davis 2013.

⁴Data on suicide attacks come from the Chicago Project on Security and Threats’ Suicide Attack Database (CPOST-SAD) unless noted otherwise.

⁵Thomas 2018.

⁶Ivan Watson. “More Women Join Ranks of Suicide Bombers in Iraq.” *NPR*. May 12, 2008.

shroud their weapons underneath their abayas, their Islamic dress...In doing so, they're becoming invisible and it's actually creating an enormous security problem for U.S. and Iraqi forces.”⁷ An official with the Iraqi Ministry of Interior acknowledged this, noting “there’s a security gap, and [female attackers are] exploiting it well.”⁸ The realization of this lapse in security protocols led to the creation of the Daughters of Iraq, a U.S.-led security program training local women to circumvent suicide bombings by female operatives.⁹ Allegations of large numbers of female suicide bombers being deployed during the battle of Mosul in 2017, however, have thrust Iraq’s female suicide bomber problem back into the spotlight, suggesting it may not have ended with the introduction of that program.¹⁰

Female suicide bombing appears to be a growing concern around the world. For example, Warner and Matfess note that between 2011 and 2017, Boko Haram utilized more women as suicide bombers than men.¹¹ Some estimates claim that more than two hundred women have *attempted* suicide bombings in Nigeria alone.¹² Globally, women have killed themselves in 214 suicide attacks across 17 different countries between 1985 and 2015. Although this number represents a mere fraction (10%) of the total number of suicide attacks undertaken during this time, it remains surprising given the ubiquitous idea that women are victims and not perpetrators of violence. Female suicide bombers, however, have been directly responsible for more than 2000 deaths over the last three decades and continue to threaten national security around the globe.¹³ Why have so many terrorist organizations integrated female suicide terrorism into their tactical arsenals and what benefits has this choice provided? In this article, I suggest that a terrorist organization’s use of female operatives in suicide missions is motivated by an expected boon in lethality of such attacks; organizations employ female attackers when they anticipate benefits from doing so. I argue that lax security protocols toward women, which are informed by societal gender stereotypes and norms, facilitate more lethal suicide attacks by female terrorists.

Although some research examines strategic motivations for women’s participation in ter-

⁷Ibid.

⁸Ibid.

⁹Captain Mike Starz. “Soldiers Create ‘Daughters of Iraq’ Program. *US Central Command*. April 23, 2008.

¹⁰See Winter and Margolin (2017), Aymenn Jawad al-Tamimi (2017) and Cottee and Bloom (2017) for a debate about the veracity of claims that ISIS used female suicide bombers during this campaign. Aymenn Jawad al-Tamimi. “ISIS’ Female Suicide Bombers Are No Myth.” *Foreign Affairs*. September 22, 2017. Charlie Winter and Deborah Margolin. 2017. “The Mujahidat Dilemma: Female Combatants and the Islamic State: How the Group Thinks About Women in Combat.” *CTC Sentinel* 10(7):23-29. Simon Cottee and Mia Bloom. “The Myth of the ISIS Female Suicide Bomber” *The Atlantic*, September 8, 2017.

¹¹Warner and Matfess 2017.

¹²Warner and Matfess (2017) suggest that many of these attempted attacks have failed, which, in part, explains why their statistics on female suicide bombings are higher in Nigeria than the global total recorded by CPOST-SAD.

¹³Not only has suicide bombing proliferated in recent years (Horowitz 2015, Pape 2005, Speckhard 2005), women’s participation in this specific type of terrorism has also become more common (Bloom 2011, Cunningham 2003, Davis 2013, Horowitz 2015).

rorism, much scholarship has focused on less deliberate reasons for gendered recruitment. For example, scholars suggest that terrorist organizations have recruited women to fill manpower shortages.¹⁴ As a rationale for their inclusion of women in violent roles, a spiritual leader of Hamas offered that “[w]omen are like the reserve army- when there is a necessity, we use them.”¹⁵ Women are also deployed as suicide bombers because they are viewed as expendable.¹⁶ According to Warner and Matfess, one former member of Boko Haram reasoned that the group prefers female suicide bombers because “using women allows you to save your men.”¹⁷

Several scholars also argue that female suicide terrorists are desirable because women martyrs have symbolic value. Attacks by women generate greater shock and awe than those by men and can be used to garner attention for a group’s cause.¹⁸ Women’s participation has also been used to spur male recruitment.¹⁹ Female sacrifice has been used to both shame and inspire men into participating in violence. A final argument, which is the focus of the present article, suggests that women are recruited for terrorism because they provide organizations with practical benefits, which help terrorist organizations improve their operations and achieve important tactical goals.²⁰

Despite a significant body of work arguing for this female advantage in terrorism, scholars have largely failed to demonstrate that the use of male and female terrorists yields different outcomes, and even those that have, have not done so systematically.²¹ Some case-specific research even appears to negate the idea that female terrorists are advantageous. For example, scholars have argued that in the Palestinian context, female bombers often fail to detonate their bombs,²² while Warner and Matfess reveal that Boko Haram’s female bombers may not contribute much to the group’s lethality since so many of these attacks fail entirely or generate few fatalities.²³ Most importantly, studies have yet to test the theoretical mechanisms that link women to an advantage in terror or the argument’s scope conditions. Specifically, while scholars have put forth the argument that gender stereotypes aid female terrorists, research has not examined whether the gender norms that undergird those tropes affect the lethality of female

¹⁴Dalton and Asal 2011, Schweitzer 2006, Warner and Matfess 2017.

¹⁵Zedalis 2004, 7.

¹⁶Speckhard 2008.

¹⁷Warner and Matfess 2017, 29.

¹⁸Speckhard 2008, Warner and Matfess 2017.

¹⁹Bloom 2005, Cragin and Daly 2009, Dalton and Asal 2011.

²⁰Several studies hypothesize that women, overall, may make superior terrorists (Cook 2005, Cunningham 2003, Dalton and Asal 2011, Davis 2013, Laqueur 2000, O’Rourke 2009, Speckhard 2008, 2009, Von Knop 2007).

²¹See O’Rourke 2009, Campbell 2014 for exceptions.

²²Berko 2016, Schweitzer 2007.

²³Warner and Matfess 2017. Warner, Chapin, and Matfess (2019) reveal, however, that despite high rates of desertion among female Boko Haram suicide attackers, all-female teams of suicide bombers are still more lethal than all-male teams.

suicide terror attacks. This article attempts to overcome these shortcomings in the literature.

First, I offer a straightforward test examining whether female recruits provide tangible benefits to terrorist organizations by focusing on whether female suicide terrorists enhance mission success, defined here as attack lethality. A female advantage should be most apparent in acts of suicide terrorism since this tactic expressly relies on stealth and the ability of terrorists to gain intimate access to targets. I focus on whether female terrorists are able to generate more casualties than their male counterparts, given that most terrorists aim to carry out attacks with maximal destruction.²⁴

Second, while existing literature stops short at examining the differential impact of male and female terrorists, I examine whether female terrorists are expected to be deadlier in all societies or whether this effect is conditional upon a state's gender norms. I argue that security blind spots that facilitate female suicide terrorism are more likely in societies where stereotypes and expectations about female pacifism and apoliticism abound. As intimated by the Singaporean official, strong societal norms influence counterterrorism policies toward women. Using data on individual suicide attacks from 1989-2015, I find that the effect of an attacker's gender is conditional upon the gender norms of the state in which the attack occurs. The results show clearly that a female advantage is only more apparent in societies where a woman's role in public life is limited; attacks by female suicide attackers are more deadly in countries where women are largely absent from the workforce, civil society and protest organizations. In more equal societies, however, there is no significant difference between the lethality of attacks executed by male and female terrorists. Finally, I assess whether counterterrorists eventually adapt to the use of female suicide terrorists. The results demonstrate that female attack lethality is declining with time, which suggests that security forces do eventually adapt to this strategy.

These findings contribute to a vibrant body of literature focusing on the role of women in the execution of violence. Most notably, this is the first study to articulate and test the argument that a female advantage with respect to suicide terrorism is conditional upon a state's gender norms. It also offers support to the existing literature asserting that female suicide terrorists perform differently than male terrorists. Consequently, it draws attention to the importance of examining gendered recruitment strategies to understand terrorist group behavior. More plainly, my research helps explain why women appear to be in high demand for terrorist organizations.

This article also contributes to the work on terrorist organization innovation. Previous studies find that terrorist organizations adopt suicide terrorism intentionally to remedy operational

²⁴Lewis 2007, Pape 2005.

asymmetries between themselves and their enemies.²⁵ This article suggests that some organizations have made further refinements to this innovation by including women as agents and have reaped substantial benefits from doing so. Similarly, this work contributes to the body of literature seeking to explain why some terrorist organizations are more deadly than others²⁶ by showing that the gender of a suicide terrorist has a significant effect on the lethality of a given attack. These findings also have important policy implications. They support Cunningham’s argument that studying female terrorism can enhance our understanding of terrorism more generally, and can help states improve upon their counterterrorism practices.²⁷

Strategic Logic of Female Suicide Attackers

Suicide terrorism is often a strategic response to asymmetries between terrorists and their targets.²⁸ Organizations adopt the tactic to remedy difficulties accessing specific types of enemy targets and to overcome limitations in their own military capabilities.²⁹ Suicide terrorism can offer weak groups leverage and therefore, help them level the playing field with much stronger adversaries.³⁰ Given the low operational cost of suicide attacks and the potential damage such attacks can inflict, suicide terrorism can be a potent tool for terrorists.³¹ Pape argues that contemporary terrorist campaigns often endeavor to achieve their political goals by imposing high costs on their enemies. In this case, death and destruction are the means to terrorists’ ends. Suicide terrorism is particularly suitable for accomplishing these objectives as it produces greater casualties than other types of violent tactics.³² Research finds that suicide terrorism is more lethal and therefore, more effective because it uses human bodies as a “precise guidance system” to increase the reliability and accuracy of attacks against vulnerable targets.³³ Further, Lewis proposes that “suicide bombing works so well [because] it gives the bomber the ability to adjust the exact location and timing of the detonation in real time so as to maximize

²⁵Hafez 2006, Horowitz 2010, Lewis 2007.

²⁶e.g., Alakoc 2017, Asal and Rethemeyer 2008, Horowitz and Potter 2014.

²⁷Cunningham 2003.

²⁸Hafez 2006, Horowitz 2010, Pape 2005.

Although some scholars suggest that the decisions and motivations of individual suicide terrorists may not always be rational (e.g., Caplan 2006, Hafez 2006), others find support for the argument that terrorist organizations are, in fact, driven by strategic considerations. This article seeks to understand the behavior of terrorist organizations, not individual operatives, and assumes that terrorist organizations engage in rational, strategic decision-making.

²⁹The Tamil Tigers, for example, adopted suicide terrorism, in part, as a response to their difficulties attacking hard targets (Horowitz 2010, 39).

³⁰Berman 2011, Hafez 2006.

³¹Horowitz 2010, Lewis 2007.

³²Mroszczyk 2019, Nilsson 2018, Pape 2005.

³³Lewis 2007, 227. Also see Berman 2011.

casualties.”³⁴

Although suicide terrorism is intended to ameliorate terrorists’ operational challenges, the ease of executing suicide attacks is often taken for granted. Securing access to important targets, however, is no simple feat. Heymann argues that a terrorist organization is only effective if it can provide the means for an attacker to gain access to its target.³⁵ Similarly, Pape proffers that “for suicide attackers, gaining access is the only genuinely demanding part of an operation.”³⁶ Unlike more conventional tactics, the success of suicide terrorism relies on a terrorist’s ability to get close to its target. If terrorists are denied access, they are denied the power to hurt their enemies and any resultant leverage that would be gained. Thus, terrorist organizations are often searching for ways to connect operatives to their marks.

Terrorists have instituted creative measures to address the inherent difficulties in launching successful attacks.³⁷ Some groups recruit selectively, choosing to employ more well-trained operatives believing that rigorous training will increase the probability of success.³⁸ Others select more intellectually able recruits for their ability to plan and execute sophisticated attacks.³⁹ Terrorists have also attempted to gain access to targets by deploying operatives that do not fit the typical “terrorist profile.” Some religious suicide terrorists have been known to dress in secular western-style clothing with shaved beards in order to evade detection and avoid scrutiny.⁴⁰ Palestinian terrorists have also attempted to pass as Israeli in order to get closer to enemy targets.⁴¹ Other organizations, such as Boko Haram and ISIS, have recruited grade-school aged children due to the presumed innocence of young children. A subset of groups utilize women to solve the access issue because like children, women are generally considered to be harmless.⁴²

Male terrorists have disguised themselves as women to get closer to targets or evade enemies,⁴³ since women are typically considered guiltless and their clothes can be useful for enshrouding munitions. While security experts search for “...a young man, sweating profusely,

³⁴Lewis 2007, 227.

³⁵Heymann 2002.

³⁶Pape 2003, 357.

³⁷Success is subjective and its definition may vary from organization to organization. However, consistent with existing scholarship (e.g., Lewis 2007, Pape 2005), I assume that suicide terrorists aim to maximize casualties. This assumption may not always hold, as organizations sometimes deploy suicide bombers to carry out targeted assassinations or to garner attention and do not aim to maximize casualties.

³⁸Horowitz 2010.

³⁹Bueno De Mesquita 2005.

⁴⁰Berko 2016, Moghadam 2008.

⁴¹Bueno De Mesquita 2005.

⁴²Brunner 2005, Sjoberg and Gentry 2007.

⁴³Berko 2016, O’Rourke 2009.

looking around furtively, carrying a rucksack or wearing bulky clothing,”⁴⁴ women are often able to pass easily without drawing suspicion.⁴⁵ In 2017, a man killed 14 people while cloaked in a woman’s robe in Iraq.⁴⁶ Before that, in 2015, a man in Chad dressed in a woman’s Burqa and killed 15 people.⁴⁷ For similar reasons, organizations have used women as decoys and shields to escape scrutiny.⁴⁸ Some groups go so far as to employ female recruits to engage in suicide attacks because women often fail to register as terrorists and therefore, are more likely to be granted unfettered access to important targets. Thus, using female operatives can benefit terrorist organizations by solving the “access issue” and can increase the success of attacks.

Utilizing women to perpetrate suicide attacks can be considered an innovation for terrorist organizations.⁴⁹ Organizations make strategic decisions to employ women for violence after weighing both the potential costs and benefits of their inclusion.⁵⁰ While some organizations never employ female terrorists, others diversify their recruitment because doing so affords them substantial advantages. For example, Palestinian terrorist groups began recruiting female suicide bombers in response to difficulties infiltrating Israeli checkpoints and avoiding Israel’s crack-downs during the Second Intifada.⁵¹ Female suicide bombers paid significant dividends for Al-Aqsa Martyrs Brigade, the first Palestinian group to integrate women into suicide operations.⁵² The Palestinian Islamic Jihad (PIJ), which began recruiting women in 2003, reportedly believed it would facilitate the organization’s missions.⁵³ Hamas, which had previously rejected female recruits, also began employing women in 2004 to skirt Israeli security.⁵⁴ The group described this change in their recruitment strategy as a “significant evolution.”⁵⁵ Due to the unique benefits expected to accrue to female operatives, three-quarters of the Kurdistan Workers Party’s (PKK) suicide attackers and two-thirds of the Chechen bombers have been female. A quarter of the Liberation Tigers of Tamil Eelam’s (LTTE) and almost half (45%) of the Syrian Socialist National Party’s (SSNP) suicide attackers have also been women.⁵⁶

Female suicide bombers have been called the “ultimate asymmetric weapon” because of their

⁴⁴Charlotte Edwards. “So How, Exactly, Do We Spot a Suicide Bomber.” *The Telegraph*, July 24, 2005.

⁴⁵Cunningham 2007.

⁴⁶Andrew Griffin. “Suicide Bomber Dressed as Woman Kills 14 in Iraq Refugee Camp.” *Independent*, July 3, 2017.

⁴⁷Madjiasra Nako and Moumine Ngarmbassa. “Suicide Bomber in Burqa Kills 15 people in Chad Capital. *Reuters*, July 11, 2015.

⁴⁸Berko 2016, Cragin and Daly 2009, Klouzal 2008.

⁴⁹Cunningham 2007, Schweitzer 2006.

⁵⁰Thomas and Bond 2015.

⁵¹Gonzalez-Perez 2011, Ness 2005, Schweitzer 2006, Speckhard 2008.

⁵²Forest 2006.

⁵³Gonzalez-Perez 2011, 58.

⁵⁴Brunner 2005, Gonzalez-Perez 2011, Schweitzer 2006.

⁵⁵Zedalis 2004, 7.

⁵⁶O’Rourke 2009.

ability to reach their targets undetected.⁵⁷ Gender stereotypes intimating that women do not engage in violence enable female terrorists to surprise their targets, leaving them defenseless. Female terrorists have been able to break into prisons, cross security checkpoints and carry out assassinations against high-level politicians because of gender stereotypes that typecast women as innocent, nonthreatening and harmless.⁵⁸ Women's success as suicide attackers, therefore, is due to the shortsightedness of their targets.⁵⁹ According to Cunningham, "[o]ne of the most significant advantages held by female terrorists is that their potential is denied, ignored, and diminished and as a result they are almost always unanticipated, underestimated, and highly effective."⁶⁰

Depictions of terrorists as "mad male minor and Muslim," overlook the possibility that terrorists can also be female (or secular or elderly).⁶¹ These ideas are especially problematic when they influence states' counterterrorism policies. For example, if it is believed that women are never terrorists, subjecting them to the same scrutiny as potential suspects is unnecessary. As a result, security protocols tend to be lax when applied to females.⁶² Hamas' first suicide attack with a female operative underscores this point. In 2004, a female suicide bomber, Reem Riyashi, allegedly "tricked soldiers" at an Israeli checkpoint by convincing them she could not pass through a metal detector because of a metal implant.⁶³ While waiting for a female security officer to search her, she was able to slip into the secured building and detonate explosives, killing four people. It is hard to imagine that a male bomber would have been able to circumvent a metal detector so easily, and even more unbelievable that he would have been able to get away from security forces after the first encounter.

Recently, four Nigerian female terrorists were able to kill two people in an attack on a local official. Young girls knocking at a politician's door failed to trigger alarm, even in the area hit hardest by Boko Haram's campaign of terror.⁶⁴ Strong gender stereotypes also explain why two female suicide bombers were able to attack Iraqi soldiers by hiding amongst a group of women and children fleeing Mosul in July 2017.⁶⁵ More precisely, the persistent trope of women as harmless civilians likely enabled the woman to evade suspicion in this case and in the high-profile assassination of Indian Prime Minister Rajiv Gandhi in 1991. In the latter case, a Tamil

⁵⁷Zedalis 2004, 4.

⁵⁸Nacos 2005, Sjoberg and Gentry 2008.

⁵⁹Cunningham 2003.

⁶⁰Cunningham 2007, 123.

⁶¹Brunner 2005, 44.

⁶²Patkin 2004, Speckhard 2008, Victor 2003.

⁶³" Hamas Woman Bomber Kills Israelis. *BBC News*. January 14, 2004.

⁶⁴"Female Teenage Suicide Bombers Kill 2, Wound 16." *Al Jazeera*, March 15, 2017.

⁶⁵"Female Suicide Bombers Kill Iraqi Soldiers in Fight for Mosul." *CBS News*. July 3, 2017.

woman, Thenmozhi Rajaratnam, was able to get close enough to Gandhi to touch his feet and subsequently detonate a bomb, despite security protocols in place. Fifteen people were killed in that attack.

This argument implies that all female terrorists are likely to gain the same benefit from being women. Since women, writ large, are often considered to be pacific, innocent, and non-violent, they are unlikely to be associated with violent political acts.⁶⁶ This benefit of doubt is operative even when women are complicit in violence, and should translate into increased access to targets for female terrorists. If proximity to one's target is necessary to generate fatalities, the lack of attention given to women should result in more deadly attacks when terrorists are female. In particular, since female suicide terrorists are able to get closer to their targets, attacks by female assailants should generate a greater number of fatalities than those executed by males. This argument is consistent with research linking the effectiveness and severity of a suicide attack to an attacker's ability to access its target.⁶⁷ Further because many terrorist organizations began recruiting women to address male terrorist's difficulties accessing targets, women should be expected to hit their marks more often. Conversely, because male terrorists are more likely to be intercepted before they reach their targets, they may be less likely to complete their missions, kill their targets, reach populated areas which would generate massive casualties or detonate their bombs at all. As a result, I hypothesize the following:

H1: *Suicide attacks committed by female terrorists are more lethal than those committed by male terrorists.*

Gender stereotypes are most likely to facilitate terrorist agendas in areas where traditional norms avert suspicion of women's complicity in terrorism.⁶⁸ Although gender stereotypes are present in most societies, ideas about women's pacifism and innocence are likely to be stronger where gender norms are conservative and more specifically, where women participate in activities outside of the home infrequently. According to Baldez, conventional "[g]ender norms tend to define women as political outsiders, as inherently *nonpolitical* or *apolitical* [emphasis in original].⁶⁹ When it is believed that women do not engage in traditional political and social affairs, it is reasonable to assume that they also do not engage in violent political activities, including terrorism. Although there is no direct link between traditional political activity and subversive

⁶⁶Sjoberg and Gentry 2007.

⁶⁷Heymann 2002, Lewis 2007.

⁶⁸Bloom 2005, O'Rourke 2009, Sjoberg and Gentry 2008.

⁶⁹Baldez 2002.

activity, presumptions about what women are likely to do should be informed by what they actually do. If widely accepted convention relegates women to the domestic sphere, security forces and ordinary citizens are less likely to perceive women as politically active or dangerous. This is where benefits are most likely to accrue to female terrorists.

Stereotypical views of women, which are often transmitted through a society's gender norms, can hamper normal procedures that root out potential assailants. Not only do these norms impact security forces' threat perception, they may prevent security operatives from searching, detaining and interrogating women when they are suspected, impeding their ability to suppress terrorist attacks. For example, Gonzalez-Perez suggests that female Tamil bombers were more effective than male bombers because the contrast between the practice of terrorism and traditional gender norms was so stark.⁷⁰

Especially in states where women's modesty is esteemed, security forces are less likely to search women and unlikely to do so rigorously. This facilitates suicide missions by enabling women to obscure explosive belts without fear that they will be detected. Terrorists have also exploited the association between motherhood and innocence by deploying expectant mothers or women pretending to be pregnant in suicide attacks.⁷¹ Pregnancy, feigned or real, allows female terrorists to conceal vests, belts and other equipment needed to carry out attacks. Some scholars suggest that pregnancy may further discourage frisks, providing female terrorists greater cover.⁷² The first female suicide attacker dispatched by the PKK, Zeynep Kinaci, concealed her explosive belt by faking pregnancy to ensure she would pass through security checkpoints with ease.⁷³ Relatedly, female suicide attackers have used their status as mothers to gain access to their targets. In January 2017, two Nigerian female suicide bombers were able to bypass a security checkpoint because they were carrying infants, while two other female terrorists without babies were detained.⁷⁴ The former two were able to generate casualties, while the latter two failed. The decision to leverage the stereotype of "maternal pacifism" was likely intentional.⁷⁵

Societal gender norms allow counterterrorists to overlook women's potential for violence, while incredulity that women can and do engage in violence enables terrorist organizations to succeed. This second argument proffers that female terrorists are only likely to have an edge in places where beliefs about female innocence and victimhood are deeply entrenched and where women are unlikely to be active in public life. In countries with restrictive gender norms, women

⁷⁰Gonzalez-Perez 2011.

⁷¹Brunner 2005, Davis 2017, Speckhard 2005.

⁷²Bloom 2011.

⁷³Cragin and Daly 2009, 66.

⁷⁴"Nigeria: Babies Used in Suicide Bombings, Officials Warn." *BBC News*. January 23, 2017.

⁷⁵See Ruddick (1983) or Conover and Sapiro (1993) for discussions on the link between motherhood and pacifism.

should have an easier time passing through secured checkpoints or blending into crowds, since they will not elicit concern from security forces or ordinary citizens. This should afford them greater access to their targets and produce more destructive terror attacks. Thus, I propose the following hypothesis:

H2: *Suicide attacks committed by female terrorists are more lethal than those committed by male terrorists in societies with more conservative gender norms.*

Although female suicide attackers should provide a net benefit to terrorist organizations, some skepticism exists, even among terrorists. Speaking of female suicide bombers, one Palestinian terrorist exclaimed that, “there is no need for them, there are many men to do the work,”⁷⁶ suggesting perhaps that the contributions of female suicide bombers are not valued as highly as male terrorists.’ Schweitzer’s interviews with male Palestinian terrorists echo a similar sentiment.⁷⁷ Additionally, Berko argues that even if female suicide terrorists are able to infiltrate checkpoints, their missions are more likely to fail because they often hesitate or change their minds.⁷⁸ It is argued that the 2002 Chechen attack on the Dubrovka Theater failed, in part, because the female bombers faltered when it was time to detonate their bombs.⁷⁹ These narratives push against the idea that female suicide bombers provide tactical benefits and suggest instead that female recruits may be liabilities for groups. If so, the inclusion of women will not have a significant impact on the lethality of suicide missions. In the subsequent sections, I address this empirical question.

Research Design

To date, only two other studies have examined the lethality of suicide bombers by gender, yet neither provides a comprehensive test of this question. ? examines the relative lethality of female suicide attackers in Sri Lanka and Chechnya, while O’Rourke focuses on those and three additional cases: Palestine, Lebanon, and Turkey.⁸⁰ Both studies focus only on high-profile cases where women are known to participate in suicide terrorism often. Such a design excludes less sensational cases where women engage in suicide terrorism less frequently and with less

⁷⁶Berko 2016, 9.

⁷⁷Schweitzer 2006.

In the Palestinian case, organizations have also resisted including women in suicide operations because of its potential effect on women’s honor.

⁷⁸Berko 2016.

⁷⁹Speckhard 2008.

⁸⁰O’Rourke 2009, ?.

success, and any countries where female suicide bombers are not utilized. The latter makes a comparison between cases with female operatives and those without them difficult.

I attempt to overcome these difficulties by examining how the gender of the perpetrator(s) affects the lethality of individual suicide attacks in a global sample, including countries where female suicide bombers are prevalent as well as where they are not. I utilize the Chicago Project on Security and Threats, Suicide Attack Database (CPOST-SAD), which records the universe of suicide attacks since 1982, worldwide.⁸¹ The inclusion criteria for suicide incidents in this database are that attacks must be led by a non-state actor, and although no other casualties are required, the attacker must kill themselves. If attackers are killed by someone else (including security forces or another terrorist), the attack is not included. Finally, the CPOST-SAD requires two independent sources to corroborate reports of a potential suicide attack. The present sample includes suicide attacks between 1985 and 2015.⁸² The unit of analysis for this study is the suicide attack.

Dependent Variable

The main dependent variable, *Number Killed*, measures the lethality of a given attack by counting the number of resulting casualties. Lethality is one way to gauge whether female recruits provide benefits to terrorists, since contemporary terrorist organizations often seek to execute maximally destructive attacks. The number of individuals killed in a single suicide attack ranges from 0 to 213.⁸³

These data include only “successful” cases of suicide terrorism, or cases where terrorists actually carry out their mission of committing suicide. That is, the proceeding analysis examines only whether attacks executed by female terrorists result in a greater number of casualties *after* an assailant is able to conduct an attack. These data are unable to reveal, however, if women are as likely as men to launch successful operations in the first place. To make a full assessment of female attackers’ ability to provide terrorists with an advantage, one must also consider how gender influences the success or failure of an attack. I address this question in detail below.

⁸¹Chicago Project on Security and Terrorism 2016.

⁸²The temporal domain of this study begins in 1985, the year that the first incident featuring a female suicide attacker, Sana’a Mehadli, was recorded.

⁸³CPOST-SAD codes the gender of the perpetrators for the 9/11 attacks missing although that information is well-known. As a result, these data are excluded from the present analysis. However, an analysis including these attacks can be found in the appendix. Moreover, excluding these attacks is consistent with other research on the lethality of suicide terrorism (i.e., Nilsson 2018), which considers these cases extreme outliers.

Independent Variable

The main independent variable, *Female Attacker(s)*, is a dichotomous indicator which records the *perceived* gender of the attacker and is coded “1” if the attack includes a terrorist that is believed to be female, “0” if the attack does not include a female terrorist and is coded missing when the gender of the attacker is unknown.⁸⁴ Although the CPOST dataset includes over 5,000 suicide attacks, information on the gender of the attacker is only available for slightly fewer than 2,500 attacks.⁸⁵ This is unsurprising given the difficulty of gathering identifying information on perpetrators of successful suicide attacks. Female attackers were present in 9% (214 of 2439) of the attacks between 1985 and 2015, where the gender of the attacker is noted. Since the data are coded at the level of the attack, *Female Attacker(s)* includes cases where female terrorists participate in team attacks with other terrorists, both male and female. One hundred and ninety-two attacks were committed by female attackers only, while 22 were committed by mixed-gender teams.

Although female terrorists are generally expected to achieve more tactical success merely because they are women, and gender stereotypes suggests that women are usually innocent, there is reason to believe this argument should be qualified. It is probable that female terrorists only benefit in some societies; those where gender stereotypes are particularly strong. To test this argument, I examine the strength of societal gender norms, specifically those regulating women’s participation in public life. Gender norms are important in this context because they set expectations about who terrorists are, and in this case, who they are not.

Given the difficulty of measuring gender norms directly, I employ three proxies. First, I include *Women’s Civil Society Participation* as a proxy for societal expectations about women’s involvement in political violence. This variable comes from V-Dem’s women civil society participation index (*v2x_gencs*), recording the extent to which women are able to form and participate in civil society organizations and express political ideas freely.⁸⁶ V-Dem’s measure ranges from 0-100, where “0” corresponds to low participation while “100” denotes the converse. In these data, however, *Women’s Civil Society Participation* ranges from 0.207 to 0.937, with a mean value of .50. The degree of women’s involvement in civil society should relate to the expectation

⁸⁴This information is available from the CPOST-SAD database.

⁸⁵A difference of means test shows that there is not a statistically significant difference in lethality between the present sample and the sample of attacks where the gender of the perpetrator is unknown. On average, cases without information on gender yield 9 deaths, while cases with information on the gender of the perpetrator(s) yield 9.7 deaths. The results of a t-test suggests there is insufficient evidence to reject the null hypothesis that the sample means are the same at the 0.05 level of significance.

⁸⁶Coppedge, Gerring, Lindberg et al. 2017. The results remain consistent if V-Dem’s measure *v2csgender*, which is restricted to include only women’s participation in civil society organizations, is used as an alternative.

of women’s involvement in political violence. Where women do not participate in civil society, expectations of their involvement in formal organizations, violent or otherwise, should be low. If it is unlikely that women are members of violent organizations, security forces and average citizens will be less apt to suspect them of terrorism and therefore, less likely to guard against their attacks. The lack of defensive preparations should lead to more severe terror attacks when female operatives are involved. In the subsequent analysis, I employ the interaction term, *Female Attacker(s) × Women’s Civil Society Participation*, as a second test of Hypothesis 2.

Next, I include *Female Attacker(s) × Women’s Protest Participation*, which interacts the gender of the attacker with a measure of women’s involvement in nonviolent contentious politics. *Women’s Protest Participation* captures the number of events where women are identified as the primary actors involved in acts of nonviolent resistance using data from Murdie and Peksen.⁸⁷ The measure ranges from 0-4, where the values of “1,” “2” and “3” correspond to the number of actual women’s protest events experienced by a country in a given year, while “4” records four or more such events. The measure is truncated in this way because fewer than 4% of the observations in the dataset experience more than 3 women’s protests in a given year. The results are robust to using the entire range of this variable, however. As with the other measures, women’s participation in protest activities is expected to attenuate the lethality of female suicide attacks. When women’s participation in lower-cost forms of contention (i.e., protest) is atypical, skepticism about their involvement in more costly acts of political dissent (i.e., terrorism) would be warranted. However, as female participation in anti-government demonstrations increases, the notion that women might also engage in violent dissent becomes more probable. If women are known to participate in contentious politics, security forces will be less apt to overlook the potential threat of female terrorists. Acute awareness by counterterrorism operatives should frustrate female terrorist’s attempts at executing deadly attacks.

Finally, I examine female participation in the labor market as a proxy for societal norms. *Women’s Labor Force Participation* records the ratio of female to male labor force participation.⁸⁸ Labor force participation refers to the “proportion of the population ages 15 and older that is economically active” and involved in the production of goods or services that contribute to a country’s economy.⁸⁹ In these data, the ratio ranges from 8.92 to 96.80, where larger

⁸⁷Murdie and Peksen 2015.

The dataset codes as nonviolent protest activities “demonstrations, sit-ins, protest marches, strokes, formal written petition drives, and boycotts” (Murdie and Peksen 2015, 185)

⁸⁸Another benefit of using female labor force participation to measure women’s inclusion in society is that this indicator has far better coverage than similar measures, including those measuring women’s educational attainment.

⁸⁹Gen 2018

The World Bank notes that a society’s cultural norms affect whether women’s work is considered “economic” and

numbers correspond to greater equality in the workforce and smaller numbers suggest a male dominated labor force.

Female labor force participation is a suitable proxy measure for gender norms because women's wholesale absence from the economic sphere is often the result of strong societal beliefs about the inappropriateness of women's roles outside of the domestic realm, and by extension the likelihood of female participation in public life. Several scholars posit a strong relationship between societal gender norms and female labor force participation and find that strong cultural and religious norms attenuate female labor force participation.⁹⁰ Others demonstrate that patriarchal values associated with religion, more broadly, correspond to lower rates of female participation in the formal economy.⁹¹ Relatedly, research suggests that departures from traditional patriarchal norms toward greater gender equality have led to increases in female labor market involvement.⁹²

Moreover, existing research finds a strong association between women's labor force participation and female political participation. From the demand-side, Iversen and Rosenbluth propose that participation in the workforce boosts the prospects for women's political representation by reducing negative stereotypes of women's political acumen; as women occupy greater roles within the labor force, perceptions of women's non-domestic skills improve, lending credibility to their political pursuits. Likewise, Thomas and Wood argue that by taking on active roles in the formal labor market, women encourage liberal beliefs about the propriety of women's roles in public life. Further, they argue that participation in the formal economy equips women with skills that could be put to use by political organizations, making them more attractive recruits. Therefore, recruiters for contentious organizations are likely to have higher assessments about women's value to their causes when they take part in the labor market. This is consistent with research that shows that terrorists screen their recruits for higher abilities and skills.⁹³ Moreover, network ties built through employment constitute a key pathway by which women are funneled into violent organizations.⁹⁴ Turning this argument on its head suggests that when women are absent from the labor force writ large, they are likely to be viewed as less capable

therefore, the extent to which their activities will be accounted for in such measures. This is consistent with what is argued in this article.

⁹⁰Bayanpourtehrani and Sylwester 2013, Clark, Ramsbey, and Adler 1991, Korotayev, Issaev, and Shishkina 2015, Reimers 1985.

⁹¹Bayanpourtehrani and Sylwester 2013, Korotayev, Issaev, and Shishkina 2015.

Protestantism stands out as an anomaly, as it is associated with increased female participation in the labor force. Haller and Hoellinger (1994) argue that engrained in Protestantism is the idea of individualism, which is largely absent from other religions. Even Catholicism is grounded in ideas of familial patriarchy.

⁹²Haller and Hoellinger 1994

⁹³Bueno De Mesquita 2005.

⁹⁴Thomas and Wood 2018.

contributors to political organizations, which will result in fewer incentives and opportunities for their mobilization into violent politics.

Thus, a lack of workforce experience should influence women’s actual recruitment as well as their perceived recruitment into terrorism. Because women are less likely to be politically active when they are absent from the formal economy, expectations about their involvement in violence should be lower when their participation in the labor force is aberrant. If gender norms dictate that women do not participate in the public sphere, female terrorists should be granted the benefit of doubt with regard to their complicity in terrorism more often than their male counterparts. As a result, female terrorists should be able to bypass security measures without suspicion, which enables them to execute more deadly attacks. To test this expectation, I include the interaction term, *Female Attacker(s) × Women’s Labor Force Participation*.

Control Variables

I include several potential confounders. First, it is possible that fatalities are related to the number of attackers, such that attacks executed by a greater number of terrorists are more deadly than those executed by fewer bombers. On the other hand, in the Boko Haram case, team attacks were generally less effective.⁹⁵ The number of attackers ranges from 1 to 7, although most attacks are committed by a single bomber. To temper the influence of outliers, I create a categorical variable, *Multiple Attackers*, coded “1” when there are one or two bombers, “2” when there are three or four attackers, and “3” for attacks executed by five or more attackers.

Although terrorist groups may cooperate, they also compete. Such competition has been found to increase the lethality of terror attacks.⁹⁶ The *Number of Terrorist Groups in Country* uses data from the Global Terrorism Database⁹⁷ to record the number of terrorist organizations active in the target country in the year of the suicide attack to account for potential outbidding. Most countries in the dataset host about 10 terrorist organizations, while some (e.g., Morocco) have as few as one and others (e.g., Pakistan) as many as 40. This measure is important because outbidding constitutes one of the leading explanations for the lethality of terrorism.

Scholars find that terrorism occurs most frequently during civil wars.⁹⁸ Civil wars might be expected to exacerbate terrorism, leading to more severe terrorist attacks. Therefore, I

⁹⁵Warner, Chapin, and Matfess 2019, Warner and Matfess 2017.

⁹⁶Bloom 2005, Conrad and Greene 2015, Horowitz and Potter 2014. Also see Kydd and Walter (2006) for an excellent discussion of the outbidding thesis.

⁹⁷GTD 2018.

This measure is created by counting the number of organizations that were recorded as executing at least one terrorist attack in a given country in a single year in the GTD dataset. This measure excludes any unattributed attacks.

⁹⁸Findley and Young 2012, Fortna 2015, Thomas 2014.

include $\ln(\text{Civil War Battle Deaths})$, which records the best estimate of battle-related casualties that incurred in the context of a civil war in a given year. These data come from Melander, Pettersson, and Themner and range from 0 to 56,468 casualties.⁹⁹ The number of casualties is coded “0”, if the country is not experiencing a civil war. The final measure displays the natural logarithm of battle related deaths.

Following Enders and Sandler, I include measures of the number of deaths, *Number Killed (t-1)*, and the number of injuries, *Number Wounded (t-1)*, a country sustained from suicide attacks in the previous month.¹⁰⁰ To assess whether certain types of weapon delivery systems lead to more severe terrorist attacks, I include a categorical indicator, *Weapon*, which records fourteen different types of weapons used in the suicide attacks in the sample.¹⁰¹ It is important to account for the weapon used in a given attack, because some types of weapon delivery systems may enable terrorists to get closer to their targets (e.g., belt bomb, turban bomb) or attack targets with greater precision, which may lead to greater casualties.

The severity of the attack may also depend on the type of target. In particular, suicide attacks should be more lethal when they are aimed at targets with little security, and less lethal when targets are heavily secured. As a result, I include two dichotomous indicators categorizing whether attacks aimed at either a *Security Target* or a *Political Target*. Both types of attacks may be more difficult to execute relative to those targeting civilians, which is the reference category. Relatedly, assassinations may be selective and therefore, yield few casualties even when successful. Thus, I include a dichotomous variable indicating whether an attack is an assassination attempt.

I include a measure of the importance of religion to ensure that the results actually assess the effect of gender norms on terrorism lethality rather than proxying the effect of religion on terrorism. Although religion bears a strong influence on gender norms, societal norms and stereotypes should have a separate effect on the suicide attack lethality. Therefore, I construct a measure of the centrality of religion to citizens in each country using global polling data from Gallup Analytics.¹⁰² The measure, which records the percentage of respondents that affirm that religion is “important” to their daily lives, ranges from 12-99 in this sample.¹⁰³ Finally, I

⁹⁹Melander, Pettersson, and Themner 2016.

¹⁰⁰Enders and Sandler 2000.

¹⁰¹The coding for *Weapon* can be found in the appendix. The results remain consistent to recoding the weapon variable.

¹⁰²Gal 2017.

¹⁰³Since polls were only conducted since 2006, for earlier observations I utilize data from the World Values Survey (Inglehart, Haerpfer, Moreno et al. 2014), which asks similarly about the importance of religion to respondents’ daily lives, or impute values using the first available data point from Gallup Analytics. I also substitute a variety of alternative measures of religion and no matter how it is operationalized, religion is insignificant in every model.

include cubic polynomials of the time since the first attack by a female assailant in April 1985 to account for potential temporal dependence.

Statistical Model

Since the death toll from a given attack is a count, I use a count model with a negative binomial distribution. Negative binomial models are appropriate when overdispersion or contagion in the data is expected. In other words, the probability of an event (a death) is not independent, but is related to the observation of other deaths. It is likely that casualties in a given attack are related, especially since suicide attackers sometimes intentionally target crowds.

The statistical results that follow are calculated with robust standard errors clustered on the terrorist campaign. Clustering on the campaign is important because suicide attacks are rarely isolated; nearly all attacks in these data occur in the context of a coherent campaign.¹⁰⁴

Statistical Results

[Table 1 About Here]

Table 1 displays the average number of deaths in a given attack by the gender of the attacker(s). Although women are involved in only a fraction of all suicide attacks in this sample, attacks involving female suicide bombers are slightly more lethal than those committed by men. On average, attacks including female terrorists kill about 11 individuals while those with only male terrorists kill about 9 people; This difference of means is significant at the .10 significance level. This table also compares the relative lethality of suicide attacks by gender and target type. The final column provides a test of the hypothesis that the mean lethality of attacks including female assailants is different than the average lethality of attacks committed by only male attackers. Across each type of suicide attack, those perpetrated by female terrorists are more lethal than those executed by men, though none of these differences are significantly differentiable.

Table 2 displays the results of negative binomial regressions examining the effect of an attacker's gender on the lethality of suicide terror attacks. The results are displayed below with year polynomials omitted from the table for brevity. The first hypothesis, which asserts that female suicide bombers are more lethal on average, does not appear to garner statistical

¹⁰⁴About 99% of the attacks in this sample fall within a campaign. The analyses that follow include only attacks that occur in the context of an organized campaign. The results remain consistent, however, if the 29 observations that are not attributed to any campaign are included.

support. In particular, Model 1 shows that there is no statistical relationship between female suicide attackers and the lethality of an attack.

[Table 2 About Here]

The results show, however, that the effect of a terrorist's gender on attack lethality is conditional on the gender norms of the state in which the attack occurs. Models 2, 3 and 4 offer support for the second hypothesis, which suggests that female attackers will be most lethal in societies with more restrictive gender norms because women are unlikely to be suspected of participating in political violence when norms generally proscribe female participation in public life. The lack of suspicion allows female terrorists unhampered access to their targets, which enables them to carry out more deadly attacks. Therefore, a negative relationship between the various indicators of women's participation in social and political life and the lethality of a suicide terror attack is expected when the attacker is a female. Model 2 examines the interaction between female attackers and women's participation in civil society, Model 3 examines the interaction between female attackers and women's protest participation, while Model 4 in Table 2 examines the interaction between the gender of the attacker and female labor force participation.

Since these are non-linear models, the effect of the interaction cannot be interpreted by examining the significance of the coefficient estimates. It is possible that these covariates will only be significant over a range of values, which is consistent with the expectations set forth in Hypotheses 2. To examine this, I plot the first differences over the range of the values of female civil society participation, female participation in anti-state protests and female labor force participation.¹⁰⁵ Figures 1, 2 and 3 show the discrete change in the expected number of deaths when moving from using only male attackers to integrating female attackers into a given attack. All three offer support for the second hypothesis.

Figure 1 demonstrates that female attackers tend to be most lethal when women rarely participate in the formal economy. As female participation in civil society increases, female attackers' edge dulls until no significant effect remains. As women's participation in formal organizations and associations increases, the expected benefit of female terrorist operatives declines until there is no discernible difference between the lethality of male and female-led attacks. Suicide attacks are expected to kill nearly 5 more individuals when that strike is executed by a woman and when women's participation in civil society is at its lowest value (0.206). At a civil society participation value of 0.3, female suicide bombers are expected to

¹⁰⁵These effects are garnered by calculating the first difference of *Female Attacker(s)*, using the observed values in the dataset. Holding the other covariates at their means does not alter the substantive interpretation of the results.

kill about 4 more individuals than male suicide bombers, while female attackers are expected to log an additional 3.5 deaths when the index reaches a value of 0.4. At the middle range of the scale, suicide attacks executed by female terrorists are expected to kill 3 (2.8) more people than those committed by male bombers. At higher rates of civil society participation, however, the gender of the perpetrator has no significant effect on the expected number of fatalities from a suicide attack, though the direction is negative. Overall, the results offer support for the argument that more restrictive norms benefit terrorist organizations by enabling female suicide bombers to surprise unsuspecting security forces and execute more lethal terror attacks. As women become more integrated into civil society, tactical benefits of gender appear to wane until they are negligible.

[Figure 1 About Here]

Figure 2 shows a similar trend with respect to women's protest activities. In particular, the substantive results show that fewer instances of women's participation in overt contentious political events are associated with more lethal attacks by female assailants. For instance, when a state experiences no nonviolent anti-state protests prominently featuring women, acts of suicide terrorism are expected to yield 9 additional fatalities when they are perpetrated by women. When there is one women's anti-state protest event, the sample mean, the number of additional deaths expected from the use of a female terrorist declines to 4. When a state experiences a relatively high number of women's anti-government protests, that is 4 or more events in a given year, female suicide terrorists are expected to be less lethal than male attackers; when women's participation in organized dissent is routine, and therefore expected, female suicide attackers are expected to kill nearly three *fewer* individuals than men. These results hint most closely at the theoretical mechanism. That is, the results demonstrate that female suicide attackers are deadlier when women infrequently mobilize for and participate in contentious politics. As women begin to participate more frequently in acts of anti-state dissent, the lethality of female suicide bombers decreases significantly.

[Figure 2 About Here]

According to Figure 3, women's labor force is significant only at lower ranges of the scale. For instance, when women's participation in the labor force is about one-tenth of that of men, changing the attack composition from an all male team to one with at least one female attacker increases the expected number of casualties by 5. When five times as many men work as do women (20), the increase in expected deaths is only 4.5. When the female workforce is a third

of the male workforce, an increase of only 3.8 deaths is expected from the use of female suicide attackers. When half as many women work as men, the first difference decreases to 3. Beyond this range of labor force participation, there is no statistically discernible difference between attacks that include only men and those that include women.¹⁰⁶

[Figure 3 About Here]

Interestingly, only four other covariates are statistically significant in any model. Attacks including a greater number of terrorist operatives tend to register higher fatalities. The weapon used also seems to influence the lethality of the attack. Finally, attacks aimed at security targets are significantly less lethal than those targeting civilians, while in half of the models, political attacks are found to be less deadly than those targeting civilians. Neither civil war casualties, the number of deaths and injuries resulting from suicide terrorism in the prior month, the degree of domestic competition among terrorist groups, nor a country's religiosity have a statistically significant effect on the lethality of suicide attacks.

Robustness Checks

The accompanying appendix includes a number of additional tests that examine the robustness of these results to changes in variable coding, sample composition, model specification and statistical model choice. For example, the appendix displays results using time-fixed effects in lieu of time polynomials, excluding outlier observations, and employing a number of strategies for addressing endogeneity concerns. The main results are unaffected by these changes. In addition, there is a potential concern that, even if female suicide bombers cause a greater number of fatalities when they set off their explosives, they may fail to carry out their missions at a higher rate. If so, the overall conclusion about their increased effectiveness would have to be tempered. Below, I explore this idea and demonstrate that this is not the case.

As noted above, the suicide attack lethality data developed by the Chicago Project on Security and Threats (CPOST) includes only incidents where the attacker succumbed to injuries sustained during their attack; they exclude cases where terrorists are apprehended or willingly surrender before their plans are executed fully. This presents a problem when attempting to assess the lethality of suicide terrorism since these data cannot tell us whether women are as likely to follow through with detonating their explosives as male terrorists. This is important,

¹⁰⁶All figures examining the substantive effects of the models are displayed with 90% confidence bands. However, a substantial range of the data are significant at the 95% confidence level as well. See Section 7.2 of the appendix for information on the distribution of the independent variables.

however, because despite the existence of scholarship arguing that women are more resolved, steadfast and goal-oriented,¹⁰⁷ some researchers suggest that women are actually more likely to second-guess killing civilians and therefore, abandon their missions more often.¹⁰⁸ Since the CPOST data record only what ensues after an attacker decides to go through with their mission, they cannot speak to the rate at which female and male bombers decide to abandon their missions or are intercepted. Even if their missions register higher fatality counts when completed, should women be considered assets to terrorist organizations if they exhibit higher rates of interception or desertion than their male counterparts?

To assess whether female operatives produce more lethal terror attacks fully, the impact of gender on an agent's willingness and ability to carry out an attack successfully should be addressed. I consider this question in two ways. First, I determine whether female attackers are more likely to perpetrate unsuccessful terror attacks with data from the Global Terrorism Database.¹⁰⁹ I cull all suicide attacks occurring between 1985 and 2015 that generated no casualties (dead or wounded), including the attacker. Crucially, the GTD database does not impose the restriction that the attacker must die to be included in the dataset, addressing a key short coming of the CPOST data; it retains all cases where the perpetrator deserts or is captured in the process of executing an attack. These coding rules yield 177 "failed" suicide terror attacks, which constitute about 4% of the suicide attacks coded in the GTD during that time frame. Next, I code the gender of the perpetrator(s) of these attacks to determine how a terrorist's gender impacts whether an attack fails. The gender of the attacker can be discerned in 134 (76%) of these cases.¹¹⁰

Thirteen failed attacks were perpetrated by female terrorists, while 121 are executed by male attackers. Thus, female attackers are responsible for 10% of the failed attacks coded in the GTD, whereas 90% of failed attacks can be attributed to men. When contextualized by extant research, these trends suggest that women *are not* overrepresented in the failure category. For instance, Pape reports that 15% of suicide bombers between 1980 and 2003 were women, while Schweitzer implicates women in 15% of all suicide attempts between 1985 and 2006.¹¹¹ Based on these estimates, women might be expected to execute about 15% of the failed attacks as well.¹¹²

¹⁰⁷Dolnik 2004, 847.

¹⁰⁸Berko 2016, Speckhard 2008.

¹⁰⁹GTD 2018.

¹¹⁰Detailed coding rules can be found in the appendix.

¹¹¹Pape 2005, Schweitzer 2006. Schweitzer's data includes the number of executed attacks as well as those intercepted before completion.

¹¹²Women's participation may be higher in this sample given the increasing prevalence of female terrorism over time.

The GTD data suggest, however, that women are slightly *underrepresented* in the sample of failed attacks when considering their overall rate of participation.¹¹³ Moreover, O'Rourke finds that across the conflicts in her sample, women perpetrated 11% of failed attacks, while the remaining 89% of failures could be attributed to men, which provides a consistent view as the GTD data. Warner, Chapin, and Matfess further rebut the idea that women are more likely to launch failing attacks than their male counterparts. Even though Boko Haram's suicide attacks generally have a high rate of failure, they find that the organization's all-female suicide attack teams fail less frequently than all-male teams; not only are groups of female suicide attackers more likely to detonate their bombs, they are also less likely to execute attacks that kill only themselves than all-male operations.¹¹⁴

These descriptive statistics suggest that female perpetrated suicide attacks fall within the failure category less frequently than attacks by male terrorists. I conduct a more systematic analysis to assess whether the CPOST data also support this contention using a zero-inflated negative binomial model. This two-stage model is useful in cases where two different processes are believed to generate zero and non-zero counts. The zero-inflated model is useful for assessing whether some factor systematically inclines a subset of cases to never yield positive death counts. In this particular case, if women are consistently more likely to detonate away from crowds or to attempt to sabotage their missions, attacks with female bombers would be expected to generate zero counts more often than male bombers. The zero-inflated model can determine this by first modeling the likelihood of an attack registering zero fatalities using a logistic regression (inflation equation). After accounting for what makes a case likely to experience a zero count, it estimates the number of fatalities with a negative binomial count model.

Using the dataset described above, the inflation equation of the zero-inflated negative binomial indicates that operations executed by female perpetrators are significantly *less* likely to end up in the definite zero's category. Therefore, women are more likely to perpetrate attacks that receive positive, non-zero death counts and are thus, less likely to contribute to failing operations that only harm the attacker. After accounting for the likelihood of a non-fatal terror attack, the count model delivers results consistent with the primary results reported earlier.

¹¹³Women are perpetrators in 9% of all suicide attacks that are recoded in the CPOST data between 1985 and 2015. If the CPOST data are more representative of women's involvement in suicide terrorism, it can be gathered that women participate in failed attacks at similar rates as they participate in successful attacks.

¹¹⁴Warner, Chapin, and Matfess 2019.

Do Security Forces Ever Learn?

The argument and analysis in the previous sections suggests that gender norms have a strong effect on the lethality of attacks perpetrated by female suicide terrorists. The results show that female suicide terrorists are more lethal in countries where gender norms restrict women from participating in public life, namely the workforce and political organizations. These gender norms generate tropes that women are neither politically active nor violent, which enables counterterrorists to overlook the potential harm female terrorists might cause. It is critical to note that although gender norms appear to be the primary culprit, the fault mainly lies with security forces that allow such norms and stereotypes to affect their own policies and behaviors. Efforts against this type of terrorism are likely to be ineffective as long as gender norms remain unchanged or until law enforcement becomes impervious to them. This begs the question of whether the effect of such norms and stereotypes persist over time. In other words, do security forces ever learn and adapt to female suicide terrorism?

Researchers find that practitioners of counterterrorism modify their practices based on prior experiences with terrorist organizations.¹¹⁵ While terrorists adapt to the constraints they face, security forces also learn and attempt to disrupt terrorists' innovations. Therefore, learning should be expected to occur with respect to female suicide terrorists as well. As female suicide attackers engage in more attacks, beliefs that women do not perpetrate acts of terrorism should begin to erode and security forces should start to scrutinize women as well. Thus, there is the potential for diminishing returns to female suicide terrorism.

Such learning appears to have occurred in at least three cases where suicide attacks by female operatives were prevalent. In both the Palestinian territories and Russia, there is growing awareness that women participate in terrorism.¹¹⁶ In Russia, the public has become nearly "obsessed" with the idea of female suicide bombers, such that suicide bombing itself has become a phenomenon most associated with women.¹¹⁷ Israeli security forces have also adapted their policies in the Palestinian territories and are now intentional about subjecting men and women to similar security measures.¹¹⁸ The Nigerian case is also instructive. Warner and Matfess suggest that due to the increase in female suicide bombings over time in Nigeria, several measures have been implemented to prevent female suicide terrorism, even if unsuccessful.¹¹⁹ Curfews have been instituted to limit women's movements, while bus drivers have resisted female passengers

¹¹⁵Kenney 2007, Marcus 2015

¹¹⁶Berko 2016, Berko and Erez 2007, Bloom 2011, Victor 2003.

¹¹⁷Andrew Kramer. "Russia's Fear of Female Bomber is Revived." *The New York Times*, March 29, 2010.

¹¹⁸Victor 2003.

¹¹⁹Warner and Matfess 2017

all together, recognizing that women now fit the suicide terrorist profile. Maiduguri, a frequent target of Boko Haram attacks, has reportedly also held a public awareness campaign designed to educate the community on how to spot potential female terrorists.¹²⁰ Now, Nigerians are hyperaware and generally concerned about women's presence in crowded places including at security checkpoints and schools.¹²¹ Moreover, security forces are also painfully aware that women do participate in suicide attacks frequently, and their efforts are unlikely to be encumbered by societal gender norms that suggest the contrary.

These anecdotes suggest that the benefit of women's participation in suicide bombings should decline with time. A square term for the number of years since a country experienced its first female suicide bombing is added to the first model in Table 2 to test this expectation.¹²² These results are displayed in Figure 4. Although female suicide bombers should be shocking at first, the belief that women do not participate in these types of activities should eventually wane as they become more routine. As expected, the predicted probabilities show that terrorist attacks executed by female suicide bombers yield fewer fatalities over time. Surprisingly, the decline is not swift. Instead, the data seem to show that a drop in lethality is not expected until more than a decade after female suicide attackers are first introduced into a country, which seems to hint at a relatively slow learning process for counterterrorists.¹²³

[Figure 4 About Here]

Discussion and Conclusion

This article assesses the question of whether female suicide bombers are as lethal as male bombers. The results show that the female advantage in suicide terrorism appears to be strongest in countries with very restrictive gender norms and practices, while female suicide terrorists do not appear to have an edge in countries with more egalitarian conventions. In particular, the results demonstrate that female suicide terrorists are most lethal in societies where women's participation in the political and economic realms are limited. Stereotypes that women are pacific and apolitical are likely to be strongest in these circumstances and are therefore, most

¹²⁰Robyn Kriel, "Boko Haram Favors Women, Children as Suicide Bombers, Study Reveals." *CNN*, August 11, 2017. Accessed at <https://www.cnn.com/2017/08/10/africa/boko-haram-women-children-suicide-bombers/index.html>.

¹²¹Dionne Searcey. "Boko Haram Strapped Suicide Bombs to Them. Somehow These Teenage Girls Survived." *The New York Times*." October 25, 2017.

¹²²The full table can be found in Section 10 of the appendix.

¹²³After controlling for prior exposure to female suicide bombers, the coefficient for female attacker is positive and statistically significant suggesting that on average, suicide attacks with female perpetrators tend to be more lethal.

likely to affect the threat perception of both civilians and authorities alike. Importantly, the findings emphasize that one cannot understand how an attacker's perceived gender influences the severity of terror attacks without also considering the context in which those attacks occur. Finally, the article demonstrates that such norms do not appear to have a consistent impact across time. Instead, the leverage that female suicide bombers have over male attackers appears to abate as the novelty of female suicide terrorism wanes. This suggests that at some point, security forces begin to rely on experience rather than tropes to inform their counterterrorism practices. To date, no study has examined the effect of gender norms on female suicide terrorism lethality or the time horizon for this dynamic.

This research has practical importance. Gender stereotypes suggesting that women are peaceful, nonviolent and innocent are prevalent in most states. In extreme cases, these ideas can prevent states from formulating inclusive counterterrorism policies, which can exacerbate insecurity. Existing research suggests that gender biases appear to influence the counterterrorism policies of more than a few select states. Sjoberg and Gentry, for example, highlight the ways that these biases have already affected American security policy.¹²⁴ Relatedly, Stern proffers that the terrorist profile used by the US Department of Homeland Security has only applied to men, which means that even highly capable counterterrorists can have blindspots relating to women and violence.¹²⁵ In other words, because most societies remain convinced that women are not dangerous, they may not go far enough to counter the threats that some women can pose. This article highlights the need for states to reevaluate their counterterrorism policies.

Some officials have already begun to do so. French officials, for example, are beginning to recognize that the droves of women who left Europe for ISIS' territories may pose significant threats to security when they return. As a result, women returning from Syria will now face increased scrutiny from law enforcement in France.¹²⁶ Also, by expanding the conditions under which security operatives are able to conduct searches on women, Singapore has also made a significant alteration to their counterterrorism practice, as previously discussed. Finally, in March 2019, American legislators introduced a bipartisan bill aimed at recognizing women's diverse contributions to both violent extremism and peace-building efforts. In particular, the "Women and Countering Violent Extremism Act" acknowledged that, "[a]s perpetrators of violent extremism and terrorism, women adopt all roles, including as informants, facilitators,

¹²⁴Sjoberg and Gentry 2008

¹²⁵Jessica Stern. "When Bombers Are Women." *The Washington Post*. December 18, 2003.

¹²⁶It is important to note the possibility that repressive tactics by law enforcement are likely to exacerbate women's interest in participating in political violence and terrorism.
"Women back from Syria 'a danger': French Prosecutor." *Al-Monitor*. September 2, 2016. Jack Moore. "Female Jihadis Give ISIS New Avenues For Attacks" *Newsweek*. October 31, 2016.

recruiters, and suicide bombers.” Furthermore, the proposed legislation concedes that current U.S. counterterrorism policy “perpetuates blind spots, such as failing to recognize women’s agency as potential mitigators and perpetrators of violence” and suggests several avenues by which to alleviate this shortcoming.¹²⁷ Similar to the policies proposed in both Singapore and France, the American act was inspired by female participation in violent campaigns in the Middle East and Africa. These developments suggest that learning is transnational; counterterrorism experts not only learn from events on their own soil, but also from those around the world. Future research may examine how increases in female suicide terrorism influence the spatial diffusion of counterterrorism innovations.

This research also lends some support to the contention that the use of female suicide terrorists is an innovation in suicide terrorism and confirms the oft-cited argument that women can provide terrorists with tactical benefits. Moreover, the results demonstrate the value of those tactical benefits; female recruits can enhance the lethality of terrorist attacks. While terrorist recruitment strategies are likely to be motivated by a diverse set of factors, the findings in this article indicate that the tactical benefits that female operatives provide may undergird organizations’ decisions to recruit women for suicide missions. Given the focus on suicide terrorism in this article, I am unable to rule out the fact that female recruitment for other types of terrorism may be triggered by different considerations, however. As a result, a lucrative avenue for subsequent research would be to consider the effect of women on other forms of terrorism.

Female terrorists appear to have a clear advantage with regard to suicide terrorism because of their ability to alleviate the “access problem” that plagues many terrorist organizations, yet there are other ways women can benefit terrorist organizations. First, women could offer terrorists access to targets even in non-suicide attacks, which could potentially help in ambushes. The 2017 confrontation between al-Qaeda in the Arabian Peninsula (AQAP) and the U.S. Navy SEAL team in Yemen highlights this possibility. News coverage has suggested that American troops were “surprised” by female combatants they encountered during the assault, especially in light of AQAP’s “history of hiding women and children within militant operating areas.”¹²⁸ Additionally, case research has confirmed that women have been able to capitalize on the benefit of doubt they are afforded to successfully complete reconnaissance missions as well as couriering and smuggling assignments. Excelling in these tasks suggests that female recruits can also have a non-lethal advantage, which may impact on terrorist groups’ ability to accomplish their broad

¹²⁷ “Women and Countering Violent Extremism Act,” H.R. 1653,116 Congress (2019-2010). Interestingly, the legislators tapped women’s empowerment as a key to dissuade women from working on behalf of terrorist organizations.

¹²⁸ Ryan Browne. “Inside the Yemen Raid: Women al Qaeda Fighters surprised US Forces.” *CNN*. February 1, 2017.

goals and objectives. Therefore, future work may examine how terrorist organizations with gender diversity fare in the long term, compared to groups with only male operatives.

This project contributes to research on gender and terrorism by drawing attention to the relationship between demand-side dynamics and the recruitment of female suicide terrorists. Most existing scholarship on the subject has focused on the supply-side, seeking to explain the specific circumstances that propel women toward suicide terrorism. While this body of work has taught us a great deal about the motivations of female terrorists, the focus on the supply-side has not contributed much to our understanding of women's impact on terrorist organizations, or the consequences of women's decisions to join at the organization level. Although individual-level motivations are unlikely to explain a lot about the benefits of female participation and the related decision for terrorist groups to recruit women, some supply-side dynamics can complicate the analysis of women's impact on suicide terrorism. Specifically, whether a particular female operative is recruited forcefully or voluntarily, may help explain the success of a given mission.

Although Warner and Matfess argue that "the unexpected bomber phase," where "Boko Haram recognized the strategic utility of using new demographics of women and children as bombers" resulted in "its most lethal and injurious period," they also assert that Boko Haram's female suicide attackers have not been more lethal than their male bombers, writ large, which might relate to their different recruitment paths.¹²⁹ Since many of the girls used by Boko Haram have been kidnapped and forced into perpetrating suicide attacks, it is unsurprising that conscripted women would lack the motivation to follow-through with assignments or that they would attempt to botch missions more often than those that are willfully recruited.¹³⁰ Both should have a negative effect on mission lethality. Two of Boko Haram's would-be female bombers offered reasons for the failure of their attacks, claiming "I didn't want a situation where I'm the reason anyone dies," and "I can't kill people, especially innocent people."¹³¹ Another girl resolved to blow herself up in seclusion, while others surrendered to Nigerian forces after revealing that they were forced into carrying out suicide attacks. These anecdotes suggest that since press-ganged girls appear less inclined to follow-through with their attacks, the operations they are tasked with should be less lethal.¹³² Future research should take a closer look at whether

¹²⁹Warner and Matfess 2017, 4

¹³⁰Warner, Chapin, and Matfess 2019.

¹³¹Searcey, "Boko Haram Strapped Suicide Bombs to Them."

¹³²It is important to note that Boko Haram only began using women for suicide attacks in 2014. Thus, the temporal domain of this study may not allow for a full assessment of the impact of including women in Boko Haram's suicide attack campaign. However, examining data on Boko Haram's suicide campaign from November 2014 to December 2015 still reveals a lethality bump for female suicide attacks similar to that depicted in Figure 4. This figure can be found in the appendix.

the mode of recruitment affects the success and lethality of suicide terror attacks. However, to do so would require more data than is currently available.

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Figures

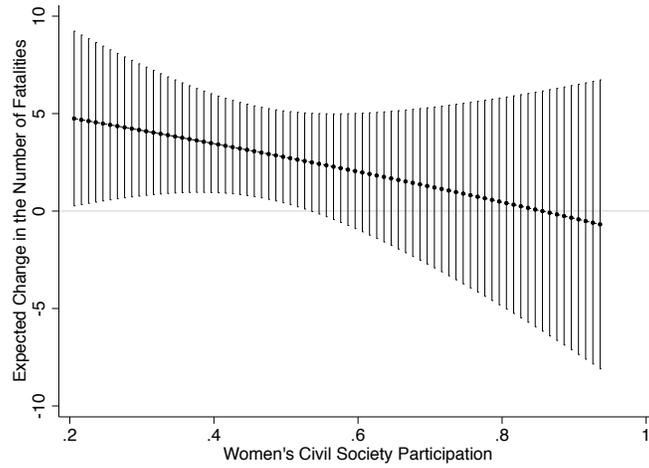


Figure 1: Expected Change in Lethality of Terror Attack by Gender, Across Female Civil Society Participation

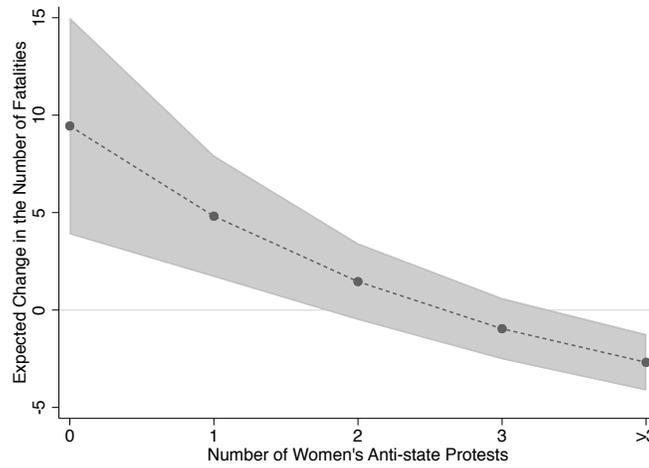


Figure 2: Expected Change in Lethality of Terror Attack by Gender, Across Female Participation in Anti-State Protests

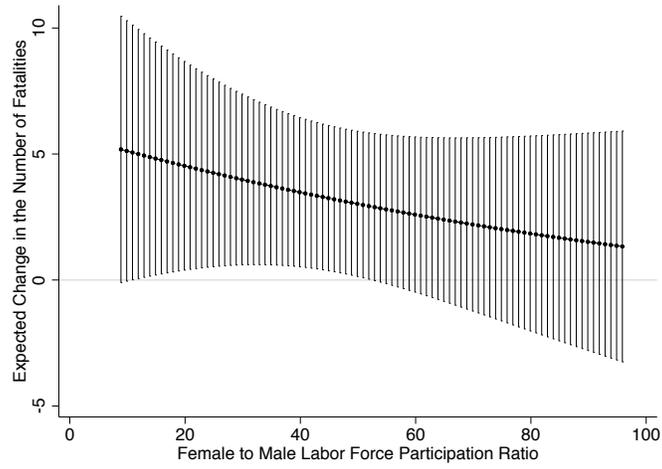


Figure 3: Expected Change in Lethality of Terror Attack by Gender, Across Female Labor Force Participation

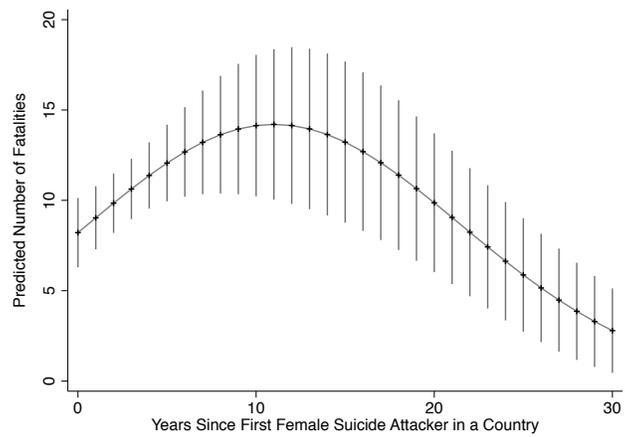


Figure 4: Expected Number of Fatalities Attributed to Female Terrorist Attacks Across Time

Tables

Table 1: Lethality of Female vs. Male Attacks, *Average# Killed*

	Female	Male	T-test
All Attacks	10.5 (214 attacks)	8.7 (2,225 attacks)	0.10
Civilian Attacks	14.4 (82 attacks)	13.7 (438 attacks)	0.77
Political Attacks	16.6 (20 attacks)	11.5 (298 attacks)	0.26
Security Attacks	7.27 (107 attacks)	6.48 (1,476 attacks)	0.45
Assassinations	9.1 (24 attacks)	7.8 (252 attacks)	0.59

Table 2: Negative Binomial Regressions Examining the Effect of Female Suicide Bombers on Suicide Attack Lethality

Variables	Model 1	Model 2	Model 3	Model 4
Female Attacker(s)	0.222 (0.173)	0.697 *** (0.206)	0.658* (0.396)	0.467* (0.279)
Women's Civil Society Participation			0.608 (1.010)	
Female Attacker(s) × Women's Civil Society Participation			-0.769 (0.809)	
Women's Protest Participation		-0.0306 (0.0288)		
Female Attacker(s) × Women's Protest Participation		-0.272*** (0.0628)		
Women's Labor Force Participation				-0.00336 (0.00530)
Female Attacker(s) × Women's Labor Force Participation				-0.00306 (0.00581)
Number Killed (t-1)	0.00220 (0.00178)	0.00249 (0.00171)	0.00219 (0.00176)	0.00238 (0.00181)
Number Wounded (t-1)	-0.000112 (0.000631)	-0.000192 (0.000598)	-0.000121 (0.000645)	-0.000211 (0.000626)
ln(Civil War Battle Deaths)	-0.0327 (0.0401)	-0.0340 (0.0385)	-0.0314 (0.0375)	-0.0443 (0.0384)
Number of Terrorist Groups in Country	0.0211 (0.0150)	0.0231 (0.0151)	0.0206 (0.0140)	0.0228 (0.0173)
Religion Importance	0.00473 (0.00750)	0.00578 (0.00709)	0.00675 (0.00647)	0.00172 (0.00671)
Multiple Attackers	0.435** (0.210)	0.356* (0.185)	0.466** (0.212)	0.454** (0.225)
Weapon	0.0586* (0.0306)	0.0604* (0.0313)	0.0577* (0.0334)	0.0591* (0.0313)
Assassination	-0.122 (0.116)	-0.148 (0.110)	-0.123 (0.109)	-0.133 (0.107)
Political Target	-0.138 (0.0967)	-0.172* (0.0887)	-0.113 (0.0997)	-0.174** (0.0803)
Security Target	-0.795*** (0.0708) (0.0103) (0.0000590)	-0.834*** (0.0684) (0.0101) (0.0000592)	-0.771*** (0.0790) (0.00959) (0.0000507)	-0.840*** (0.0561) (0.0277) (0.000114)
Constant	1.999*** (0.712)	2.083*** (0.647)	1.356 (0.831)	6.469*** (2.365)
ln(alpha)	0.476*** (0.119)	0.465*** (0.120)	0.474*** (0.117)	0.464*** (0.119)
No. Observations	2373	2373	2373	2347

Standard errors clustered on campaign in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Time polynomial omitted from table for brevity.