ABSTRACT

Title of Document:	ARE SUICIDE BOMBINGS REALLY UNIQUE? A MULTI-LEVEL ANALYSIS OF WORLDWIDE TERRORIST INCIDENTS, 1980-2015
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Suicide bombing is a lethal terrorism tactic that kills over 8 people per attack and injures 21 other people, on average. Suicide bombings have also been used more frequently in 2015 than they have in any one year since the tactic was first introduced in Iraq in 1981 and they were also used in more countries and by more groups than ever before. Even though the tactic is continuing to grow around the globe, there have been few studies seeking to understand in what ways the tactic is unique from other forms of terrorism. While theorists have attempted to explain the initiation and use of the tactic across various conflicts, there has been no previous study, of which I am aware, that compares suicide bombings to other relevant tactics, such as vehicle bombings, as well as to all other terrorist attacks in a multilevel framework.

With this in mind, the current dissertation seeks to create a profile of suicide bombing by including a number of attack- and country-level variables in a multilevel model. Using data from the Global Terrorism Database (GTD) from 1980 through 2015, this dissertation compares 4,737 suicide bombings with 142,195 other terrorist attacks along a number of theoretically and empirically relevant variables. The attack, country-year, and country-level variables are used to test 5 hypotheses. Separate models were also run that included 7,130 vehicle bombings as a tactic separate from suicide bombings and all other terrorist attacks. Suicide bombings were also split into two categories, vehicle and non-vehicle. Using three-level HGLM analytical techniques, this dissertation found that only one of the five hypotheses received support across all 17 model specifications. Looking at the significance of variables across model specifications, a profile of suicide bombings was developed. Suicide bombings were more likely to: target security forces; be used in complex attacks; be carried out by known organizations; cause a greater number of fatalities; be used since 9/11; be used in international attacks; be used in more lethal conflicts; and be used in Muslim majority countries. Conversely, suicide bombings were less likely to: target civilians; be used in assassinations; and be successful. These findings call into question some of the main theories of suicide bombings, including those put forth by Pape and Bloom. However, this research does serve as a useful starting point for policy

makers and practitioners in terms of understanding when, where, and how suicide bombings are used by different individuals and organizations around the world.

Are Suicide Bombings Really Unique: A Multi-Level Analysis of Worldwide
Terrorist Incidents, 1980-2015

by

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Chapter 1: Introduction

Given the extensive focus on suicide attacks (Bloom, 2005; Hoffman, 2003; Moghadam, 2008; Pape, 2005; Pedahzur, 2005), many academics and policy makers view this tactic as unique and fundamentally different from other types of terrorism. While suicide bombings account for a small fraction of the overall number of attacks (Distler, Hodwitz, Jensen, LaFree, Miller, & Safer-Lichtenstein, 2014), they are extremely lethal. For example, Moghadam (2003) noted that suicide attacks accounted for just 1 percent of the overall number of attacks in Israel and Palestine between September, 2000 and August, 2002, but accounted for almost 44 percent of all Israeli casualties (similar figures are noted in Kliot & Chaney, 2006). According to the Global Terrorism Database (GTD), suicide bombings killed over eight people per attack, on average, and non-lethally injured more than 21 (National Consortium for the Study of Terrorism and Responses to Terrorism (START), 2016a).[1] This is a stark difference when contrasted with non-suicide terrorist attacks identified by the GTD, in which the average lethality per attack was a little less than 2 people killed and about 2.5 people injured. In total, suicide attacks identified by the GTD have been responsible for approximately 37,900 fatalities and an additional 93,200 injuries from 1981 through 2015.

Not only are suicide bombings extremely lethal, but the tactic has also been used more frequently, with the number of attacks per year growing exponentially. In the last ten years alone, the use of suicide bombings has increased by over 380 percent (from 187 in

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[1] Any calculations referenced in the text of this paper were based on the Global Terrorism Database unless otherwise noted. I used the version of the dataset that was released to the public on June 27th, 2016, and calculations were based on data from 1980-2015. The GTD is available for analysis at https://www.start.umd.edu/gtd/ and for download at https://www.start.umd.edu/gtd/contact/.

2006 to 903 in 2015).[2] In just 2015 alone there were more suicide bombings, 903, than there were for the first 25 years[3] that the tactic was used (903). This points to a troubling trend that should continue to be monitored, especially as global terrorist organizations, such as the Islamic State of Iraq and the Levant (ISIL), continue spreading to new conflict zones around the world.

Along with the overall growth in the use of the tactic, suicide bombings have also been used by more organizations and in more countries than ever before. In 2015, 47 unique organizations deployed suicide bombers. Furthermore, 25 countries experienced at least one suicide bombing in 2015. These 25 countries included three countries—Cameroon, Chad, and South Sudan— which all experienced suicide bombings for the first time in 2015. This was the highest number of groups that have used, and countries that have experienced, suicide bombings in any one year time period according to the GTD. By multiple measures, suicide bombings are dangerous, lethal, and being used more frequently, by more organizations, in more conflicts.

Academic interest in suicide terrorism has grown in lock-step with its use as a tactic over the last ten to fifteen years. Although the research base has increased dramatically, I was able to identify only seven studies (Hicks, Dardagan, Serdan, Bagnall, Sloboda, & Spagat, 2011b; Mereri, Diamant, Bibi, Broshi, & Zakin, 2009; Pedahzur, Perliger, & Weinberg, 2003; Piazza, 2008; Rome, 2013; Seifert & McCauley, 2014; Weinberg, Pedahzur, & Canetti-Nisim, 2003) that compared suicide attacks with non-suicide attacks,

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[2] In comparison, all attacks excluding suicide bombings have increased by over 442 percent (from 2,564 in 2006 to 13,903 in 2015).
[3] From 1981 through 2006.

or suicide bombers with non-suicide bombers.[4] However, only one of these studies offered any comparison beyond a suicide/non-suicide dichotomy (Hicks, et al., 2011b).[5]

According to Clarke and Newman (2006), researchers must use the available data to drill down and look at the aspects of specific tactics in order to further our understanding of how they are used. This would allow scholars to highlight where opportunities exist to carry out these attacks, thereby offering security officials, and other practitioners, opportunities to thwart them (p. 30; p. 53-54; p. 233). Furthermore, Seifert and McCauley (2014) argued that suicide bombings should only be studied as a separate phenomenon when they were weakly correlated with other tactics. However, scholars cannot begin to drill down and identify opportunities for suicide bombings until there is a clear understanding of what differentiates this tactic from other forms of terrorism. And the research conducted on suicide bombings to date has often failed to include a relevant comparison group.

Prior research on suicide attacks has identified a number of potentially relevant variables that appear to explain the use of the tactic (Braun & Genkin, 2014; Choi & Piazza, 2016; Wade & Reiter, 2007). However, since much of this research does not offer a comparison group, it is unclear whether the researchers have identified variables that distinguish this tactic or whether the findings are relevant for terrorism more generally. Furthermore, the seven studies identified above that do offer a comparison group are lacking what I consider to be a *relevant* comparison group, with the exception of the

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[4] The importance of this comparison cannot be understated, as critiques of Robert Pape's (2005) initial work on suicide terrorism focused on his sampling of the dependent variable, in which he offered no comparison group of non-suicide attacks (Ashworth, Clinton, Meirowitz, & Ramsay, 2008; Atran, 2006).
[5] Hicks and colleagues (2011b) compared the lethality of executions, small arms gunfire, suicide bombings on foot, suicide bombings in a vehicle, vehicle bombings, roadside bombings, mortar fire, and airstrikes with and without ground fire.

research by Hicks and colleagues (2011b). In the dichotomy of suicide/non-suicide, a large number of different and varying tactics are lumped together in the non-suicide category. Having all of these tactics in one category could potentially obscure results for specific variables.

As a hypothetical example,[6] Pape (2005) argued that suicide bombings are more likely to occur during a foreign occupation. He then presented results that show that the majority of suicide attacks occurred during foreign occupation. But he offered no comparison group of other types of terrorist attacks so it was unclear whether this was unique to suicide attacks or was an aspect that was common in all forms of terrorism. To address this issue, another researcher took the same data, included a comparison group of all non-suicide terrorist attacks, and found results that support Pape's (2005) theory, concluding that suicide attacks were significantly more likely to occur during a foreign occupation when compared to all other terrorist attacks.

Even with these hypothetical findings, I would still question whether the results supported the theory on foreign occupation. Within the category of non-suicide attacks, there could be specific tactics, such as vehicle bombings, that were also more likely to be used during a foreign occupation. However, since vehicle bombings represented only a small proportion of the overall number of non-suicide attacks, these results were obscured, and the scholar incorrectly determined that foreign occupation was a condition unique to suicide bombings. One of the goals of this dissertation, then, is to ascertain whether results

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[6] While I am using Pape's (20005) theory to form the basis for this hypothetical example, I do not reference any actual study. In fact, there has not been a study, of which I am aware, that has compared suicide and non-suicide attacks in terms of their use during foreign occupations.

are being obscured for the relevant variables identified in previous empirical literature on suicide terrorism.

Criminology is well-situated to address the use of suicide bombings as a tactic of terrorism. I use situational crime prevention (SCP) developed by Clarke (1983) and linked to terrorism by Clarke and Newman (2006) as a framework to inform my strategy of identifying ways in which suicide terrorism is unique and to begin to create a profile for suicide bombings. To create this profile, I used previous empirical literature to identify a small set of variables focusing on various targeting aspects of suicide bombings. I also used this same empirical research to identify a large number of control variables on multiple aspects of suicide bombings that are also included in the analysis. All of these variables are described in much greater detail below. For the independent variables and the hypotheses that go along with them, they are informed by situational theory, which forms the basis for SCP. However, before stating the purpose and goals of this dissertation, I first explain why I consider vehicle bombings to be a *relevant* comparison to suicide bombings.

WHY VEHICLE BOMBINGS?

As a graduate research assistant since June, 2012, I have been tasked with duties involving the ongoing data collection of the GTD for terrorist incidents. In my five years of experience, I have read through tens of thousands of news articles, identified and created thousands of incident case files, and also coded several thousand attacks for relevant weapons variables as well as writing numerous incident summaries. In all of this experience, I began to notice how vehicle bombings were oftentimes deployed in a similar fashion to suicide bombings, at least in more recent years.

With this initial interest in how these tactics were deployed, I was surprised to learn that, while there was a plethora of research on suicide terrorism as a tactic, there was almost no academic interest in vehicle bombings (for an exception, see Davis, 2007). However, I was encouraged to see that other scholars at least recognized the potential importance of the tactic, as McCormick (2003) stated,

> To achieve these effects, terrorists continue to look for an edge, tactically and technically, that will allow them to create the theatrical kind of event they desire. In the late nineteenth century it was dynamite; between the 1960s and 1980s it was aircraft hijackings, political kidnappings, and embassy takeovers. Today it is **car bombs**, **suicide attacks**, and, for selected groups, the quest for weapons of mass destruction. [emphasis added] (p. 480)

It was my opinion that this lack of research on vehicle bombings was a major gap in the literature, especially given my overall impression that they were used in similar ways to suicide bombings.

With this in mind, I began to look at the data on suicide bombings, vehicle bombings, and all other terrorist attacks over time, focusing specifically on some of the ways in which the two tactics were similar based on my personal tasking with the GTD. In terms of the overall number of attacks, the GTD has identified almost 147,000 incidents from 1980 to 2015. However, both vehicle bombings and suicide bombings have remained infrequently used tactics throughout this time period, representing only 4.85 percent and 3.22 percent of all attacks respectively. Both tactics represented only a tiny fraction of the overall majority of attacks, which is an important theme in this section.

While these tactics were used infrequently, it is important to note that both were highly lethal. In a comparison of fatalities, suicide bombings killed 8.10 people, on average. While the average number of fatalities was much lower for vehicle bombings, at 2.94 people per attack, it was still 53 percent more lethal than all other terrorist attacks, which killed 1.93 people, on average. The difference in magnitude was even greater for injuries. While suicide bombings injured 21.27 people, on average, vehicle bombings injured 9.83 people per attack. This was 361 percent more destructive when compared to all other attacks, which injured 2.14 people, on average. It appears then, that vehicle bombings were somewhat unique from other attacks in terms of fatalities, and very unique in terms of injuries.

Returning now to the use patterns of vehicle and suicide bombings, they were also similar in where the tactics were deployed and by whom. While all other attacks have been carried out literally across the globe, in 202 different countries, suicide bombings have so far been limited to 58 countries, while vehicle bombings have only occurred in 107 countries. Looking at perpetrator groups yields similar results. While all other attacks have been carried out by 2,193 separate and identifiable groups, suicide and vehicle bombings have only been carried out by a select number of groups (154 and 264, respectively). These represented roughly 7 and 12 percent, respectively, of the total number of groups that have committed a terrorist attack in the GTD since 1980.[7]

It is also important to note that while vehicle and suicide bombings do appear to be somewhat distinct from each other in most of these comparisons, this is likely due to the fact that the vehicle bombing tactic has been around since the 1920s (Davis, 2007) while

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[7] The GTD has identified a total of 2,266 unique groups from 1980 through 2015.

suicide bombing is a relatively new tactic, as it was first deployed in 1981. This longer life of the tactic may have allowed more groups to deploy vehicle bombings in more conflict areas. Given that vehicle bombings have been around for almost 100 years, it is actually quite remarkable that it has only been used in about half of the countries since 1980 and by only 12 percent of the terrorist groups identified in the GTD, likely representing a saturation point in which the growth of the use of the tactic slows. Overall, these lethality rates and low rates of use, along with my observations during data collection, point to important ways in which these tactics may have been deployed in a similar manner.

PURPOSES AND GOALS OF THIS RESEARCH

The purposes of this research are threefold. First and most importantly, I hope to answer the following question: conditional on an attack occurring, what is the likelihood that the tactic deployed will be a suicide bombing? To answer this research question, I use data on terrorist incidents from the GTD from 1980 to 2015, as well as several other data sources at the national and international level, to test the relationship between a set of variables identified by previous empirical literature and these types of attacks. Furthermore, I also include vehicle bombings in the subsequent analysis, offering an exploratory look at how this tactic compares to both suicide bombings and all other terrorist attacks. This research question also serves as a response to a request from Clarke and Newman (2006) for more research focusing on specific forms of terrorism and their manifestations. The main goal of this research is to create a profile of where, when, and how suicide bombings occur, by comparing the tactic to all other attacks and also to vehicle bombings. This suicide bombing profile could then be used to inform policy decisions.

Second, this research adds to the growing literature on suicide terrorism. This is the first study, of which I am aware, that directly compares suicide bombings to a related tactic (vehicle bombings) along a number of empirically identified variables.[8] This is also the first study, of which I am aware, that looks at attack- and country-level characteristics of suicide bombings simultaneously, through the use of hierarchical generalized linear modeling (HGLM) methods.

Third, this research adds to the growing literature connecting criminological theories with terrorism research. While this research nexus of crime and terrorism has been studied extensively since the turn of the century, there has been very little scholarly attention on suicide bombings from a criminological perspective. Furthermore, I am aware of only two empirical studies that have focused specifically on situational clustering of crime and terrorism (Fahey, LaFree, Dugan, & Piquero, 2012; LaFree & Birkbeck, 1991). These are the only two studies I was able to identify that took a similar approach to my research in terms of their comparison between different forms of crime and terrorism.

ROADMAP

In this dissertation, I proceed as follows. In Chapter 2, I provide an in-depth look at the connections between research on crime and research on terrorism. Specifically, I focus on the antecedents of SCP research and the empirical literature surrounding suicide terrorism. At the end of the chapter, I present a set of hypotheses which are derived from the empirical and theoretical literature on suicide bombings. These hypotheses address my

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[8] Hicks and colleagues (2011b) only made comparisons between different tactics in terms of lethality. This research goes beyond lethality to look at other ways in which the tactics may differ as well as the ways in which they are similar.

primary research question, which focuses on the comparison of suicide bombings to all other terrorist attacks in terms of targeting strategies. I also offer my expectations for the relationships between suicide bombings, vehicle bombings, and all other forms of terrorism in my exploratory comparison of these tactics.

In Chapter 3 I then identify the data that have been collected for this research and the statistical methods used to analyze it. I briefly discuss the history of the GTD and the arguments as to why this data source is best suited to both identify incidents of terrorism and distinguish these incidents by attack type. Other sources of data for the independent and control variables are also discussed. Finally, I identify the statistical method employed in this research.

In Chapter 4, I present descriptive statistics for the dependent variable as well as all independent and control variables included in the study. Special attention will be given to suicide and vehicle bombings, the main tactics of interest, including a mapping of these tactics both spatially and temporally. In Chapter 5, I present the results from the different statistical models, focusing on the primary dependent and independent variables as well as additional variables included to assess the robustness of the findings. Finally, in Chapter 6 I discuss the results, including their relevance for policy makers. The chapter concludes with thoughts for future research in the area of situational terrorism prevention.

Chapter 2: Theoretical Model and Literature Review

In this chapter, I link criminological theory to terrorism research while illuminating the important ways in which both can inform each other and future policies aimed at lessening the impact of terrorist attacks. I begin with a brief discussion of how criminological theory has been linked to the study of terrorism. I then continue with a review of situational crime prevention (SCP) and its relationship to terrorism research. This builds the framework for one of the main goals of this dissertation, which is to identify and create a profile of suicide bombings that can be used to inform policy decisions related to SCP analysis. Next, I focus on the theoretical and empirical research on suicide attacks and how this research informs the hypotheses for the current study. This includes a discussion of the differences between attack- and country-level variables and how they might be used to distinguish between the different types of attacks. I conclude with a brief restatement of the goals of the current study.

LINKING CRIMINOLOGY TO TERRORISM

Over the past 15 years, the study of terrorism from the criminological perspective has increased dramatically. Using participation at the American Society of Criminology (ASC) annual meeting as just one measurement,[9] I found that in 2000 there were a total of eight panels identified under the subsection of "Terrorism, Militia and Hate Crimes."[10] In

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[9] The data for 2000 was obtained from
http://www.asc41.com/Annual_Meeting/programs/2000/cmsindx.htm (accessed 11/6/2015), while the 2015 data were obtained from
http://convention2.allacademic.com/one/asc/asc15/index.php?cmd=Prepare+Online+Program&program_focus=main&PHPSESSID=uhdb0mha8qea5j99sq06bn0782 (accessed 11/6/2015).

[10] It should be noted that of these eight panels, only three dealt specifically with terrorism, as three more focused on hate crimes, one on cybercrime, and one on genocide.

these eight panels, there were 28 different paper presentations and 44 unique participants serving as authors, chairs, and/or discussants. In comparing this to the 2015 annual meeting, I found that there were a total of 22 panels identified under the subsection of "Terrorism & Hate Crimes."[11] In these panels, there were 86 paper presentation and 147 authors, chairs, and/or discussants. From this perspective, it appears that terrorism research from the criminological perspective has grown into a mainstream topic.

More than a decade ago, LaFree and Dugan (2004) argued that research on terrorism dovetails with criminology. The authors discussed the ways in which terrorism and crime are similar as well as important differences regarding the topics of: conceptualization; data collection; and methodology. Clarke and Newman (2006) made a similar argument, concluding that "terrorism is crime with a political motive" (p. 6). Much additional work has attempted to apply criminological theories to terrorism, looking at theories such as: strain (Agnew, 2010; Chermak & Gruenewald, 2015; Dugan & Young, 2009; LaFree & Dugan, 2009; Rice, 2009; Rice & Agnew, 2013); social learning (Akers & Silverman, 2004; Hamm, 2007; Winfree & Akins, 2008); social control (Black, 2004; Shecory and Laufer, 2008); social disorganization (Fahey & LaFree, 2015; LaFree & Bersani, 2014); subculture (Hamm, 2004; Pisoiu, 2015); desistance (LaFree & Miller, 2008; Miller, 2012); legitimacy (LaFree & Dugan, 2009; Tyler, Schulhofer, & Huq, 2010); situational (Clarke & Newman, 2006; Fahey, LaFree, Dugan, and Piquero, 2012; Freilich & Newman, 2009; Hsu & Apel, 2015); deterrence and backlash (Argomaniz & Vidal-Diez, 2015; Dugan & Chenoweth, 2012; LaFree, Dugan, & Korte, 2009); routine activities

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[11] All but one of these 22 panels centered on either terrorism or extremism. The final panel looked at violent threats and ideology.

(Hamm, 2007; Parkin & Freilich, 2015); and rational choice (Dugan, LaFree, & Piquero, 2005; LaFree & Dugan, 2009; Newman & Hsu, 2012; Perry & Hasisi, 2015; Pridemore & Freilich, 2007).

Clearly, criminologists have taken to the study of terrorism and its manifestations. One such criminological perspective that has been linked to terrorism is situational crime prevention, which I will now discuss.

Situational Crime Prevention

As I discussed above, one of the main goals of this research is to help inform policy decisions on terrorism in general, and on suicide bombings more specifically. One policy in criminology that could have applications in other areas is SCP. The framework for SCP was first developed by Ronald Clarke (1983). From a research program developed by the Home Office in England, Clarke (1983) described the key elements of the framework, which included: surveillance; target hardening; and environmental management. Surveillance went beyond a simple increase in police patrols, and included technology, such as the implementation of closed-circuit television (CCTV), or the training of employees to better detect signs of theft. Surveillance also included elements of collective efficacy[12] (Morenoff, Sampson, & Raudenbush, 2001; Sampson, Raudenbush, & Earls, 1997) as Clarke (1983) described the importance of residents interacting with one another and creating a neighborhood identity.

Target hardening was seen as an important way to increase the difficulty of successfully carrying out an act of crime. Target hardening was defined by the increase of

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[12] Although not defined as such by criminologists at the time.

physical security, whether that was an object that could be stolen or a person that could be victimized (Clarke, 1983). This approach included preventative steps such as the installation of LoJack in a vehicle that makes it less appealing as a target, or the implementation of consumer security systems to make burglars think twice before attempting to enter a home or business. Target hardening of individuals also included the encouragement that people travel in groups rather than alone at night.

Environmental management focused on the development of public space or the manipulation of the environment to make the target unavailable to potential offenders. Clarke (1983) gave the example of reducing the opportunities to steal wages by issuing checks[13] rather than simply handing cash to employees at the end of each work week. Other examples included the actual development and planning of urban spaces, including parks and streets, as discussed in Newman's (1972; 1980) idea of defensible space.

The aspects of SCP were driven, in part, by the three theoretical perspectives that are the focus of this research. Situational criminology was at the heart of SCP, as the main focus of the theoretical perspective and the policy was on the situational aspects of crime and how this informs offenders' decisions. Furthermore, rational choice theory served as the underlying framework for both situational criminology theory and SCP. It was no surprise that Ronald Clarke not only developed SCP, but was also one of the proponents of modern rational choice theory in criminology (see Cornish & Clarke, 1986). Routine activities theory also informed key aspects of SCP, especially in terms of the focus on suitable targets and capable guardians. Empirical research on routine activities theory has informed aspects of surveillance, target hardening, and environmental management. I will

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[13] Or nowadays, the issuance of wages through direct deposit.

describe all three of these theoretical perspectives in greater detail below, but I now turn to the application of SCP to terrorism.

Outsmarting the Terrorists

As situational crime prevention continued to change and develop over time, through further research and examples of successes in using the strategy (Clarke, 1992; 1995; 1997; Cornish & Clarke, 2003; Newman, Shoham, & Clarke, 1997), Clark and colleagues began to apply it to a greater variety of different crimes. This included an application to terrorism in a recent book by Clarke and Newman (2006). In their book, Clarke and Newman (2006) argued that lessons learned in criminology can help to inform research and policy in the realm of terrorism (for a similar argument, see LaFree & Dugan, 2004). From the research literature on situational crime prevention and the literature on terrorism, the authors identified four main pillars of terrorist opportunity: targets; tools; facilitating conditions; and, most importantly for this research, weapons (Clarke & Newman, 2006). I will briefly describe these four pillars, focusing on weapons and how these other pillars relate to it.

The types of weapons that a group used in an attack depends on the goals and resources of the organization. According to Clarke and Newman (2006), groups choose weapons that are multipurpose, undetectable, removable, destructive, enjoyable, reliable, obtainable, uncomplicated, and safe (MURDEROUS). Looking at these conditions helps inform our understanding of why terrorist groups are more likely to use suicide bombing methods, which are destructive, reliable, and uncomplicated, rather than nuclear weapons, which are somewhat unobtainable and have certain complications.[14] However, it should

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[14] Such as the development of an effective delivery system

also be noted that goals play an important role, and although nuclear weapons might be more difficult to obtain or use, certain groups may still be highly motivated to attempt to carry out these types of attacks.

Clarke and Newman (2006) devoted a full chapter of the book to suicide terrorism as an example of how fine-grained the analysis needs to be to understand the threats that different tactics pose and the ways in which their success can be limited. Understanding how, and under what circumstances, certain tactics are used forms the basis for SCP analysis. Once a profile has been created or identified for a tactic, then the other pillars of terrorist opportunity can be brought in, allowing practitioners to analyze ways to make targets safer, or how to limit the usefulness of tools or the effectiveness of facilitating conditions.

Following the work in situational crime prevention, where targets were attractive for thieves if they are concealed, removable, available, valuable, enjoyable, and disposable (CRAVED), the attractiveness for targets of terrorist attacks are identified under the acronym EVIL DONE (Clarke & Newman, 2006). This identifies targets that are exposed, vital, iconic, legitimate, destructible, occupied, near, and easy (Clarke & Newman, 2006). When identifying potential targets of an attack, an individual or group looks for targets that meet some or all of these criteria, and the weight given to individual criteria differs based upon organizational goals and resource allocation.

In discussing tools, Clarke and Newman (2006) referred to tangible products, including cell phones, cars and trucks, cash and credit cards, false documents, and target information, which are used in the commission of an act of terrorism but are not a part of

the weapon or the delivery system. The authors argued that many of the same hot products[15] that draw the attention of thieves were also the same tools that terrorists might use to carry out an attack[16] (Clarke & Newman, 2006). The authors also noted that theft and fraud are common mechanisms used by terror groups to fund their activities.

The final pillar of opportunity, facilitating conditions, is the larger context in which these individuals and organizations operate. According to Clarke and Newman (2006), these conditions were grouped into five categories, those that make crime and terrorism easy, safe, excusable, enticing, and rewarding (ESEER). A practitioner or analyst is tasked with considering the environment in which a group or individuals operates and then needs to think through ways in which attacks are easy, safe, excusable, enticing, or rewarding, within that environment. Clarke and Newman (2006) gave the example of the conditions that could someday facilitate the construction of a nuclear bomb by a terrorist group or organization, including: scientific knowledge; a sufficient quantity of weapons-grade material; access to an advanced workshop; machining capabilities; and tools such as ceramic crucibles and Freon gas, among other things. The analysis of facilitating conditions is normally conducted at the attack- or weapon-type level, as different conditions or situations leads to a group choosing one tactic or weapon over another.

Clarke and Newman's (2006) work highlighted a blending of criminological theory and terrorism research. However, to better comprehend how this theoretical perspective fits within this dissertation, it is crucial to also gain a thorough understanding of the

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[15] They defined hot products as "things that criminals target for theft" (p. 120).
[16] These included cell phones, vehicles, or credit cards.

literature on terrorism and, more specifically, the tactics of terrorism that are the focus of this dissertation.

A FOCUS ON SUICIDE BOMBINGS AND GENERATING HYPOTHESES

Before discussing theories that attempt to explain suicide terrorism, I want to address the difficulties in defining the phenomenon. Similar to terrorism in general (Hoffman, 2006), there are several different definitions that can be used to classify suicide terrorism, depending on the qualifications necessary for success or the level of intention needed by the individual perpetrator (Moghadam, 2006a). Moghadam (2006a) noted that several terms which are normally used interchangeably, such as suicide mission, suicide bombing, and suicide terrorism, actually have important differences. He also emphasized the importance placed, by terrorist organization and the communities in which these events occur, on referring to these attacks as martyrdom operations, thereby justifying their use in these cultures (Moghadam, 2006a; for a more detailed discussion, see Moghadam, 2008). In Moghadam's (2006b) critique of Pape's (2005) thesis, for example, he pointed out that the definition used includes attacks against combatants, which not all scholars agree should be included in a discussion of terrorism. Interestingly, these definitional issues are also important when attempting to make comparisons across terrorism datasets (Distler et al., 2014). For the purposes of my research, my definition is slightly more restrictive as I am only interested in suicide bombings. This means that my analysis excludes attacks such as 9/11, which did not involve the use of an explosive device, or fedayeen[17] attacks that have

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[17] Fedayeen attacks are incidents in which the assailant(s) enter the situation with the intention of killing as many people as possible before they are killed themselves. In the past, these attacks typically involved the use of firearms and sometimes included the use of grenades as well (Subrahmanian, Mannes, Sliva, Shakarian, & Dickerson, 2013).

occurred in conflict areas such as Jammu and Kashmir in India. While the theories I discuss below focus on suicide attacks or suicide terrorism more generally, they are all still applicable to my research, since the bombing delivery method accounts for the majority (over 99 percent) of these types of attacks.

Early on, theorists studying suicide terrorism focused on the individual-level variables that might explain why individuals make the decision to end their lives in this way. Kushner (1996) argued that individual bombers carried out these attacks as a result of frustrations in their lives as opposed to poverty and despair. Israeli (1997) instead argued that individuals were driven to carry out these attacks due to their involvement with radical sects within Islam. He termed this new phenomenon Islamikaze, drawing similarities to the tactic used by Japan fighter pilots in World War II. More recent research looked at the importance of trauma and bereavement as individual factors (Speckhard, 2006; Speckhard & Ahkmedova, 2005; Speckhard & Ahkmedova, 2006; Speckhard & Ahkmedova, 2007), among other potential characteristics. While this individual-level research is fascinating and allows for important insights into this specific type of radicalization, it is not the focus of this dissertation, which instead looks at the situations under which the decision is made to deploy the tactic.

Sprinzak (2000) was one of the first scholars who discussed suicide terrorism as a rational tactical choice made at the organization level. He identified three typologies of groups: those that used the tactic sporadically, such as Al-Qa'ida (AQ); those that used the tactic only when it was beneficial and effective, such as Hezbollah and Hamas; and those that used the tactic as part of a sustained campaign, such as the Liberation Tigers of Tamil

Eelam (LTTE). He concluded that raising the costs to these groups was the best way to limit future suicide terrorism (Sprinzak, 2000).

In the early 2000s, there was a swell of academic interest in this topic as leading scholars began to further discuss the causes and impact of suicide terrorism (Ganor, 2001; Pedahzur, 2005). Specifically, it was researchers such as Robert Pape, Mia Bloom, and Ami Pedahzur that illuminated the growing concerns with suicide terrorism, the strategic or rational logic used by organizations implementing the tactic, and important variables that played a part in their use. It is from these theoretical discussions as well as the vast amount of empirical research which has followed that much of the data and hypotheses in this dissertation are derived.

Generating Hypotheses

My research focuses on understanding the different conditions under which suicide bombings occur when compared to all other terrorist attacks at multiple levels of analysis. Much of the empirical and theoretical research regarding suicide bombings has focused on important distinguishing variables at the individual/attack-level, at the group-level, and at the country-level of analysis. A three-level analysis, however, is beyond the scope of this research. This is mainly due to a lack of information available at the group-level.[18] Furthermore, group-level information is most likely to be available for only those groups that are the most influential, such as the Islamic State of Iraq and the Levant (ISIL), as well

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[18] For important exceptions, see the data currently being collected by Victor Asal and R. Karl Rethemeyer, which is available here: http://www.start.umd.edu/baad/database. Martha Crenshaw has undertaken a similar endeavor here: http://web.stanford.edu/group/mappingmilitants/cgi-bin/. Finally, Erin Miller and Kathleen Smarick have collected information on terrorist groups active in the United States that have been identified by the GTD. More information is available here: http://www.start.umd.edu/data-tools/profiles-perpetrators-terrorism-united-statesppt-us.

as those organizations that have survived the longest, such as the New People's Army (NPA) in the Philippines. In fact, the majority of groups identified by the GTD lasted less than one year (LaFree, Dugan, & Miller, 2015: p. 81).

Additionally, many incidents of terrorism are not linked to any terrorist group. These cases would therefore be dropped from any three-level analysis. Much of the prior work in the area of suicide terrorism has tended to focus on attacks perpetrated by a known group. This leaves out a large amount of the cases that, if not missing at random, could have a large impact on the profile of suicide bombings. Therefore, one of the goals of this dissertation is to include more cases than has been done in prior research to reanalyze the effects of some of the strongest correlates of suicide bombings that have been identified to date.

Instead, this research focuses on variables at the attack- and country-level, both separately and simultaneously. They are focused on separately in the sense that there are different hypotheses that test whether suicide bombings are distinct from other forms of terrorism at the attack- and country-level. By focusing separately on the different levels, I am able to include more variables, allowing for a more detailed analysis and identification of how suicide bombings occur under different situations and circumstances from both vehicle bombing and all other attacks.

However, these different levels of analysis are also examined simultaneously in this analysis, allowing me to include both attack- and country-level variables in the same model. Using these methods, which have not yet been introduced in research on suicide terrorism,[19] I am able to explore the interplay between attack- and country-level

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[19] In fact, these methods have been underutilized in terrorism research more generally (Johnson, 2017).

characteristics. Overall, this approach allows for an alternative presentation and analysis of this phenomenon as compared to prior research.

CRIMINOLOGICAL THEORIES AND THIS RESEARCH

Before I introduce the hypotheses, I first describe how a suicide bombing differs from other forms of terrorism. I then use this comparison as a basis for understanding how situational criminological theory can explain differences between suicide bombings and all other terrorism. I conclude this section by describing situational criminology, including the importance that rational choice and opportunities play in the theory.

What Makes a Suicide Bombing Unique?

I begin with the assumption that there are motivated individuals that will seek out organizations and groups that will allow them to carry out suicide attacks. Therefore, a suicide bombing is unique from other tactics of terrorism in that individuals strap explosive device to their bodies. Thus, they make themselves what Hoffman (2003) describes as "smart bombs." They are able to: identify the best way to carry out their attack; change their position or the time of their detonation instantaneously; and blend into a crowd or make it seem as if they are just another civilian rather than a mobile explosive device.

This is in comparison to all other types of bombings, including vehicle bombings, where the assailant or assailants are not present at the time of the attack. Instead, the explosive is detonated remotely, triggered by the victim, or set to detonate at a pre-specified time. While armed assaults also have the requirement that the assailant be present at the time of the attack, stealth is not as easy to accomplish as a gun is usually more difficult to conceal. While other types of weapons, such as knives, might be similarly easy to conceal

as strapped-on explosives, they do not offer the opportunity to cause as much instantaneous death and destruction as compared to suicide bombings.

As with crime, the deployment of different terrorism tactics comes down to opportunities. In what ways will opportunities differ between suicide bombings and other tactics? In this dissertation, I focus on different aspects of targeting strategies where I hypothesize that opportunities will make a difference in the use of suicide bombings and other tactics.

However, it is also important to understand the goals and motivations of suicide bombings that help us to understand the types of opportunities that are a necessary condition for this tactic to be used. As described above, suicide bombings are much more lethal when compared with other tactics specifically and with all terrorism more generally. Therefore, it has been argued that one of the main goals of suicide terrorism is to cause as much death and destruction as possible (Bloom, 2005).

A main goal of all terrorism is to attract attention, specifically through the media (Dugan & Distler, 2017; LaFree & Dugan, 2004). This allows the group or organization to publicize their plight or put forward their particular agenda. It is reasonable to assume that more noteworthy tactics, such as suicide bombings or airplane hijackings are more likely to garner mass media attention when compared with tactics such as armed assaults and roadside bombings. Whereas airline hijackings have been reduced through policies and target hardening, the same has not been true with suicide bombings. Therefore, suicide bombings should give groups and individuals the greatest opportunity to have their struggle recognized by the masses.

It is these two motivations and goals that drive the use of suicide bombings over other tactics of terrorism. Therefore, the hypotheses I identify below focus on targeting strategies that give organizations and individuals greater opportunities to meet these goals. Before discussing these hypotheses, however, I first describe the criminological theory at the heart of this research.

Situational Criminology

For many years, few criminologists focused on the importance of the situational aspects of crime. There are, however, a few notable exceptions. Both Sutherland (1947) and Hirschi and Gottfredson (1986) discussed the difference between historical and situational explanations and the difference between crime and criminality, respectively. However, much of the focus in terms of research and theory has been on historical explanations of crime[20] or on the criminality of the offender. But the importance of the situation in the study of crime should not be understated. Gottfredson and Hirschi (1990), in their general theory of crime, placed prime importance on the concept of opportunity, including it as a central part of the thesis. The opportunity to commit crime or to carry out an act of terrorism is based, in a large part, on the present situation. While the situational aspects of crime have received more recent scholarly attention, it has still been understudied in comparison to its relative importance.

Although there is no universal definition of situation in the literature, LaFree and Birkbeck (1991) subscribed to a definition taken from experimental psychology, which defines it as "the perceptive field of the individual at a given point in time" (p. 75). The

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[20] Historical explanations of crime look at the factors in an offender's life that lead up to the commission of crime (Birkbeck & LaFree, 1993).

situational aspects of crime can inform our understanding of why some situations lead to crime and deviance while others do not. No matter the historical factors that play a part in forming and shaping the potentially motivated offenders, they must still be placed in a situation that is conducive to criminal and/or deviant behavior.

Situational theory is a subset of Rational Choice Theory, which flows from the work of 18th century reformers, including Cesare Beccaria and Jeremy Bentham. The basic tenets of the theory are that actors make decisions using a cost-benefit analysis, weighing the costs of committing an act along with benefits gained from carrying out such an act. Following this very early work, much of the attention in this area of criminology was focused more specifically around deterrence theory, which Paternoster (2010) referred to as a limited subset of rational choice theory more generally. It wasn't until the mid- to late-1980s that researchers began to blend the rational choice and deterrence perspectives, as scholars came to realize that these theories were two sides of the same coin. It was around this time that Cornish and Clarke (1986) formalized the rational choice perspective, pulling from the classical school and economic theories of crime and punishment.

The authors focused specifically on the individual choice to engage in crime as a way to maximize the benefits and minimize the costs (Cornish and Clark, 1986). The authors viewed this as a two-stage process in which the offender first chose whether to engage in crime and then, once the decision to be involved in crime has been made, they then chose what type of crime to engage in. This choice was normally driven by opportunities and situational considerations (Cornish and Clark, 1986). The second stage of the process is important in this study because it highlights the differences between different types of crime. Much of the decision-making process is situation specific, such as

a decision to burglarize a certain house or to assault and rob a specific individual. This is an important consideration since groups or organizations have a number of different tactics at their disposal to choose from.

Rational choice theory is one of the strongest and most widely used theories to study terrorism from a criminological perspective. It has been argued that terrorist organizations act in ways that most benefit their goals and motivations, similar to individual criminal offenders. Crenshaw (2007) argued that these organizations weigh the costs and benefits at the initial step of determining whether to engage in terrorism as opposed to other forms of political expression. She further argued that there is a strategic logic to the choices that are made, as groups take account of things such as the media, their constituency, and responses from the targeted country, among other important factors (Crenshaw, 2007). Once a group has decided to engage in this type of behavior, they then use the same cost-benefit analysis when determining what forms of terrorism to engage in (Clarke & Newman, 2006). This idea of rationality and strategic logic was incorporated into many of the theories focusing specifically on suicide terrorism (Bloom, 2005; Hoffman, 2003; Pape, 2005; Pedahzur, 2005).

Returning now to situational criminology more specifically, Birkbeck and LaFree (1993) identified three distinct areas of research that have attempted to better understand the situational aspects of crime. The first is symbolic interactionism, which was born out of work by early theorists such as Cooley (1922) and Mead (1934). It is the actors, in this perspective, that give meaning to specific situations that they find themselves in (Birkbeck & LaFree, 1993). While this area of research has certainly improved our understanding of the situational aspects of crime and deviance, its impact has been limited by a focus on

descriptive studies and a low level of generalizability due to methodological challenges (Birkbeck & LaFree, 1993). A second area of research that has turned attention to the situational components of crime is experimental psychology, which is limited by a lack of a unifying theory and by external validity problems in transitioning results from laboratory to non-laboratory settings (Birkbeck & LaFree, 1993).

The third area of research identified by Birkbeck and LaFree (1993) is opportunity theories of crime. Of this class of theories, the most well-known is the routine activities theory as developed by Cohen and Felson (1979). Routine activities theory, along with the lifestyle theory developed by Hindelang, Gottfredson, and Garofalo (1978), grew out of findings from the National Crime Victimization Survey (NCVS), and were developed to understand and explain victimization in crime. Cohen and Felson (1979) argued that crime is most likely to occur at the nexus of three important factors: a motivated offender, a suitable target, and a lack of a capable guardian. Furthermore, they believed that the motivated offender should be taken as a constant, as there is always an influx of motivated offenders that engage in crime if given the opportunity. The opportunities for crime and the focus of the theory revolved more around the suitability of a target, whether it was an individual or an object, as well as the lack of a capable guardian (Cohen and Felson, 1979). These theories of victimization, however, are limited by the lack of attention to the motivations and decision-making of the offender, which does play an important role in the nexus of crime, as is evident from the work in the areas of symbolic interactionism and experimental psychology (Birkbeck & LaFree, 1993).

In more recent research, scholars have used this perspective to study offender decision making. Much of this research has focused on interviews with offenders or

experiments designed to test how individuals react to different environmental cues or various situations. Wright, Logie, and Decker (1995) found that active residential burglars are more likely to identify environmental changes related to the crime when compared with non-offenders. Nee and Meenaghan (2006) interviewed fifty experienced burglars, noting that the majority used similar specific searching patterns to identify targets based on environmental cues. In another application of this approach, Roth and Trecki (2017) compared burglars and non-burglar offenders in an experimental design, finding that there were not significant differences in the choices they made related to offending.

Another area in which the situational perspective has been used is to study situational clustering of different types of crimes. LaFree and Birkbeck (1991) compared assaults, robberies, and pickpocketings in the United States with assaults, robberies, and property snatchings in Maracaibo, Venezuela, using victimization surveys. Using logistic regression, the authors compared the three crimes in the United States with each other on a number of situational variables, including: whether the victim was female; the age of the victim; the number of victims; whether the offender was a stranger; whether the attack occurred outside; whether the attack happened in a public domain; whether other people were present; and whether the attack occurred at night.[21] The authors found a number of differences when comparing the types of crime, noting that the situations that lead to the occurrence of these crimes can differ quite dramatically. They concluded that a study of the situation is an important endeavor to undertake by criminologists.

Two decades later, Fahey and colleagues (2012) applied this idea to the study of terrorism. Focusing on the situational differences between terrorist and non-terrorist aerial

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[21] The same analysis was conducted on the three Venezuela crime types as well.

hijackings from 1947 through 2007, the authors also used logistic regression as a means of comparing the two types of hijackings. In this study, the authors included two groups of variables, publicity[22] and organizational resources,[23] as well as control variables for whether the flight originated from a top terrorism country and the year that the hijacking took place. The authors found that they were able to distinguish terrorist and non-terrorist hijackings based on organizational resources, while they found only partial support for the publicity domain, as many of the variables did not distinguish the type of hijacking.

Now that I have described how criminological theory is used to inform the hypotheses, I will lay out these hypotheses in the next section. This will be followed by a longer discussion of other relevant aspects of suicide bombings that will be included as control variables in the analysis.

RESEARCH HYPOTHESES

As described above, the purpose of this research is to identify ways in which suicide bombings differ from other forms of terrorism. In other words, conditional on their being a terrorist attack, what is the likelihood that the incident will be a suicide bombing. In this dissertation, I focus on different aspects of targeting strategies to ascertain whether suicide bombings differ from other tactics. The next four subsections describe five aspects of targeting that I have identified where situations and opportunities may lead to a suicide bombings as opposed to another tactic. These variables include: whether the attack occurred against a hard target; whether the attack was complex; whether the attack occurred

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[22] Variables in this domain included: whether the flight originated from the United States; whether the flight originated from a capital city; whether the attack occurred on a weekend; whether the attack occurred in the summer; and whether there were any casualties in the attack (Fahey et al., 2012).

[23] Variables in this domain included: whether a weapon was used; whether there were a combination of weapons used; and the number of hijackers (Fahey et al., 2012).

on an election day; whether the attack occurred on an important religious holiday; and the importance of religion, the cultural, ethnic, and religious diversity within a country. I will describe the empirical and theoretical research looking at these aspects before laying out the specific hypotheses at the end of each subsection.

Targets of Suicide Terrorism

As I briefly noted above, Hoffman (2003) argued that suicide bombers are the ultimate smart bomb in that the individual has the ability to choose the timing and target of the attack and can change their decision in an instant. This led scholars to postulate that suicide bombings are more likely to be used against more difficult, or hardened, targets, as suicide bombers are able to approach a target that other tactics might be unable to reach. For the purposes of this research, hardened targets are defined as entities that are more difficult to attack, such as the military, whereas soft targets generally refer to civilians and other entities that have less security and are therefore easier to target. However, the research on targeting strategies of suicide attacks has not necessarily found Hoffman's (2003) claims to be correct.

Many studies of suicide terrorism have focused on whether attacks were carried out against security (hard) or civilian (soft) targets. Seifert and McCauley (2014) addressed targeting strategies in Iraq and used a combined dataset of RAND, the Worldwide Incidents Tracking System (WITS)[24], and the GTD to identify 1,779 bombers from 2003 through 2010. These attacks were compared with non-suicide attacks collected from WITS. The correlation between suicide and non-suicide attacks was lower in the early years of the

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[24] This was a database that included cases that were collected from the beginning of 2004 until the effort was halted in 2012. It was run by the National Counterterrorism Center (NCTC).

insurgency and much greater in the later years. The authors found that coalition forces and foreigners were more likely to be targeted in the early years, members of the Awakening Movement were more likely to be targeted in the middle years (2007 and 2008), and Iraqi security forces, government entities, and civilians accounted for the majority (over 75 percent) of those targeted during the entire time period (Seifert & McCauley, 2014; see also Hafez, 2006b).[25] Seifert and McCauley (2014) concluded that the results did not support the theory that hardened targets were more likely to be targeted in suicide attacks. To contrast this, Berman and Laitin (2008) found that approximately 90 percent of suicide attacks targeted victims that had different religious views from the attackers, which they argued supported the idea of target hardening.

Hicks and colleagues (2011a) used the Iraqi Body Count (IBC) database to assess civilian casualties from the beginning of the war (March 20, 2003) through December 31, 2010. The authors found that 26 percent of all injuries and 11 percent of all civilian deaths in the war were caused by suicide bombing incidents. The scholars categorized those killed and injured as police, soldiers, or civilians, finding that civilians were more likely to be killed in these types of attacks when compared to soldiers (Hicks et al., 2011a). Overall, it appears that in the Iraqi conflict, suicide bombings were not necessarily used against more hardened targets. In comparison, Harrison (2006) assessed attacks in Israel and Palestine and found that the results were similar to those noted in Iraq. Using the International Institute for Counter-Terrorism (ICT) dataset to identify 103 attacks from November 6, 2000 through November 3, 2003, the author identified basic suicide attack characteristics,

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[25] Hafez (2006b) analyzed suicide attacks in Iraq from 2003-2006 and found that they were focused on Coalition forces in the early years, but over time the trend moved towards the targeting of police and local security forces, followed by non-governmental organizations, the Red Cross, and embassies.

noting that most were aimed at civilian targets, which included cafes, buses, bus stops, stores, on the street, or at checkpoints (Harrison, 2006; see also Kliot & Chaney, 2006).

Bhatti and colleagues (2011) looked at the patterns of suicide attacks from an epidemiological perspective. Using data from the South Asian Terrorism Portal (SATP) and focusing on attacks in Pakistan from 2002 through October 31, 2009, the authors discovered that attacks increased drastically over time and the majority of the victims (more than 74 percent of the deaths and over 93 percent of the injuries) were civilians (Bhatti, Mehmood, Shahid, Bhatti, Akhtar, & Razzak, 2011). Even in attacks against security establishments, a large proportion of those killed and the majority of those injured were civilians. In conclusion, much of this research has found that attacks are more often used against soft targets.

From a situational perspective, it is likely that suicide bombings are not used against harder targets, such as the military, because of the limited opportunities available to suicide bombers to interact with these individuals. Since the military is likely to be suspicious of all individuals, the concealment strategy will not work as well for these targets. In contrast, other forms of terrorism, such as bombs planted on the side of the road, are more in line with the opportunities created by hard targets to the extent that they use familiar routes and travel in more public places. Rome (2013) found that, when compared to suicide bombings, IED attacks were more likely to be carried out against troops in Afghanistan and accounted for a larger percentage of the increases in terrorism. Furthermore, one of the main goals of suicide bombings is to cause a large amount of death and destruction. Since this is difficult to achieve against hard targets, which offer fewer opportunities to be targeted than do soft targets, suicide bombings will be reserved for more public attacks and more public forums.

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Therefore, I hypothesize that suicide bombings are less likely to be used against hard targets.

Hypothesis 1: Compared to all other tactics of terrorism, suicide bombings are less likely to be used against hard targets.

Suicide Bombings as a Component of Complex Attacks

The complexity of a terrorist attack can have several different meanings. It can refer to a comparison of different tactics, such as identifying whether a kidnapping is more complex than a suicide bombing. It can refer to the number of individuals involved in an attack, such as whether an operation involved one or multiple suicide bombers. Finally, a complex attack may refer to the number of different weapons used in a single incident, such as a suicide bomber followed by additional assailants attacking with firearms. It is this last definition which I will use to operationalize this variable in the next chapter. No matter how complex attacks are defined, they highlight the amount of time, planning, and resources needed to carry out an incident.

This idea of complex attacks has not been extensively studied in the literature on terrorism. Fahey and colleagues (2012) included a measure assessing whether there were a combination of weapons used in a hijacking attempt. They found that attacks involving more weapons were significantly more likely to be carried out with terrorism motives in mind (Fahey et al., 2012). Seifert and McCauley (2014) found that there were no differences in targeting strategies for attacks that involved either one single bomber or multiple bombers attacking the same target. These findings once again link to the idea of comparing hard and soft targets, with the assumption that multiple bombers would be used

against more fortified targets, thereby increasing the likelihood of success in these types of attacks (Seifert & McCauley, 2014). However, the findings do not back up this assertion.

In more recent incidents of terrorism, a pattern has emerged where attacks that target hotels, military bases, or other government structures start with a suicide bomber in order to break through the initial line of defense. This allows additional assailants, either more suicide bombers or attackers armed with firearms or other weapons, to swarm or raid the desired target. Therefore, I hypothesize that suicide bombings would be more likely to be used in complex attacks when compared with other forms of terrorism. Suicide bombings offer a greater opportunity for a successful attack to be carried out. Since suicide bombings cause mass destruction and chaos, including this tactic in complex attacks helps to focus these defenses to a specific area, thereby weakening the defenses in other parts of the targeted entity.

From a hard targets perspective, it also makes sense that these more fortified structures and targets would be more difficult to attack with a single assailant or even a single bomber. By including a number of assailants with a number of different weapons, it allows for a higher likelihood of success. And falling back on Hoffman's (2003) assessment of suicide bombers as the ultimate smart bomb, including a suicide bomber in these complex attacks makes sense strategically, as it allows the bomber to identify and strike the weak point of the intended target's security. As an example, Kliot and Chaney (2006) discovered that the building of the Separation Fence changed the attack patterns of suicide bombers. Specifically, the authors found that bombers carried out attacks in areas where the fence was incomplete (the weaker point of Israel's security). Looking at complex attacks also serves as a proxy measure of resources, allowing me to make some assessments

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regarding whether groups with greater resources are more likely to carry out suicide attacks (Fahey et al., 2012).

Hypothesis 2: Compared to all other tactics of terrorism, suicide bombings are more likely to be used as part of complex attacks.

The Importance of Holy Days and Elections

As has been discussed numerous times already, the main motivations for suicide terrorism are to cause mass casualties and to achieve notoriety through media coverage. Although these goals are not necessarily unique to this tactic, it appears that suicide bombings are relatively more successful in both of these areas when compared to other forms of terrorism. While groups can take steps to achieve these goals, whether through claiming responsibility for attacks, or carrying out attacks against notable targets or in important and influential cities, this can also be achieved by the choice of when to carry out attacks. While very few studies have focused on temporal aspects of suicide attacks, Kliot and Chaney (2006) noted that they most often occurred in the middle of the day, from Sunday to Wednesday, and peaked in March and May, when a number of religious and civil holidays are observed in the country.

Groups or individuals may choose important or notable days to carry out attacks. A group might choose to carry out terrorist attacks on days that are meaningful to them, such the anniversary of the group's founding, or the anniversary of an influential attack.[26] They could also carry out attacks on days that are meaningful to their country, such as an independence day. However, two other important and notable days when groups or

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[26] For example, Black Tigers Day was celebrated every year by the LTTE and their constituency, following the first suicide attack carried out in Sri Lanka on July 5, 1987 (Ramachandran, 2002).

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individuals might choose to carry out terrorist attacks are religious holidays or election days.

Depending on the overall goals and motivations of a terrorist group, holidays of various religions could play an important role in strategic planning and carrying out of attacks. Groups could choose to carry out attacks during their own religious holidays or on holidays of other religions that they are in conflict with. In terms of suicide terrorism, many scholars have argued that religion is not the driving force behind these attacks (see Bloom, 2005; Pape, 2005).[27] However, Perry and colleagues (2013) included a measure of whether attacks in Israel were carried out on a religious holiday or on the day before the holiday, finding that attacks were more likely to occur in Jerusalem on Jewish holidays.

Therefore, I hypothesize that these religious holidays play a role in when suicide attacks occur for similar reasons to the arguments made above. On religious holidays, individuals are more likely to attend services in a religious institution or to attend public services. During such times, a suicide bomber has more opportunities to blend in with a crowd, to attend a public service, or to enter a religious institution undetected. This is especially true with some of the religious attire that is worn in these ceremonies.

Hypothesis 3: Compared to all other tactics of terrorism, suicide bombings are more likely to occur on religious holidays.

Election days are often a contentious event that is likely to be targeted with attacks because the groups and organizations engaged in terrorism are often opposed to the ruling party and are also usually against the electoral process in general. These days represent another opportunity for organizations to cause fear and panic with the added benefit of

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[27] The relationship between religion and suicide terrorism is addressed in more detail below.

having an effect on the makeup of the government. In order to disrupt the election process, organizations and individuals seek to carry out suicide attacks to cause the greatest chaos. Similar to the argument above, election days offer suicide bombers a greater opportunity for mobility and movement with the hopes of gaining attention while causing death and destruction. Compared to other tactics, suicide bombers have a better chance of successfully carrying out attacks at polling stations because there are large numbers of people in confined spaces and bombers can also take advantage of crowds gathering to celebrate the victory of their candidate.

Hypothesis 4: Compared to all other tactics of terrorism, suicide bombings are more likely to occur on election days.

Religious and Ethnic Differences: A Precondition to Suicide Bombings?

Previous research has also focused on religious and cultural differences within a society (or country) to try and understand the use of suicide bombings. Pedahzur (2005) related suicide terrorism to Samuel Huntington's (1993) clash of civilizations thesis. While both Pedahzur and Huntington focused on the macro aspects of the thesis, which looked at large conflicts between Islam and the West, among others, this basic framework can also be used to understand micro-level clashes between different cultures and religions within a country as well. Fox (2002) found that a minority of ethnic conflicts can be defined as those occurring between different religions identified by Huntington (civilization conflicts). In the study, he identified all conflicts occurring in each country through the use of the Minorities at Risk (MAR) dataset, noting that a number of these conflicts occurred within specific religions (i.e. Sunni versus Shiite in Iraq).

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A few empirical studies have included a measure of religious and/or cultural differences when looking at suicide attacks. Some studies have used ethnic fractionalization data (Choi & Piazza, 2015; 2016; Henne, 2012), which measures the likelihood that two randomly chosen individuals within a country have the same religious or cultural background. Other studies have included information from the Minorities at Risk (MAR) dataset, such as the number of MAR groups in a country or the MAR separatism index (Choi & Piazza, 2015; 2016; Collard-Wexler, Pischedda, & Smith, 2014; Findley & Young, 2012; Wade & Reiter, 2007). Piazza (2008) included a measure that ascertained whether there was a difference in religions between the attacker and the victims, finding the variable to be a significant predictor for suicide terrorism. While it is unclear exactly how this variable was measured, whether the differences are at the macro-level (Christianity versus Islam) or at the micro-level (Sunni versus Shiite), the fact that Piazza included a measure of fractionalization in two later studies based on this earlier finding leads me to believe that he contended that these ethnic and religious differences within countries are important.

Given this work, I hypothesize that religious and ethnic differences within a country are going to play an important role in the decision to use suicide bombings. Specifically, this tactic is used more often in countries where there are large cultural and religious differences, especially in countries that might be ethnically or religiously divided (i.e., in places such as Nigeria, where Muslims form the majority in the north and Christians form the majority in the south). Berman and Laitin (2008) contended that coreligionists are often easier targets because people look and act similar. Therefore, suicide attacks are unnecessary because any choice of weapon is sufficient to carry out an attack. However,

people of different religions oftentimes look and act differently. It is harder for a terrorist to infiltrate an area and attack individuals of different religions, so suicide attacks become necessary to achieve strategic goals (Berman & Laitin, 2008). In other words, there are more opportunities for other weapons to be used against coreligionists, but suicide bombings offer some of the only opportunities to attack people of different religions and ethnicities.

Hypothesis 5: Compared to all other tactics of terrorism, suicide bombings are more likely to occur in countries with greater religious and ethnic diversity.

OTHER SUICIDE TERRORISM RESEARCH

Scholars from a variety of fields have studied suicide terrorism along a number of relevant variables and aspects beyond the targeting strategies discussed above. Some of the main theories of suicide terrorism focus on the importance of foreign occupations, the democraticness of the target, and the competition and outbidding within a specific conflict or country. These, among other empirically and theoretically identified variables, are discussed below.

Democracy and Suicide Bombings

The relationship between democracy and suicide bombings has been championed by the work of Robert Pape. Pape (2005; see also Pape, 2003; Pape & Feldman, 2010) asserted that campaigns of suicide terrorism[28] are most likely to be used against democratic targets in response to an occupation of the homeland of the perpetrator of the attack(s). He

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[28] Pape (2005) defined a campaign as "an intended series of attacks that terrorist leaders explain and justify as aimed at gaining political concessions from a target government" (p. 39-40).

went through each campaign to explain how the organization or organizations carrying out these attacks were working against occupying countries that are generally described as democratic. Pape (2005) argued that democracies are more likely to be coerced, through the use of this tactic, to bend to the demands or goals of the organization carrying out the attack (or the campaign of attacks). He argued that democracies are viewed by critics and rival states as soft, since the general population has a lower threshold for costs associated with suicide attacks while also having a higher capacity to change policies in the country (Pape, 2005).

Many scholars have attempted to empirically assess the relationship between democracy and suicide terrorism. Wade and Reiter (2007) identified the number of suicide attacks in a country and the number of suicide attacks targeting a country in a given year.[29] The authors then used a combination of Freedom House and Polity IV data to identify democracies, and found little support for a relationship between democratic countries and suicide terrorism. Furthermore, they found that other control variables, including the size of the country, whether the country was majority Muslim, and whether the country had past experiences with suicide terrorism, all had effects of greater magnitude (Wade and Reiter, 2007).

Other scholars looked only at the incidence of suicide terrorism occurring in democracies. Santifort-Jordan and Sandler (2014) found that democracies experienced fewer suicide attacks overall and fewer attacks domestically when compared with other regime types. Similarly, Piazza (2008) found that democracies were less likely to produce

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[29] Wade and Reiter (2007) combined incidents from Pape (2005) and Pedahzur (2005) to identify suicide attacks.

individuals who committed suicide attacks and were also less likely to be targeted.[30] The author concluded that the reason there were no significant findings for democracies and suicide terrorism was that they were more likely to be targeted in all types of attacks, not just in suicide attacks. This may explain why Pape (2005) found a significant effect for democracies, since his data did not include non-suicide attacks. In contrast, Choi and Piazza (2015) found that press freedom was a consistent and significant positive indicator of suicide terrorism while democracy, as measured by Polity IV, was also a consistently positive indicator of suicide terrorism, although this finding was not significant across all 12 models.

Suicide Attacks in the Context of Foreign Occupations

Along with the targeting of democratic entities, foreign occupation was the other main aspect of Pape's (2005) theory regarding the causes of suicide terrorism. As was discussed in the section on democracy and suicide terrorism above, he believed that campaigns of suicide terrorism were carried out against democratic occupiers. This portion of his argument dealt with the perpetrators of these attacks, as Pape (2005) argued that all of the groups that have carried out these campaigns have had a similar goal in mind, which is one of nationalism (p. 42). He even described how Al-Qaida (AQ), which many people identify as a global jihad movement (Moghadam, 2008), showed signs of having nationalist goals and carried out attacks targeting democratic entities representing occupying forces throughout the Arabian Peninsula (Pape, 2005).

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[30] Although this result disappeared once a control variable for whether the attack occurred in Iraq was included in the model.

This has been the most contentious part of Pape's (2005) argument, as numerous scholars have disagreed with his assertions regarding occupation and how it relates to suicide bombings. One vocal critic has been Assaf Moghadam, who has quarreled with Pape's definition of occupation. As a glaring example, Moghadam (2006b) devoted a large portion of the article to AQ, using the group's own public statements to show how their interest in developing a Caliphate far outweighed their concern with the US occupation in the Arabian Peninsula. Collard-Wexler, Pischedda, and Smith (2014) highlighted the potential conflation of foreign occupation with other relevant concepts such as minority groups seeking independence or autonomy, while Atran (2006) noted that expelling foreign forces is not the sole goal of suicide terrorism. Pape and Feldman (2010) attempted to address these critiques and tried to explain the more recent wave of suicide attacks but instead made even more tenuous claims regarding countries and occupation.[31]

In studying the relationship between foreign occupation and suicide terrorism, Choi and Piazza (2015) focused on a specific operationalization of foreign military interventions, which they defined as incursions of one country into the territory of another country.[32] They not only looked at military interventions in general, but attempted to differentiate between different types of interventions, such as the size of the intervention, whether ground troops were used, and whether the invading country was working with or against the ruling government of the occupied country. Using a dataset that combined

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[31] Their treatment of Pakistan is a prime example as the definition for occupation was extended and molded to the point where the strategic alliance between the governments of Pakistan and the United States was seen as a form of Western occupation that explained the rise of suicide terrorism in the country. Since many of the targets in Pakistan were nationally Pakistani, as the United States actually has very few troops in the country, it also necessitated that one view Pakistan as a democracy, which was somewhat difficult to accept.

[32] This excluded military interventions such as the mobilization of the Sri Lankan government in the northwestern portion of Sri Lanka, which was controlled by the LTTE. However, the incursion of India into Sri Lanka in the late-1980s was an example of an intervention which was included.

suicide attacks from the Chicago Project on Suicide and Terrorism Suicide Attack Database (CPOST-SAD)[33] and the GTD, the authors found that pro-government interventions are more likely to lead to suicide attacks, regardless of whether the intervention was large or included ground troops (Choi and Piazza, 2015). They also found that whether ground troops were present had more of an effect than did the size of the intervention. Choi and Piazza (2015) concluded that these findings resonated with some of the arguments made by Pape (2005) but they argued that target hardening could also explain the increase in suicide attacks. In contrast, Wade and Reiter (2007) operationalized perceived occupation as the number of minorities at risk in a country in a given year that have different religious beliefs.

Collard-Wexler and colleagues (2014) instead focused on domestic and international occupations in an attempt to tease out important effects that may be missed when these two categories are combined. They looked at the number of suicide attacks against a target state in a given year[34] as the dependent variable.[35] In the analysis, the authors included separate variables that measured whether the country was involved in a foreign occupation and whether it was involved in a domestic occupation (Collard-Wexler et al., 2014). The authors found strong support for Pape's (2005) arguments when all occupations were included in the same analysis. However, when looking at the types of occupations separately, they found that foreign occupations were far more likely to lead to suicide attacks when compared with domestic occupations. Additionally, foreign occupations where there was a difference in religion between the occupier and the occupied

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[33] CPOST-SAD is the updated version of the data collected by Robert Pape and first distributed in the appendix of his 2005 book.
[34] This data also came from CPOST-SAD.
[35] Wade and Reiter (2007), by comparison, focused on the location of the attacks.

area were much more likely to experience suicide attacks when compared with foreign occupations of similar religions and all types of domestic occupations. The authors concluded that, while occupation appeared to play a role in the incidence of suicide terrorism, there were important caveats that must be taken into account (Collard-Wexler et al., 2014).

In the first study to attempt to include both attack and country-level variables into the same analysis, Santifort-Jordan and Sandler (2014) sought to differentiate between domestic and transnational attacks when looking at suicide terrorism. Drawing from a dataset of 2,448 suicide attacks from 1998 through 2010, they found that foreign occupation increased suicide terrorism overall, although this masked important difference, namely that it decreased the likelihood of experiencing suicide attacks domestically and increased the likelihood for transnational attacks. Foreign occupation was also found to have the greatest impact on the number of suicide attacks (Santifort-Jordan and Sandler, 2014). The authors concluded that these results offered support for Pape's (2005) arguments regarding foreign occupations and they also pointed out the important differences between domestic and international attacks. Similarly, Piazza (2008) found that occupation is a significant predictor, although he noted that it was not related to the regime type.[36]

Competition, Outbidding, and Suicide Bombings

At the same time that Pape (2005) put forward his explanation for the tactic, Mia Bloom (2005; see also Bloom, 2004) argued for a distinct view on the causes of suicide

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[36] In other words, occupations matter regardless of the level of democracy.

terrorism. Bloom (2005) departed from previous theories of suicide terrorism in that she focused, almost exclusively, on the importance of public support and domestic politics in the calculation of the costs and benefits of using the tactic (see also Pedahzur, 2005). Her main thesis was that terrorist organizations operating in the same area as a number of other terrorist groups are more likely to adopt suicide terrorism as a tactic in order to distinguish themselves from the pack with the hope of gaining local support as well as the support of donors, both locally and internationally (Bloom, 2005). This concept is what scholars describe as outbidding. An organization lives and dies based on the support it receives from the local community it purports to represent as well as the diaspora community living abroad and following the conflict from afar. It is through the theory of outbidding that public support and battle fatigue enter into the equation. These elements must be in place before a successful suicide campaign can be undertaken.

To help illustrate this idea of outbidding, Bloom (2005) focused on the use of suicide bombings in Israel and Palestine. In this conflict, suicide terrorism was first carried out by the Palestinian Islamic Jihad (PIJ) in 1989 and soon after was followed by Hamas in 1993. The two groups continued to carry out these attacks up through the beginning of the Second Intifada, until they were joined by the Popular Front for the Liberation of Palestine (PFLP) in 2001 and Fatah in early 2002. Given all of the groups vying for support from a small localized population as well as international donors throughout the Arabian Peninsula and abroad, it is not surprising that several groups, including Fatah, who had initially refused to carry out such attacks, engaged in suicide tactics. Bloom (2005) also pointed out that competing claims of responsibility frequently occurred for attacks carried out in Israel and Palestine as groups wanted to exhibit their power and prowess.

One aspect of outbidding is individual groups taking credit for attacks that they carry out. When compared to common crime, a big difference is that criminals seek to avoid attention while terrorists hope to attract it (LaFree and Dugan, 2004). Furthermore, groups normally attempt to carry out attacks that are more likely to grab the attention of the media (Hoffman 2006; Jenkins 1974). Groups that are in competition with each other are more likely to take credit for attacks, especially larger and more influential attacks. Seifert and McCauley (2014) found that attacks were more likely to be claimed in the earlier years of the Iraq War, which could be a result of competition between numerous groups. Hafez (2006b) found a similar trend, noting that the earlier years were also when more attacks targeted Coalition Forces. This highlights the potential importance that target types might play in claiming strategies of groups, where they appear to be more likely to claim attacks against targets that may be more acceptable to the public.

This theory has also received scholarly criticism (similar to Pape's theory). While the majority of these critiques have been related to a lack of empirical support, there is some literature that offers alternatives or counter arguments to outbidding. These critiques include that: outbidding might have more of an impact on *quality* rather than *quantity* of violence (Conrad & Greene, 2015); competition might lead to less violence under an organizational ecology approach (Nemeth, 2013); and the possibility that a cycle of state repression leads to insurgent solidarity and cooperation which can also create more suicide bombings and even further heightened state repression (Brym & Araj, 2008).

Findley and Young (2012) claimed to be the first empirical test of the outbidding thesis, looking at its effects on suicide bombings specifically and also on terrorist attacks as a whole. Using the dataset created by Wade and Reiter (2007) to measure suicide attacks

and the GTD to measure all terrorist attacks from 1970-2004, the authors attempted to address the outbidding thesis using three different constructs. The first variable looked at the number of perpetrator groups active in a conflict according to the GTD; the second used the number of veto players during an armed conflict; and the third used the number of actors in a conflict based on another database[37] (Findley & Young, 2012). While the authors initially found a marginally significant result between outbidding and suicide terrorism, this effect waned when looking across model specifications and when control variables were included. Findley and Young (2012) concluded that the logic of the outbidding thesis needed to be reexamined and they suggested that the theory might be tied too closely to the Israeli conflict.

Gupta and Mundra (2005) sought to understand strategic decision-making in the use of suicide bombings as a tactic. They focused on three main strategic uses: as retaliation to government aggression; as a tool to disrupt peace negotiations and elections; or as a form or rivalry or cooperation among non-state actors. Focusing specifically on the Israeli context, Gupta and Mundra (2005) looked at suicide attacks carried out by Hamas and the PIJ, and shooting incidents carried out by Fatah. One interesting finding was that Fatah shooting incident in a prior period had an effect on suicide attacks carried out by Hamas and the PIJ in the current period (Gupta & Mundra, 2005). However, this effect was not a significant predictor when the roles were reversed, lending support to the idea of outbidding or one-upmanship. Furthermore, the authors found support for the claim that suicide bombings were used as a strategic tactic in the larger Israel/Palestine political arena.

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[37] This other database was the Uppsala Conflict Database, available at:
http://www.pcr.uu.se/research/ucdp/datasets/ucdp_actor_dataset/.

The authors concluded that, at least in the context of Israel, rivalry and cooperation is an important aspect of the choice to use suicide bombings among the various groups operating in the area (Gupta and Mundra, 2005).

Several other studies included a control variable that measured the number of active groups or rivalries between groups when studying suicide terrorism. Choi & Piazza (2016) included a measure looking at the number of terrorist movements that have committed an attack in a country in a given year and found that the coefficient was significant and in the expected direction in two of the three models (for similar findings, see Choi & Piazza, 2015). Piazza (2008) used a similar measure of the number of competing groups, although he only found marginally significant results for one of six models, with no support for outbidding once Iraq is controlled for in the model. Collard-Wexler and colleagues (2014) looked at the cumulative number of local attacks as a proxy for either outbidding or copycat attacks, finding that the coefficient was significant across model specifications. Braun and Genkin (2014) looked at prior adoption of the tactic within a 500-kilometer radius of the minority group and obtained a significant result in eleven of the thirteen models.[38] Finally, Seifert and McCauley (2014) noted that almost 80 percent of the suicide bombings in Iraq from 2003-2010 went unclaimed, which they argued was a challenge to the outbidding hypothesis. Overall, it appears that results are mixed, at best, regarding competition, outbidding, and suicide terrorism.

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[38] However, this measure was likely conflated with the simple fact that prior successful attacks in an area lead to future attacks in the same area.

Religion as the Driving Force in Suicide Bombings

Pape (2005) contended that it is not a specific religion, such as Islam, that is more likely to lead to suicide campaigns, but instead these attacks are most likely to happen when there is a stark difference in religion and/or culture between an occupying force and the local population (see also Bloom, 2005). As an example, Pape (2005) noted how the LTTE carried out suicide attacks against the Sinhalese government forces in early 1987 but when India sent troops into the country to battle the group later that year, the LTTE ceased their suicide operations and used more conventional tactics. Following the withdrawal of Indian troops in 1990, the LTTE once again began to carry out suicide operations against the Sinhalese government. The main difference, Pape (2005) noted, was that the Tamil population was mostly made up of people following Hinduism, which is also the majority religion of India. However, the Sinhalese were mostly Buddhists. He argued that these religious differences, which often go hand-in-hand with cultural differences, allow an organization or perpetrator to more easily justify the use of suicide tactics.

Moghadam (2006b), however, disagreed with Pape's (2005) assertion that religion does not play a role in the use of suicide terrorism. Moghadam (2006b) emphasized the importance of religion and, more specifically, AQ's role in the proliferation of the tactic across the globe. Moghadam (2006b) laid out his initial hypothesis, stating that Pape's (2005) explanation was a good way to describe what Moghadam called the first wave of suicide terrorism. This wave included many of the groups and countries that have been discussed above, including Hezbollah in Lebanon; the LTTE in Sri Lanka; the Palestinian groups in Israel, West Bank, and Gaza;[39] and the PKK in Turkey. However, Moghadam

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[39] This included Fatah, Hamas, the PIJ, and the PFLP.

(2006b) argued that a second wave of suicide terrorism, led by AQ and groups linked with the organization, quickly spread to many conflict zones that had not previously experienced this form of terrorism. In his book, Moghadam (2008) expanded on his theory, first offering evidence of the large increase in the use of suicide operations following AQ's successful attack on September 11th, 2001 in New York City and Washington, D.C. He argued that much of the increase in suicide terrorism was a result of the rise of AQ as a global terror actor.

The important link, according to Moghadam (2008), is the guiding ideology of Salafi Jihad. While other scholars, such as Pape and Bloom were quick to downplay the importance of religion and ideology, Moghadam instead argued that it plays an important role. Moghadam (2008) stated that this specific strand of Islam has played a significant part in the explosion of suicide terrorism around the world. He drew important lines of distinction between Salafism more generally and Salafi Jihad, pointing out that most Salafists believe in the spreading of God's word through non-violent means, such as through *dawa*[40] (Moghadam, 2008). Salafi-Jihadists, by comparison, advocate violence in spreading the word of God (Moghadam, 2008). Moghadam (2008) believed that the second wave of suicide terrorism arose in many more places and represented a global jihad, whereas the first wave represented localized conflicts.

Similarly, Hafez (2006a) argued that cultural theories of suicide terrorism better accounted for individual- and group-level motivations and actions. According to Hafez (2006a), religion is a primary component of culture, thereby linking this work to that of Moghadam (2008) and other scholars who have focused on the importance of religion in

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[40] Moghadam (2008) defined dawa as "the nonviolent call to Islam by proselytizing" (p. 45).

the choice of suicide terrorism as a tactic. Acosta and Childs (2013) discussed the importance of the suicide-attack network and argued that the links between organizations are crucial in understanding when and where suicide tactics are carried out. This high connectivity between groups could help to explain Moghadam's (2008) stance regarding how AQ's innovations were able to diffuse globally.

Atran (2003) initially argued that there was a strategic logic to suicide terrorism, similar to the views of Pape and Hoffman, among others. He added to this work by also linking the individual and organizational goals in carrying out these types of attacks. However, he differed from Hafez (2006a), in that he described this link as a result of recruitment efforts and even compared an individual suicide bomber to participants in Stanley Milgram's (1974) famous laboratory study. Suicide bombers feel a bond to the other members of their cell and the group more generally and it is this idea of fictive kin that links individual- and group-level motivations (Atran, 2003; also see Atran, 2004). In a later piece, Atran (2004) began to move away from a rational choice perspective and placed more emphasis on religion as an important factor. In this piece, he argued that an interaction between religion and ethnicity could be the vital piece to understanding the use of this tactic (Atran, 2004). Finally, in Atran's (2006) third piece, there was a complete transformation, as he now viewed the tactic as shifting from organized campaigns to a large global campaign with religion as its inspiration (similar to Moghadam, 2008). He even stated that Pape's (2005) argument that the tactic is not related to the Salafi ideology was based on inferences rather than facts (Atran, 2006). It is interesting to note this shifting viewpoint in such a short period of time, which likely reflects a real change noted by

academics around this time period from an era or localized conflicts to an era of global jihad.

Moghadam (2009) created a dataset by combining attacks identified by WITS and the Suicide Terrorism Database[41] and conducted a group-level analysis exploring the relationship between Salafi Jihad and suicide terrorism. He found that almost 38 percent of the 788 attacks with a known perpetrator group were carried out by groups that ascribed to a Salafi Jihad ideology. Furthermore, of the 1,069 attacks without a perpetrator group, approximately 80 percent took place in Iraq, where the majority of the groups operating ascribed to Salafi Jihad. He also found that suicide terrorism had been dominated by this religious ideology in terms of the number of attacks, the number of groups carrying out suicide attacks, and in terms of lethality (Moghadam, 2009). Based upon these findings, Moghadam (2009) concluded that we should look at suicide terrorism as having two distinct phases, with the more recent attacks being driven by this ideology and a globalization effect through the operations of AQ.

Berman and Laitin (2008) identified terrorist organizations as public goods providers, taking an approach that treated them similar to religious clubs. The main argument was that religious clubs are less likely to have defections and are therefore able to pre-select individuals that are more likely to carry out suicide attacks because of their willingness to sacrifice as a way to gain membership into the club (Berman & Laitin, 2008). Using a combination of attack data from Pape (2005) and the ICT, the authors tested whether suicide attacks were used more often against hard targets. Berman and Laitin

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[41] This database was collected by the National Security Studies Center at the University of Haifa in Israel and represented an updated version of the data initially collected by Pedahzur (2005). Unfortunately, this effort is also no longer publicly available.

(2008) found that predictors common in determining civil war were not predictive of suicide terrorism. As discussed in the section above, the authors found that suicide attacks were more successful when carried out by religious organizations, lending support to the club model. Berman and Laitin (2008) concluded that governments should focus on increasing the benefits of leaving these clubs or organizations (for a similar argument at the group-level, see Dugan & Chenoweth, 2012).

Henne (2012) argued that the goals of religious terrorist organizations are to kill as many people as possible and that these groups target indiscriminately, while non-religious groups limit casualties and do not carry out suicide bombings within their own communities or spheres of influence. The author used a dataset put together at the U.S. Army's School of Advanced Military Studies, covering suicide bombings from 1980-2006. As described above in the section on lethality, Henne (2012) found that religious groups in general were more likely to carry out more lethal incidents (see also Capell and Sahliyeh, 2007). The author concluded that it is not the effect of a specific religion but is instead the effect of religious ideologies in general.

Finally, Ginges and colleagues (2009) looked at the importance that religion plays in the larger support for suicide terrorism. Using four different studies that included a variety of religions,[42] the authors concluded that attending religious services had a strong correlation with support for suicide bombings, pointing to the importance of coalitional commitment rather than religion itself (Ginges, Hansen, and Norenzayan, 2009).

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[42] Individuals included in these studies identified as: Catholics; Hindus; Jews; Muslims; Protestants; and Russian Orthodox Christians.

The Role that a Culture of Collectivism Plays in Suicide Bombings

Pedahzur (2005) highlighted the importance of understanding the different views of suicide and death across cultures. While Western society is likely to experience more egoistic suicide, which is much more individualistic, altruistic[43] and fatalistic[44] suicide are much more likely to be observed in a collectivist society (Braun & Genkin, 2014). By highlighting the importance of culture, we begin to see how it plays a role and also how religion could perhaps play an indirect role in the use of this tactic.[45] To study this concept, Pedahzur and colleagues (2003) focused on individual suicide bombers and identified their motivations for carrying out attacks. More specifically, the authors used the typologies identified by Durkheim ([1897], 1951) and hypothesized that bombers exhibited a combination of altruistic and fatalistic suicide. The researchers created their own individual-level dataset of attacks in Israel and Palestine based upon a review of Ha'aretz newspaper articles from 1993 through 2002 (Pedahzur et al., 2003). The authors identified both suicide and non-suicide terrorists who participated in attacks in order to make comparisons between the two groups. Pedahzur and colleagues (2003) found that suicide bombers were significantly more likely to have a religious education and be affiliated with a religious fundamentalist organization, were older, were unmarried, and came from less affluent regions. The authors concluded that suicide attacks are a result of both collective and individual motivations (Pedahzur et al., 2003).

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[43] Altruistic suicide is defined as deep societal integration in which the collective society is more important than the life of the individual (Durkheim [1897], 1951).

[44] Fatalistic suicide is defined as a sense of hopelessness within the individual brought about by societal conditions, specifically economic or political oppression (Durkheim [1897], 1951).

[45] If we assume that culture is often defined by the religious beliefs of the community or society we are discussing, among other things.

Braun and Genkin (2014) further developed this line of research by arguing that the cost of suicide is reduced in a collectivist society because the group is valued more than the individual. Additionally, they contended that countries that are defined as more collectivist also happen to be where many of the groups that use suicide terrorism originated. As compared to Pedahzur and colleagues (2003), these authors instead focused on a global analysis of suicide terrorism at the group-level. Using both the RAND Database of Worldwide Terrorism Incidents and the Terrorist Organization Profiles (TOPs) datasets, the authors identified 414 groups that were active at any point after the first suicide terrorist attack in 1981. They then used four datasets[46] to triangulate the exact timing of the adoption of the tactic by these groups. To identify group-level collectivism, Braun and Genkin (2014) used an index based on six scales measured at the ethnic group-level, which were then assigned to the 414 groups based on country-level scores for various ethnic groups within the country. The authors found that more than 25 percent of the groups that rated high on the collectivism index adopted suicide terrorism, whereas only 6 percent of the groups that rated low on the index adopted the tactic (Braun & Genkin, 2014). They also found that religious groups were 5 times more likely to adopt the tactic when compared to non-religious groups. Furthermore, they found that Islamic religious groups were 6 times more likely than non-Islamic religious groups to adopt suicide terrorism. Overall, Braun and Genkin (2014) highlighted the importance of collectivism by noting that the most collectivist organizations are 50 percent more likely to adopt the tactic when compared with the organizations that are the most individualist.

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[46] The four datasets were: CPOST-SAD; the GTD; WITS; and Terrorists, Insurgencies, and Guerillas in Education and Research (TIGER).

The Success of Suicide Terrorism

Success in terrorism can be defined on a number of levels. At the tactical level, success can be defined based on the tactic used in an attack. In other words, did the suicide bomber detonate his or her device? Was the target kidnapped, or was the plane hijacked? Success can also be defined based on casualties, whereas the attacks that are most successful are those that cause the greatest number of casualties, such as 9/11 or the Beslan School attack in Russia. Other scholars have defined success based on whether larger group goals have been met or concessions have been made by the government. Did Hezbollah succeed in driving occupation forces out of Lebanon? Was the Islamic State of Iraq and the Levant (ISIL) successful in creating a caliphate? In prior research on suicide terrorism, scholars have used these different definitions of success as well as others. While that might make it difficult to make comparisons across studies, it does give me insight into how to best define success in this study. In the end, many of the other forms of success are difficult, if not impossible, to measure. So I define success in terms of whether the attack was actually carried out (i.e., whether the bomb detonated).

One of Pape's (2005) main tenants was that the decision to use suicide terrorism is a strategic maneuver often made by organizations engaged in terrorism. More specifically, he argued that groups choose this tactic because it is effective (Pape, 2005). Using Hezbollah as his primary example, Pape (2005) argued that the organization successfully used suicide attack campaigns to force the withdrawal of foreign troops from Lebanon, first the United State and France in 1984, and then Israel, which withdrew from Beirut and other parts of northern Lebanon in 1985 and completely withdrew from southern Lebanon in 2000. It was this apparent success that drew the interest of other organizations, such as

the Liberation Tigers of Tamil Eelam (LTTE) in Sri Lanka and the Kurdistan Workers' Party (PKK) in Turkey. Pape (2005) further argued that Hamas also found success in using the strategy in Israel, West Bank, and Gaza during the 1990s and early 2000s. Overall, of the thirteen suicide campaigns that were complete at the time that the book was written, Pape (2005) contended that seven were successful in meeting the goals of the group, which he claimed was a remarkable success rate in terrorism (p. 65).

This assertion, however, has been critiqued by a few scholars. The primary concern that Moghadam (2006b) raised with Pape's (2005) theory has to do with the claim that suicide terrorism is an effective tactic. Moghadam (2006b) contended that the 54 percent (7/13) success rate that Pape (2005) identified for suicide campaigns was too high. He first argued that four of the ongoing campaigns which were excluded from the calculation[47] have actually lasted longer than the average length for completed campaigns and he therefore considered these unsuccessful. He further quarreled with three of the completed campaigns and instead believed that there were outside forces that more likely played a role in concessions that were made. Adjusting for these changes, Moghadam (2006) instead calculated a success rate of 24 percent. Additionally, Atran (2006) argued that Pape's conclusions were both too narrow, since he did not look at the success of conventional terrorist attacks, [48] and also too broad (for example, there were differences in suicide terrorism in the era of the LTTE when compared to the more recent wave of attacks, which Pape did not address).

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[47] These campaigns were identified as: Al-Qa'ida (AQ) against the United States; Chechen rebels against Russia; Kashmir rebels against India; and the Palestinian rebels against Israel (Pape, 2005).
[48] Although it should be noted that Horowitz (2010) stated that suicide attacks are much more successful than non-suicide attacks. This assertion was not tested, however.

There has been little empirical research on the success of suicide attacks. In research discussed above, Harrison (2006) discovered an interesting finding regarding a bystander effect. In almost 40 percent of the attacks, there was information that identified a civilian who challenged the bomber (Harrison, 2006). In attacks where the bomber was challenged, there were, on average, 28.2 fewer casualties. Considering that attacks where the bomber was challenged resulted in an average of only 16.9 casualties, this is a large difference (Harrison, 2006). Overall, the author concluded that a more in-depth look at bystander effects was warranted and could have benefits in terms of counter-terrorism policy.

Berman and Laitin (2008) analyzed attacks in Israel, Palestine, and Lebanon, finding that suicide attacks were more successful (operationalized based on lethality) when carried out by religious organizations. Benmelech and Berrebi (2007) specifically focused on bombers that failed for any one of a number of reasons, [49] finding that they were younger, on average, and were less likely to be enrolled in higher education.

Suicide Attacks: A Lethal Reality

The lethality of suicide terrorism has already been addressed above. It has also been highlighted by many scholars as a main driving force for studying the tactic (Berman & Laitin, 2008; Bloom, 2005; Hafez, 2006a; Henne, 2012; Hicks et al., 2011a; Hicks et al., 2011b; Kliot & Chaney, 2006; Moghadam, 2003; 2009; O'Rourke, 2009; Pape, 2005).

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[49] Attacks were considered unsuccessful if the bomber: failed to detonate; looked suspicious and was apprehended or killed; panicked and blew themselves up before reaching their target; or chickened out (Benmelech & Berrebi, 2007).

Rather than rehashing many of the same arguments about lethality from above, I will briefly highlight some interesting findings on the topic.

Using the Iraqi Body Count (IBC) database to assess civilian casualties from the beginning of the war (March 20, 2003) through March 19, 2008, Hicks and colleagues (2011b) found that suicide bombings were more lethal than Coalition airstrikes, killing an average of 19 civilians per attack as compared to airstrikes, which killed 17 people per attack. They also found that suicide bombers were more lethal than non-suicide car bombings (Hicks et al., 2011b). Finally, they compared suicide bombings, car bombings, and improvised explosive device (IED) attacks, finding significant differences in lethality between the three tactics. Comparing different suicide bombing tactics, Hicks and colleagues (2011b) found that bombers on foot were more lethal than those in a vehicle (see also Bhatti et al., 2011).

Henne (2012) found that religious groups were significantly more likely to carry out more lethal attacks, with fundamentalist organizations being the most lethal. However, he also found that Muslim religious organizations were not more lethal than non-Muslim religious organizations. O'Rourke (2009) found that female suicide bombers are more lethal, on average, and also found that lethality increased over time for females while it decreased over the same time period (1985 through 2008) for males.

The Effect of Long-term Conflicts on Suicide Terrorism

Terrorism often springs up in areas experiencing large conflicts, whether in terms of a civil war, a foreign occupation, or another form of political violence involving state actors. Many of the scholars that have focused on suicide terrorism have addressed the ways in which this conflict environment plays a role in the initiation of suicide bombings.

In general, Pape (2005) contended that suicide bombing campaigns were used as a strategy by weak actors in an attempt to balance the levels of power when facing a stronger actor. Using the logic of coercive power, he argued that these organizations graduated to suicide terrorism when they found that other options do not lead to concessions or negotiations with the government.

Similarly, Bloom (2005) argued for a strategic logic to the use of suicide terrorism. She also argued that organizations used a cost-benefit analysis to decide whether to engage in suicide terrorism as a strategy (Bloom, 2005). Additionally, she noted that suicide terrorism was most likely to occur in areas with long-standing conflicts. Bloom (2005) described this in terms of battle fatigue, where support for the tactic increases the longer that an area has been exposed to prolonged and continuous violence.

A good example of this type of environment is within the Israel/Palestine conflict. There were few suicide attacks carried out throughout the 1990s as surveys of Palestinian civilians showed little public support for suicide terrorism and a relatively high belief that Israel and Palestine could co-exist. However, following the beginning of the Second Intifada, there was a noticeable shift in public support for suicide terrorism, as the majority of Palestinians surveyed favored the use of the tactic against Israel (Bloom, 2005, p. 193). This could be explained through the frustration experienced by Palestinian civilians regarding the peace process and also the anger they felt at the Israeli government regarding numerous actions that security forces had taken against civilians. The Second Intifada was far more violent than the first, and battle fatigue likely played a role in this escalating violence. This support is crucial and signals to groups active in the area that they can gain

a leg up on their competition if they showed that they were willing to carry out these attacks, sacrificing a member of the group to the cause.

Pedahzur (2005) also addressed this topic and argued that suicide terrorism arose in conflicts with an asymmetrical balance of power, especially between a weak organization and a strong state. This allows for fear to spread throughout the society and doubt regarding the abilities of the government to keep civilians safe to creep into the minds of the populace. The author also framed the use of suicide terrorism within the clash of civilizations thesis, with a focus on the struggle for territory and an aspiration of self-determination (Pedahzur, 2005).

Furthermore, Hoffman and McCormick (2004) argued that groups use suicide terrorism to both coerce the current regime and to politically mobilize the group's support base. Hoffman and McCormick (2004), while taking a rational choice approach, contended that one strategy of using suicide terrorism could be to make the organization seem irrational, thereby allowing the group to craft an image of strength and utter determination. Also discussed was how these groups that use suicide terrorism effectively develop the ethos of the martyr, which builds recruitment and also increases public support.[50] This approach comes out of the initial work by Hoffman (2003), where he argued that the use of suicide bombings is a logical choice for a number of reasons, including the fact that bombings were: inexpensive;[51] effective in terms of sowing fear and causing panic and chaos; less complicated than other strategies, such as hijackings; guaranteed to garner a ton

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[50] The authors pointed out that this works with both religious groups and secular groups, under the tradition of the Shahada and the tradition of the hero, respectively (Hoffman & McCormick, 2004).
[51] An estimate that was discussed throughout the literature comes from Hassan (2001), in which an individual from Hamas stated that the typical suicide bombing cost around $150, with an additional $3,000 to $5,000 given to the family of the bomber.

of media coverage;[52] and led to large consequences, such as the ripping apart of the fabric of trust that holds societies together.

Assassination Strategies and Suicide Attacks

While it could be argued that assassinations are a tactic in the same ways that I have discussed suicide bombings, they are not mutually exclusive. The reason is that assassinations refer to a tactical strategy whereas suicide bombings refer to the tactical use of a weapon. Therefore, there are instances, such as the murder of Rajiv Gandhi in 1991, or the two attempts to kill Benazir Bhutto, the former Prime Minister of Pakistan, in 2007, in which the tactic of suicide bombing was used to carry out a targeted killing of a prominent individual. So it becomes pertinent to ask whether suicide bombings are used to carry out assassinations.

While this has not been a focus of the research on suicide terrorism, Kliot and Chaney (2006) noted that, in Israel and Palestine, iconic political figures and structures were not chosen in suicide attacks. O'Rourke (2009) found that the majority of assassination attempts (approximately sixty percent) were carried out by female operatives. Pape (2005) and Bloom (2005) both highlighted, throughout their respective books, the ways in which suicide bombings have been used to carry out successful and influential assassinations. Pedahzur (2005) also argued that suicide terrorism is effective as a weapon in assassinations. Mandala (2017) assessed the use of the tactic more generally, finding that over 70 percent of assassination attempts involved the use of a firearm, while only 15

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[52] Although anecdotal, I estimate that even in 2015, a typical suicide bombing got anywhere from 10 to 20 article at a minimum describing one specific attack while most other forms of terrorism typically get anywhere from one to five articles.

percent involved the use of an explosive device. This is in stark contrast to overall attacks, in which 56 percent involved explosive devices and only 32 percent involved firearms (Mandala, 2017).

Targeting Cities in Suicide Terrorism

Identifying where suicide attacks are likely to occur is an important endeavor if the goal is to limit the number of attacks. Many scholars studying suicide terrorism, through their choice of data and how they frame their research questions, have identified the countries in which this phenomenon is most relevant and problematic. These countries, which have been the focus of many empirical studies, include: Israel and Palestine (Aharonson-Daniel et al., 2006; Araj, 2012; Benmelech & Berrebi, 2007; Benmelech, Berrebi, & Klor, 2012; Benmelech, Berrebi, & Klor, 2015; Berko & Erez, 2005; Berrebi, 2007; Bloom, 2004; Brym & Araj, 2006; Brym & Araj, 2008; Frisch, 2006; Ginges et al., 2009; Gupta & Mundra, 2005; Harrison, 2006; Kaplan, Mintz, Mishal, & Samban, 2005; Kaplan, Mintz, & Mishal, 2006; Khasan, 2003; Kimhi & Even, 2004; Kliot & Chaney, 2006; Merari et al., 2009; Merari, Fighel, Ganor, Lavie, Tzoreff, & Livne, 2010; Pedahzur et al., 2003; Weinberg et al., 2003); Iraq (Hafez, 2006b; Hicks et al., 2011a; Hicks et al., 2011b; Seifert & McCauley, 2014); Russia (Speckhard, 2006; Speckhard & Ahkmedova, 2005; Speckhard & Ahkmedova, 2006; Speckhard & Ahkmedova, 2007); Pakistan (Bhatti et al., 2011; Kazim et al., 2008; Nolan, 2013); Afghanistan (Rome, 2013); and Lebanon (Krueger & Malekova, 2003). However, at the more micro-level of analysis, it is important to understand where, within these countries, suicide attacks are most likely to occur.

Kliot and Chaney (2006) took up this endeavor of attempting to identify where suicide attacks occur within a country. The authors identified suicide attacks in Israel and

Palestine from 1994 through September, 2005 by using several local news sources, as well as government data from the Israeli intelligence service, the local police, and the Israeli Defense Force (IDF) (Kliot & Chaney, 2006). The authors found that most attacks occurred close to the city in which the attack was planned and coordinated. Additionally, when the distance traveled was further, it represented the importance of the targeted city, such as Jerusalem, Tel Aviv, and Haifa (Kliot & Chaney, 2006). Similarly, Hafez (2006b) found that the majority of suicide attacks in Iraq occurred in and around Baghdad. In contrast to these findings, Bhatti and colleagues (2011) found that suicide bombings were spread across many districts encompassing four different provinces within Pakistan.

The Mystery of Internally Displaced Populations and Suicide Bombings

While most of the previous studies have focused on many of the same variables related to suicide terrorism, some scholars took this field of research in new and exciting directions. One of these studies was conducted by Choi and Piazza (2016), which focused on internally displaced populations and their relationship to suicide attacks. The authors argued that there were four intervening variables that mediated the relationship between internally displaced populations and suicide terrorism: economic inequality; political exclusion of ethnic groups; interethnic group violence; and state failure/human rights abuses (Choi & Piazza, 2016). The authors identified suicide and non-suicide attacks from the GTD and the Wade and Reiter (2007) data, while also using a dataset that identified the number of internally displaced populations in a country as the main independent variable (Choi & Piazza, 2016). To study the four intervening variables, Choi and Piazza (2016) used the Gini coefficient, an ethnic violence indicator, a measure of the size of the politically excluded ethnic population, the Physical Integrity Rights measure, and the

Aggregate State Failure measure, which allowed the researchers to look at the effect of internally displaced populations on counter-terrorism capacity. They also included a number of control variables which have been shown to be significant in many prior studies of suicide tactics, including those described above. Choi and Piazza (2016) found that: there was a direct relationship between internally displaced populations and suicide attacks; internally displaced populations were positively associated with all five intervening variables; ethnic group exclusion, human right abuses, and state failure were generally significant and in the expected direction across various models which used different dependent variables; and human rights abuses were found to be positively and consistently associated with suicide terrorist activity, making it the only intervening variable with a consistent relationship. The authors concluded that internally displaced populations appeared to play an important role but more research on these effects was still needed (Choi & Piazza, 2016).

EXPLORING VEHICLE BOMBINGS

While suicide attacks have been one of the most studied terrorism-related phenomenon, which has created a rich environment of theoretical and empirical research from which to draw, there is almost no research looking at vehicle bombings independently as a tactic (for a history of the car bomb, see Davis, 2007). Within the literature on suicide terrorism, the tactic of vehicle bombings has been mentioned as an alternative delivery mechanism from suicide vests or belts (see Hicks, Dardagan, Bagnall, Spagat & Sloboda, 2011a; Hicks et al., 2011b; Speckhard, 2009; Speckhard & Ahkmedova, 2006). For example, Hafez (2006b) noted that the majority of the attacks in Iraq involved the use of

car bombs,[53] while Harrison (2006) found that most of the attacks in Israel and Palestine involved a bomber on foot. Furthermore, Bhatti and colleagues (2011) found a more even split between the use of individual bombers on foot and those in vehicles in Pakistan.

Given this lack of research on vehicle bombings as a tactic of terrorism, I have no empirical backing to generate hypotheses for each individual variable discussed above. However, given my work with the GTD and some of the similarities between vehicle and suicide bombings identified above, I take the first step in a comparison of vehicle and suicide bombings with an exploratory analysis of these two tactics and all other terrorist attacks. At this stage, I will use the same variables described above and see whether the relationships between suicide bombings and other terrorist incidents holds when the vehicle bombings tactic is assessed separately from all other attacks.

I expect a specific relationship to evolve for the three categories of terrorist attacks. If you think of the relationship as being along a continuum, then suicide bombings and all other terrorist attacks would be on opposite ends. Vehicle bombings, while still being significantly different from suicide bombings, would fall closer on the continuum to this tactic than to all other tactics. It is even possible that for some of the relationships, the difference between the coefficients may not be significant. Targeting strategies, for example, may be similar for suicide and vehicle bombings, given the fact that both tactics are more lethal, on average, than all other terrorist attacks. I hypothesized above that suicide bombings are less likely to target security forces because of the lack of opportunities to interact with them. The same may hold true for vehicle bombings and the

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[53] Hafez (2006b) reasoned that this was the case because cars were relatively inexpensive and were driven by a majority of people in the country.

difference between vehicle and suicide bombings may not approach statistical significance. However, without this initial baseline research looking at vehicle bombings as a separate tactic, it is difficult to make any claims regarding hypothetical relationships for specific variables. It is my hope that this research can serve as a springboard for further research on vehicle bombings as a distinct and unique terrorist tactic.

AN OVERVIEW OF PRIOR RESEARCH AND THE CURENT STUDY

Upon reviewing the empirical literature on suicide attacks, a number of observations are apparent. First, many different data sources have been used in this empirical research. With the exception of scholars that published with the same data on multiple occasions, almost every empirical study used a different dataset of suicide bombings or bombers. Many of the studies combined a number of different data sources, but authors have used these sources rather evenly across the research landscape, including the GTD, data from Robert Pape and CPOST-SAD, data from Ami Pedahzur and TIGER, and WITS, among many others.

Second, when thinking about the scope of the studies, numerous studies focused on a specific country or a specific conflict. There were a number of studies, described above, that focused exclusively on the conflict in Israel and Palestine, while others focused on the use of suicide bombings in Iraq. Additional countries that have been the focus of this empirical work include Pakistan, Afghanistan, and Russia (Chechnya). There have been fewer research endeavors which have focused on a global analysis of suicide terrorism. This can be both good and bad, as a focus on individual countries allows researchers to discover potentially important variables that may be washed out in a global analysis.

However, focusing on specific countries and conflicts may miss important similarities across these areas that become evident in an analysis of all attacks.

Third, focusing on the level of analysis, there is also diversity and a relatively even split in what researchers have assessed. Some studies looked at the individual-level bomber and the characteristics that might lead someone to carry out these types of attacks (Berko & Erez, 2005; Hicks et al., 2011a; Hicks et al., 2011b; Seifert & McCauley, 2014; Weinberg et al., 2003). Other studies, instead, focused on the group-level in an attempt to distinguish organizations from one another and see if there are differences in terms of motivations, goals, or ideologies (Berman & Laitin, 2008; Gupta & Mundra, 2005). Still other studies focused on country-level differences, looking at macro-level variables that might have an effect on suicide attacks over time (Choi & Piazza, 2015; 2016; Collard-Wexler et al., 2014; Findley & Young, 2012; Hafez, 2006b; Rome, 2013; Santifort-Jordan & Sandler, 2014; Wade & Reiter, 2007). Finally, there were a set of articles that focused on attack-level characteristics (Capell & Sahliyeh, 2007; Harrison, 2006; Henne; 2012; Kliot & Chaney, 2007; Moghadam, 2009; Piazza, 2008).

Fourth, as has been discussed above, many of these prior studies lacked any comparison group. Very few studies compared suicide and non-suicide attacks, which is important for those that are interested in understanding the impact and unique qualities of suicide terrorism. While this is not to say that these other studies have not added important information and began to bring clarity to the understanding of the use of suicide bombings as a tactic, these studies are limited to generalizing only about this one tactic rather than generalizing amongst the many tactics used in terrorism.

Table 1. Summary of Research Hypotheses

H1: Compared to all other tactics of terrorism, suicide bombings are less likely to be used against hard targets.

H2: Compared to all other tactics of terrorism, suicide bombings are more likely to be used as part of complex attacks.

H3: Compared to all other tactics of terrorism, suicide bombings are more likely to occur on religious holidays.

H4: Compared to all other tactics of terrorism, suicide bombings are more likely to occur on election days.

H5: Compared to all other tactics of terrorism, suicide bombings are more likely to occur in countries with greater religious and ethnic diversity.

With these issues in mind, I seek to identify variables unique to suicide bombings in order to create a profile for the tactic that can be used in SCP analysis and by practitioners and security officials. While many previous studies have shown support for a number of variables to explain the use of suicide bombings, this research goes a step further by asking whether these characteristics are describing unique aspects of suicide bombings. This research also furthers the study of suicide terrorism by introducing methods incorporating both attack- and country-level characteristics that could have an effect on the tactic used in an attack. In order to study these attack- and county-level variables simultaneously, this research uses analytic methods that allow for the flexibility of looking at both within-country and between-country differences. Now that the hypotheses for this research have been explicitly laid out, it is important to understand where the data come from, how the concepts above are operationalized, and what methods are used to test the hypotheses. The next chapter addresses these topics at length. For ease of use, I have compiled all of the

hypotheses introduced above into a single table. Please refer to Table 1 for a restatement of the hypotheses.

Chapter 3: Data and Methods

This chapter lays the foundation for the empirical analysis and discussion in the following chapters. I begin with a discussion of the primary dependent variables that are used in the analysis, which were created from the incident-level data available in the Global Terrorism Database (GTD), a publicly-available, open-source and unclassified event-level dataset that records information on terrorist attacks from 1970 through 2015. Following this discussion of the variable and the data source, I then focus on the independent variables and their various sources. These variables include: *Security Target*, *Military Target*, *Civilian Target*, *Complex Attack*, *Religious Holiday*, *Election Day*, C*ultural Fractionalization*, *Religious Fractionalization*, and *ER Polarization Index*. Relevant control variables are also included and are discussed at this point. This includes the following attack-level variables: *Democratic Target*, *Assassination*, *City Detonation*, *Group Attribution*, *Tactical Success*, *LN Fatalities*, *LN Injuries*, *After 9/11*, and *International Attack*. Also included are the following country-level control variables: *Foreign Occupation*, *Democratic Target*Foreign Occupation*, *Outbidding*, *LN Conflict Lethality*, *Conflict Length*, *Muslim Majority*, *Muslim Supermajority*, *Collectivism*, *LN IDP*, and the *GTD data collection phases*. I conclude with a focus on the methods that are used to test the hypotheses from Chapter 2.

DEPENDENT VARIABLE

There are two primary dependent variables in this research. The first is *Suicide Bombing*, which is a dichotomous variable that separates suicide bombings and all other terrorist attacks identified by the GTD. The second dependent variable, *Tactic Type*, is a

nominal categorical variable that splits the data into three distinct categories (suicide bombings, vehicle bombings, and all other terrorist attacks). In the next section, I give a detailed description of the data source, which is followed by a short discussion of the main weaknesses of the GTD data. I then introduce the relevant variables in the GTD that are used to construct the main dependent variables. This is followed by a brief discussion about a special class of attacks, those which involve a suicide bomber using a vehicle as the delivery method for the attack, for which I introduce a third dependent variable.

The Global Terrorism Database

The GTD is considered the largest open-source, non-classified database of terrorist attacks in the world, with approximately 156,000 incidents recorded from 1970-2015.[54] The GTD owes its size to the fact that the database includes both domestic and international terrorist attacks (LaFree, Dugan, & Miller, 2015). The database is maintained by the National Consortium for the Study of Terrorism and Responses to Terrorism (START), which is a Department of Homeland Security (DHS) Center of Excellence (COE), housed at the University of Maryland, College Park (UMD).

The GTD defines terrorism as the "threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation" (START, 2016b). In essence, this definition can be broken down into six criteria. The first set of three criteria must be met for a case to be included in the database. These criteria are:

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[54] The most recent GTD data available at the time of completion of this dissertation was the June 2016 data release. This covered attacks up through 2015. The 2016 data is not scheduled to be released until June of 2017.

1. "The incident must be intentional – the result of a conscious calculation on the part of a perpetrator"

2. "The incident must entail some level of violence or immediate threat of violence (including property violence, as well as violence against people)"

3. "The perpetrators of the incidents must be sub-national actors" (START, 2016b).

For the second set of three criteria, at least two of these must be met for an incident to be included. These criteria are:

1. "The act must be aimed at attaining a political, economic, religious, or social goal"

2. "There must be evidence of an intention to coerce, intimidate, or convey some other message to a larger audience (or audiences) than the immediate victims"

3. "The action must be outside the context of legitimate warfare activities; that is, the act must be outside the parameters permitted by international humanitarian law" (START, 2016b).

Therefore, the GTD uses a relatively inclusive definition, allowing for attacks against the military to be included, which other databases and many definitions exclude. This is an important distinction because it allows me to study the use of suicide bombings and vehicle bombings more broadly, the military was often the target of these attacks and in many of these instance, soldiers were the only victims.

As stated previously, the GTD includes data on terrorist incidents beginning in 1970, and over the last 46 years the database has gone through several phases of collection efforts. The initial data (referred to as GTD I) were collected by the Pinkerton Global

Intelligence Service (PGIS) from 1970-1997 (LaFree, Dugan, & Miller, 2015; START, 2016b). This data were collected in real-time using wire services, US and foreign newspapers, and government reports to identify incidents and collect more detailed information on each of these incidents (LaFree, Dugan, & Miller, 2015). After START obtained and digitized this hand-coded data, the next step was to retroactively code incident starting in 1998 and moving up to the present (GTD II). The team that took over this phase of data collection was the Center for the Study of Terrorism and Intelligence Studies (CETIS), who collected incidents that occurred from 1998 through 2007, in what is referred to as GTD II (LaFree, Dugan, & Miller, 2015). It was at this time that the researchers at UMD also formalized a codebook for the dataset, identifying the six inclusion criteria that make up the definition of terrorism, as well as including additional relevant variables that were not collected systematically in the PGIS data (LaFree, Dugan, & Miller, 2015).[55]

Following the completion of the data collection efforts up through 2007, another group was funded to continue the real-time data collection efforts in 2008 (GTD III), the Institute for the Study of Violent Groups (ISVG) (LaFree, Dugan, & Miller, 2015). The main difference between GTD II and GTD III is that CETIS collected data retroactively, which likely means that attacks were missed due to the decaying nature of source availability (Dugan & Distler, 2017). In contrast, ISVG worked in real time. ISVG continued collecting data up through October 2011, at which point data collection was brought in-house to START for the first time in the history of the GTD (LaFree, Dugan, & Miller, 2015).

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[55] Wherever possible, efforts were made to retroactively code new variables back to 1970. However, as is seen below, some of these potentially useful variables have not yet been systematically coded back to 1970. Some of these newer variables were actually relied upon in the creation of the dependent variable.

The current data collection efforts (GTD IV), which reflected data collection starting in November 2011, have been conducted using the benefit of technological improvements in accessing and classifying news articles online. Through the use of web-crawling tools and machine-learning models, the GTD team starts with around 1.6 million articles per day and turn that in to around 20,0000 articles per month that need to be read and hand-coded based on the inclusion criteria (Dugan & Distler, 2017; Jensen, 2013; LaFree, Dugan, & Miller, 2015). As can be seen from the brief description of the history of the GTD, the database has gone through several changes and improvements, while still attempting to maintain the same basic inclusion criteria that make the data consistent across time.[56] This leads to a discussion of some of the issues with this dataset that must be understood before identifying the cases that are included in this analysis.

Limitations in using the GTD

LaFree, Dugan, and Miller (2015, p. 22-23) identified four main limitations with the GTD. The first limitation was that data collected on incidents is often only as good as the media reporting of the event, which could lead to: a potential bias towards more newsworthy events; inconsistency in information across sources; and the potential for over reporting, possibly leading to duplicate cases (Dugan & Distler, 2017). A second limitation that the authors discussed was the problems in distinguishing terrorism from other forms of crime and political violence. In terms of this research, bombs can be used by organized crime groups, drug cartels, and gangs to carry out attacks that do not meet the other

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[56] For a more detailed description of the history of the GTD, please refer to LaFree, Dugan, and Miller (2015, chapter 2) and START (2015b). For a more detailed description of the current collection efforts undertaken by the GTD team, please refer to Jensen (2013), LaFree, Dugan, and Miller (2015, chapter 2), and START (2015b).

inclusion criteria for the GTD. Third, LaFree, Dugan, and Miller (2015) noted that relevant details, especially for smaller attacks, can sometimes be missing from the reports available to the data collection team. They specifically make reference to perpetrator groups, but this problem is relevant for any variable in the database (Dugan & Distler, 2017). The fourth and final limitation that the authors identified was the financial and substantive constraints in collecting this type of database.

Perhaps an even greater concern, however, is the fact that there have been four distinct phases of collection efforts. While the definition and inclusion criteria have been applied fairly consistently over the course of the collection efforts, the different phases have had distinct collection strategies that have likely led, at least partially, to artificial increases or decreases in the number of terrorist incidents over time. Just looking at the collection for GTD II, there was a large dip in terrorism from 1997 to 1998, followed by a steady incline throughout the collection time period. This was likely due, at least in part, to the source decay and erosion discussed above. As CETIS was able to get closer to real time, they were able to identify more cases. This also coincided with improvements in technology that allowed for more newspapers, especially local papers, to become available through news aggregators such as LexisNexis and Factiva (Dugan & Distler, 2017). These technological advancements have already been cited as a huge advantage for the recent data collection efforts.

However, it should also be noted that from 1998 through most of 2001, the US was not involved in a major military campaign, whereas the involvement in Afghanistan and Iraq likely led to volatile situations in those countries that bred terrorism. Additionally, the Second Intifada began in 2000 in Israel and Palestine, which led to a large increase in

problems there. This is all to say that we are unable to determine, with any certainty, what percentage of any changes in terrorism or even in the use of specific tactics is attributed to data collection issues or to real changes. To combat any potential problems with these different data collection phases, I include a set of control variables to take into account the shift in data collection. This is further discussed in the control variables section below.

A final and important limitation with the GTD is the simple fact that it does not include data from 1993. Although this has been discussed in numerous forums before, I briefly discuss it here (for more detailed information, see LaFree, Dugan, & Miller, 2015; START, 2016b). During a previous PGIS office move, the box containing the handwritten notecards for 1993 was lost (LaFree, Dugan, & Miller, 2015; START, 2016b). Upon this realization, there was an attempt to first locate the missing notecards and later CETIS attempted to collect 1993 data while also collecting the data on the later years (LaFree, Dugan, & Miller, 2015; START, 2016b). Complete information was collected on 748 incidents from 1993; however, it is estimated that this only represented around 15 percent of the overall number of attacks for that year (START, 2016b). Given the inherent biases of the attacks that were collected retrospectively, such as being more likely to include larger attacks that were reported by several news outlets, 1993 is excluded entirely from this analysis.

Now that we have a better understanding of the limitations with this data, I turn to the specific information in the GTD that is used to construct the main dependent variables in the analysis.

Suicide Bombing and Tactic Type

After starting with the full GTD dataset, the first restriction is that I only include attacks from 1980 to 2015 since the first suicide bombing did not occur until 1981. Excluding attacks from the 1970s leaves me with a total of 146,932 terrorist incidents. To construct the *Suicide Bombing* variable, I used a set of variables that focus on the use of IEDs in attacks.[57] Specifically, the suicide improvised explosive device (S-IED) variable identifies incidents in which a suicide bombers carried out an attack, which is defined as an incident in which a perpetrator intentionally dies or attempts to die while detonating a device. From 1980 through 2015, there were 4,737 cases in which an S-IED was used. These cases are coded "1" and all other cases were coded "0". This variable is similar to that used in previous research (Hicks, Dardagan, Serdan, Bagnall, Sloboda, & Spagat, 2011b; Piazza, 2008; Rome, 2013; Seifert & McCauley, 2014).

A similar strategy was used to create the *Tactic Type* variable. Similar to S-IED, the vehicle-borne improvised explosive device (VBIED) variable identifies cases in which a vehicle bomb was used in the attack, which is defined as any explosive device planted in or attached to any non-mass transit vehicle. A VBIED has been used in 9,611 cases. However, these numbers for S-IED and VBIED are a bit misleading. A classification of VBIED or S-IED is not mutually exclusive, and the GTD actually identified 2,481 attacks in which a suicide bomber used a vehicle as a delivery method for the explosives, which I refer to as an S-VBIED attack moving forward.

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[57] The GTD defines an IED as "a bomb that is constructed in part or wholly from military or commercial explosives or commercial components, and used in a manner other than intended by the manufacturer" (START, 2016b, p. 66).

S-VBIED attacks present a unique situation, as it is unclear whether these incidents should be categorized as a suicide bombing or a vehicle bombing. Theoretically, it is most likely that S-VBIED attacks are deployed in a similar fashion to S-IED attacks. Returning to Hoffman's (2003) assertion that suicide bombers are the ultimate smart bomb, the S-VBIED attack is an extension of this line of reasoning. The vehicle can be thought of as a delivery method, in the same way that a suicide bomber might use a backpack, a vest, or a belt. Ultimately, the smart bomb (suicide bomber) still has the ability to make split second decisions about carrying out an attack to maximize casualties or to maximize the likelihood of achieving success in the attack. Given these reasons, S-VBIED attacks are included with S-IED attacks in the main analysis.

However, given that vehicles present challenges in terms of how close they are able to get to a target (such as targeting a prayer leader inside a mosque), there is an argument to be made for how these S-VBIED attacks could be distinct from both S-IED and VBIED attacks. With this in mind, I conducted a small-scale analysis comparing VBIED, S-IED, and S-VBIED on a sub-set of variables[58] (Distler, 2014). Interestingly, I found that S-VBIED attacks significantly differed from VBIED attacks on four of the six hypothesis and differed from S-IED attacks on three of the six hypotheses. Given these initial findings, I also run a separate set of analyses with S-VBIED attacks as a separate category. For an overview of the three dependent variables and the number of cases in each category, please refer to Table 2.

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[58] These variables included an outbidding variable, a variable focusing on the press freedom in the country that an attack occurred, a group attribution variable, a success variable, a variable identifying whether a conflict occurred in a country, and a set of variables looking at different targets.

Now that the dependent variables have been described in detail, I move on to a discussion and description of the main independent variables in this analysis. I proceed by first looking at the attack-level independent variables. I then focus on the country-level independent variables.

Table 2. Dependent Variables and Percentage of Cases

Suicide Bombing	1 = Suicide Bombing	4,737 (3.22%)
	2 = Other Terrorist Attack	142,195 (96.78%)
Tactic Type	1 = Suicide Bombing	4,737 (3.22%)
	2 = Vehicle Bombing	7,130 (4.85%)
	3 = Other Terrorist Attack	135,065 (91.92%)
S-VBIED Distinct Tactic Type	1 = Vehicle-Suicide Bombing	2,481 (1.69%)
	2 = Non-Vehicle Suicide Bombing	2,256 (1.54%)
	3 = Non-Suicide Vehicle Bombing	7,130 (4.85%)
	4 = Other Terrorist Attack	135,065 (91.92%)

Note: Variable in bold is the primary dependent variable.

INDEPENDENT VARIABLES

The independent variables rely on data from a few different sources. Some of the variables relied on GTD coding strategies, whereas other variables were created using country-level political science datasets that are publicly available. The independent

variables are described in the order that they were presented in the hypotheses from Chapter

2. Please refer to Table 3 for the list of the independent variables, which includes a

description of how each of the variables were operationalized and their source.

Table 3. Independent Variables, Definitions, and Data Sources

Variables	Definition	Source
Security Target	Attacks that target security entities, including military and police (0, 1)	GTD
Military Target	Attacks that target only military security entities (0, 1)	GTD
Civilian Target	Attacks that target civilian entities (0, 1)	GTD
Complex Attack	Attacks that involve the use of multiple types of weapons (0, 1)	GTD
Religious Holiday	Identifies whether an attack occurred on a holiday for a major religion (over 5 percent observance) per country (0, 1)	World Religion Dataset
Election Day	Identifies whether an attack occurred on a national election day for constituent assembly, legislative/paramilitary, and executive positions (0, 1)	NELDA
Cultural Fractionalization	A score representing ethnic and linguistic differences between groups in each country (0-1)	Fearon (2003)
Religious Fractionalization	A score representing religious differences between groups in each country (0-1)	Alesina et al. (2003)
ER Polarization Index	A score representing ethnic and religious differences between groups that controls for the distance between the groups in each country (0-1)	Desmet et al. (2009)

Note: Variables in bold are those that are included in the primary analysis. Non-bolded variables are those that are included in subsequent analyses.

To address targeting strategies, two dichotomous variables were created to capture whether the attack targeted a *Civilian Target* or a *Security Target*.[59] Targets were separated into these three categories because I believe that they symbolize differences in terms of opportunities. Whereas both security and government entities are likely to be difficult to target, government entities offer more opportunities to be targeted because part of their charge is to interact with their constituents. They are also more likely to be in public settings giving speeches or holding rallies when compared to security entities. Therefore, there is a meaningful distinction between these two categories. However, civilian entities will still offer the greatest likelihood of death and destruction, and therefore, government entities fall in between civilian and security entities for the likelihood of suicide bombings.

The GTD identifies 22 unique target types, which are highlighted in Table 4. For target types that were broader in scope, the target subtype variable was used to categorize the cases. For example, one target type captured attacks against "Terrorist/Non-State Militia" (START, 2016b). Within this target type, the two subtypes were identified as "Terrorist Organization" and "Non-State Militia" and while some scholars may include non-state militias in a broader definition of security organizations, no one would argue that terrorist groups should be included in that category. Therefore the subtype was used to identify how the cases should be coded. Table 4 also identifies how each of the 22 target types were categorized.

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[59] The reference category, therefore, is *Government Target*.

Table 4. Target Type Classifications

Target Type	Target Identification
Abortion Related	Civilian
Airports & Aircraft	Civilian
Business	Civilian
Educational Institution	Civilian
Food or Water Supply	Civilian
Government (Diplomatic)	Government
Government (General)	Government
Journalists & Media	Civilian
Maritime	Civilian
Military	Security
NGO	Civilian
Other	Civilian
Police	Security
Private Citizens & Property	Civilian
Religious Figures/Institutions	Civilian
Telecommunications	Civilian
Terrorists/Non-State Militias	Civilian (Terrorists)
	Security (Non-State Militias)
Tourists	Civilian
Transportation	Civilian
Unknown	Unknown
Utilities	Civilian
Violent Political Parties	Government
	Civilian (Rallies)

The main issue to be addressed is whether to include police officers and/or militias that are not paid by the state as security forces or whether they should be counted as civilian targets. In the past, some scholars have adopted a strict definition of security that only included attacks that target the military, whereas all other targets were captured under the broader civilian category (Bhatti et al., 2011; Hicks et al., 2011a; Hicks et al., 2011b). However, when looking at this issue through the lens of target hardening, it should be noted that police officers were likely to be a more hardened target when compared to civilian targets and were more likely to look like military targets. Furthermore, the duties of police officers were sometimes blended with military tasks such as counterterrorism activities and

operations. Countries such as Afghanistan, Iraq, and Pakistan even have counterterrorism units or departments that are staffed by police officers. Seifert and McCauley (2014) also included police under the Iraqi security forces category, showing that academics have seen them as falling under both auspices depending on the research agenda or question being addressed. In the main analysis, police and non-state militia are included within the broader designation of security forces, although separate analyses are also run with the stricter military definition to assess the robustness of the findings.

Another issue I dealt with was having multiple target types for one attack. To address this issue for security targets, I decided to include cases in which any of the three target types targeted military, police, or non-state militias. I did the same procedure for government targets, including them in the reference category, unless one of the other target types was a security target. The reason behind this decision was that, if a security entity was represented in any of the three target types, the assumption was that they were the likely target and it represented an attack against these more hardened targets, with civilians considered coincidental.

For the *Complex Attack* variable, I used the weapon type and weapon subtype variables in the GTD to create a dichotomous variable. The GTD collected data on up to four different weapon types. The weapon types were identified and classified as one of 13 categorical options. Additionally, there were 28 different weapon subtype classifications.[60] I defined a complex attack as any incident in which multiple, different types of weapons were used to carry out the attack. To construct the variable, I began by taking all incidents

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[60] The majority of the subtypes were used to classify different types of firearms, explosive devices, incendiary, and melee weapons. There was also a subtype for chemical weapons that identified poison attacks.

in which only one weapon was used and coded them as "0", indicating non-complex attacks. I was then left with approximately 10,000 cases where at least two weapons were used in the attack. For these incidents, I first identified cases where the first weapon type was different from any of the other weapons identified (the second weapon type through the fourth weapon type). These incident were coded as "1", representing a complex attack.

For the remaining cases, in which multiple weapons were used but these were the same type of weapons (i.e., multiple different types of firearms), I used the weapon subtype variables. Multiple subtypes were used for the firearms, explosives, incendiary, and melee weapon types. For the firearms, incendiary, and melee weapon types, the subtypes did not justify describing the incident as a complex attack. For example, some attacks involved the use of multiple different types of firearms, such as pistols, shotguns, and assault rifles. That does not necessarily constitute a complex attack since they were still used in a single armed assault. In contrast, the explosives subtypes differentiated unique types of weapons, from grenades and rockets to vehicle and suicide bombs. Therefore, cases that involved multiple different types of explosive devices (identified by different subtypes) were coded as complex attacks. In contrast, cases which used multiple types of firearms or different subtypes for attacks involving incendiary or melee weapons were coded as non-complex attacks.

Religious Holiday is also a dichotomous variable that identified whether the attack occurred on a religious holiday. To identify the religious holidays that were relevant for specific countries, I first identified the major religions within each country and then found the major holidays that were observed by these religions (see Table 5). The major religions for each country were identified using the *World Religion Dataset* (Maoz & Henderson,

2013). The dataset used various sources to identify the unique religions that were included and then used additional sources, such as census-based information, specific estimates for religious groups, and sources that looked at a specific religion longitudinally (Maoz & Henderson, 2013). The dataset gave estimates of a total number of people practicing the religion and the data were also presented as a percentage of the total population of the country (Maoz & Henderson, 2013). For a religious holiday to be included for a country, the religion had to be practiced by a minimum of 5 percent of the population. After the religions were identified for each country, targeted Google searches were conducted to identify the major religious holidays for each religion and this information was used to identify the days in each country when a religious holiday was being observed. Please refer to Table 5 for the list of religions that were included and the major holidays observed.

E*lection Day* is a dichotomous variable that identified whether the attack occurred on a national election day within the country. To identify election days by country, I used the *National Elections across Democracy and Autocracy (NELDA)* dataset (Hyde & Marinov, 2015). This dataset included detailed information on a number of relevant aspects of elections occurring around the world from 1980 through 2012, including the country that they occurred in and the date of the elections. Using these variables, I identified all national-level elections for all countries in the data up through 2012. To supplement these data and update it through 2015, I attempted to triangulate the data on elections from a number of different sources.[61] For the 2013 through 2015 data, only national-level

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[61] These sources included the Global Elections Calendar from the National Democratic Institute (https://www.ndi.org/electionscalendar/), the Election Guide from the International Foundation for Electoral Systems (http://www.electionguide.org/elections/past/), and the Electoral Calendar from Maximiliano Herrera's Human Rights Site (http://www.mherrera.org/elections.html).

elections were included, focusing on the types included in NELDA (constituent assembly, legislative/ parliamentary, and executive).

Table 5. Major Religions and Associated Holidays

Main Religion	Sub Religion	Holidays
Christianity	Protestant Roman Catholic Eastern Orthodox Anglican	Ash Wednesday (First Day of Lent), Palm Sunday, Good Friday, Easter, Pentecost, Christmas
Judaism	Orthodox Conservative	Rosh Hashanah, Yom Kippur, Hanukkah, Passover
Islam	Sunni Shiite Ibadhi Alawite Ahmadiyya	Muharram, Mawlid al-Nabi, Ramadan (including Eid al-Fitr), Eid al-Adha
Buddhism	Mahayana	Buddhist New Year, Vesak, Sangha Day, Dhamma Day
	Theravada	Buddhist New Year, Nehan-e, Hanamatsuri, Jodo-e
Hindu		Maha Shivratri, Holi, Raksha Bandhan, Krishna Janmashtami, Ganesha Chaturthi, Navratri, Dussera, Diwali
Shinto		Seijin Shiki, Rei-sai, Oshogatsu, Shichigosan, Hina-matsuri
Taosim		Chinese New Year, Lantern Festival, Tomb Sweeping Day, Dragon Boat Festival, Ghost Festival, Mid-Autumn Festival, Double Ninth Day
Confucianism		Mid-Autumn Festival

Finally, there were several different measures available to assess religious, linguistic, ethnic, and/or cultural differences within a society. Early studies used the ethnolinguistic fractionalization index, which was developed from the *Soviet Atlas Narodov Mira* (Vogt, Bormann, Rüegger, Cederman, Hunziker, & Girardin, 2015). Alesina and colleagues (2003) created three measures that looked at ethnic, linguistic, and religious fractionalization separately. There has been more recent research which has studied the

difference between measures looking at fractionalization and polarization, as well as the differences between measures that focused on the distance between various groups (Desmet, Weber, & Ortuño-Ortín, 2009). However, given the specific interest in cultural and religious differences, I chose to use a measure of cultural fractionalization. While this measure was first developed by Fearon (2003), it was improved upon by Kolo (2012), and it was Kolo's distance adjusted ethno-linguistic fractionalization index (DELF) measure that I used in this analysis.

Cultural Fractionalization, then, is a measure that ranged from 0 to 1, with 1 representing a perfectly heterogeneous country and 0 representing a perfectly homogeneous one (Fearon, 2003). This index took into account ethnic, linguistic, and religious differences (including the distances between different ethnicities, languages, and religions) between different groups within a country (Kolo, 2012). Scholars have argued that this measure is time-invariant and therefore I used the same measure in a country for the entire time period (Alesina, Devleeschauwer, Easterly, Kurlat, & Wacziarg, 2003; Desmet, Weber, & Ortuño-Ortín, 2009; Fearon, 2003; Vogt et al., 2015). However, I incorporated some other measures of fractionalization in subsequent analyses to test the robustness of the findings. These measures included the *Religious Fractionalization index* developed by Alesina and colleagues (2003), as well as the *ER Polarization Index* described by Desmet and colleagues (2009). Once again, please refer to Table 3 for the full list of the independent variables. I now describe the control variables that will be included in the analysis.

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CONTROL VARIABLES

While the variables previously discussed serve as the primary variables that will be used to test the hypotheses from Chapter 2, I also include a number of control variables based on previous empirical and theoretical research on suicide terrorism. This section is broken down into two subsections. The first subsection addresses the attack-level control variables whereas the second section describes the country-level control variables.

Attack-Level Control Variables

Most of these variables draw from variables available in the GTD. The only variable that uses data from outside sources is *Democratic Target*, which will be discussed first. Please refer to Table 6, which lists the attack-level control variables, along with a description of how the variables were operationalized and their sources.

In order to identify the level of democracy/press freedom of the targets of different types of bombings (*democratic target*), I relied on a combination of GTD data and outside sources. The GTD identified up to three distinct target types (START, 2016b). Within each target type designation, the nationality of the target was also recorded. The database used country classifications to identify the nationality of the targets for over 98 percent of the cases included in this analysis. The remaining cases have nationalities that were coded as "International" (i.e. the Red Cross) or "Multinational" (i.e. a café with victims that include locals and tourists from numerous countries). In order to assign democracy/press freedom scores, it was imperative that these nationalities were linked to specific countries, because scores were calculated at the country level.

Table 6. Country-Level Control Variables, Definitions, and Data Sources

Variables	Definition	Source
Democratic Target	Press freedom score of the nationality of the target (1-7)	GTD; Freedom House
Assassination	Attacks that aim to kill one or more specific, prominent individuals (0, 1)	GTD
City Detonation	Identifies whether the attack occurred in a city over 100,000 or a provincial/regional/state capital (0, 1)	GTD
Group Attribution	Attacks which are claimed, attributed, or suspected to be carried out by a specific group (0, 1)	GTD
Tactical Success	Identifies whether the bomb detonated or whether the target was killed in an assassination (0, 1)	GTD
LN Fatalities	The natural log of the count of victim fatalities in an attack	GTD
LN Injuries	The natural log of the count of victim injuries in an attack	GTD
After 9/11	Incidents that occur after the attacks on September 11, 2001 in the United States (0, 1)	GTD
International Attack	Logistically international: Attacks in which the nationality of the terrorist group and the location of the attack are different (0, 1)	GTD

While 2 percent of the cases might seem like a small amount of events to lose in the analysis, the issue is that suicide attacks bear a relatively large percentage of these lost cases, compared to the percentage of suicide bombings relative to all other cases. While there are a total of 2,620 targets across the three target types that are not linked to a specific

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country, 257 of these instances are for suicide attacks. This, intuitively, makes sense when thinking about the history of suicide bombings, which have been used to target international coalitions, such as the International Security Assistance Force (ISAF) in Afghanistan, or to target hotels or other gatherings where tourists or foreigners are more likely to congregate. Given these issues, I developed a systematic way of classifying these cases.

There were two distinct types of organizations that were categorized as international. The first were international coalitions that were developed by international organizations, such as the United Nations (UN), the North Atlantic Treaty Organization (NATO) or the African Union (AU). These coalitions involved the deployment of soldiers, police officers, and civilian peacekeepers from a subset of countries that were a part of the international organization. Since terrorist groups were often aware of which countries were involved in these operations, I created a score that incorporated all of the countries involved in the specific coalition. As an example, the African Union Mission in Somalia (AMISOM) is and has been staffed by eight countries (Burundi, Djibouti, Ethiopia, Ghana, Kenya, Nigeria, Sierra Leone, and Uganda). For each year, I took an average score for these eight countries to arrive at an estimated score for attacks targeting AMISOM.

The other type of organizations that were targeted were international non-governmental organization (INGOs), intergovernmental organizations (IGOs) and similar types of international entities. Since anyone from any country can normally join one of these organizations, and it was far less likely that a terrorist group knew what country an employee was from, I used the headquarters of the organization to identify the score. So an attack on the United Nations (UN), which is headquartered in New York City, received the

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same score as an attack on a United States entity, while an attack that targeted the International Committee of the Red Cross (ICRC), which is headquartered in Geneva, received the same score as an attack on a Swiss entity. For more information on the specific international coalitions and organizations and the country or countries that they are identified with, please refer to Appendix A.

For the small number of cases coded as multinational, I read through the original source material and identified the nationalities of the victims of the attack. Once I was confident that I identified all of the nationalities of the main victims of an attack, I then took an average score for the number of unique nationalities, similar to how I calculated the score for the international coalitions.

The other main issue with these data had to do with having multiple nationalities (due to having the possibility of up to three target types) for some of the cases. For example, a bomb may detonate in a market that targets both ISAF soldiers and Afghan civilians. In order to make sure that the data accurately reflected what happened on the ground, I made the decision to take an average score when there were multiple unique nationalities targeted in an incident. This gave equal weight, in the example above, to ISAF and Afghan civilians, regardless of the intended target of the attack or whether one target or the other had more casualties.

In order to assign scores to these target nationalities, I identified two potential sources that have been used in previous terrorism research. The first and most obvious source for democracy scores comes from the *Polity IV Project: Political Regime Characteristics and Transitions, 1800-2013*, which is maintained by the Center for Systemic Peace. The variable, "POLITY2," which is the revised combined polity score,

ranges from -10 to +10, with higher scores representing more democratic countries and lower scores identifying more autocratic countries (Marshall, Gurr, & Jaggers, 2014). However, there were issues with these data that made it nearly impossible to use for this analysis. Countries with foreign invasions or foreign interruption (such as the invasion of Afghanistan in 2001 and Iraq in 2003 by the international coalitions led by the United States or the invasion of Afghanistan by the USSR in the 1980s) were coded as having missing values for the years that these operations were ongoing. Therefore, Afghanistan was missing a score from 2001 through 2013, while Iraq was without a score from 2003 through 2009. Excluding these cases would drop almost 30 percent of the attacks in Iraq and almost 75 percent of those in Afghanistan. When looking at suicide attacks, using the polity score would discard half of the Iraq cases and over 77 percent of the Afghanistan cases. This was even more concerning upon the realization that these cases in Iraq and Afghanistan that would be lost represented almost 36 percent of the overall number of suicide attacks. Given these concerns, the polity score was not used in this analysis.

Instead, I drew scores from the Freedom in the World Report that is produced by Freedom House.[62] Freedom House assigned two separate scores to countries and territories, a political rights score and a civil liberties score (Freedom House, 2016; Puddington & Roylance, 2016). The political rights score was calculated from 10 different indicators while the civil liberties score was based on 15 indicators (Freedom House, 2016). Each of these 25 indicators ranged from zero to four, so the overall score could range from 0 to 40 for political rights and from 0 to 60 for civil liberties (Freedom House, 2016). These scores

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[62] Freedom House provides a downloadable version of the data in excel format at: https://freedomhouse.org/report-types/freedom-world.

were then standardized so that a country received a political rights score that ranged from 1 to 7 and a civil liberties score that also ranged from 1 to 7 (Freedom House, 2016). A lower standardized score reflected a country or territory that was freer (Freedom House, 2016). As a final step, I took the average of these two scores so that I was left with an overall press freedom score for each country every year from 1980 through 2015.

This data source was more desirable for a few reasons. First, there were fewer gaps for countries, especially those of the most importance in this research (the countries where terrorism occurs most often). Specifically, Iraq and Afghanistan were assigned scores for every year, which accounted for two of the more active countries in this dataset. Second, Pape (2005) actually used press freedom in his analysis after initially developing the theory on democracies, so by using the same data source, it became a stronger test of his theory. Third, press freedom was actually a better operationalization of the concept described by Pape (2005) when compared to democracy scores. Countries that have greater press freedom are countries where terrorist attacks are more likely to be reported to the population. Furthermore, these populations are more likely to have the freedom to denounce foreign occupations undertaken by their government in these countries. These two concepts (democraticness and press freedom) are certainly interrelated and choosing to use a measure of press freedom does not diminish the value of this variable.

With the target nationalities and the press freedom scores in hand, I was able to marry these two pieces of information. Since the press freedom score was assigned on a yearly basis, I simply input the score for each country and territory for each year from 1980 through 2015. As discussed above, average scores were assigned for incidents with multiple targets and scores were assigned to special cases (international and multinational)

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through averaging with each target nationality or by basing the target nationality on the global headquarters of the organization being targeted or victimized. After this, I was left with a *Democratic Target* score for all but 95 of the 146,932 cases included in the analysis that ranged from 1 to 7, with lower scores demonstrating greater press freedom.

To identify cases that would be classified as assassinations, I took advantage of the attack type variables in the GTD. The GTD used nine attack types to identify the tactics used in each incident. Most relevant for this variable was the assassination attack type, which was defined as: "An act whose primary objective is to kill one or more specific, prominent individuals...such as high-ranking military officers, government officials, celebrities, etc." As with target types, the GTD identified up to three attack types for each incident. A dichotomous variable, *Assassination*, was created in which cases where any of the three attack types were identified as assassination were coded as "1" while all other incidents were coded as "0".

The C*ity Detonation* variable is a dichotomous variable that indicated whether an attack took place in a major city. I operationalized major cities based on population or political influence. For population, I wanted to choose a population size that allowed me to distinguish cities from other locales. In searching for available data, I came across the *United Nations Demographic Yearbook*[63] which defined cities as locales with a population over 100,000. I used this data source to identify the cities in each country that met this criteria from 1980 through 2015.[64]

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[63] More information on the demographic yearbooks, including how to download the PDF version or an Excel file for the different tables, is available here: http://unstats.un.org/unsd/demographic/products/dyb/dyb2.htm.

[64] Population information for some of the countries was lacking, and the area that gave me the most difficulty was the West Bank and Gaza Strip. The UN did not have any information prior to 2012. To attempt to identify the large cities, I identified the six cities from the 2012 data (Gaza, Hebron, Khan Yunis,

For political influence, I identified any capitals of first-level administrative units that had populations under 100,000 within countries and included them as well. These capitals were included because, although the population may be smaller, the symbolic value of targeting people or structures within them holds similar weight to attacks in large cities. To identify the capitals of these first-level administrative units I conducted independent research, including targeted Google searches for first-level administrative unit information for each country. After these cities were identified, I used the "City" variable in the GTD to identify the cases that occurred within these locales.

While the GTD included a variable that identified whether a group had claimed responsibility for an attack, this was systematically collected for cases only after 1997 (START, 2016b). Cases from 1997 and earlier were mostly coded as unknown for this variable. Rather than ignoring 18 years' worth of cases, my variable, G*roup Attribution*, instead captured instances in which a group had at least been linked to an attack in some way. To accomplish this, I used the "Perpetrator Group Name" variable in the GTD, which identified the group involved in the incident (START, 2016b). However, this variable included both specific group names, such as the Sinai Province of the Islamic State or the Donetsk People's Republic (DPR), as well as generic names that are sometimes used to identify perpetrators, such as Palestinian extremists or Muslim extremists. There was also a category that identified individuals that carried out an attack who are unaffiliated with a terrorist group (START, 2016b).

Nablus, and Rafah). After obtaining the population totals for these six cities from the 2007 census, I extrapolated population estimates backwards, using overall population estimates of Palestine to identify the likely populations of these cities.

Since I am only interested in claiming and attributions for specific groups, I needed to identify generic and individual classifications so that they could be coded accordingly. While the GTD did not provide a list of groups in the codebook, there was a list of specific groups on the data interface on the website.[65] Therefore, this list was used to identify the organizations in the dataset and these cases were coded as "1" on the *Group Attribution* variable, while the rest of the cases were coded as "0".[66]

To capture success, I used the success variable in the GTD, which identified whether the attack was carried out or completed. This is a tactical approach to success, as it was dependent on the attack type that was used. Specifically, a bombing or explosion was deemed successful if the bomb actually detonated (START, 2016b). This included if a bomb detonated prematurely, which others may classify as unsuccessful. In terms of this research interest, a suicide bomber who survives the detonation was coded as successful so long as they actually detonated the device. However, assassinations are determined to be successful only if the targeted individual was killed in the attack (START, 2016b). Therefore, the assassination attempt on Benazir Bhutto in October, 2007 was coded as unsuccessful even though the suicide bomber detonated and there were several hundred casualties. The attack that targeted Bhutto a few months later, on the other hand, was coded as successful since Bhutto was actually killed in this incident. The GTD success variable was used in this analysis.

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[65] This list of specific groups is available here:
https://www.start.umd.edu/gtd/search/BrowseBy.aspx?category=perpetrator.
[66] The lone exception to this rule dealt with the generic identification of Maoists in India. While this was coded distinctly from cases which are attributed to or carried out by Communist Party of India - Maoist (CPI-Maoist), START has previously combined these two categories in reports and presentations, such as the Statistical Annex in the *Country Reports on Terrorism*. Following this practice, I also included Maoists and considered them part of the CPI-Maoist group in India, thereby making these cases a "1" on G*roup Attribution* as well.

Both *LN Fatalities* and *LN Injuries* focused on the lethality of these attacks. I used the two variables in the GTD that identified the number of people killed and injured. However, these two variables included perpetrator fatalities, so I had to use the perpetrator fatalities variables as well in order to subtract these deaths and injuries from the calculation. This left me with two variables, victim fatalities and victim injuries. However, since fatalities and injuries are both heavily skewed towards 0, I transformed the variables by taking the natural log of the counts of casualties for each incident.

I also included *After 9/11*, a dichotomous variable that identified whether the attack occurred before or after the terrorist attacks in the United States on September 11, 2001. As discussed in detail above, Moghadam (2008) argued that prior theories of suicide terrorism were more suited to explain what he identified as the first wave of suicide terrorism. However, in the more recent wave, referred to as the globalization of suicide terrorism, Moghadam (2008) argued that there are different factors at play. Therefore, *After 9/11* was included to account for this potential impact on more recent attacks.

In their research on suicide terrorism, Santifort-Jordan and Sandler (2014) noted the important differences between domestic and transnational attacks. Therefore, the final attack-level control variable, *International Attack*, is another dichotomous variable in which international attacks were coded as "1" and domestic attacks were coded as "0". The GTD included four variables that determined whether an attack was international or domestic and this was based on a comparison between the nationality of the perpetrator group, the nationality of the targets or the victims, and the location of the attack (START, 2016b). The first variable identified whether an attack was logistically international, and compared the group nationality with the location of the attack (START, 2016b). The next

variable identified attacks that were ideologically international, based upon a comparison between the nationality of the organization and the nationality of the target/victim (START, 2016b). The third variable compared the nationality of the target or victim with the location of the attack, while the final variable identified whether any of the other three variables identified the attack as international (START, 2016b).

While the logistical variable was the most logical choice, the main issue of concern was a large amount of missing data. Since there were numerous cases where the perpetrator group was unknown throughout the GTD, a large proportion of the incidents were coded as unknown (over 60 percent of the cases). While the variable that compared the victim/target to the location of the attack had almost no missing values, this was not the typical definition of international and domestic attacks. Instead, I decided to use the logistic variable with the assumption that the amount of time, planning, and resources spent on carrying out an international attack meant that a terrorist is group was highly likely to claim responsibility or be attributed to the attack. Given this assumption, all of the cases that were currently coded as unknown in the GTD were identified as domestic in my analyses. I believe that the majority, if not all of these attacks, would be coded as domestic if the dataset had perfect information on the perpetrators of every attack. Once again, please refer to Table 6 for the full list of the attack-level control variables. I now describe the country-level control variables.

Country-Level Control Variables

Almost all of these variables incorporated data from several sources that were collected at the country-year and were mostly drawn from various political science

datasets. Please refer to Table 7, which lists the country-level control variables, along with

a description of how the variables were operationalized and their sources.

Table 7. Country-Level Control Variables, Definitions, and Data Sources

Variables	Definition	Source
Foreign Occupation	State or intergovernmental organization with troops stationed in another country exercising coercive power over the population (0, 1)	GTD; Collard-Wexler (2013)
Democratic Target* Foreign Occupation	Interaction term identifying democratic targets of attacks in countries experiencing a foreign occupation (1-7)	GTD; Freedom House; Collard-Wexler (2013)
Outbidding	Count of the number of active (non-generic) groups in a country in a given year (1-49)	GTD
Group Attribution* Outbidding	Interaction term identifying the number of active groups in a country in a year for attacks by specific groups (0-49)	GTD
Conflict Lethality	Count of the number of battle-related deaths in a country in a given year	PRIO; UCDP
Conflict Length	Count of the (consecutive) number of years a conflict has been ongoing	UCDP/PRIO
Muslim Majority	A dichotomous variable that measures whether a country has a majority of Muslim inhabitants.	RCS
Muslim Supermajority	A dichotomous variable that measures whether a country has a supermajority of Muslim inhabitants.	RCS
Collectivism	A dichotomous variable that identifies whether a country is collectivist.	Braun and Genkin (2014)

LN IDP	The natural log of the number of internally displaced persons per 100,000 in a country in a year.	USCRI; IDMC
GTD1	Attacks that were collected by PGIS from 1980-1997 (0, 1)	GTD
GTD2	Attacks that were collected by CETIS from 1998-2007 (0, 1)	GTD
GTD3	Attacks that were collected by ISVG from 2008-2011 (0, 1)	GTD

F*oreign Occupation* is a dichotomous variable that identified whether a state or intergovernmental organization (such as the United Nations or the African Union) has stationed troops in all or part of another country and exercises coercive power over the local population (Collard-Wexler, Pischedda, & Smith, 2014). To determine whether a country has been occupied, I used the list compiled by Collard-Wexler (2013) as a starting point. However, this only identified occupation from 1980 up through 2010, so I had to supplement these data with personal research to extend it through 2015. Collard-Wexler (2013) identified 75 unique foreign occupations that began in 2010 or earlier, while my research identified an additional 7 occupations (for the complete list, please refer to Appendix B). These occupations were identified on a yearly basis, so using the country where the attack occurred, as identified in the GTD, countries that experienced a foreign occupation were assigned a score of "1" and those that did not were assigned a score of "0" for each year from 1980 through 2015. Finally, since Pape (2005) contended that foreign occupations by democratic countries were the most likely to result in suicide terrorism, I included an interaction term to test this relationship, *Democratic Targets*Foreign Occupation*.

Outbidding measured the number of groups active in a country in a given year. This operationalization of the outbidding thesis followed from research conducted by Young and Dugan (2014). As discussed with the *Group Attribution* variable above, the GTD collects data on the name of the group that carried out a terrorist attack. Furthermore, the database identified up to three groups for every attack. Looking through all three group variables, I counted the number of unique organizations active in each country each year. I once again excluded the generic perpetrator groups in this calculation. The number of active groups ranged from a low of 1 to a high of 24.[67] While this measure was not as nuanced as other potential options, such as rivalry scores or terrorist group network information, those options were better suited for a group-level analysis. With this research, identifying the number of active groups was the best measure available. Furthermore, an interaction term, *Group Attribution*Outbidding*, was included that identified the number of active groups in a country in a given year for attacks in which a specific group either claimed responsibility or was linked to the incident by authorities or media sources.

The two conflict variables, *Conflict Lethality* and C*onflict Length*, were drawn from various datasets made available by the *Peace Research Institute Oslo (PRIO)* and the *Uppsala Conflict Data Program (UCDP)*. *Conflict Lethality* is a count of the number of battle deaths in a conflict (which have been linked to countries in the GTD) and was drawn from the *PRIO Battle Deaths Dataset* and the *UCDP Battle-Related Deaths Dataset*. The *PRIO* dataset collected information on battle deaths up through 2008, while the *UCDP* dataset only went back to 1989 (Lacina, 2009; Pettersson, 2014). In order to identify the

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[67] The minimum value for this variable was 1. If an attack was carried out in a country with no active groups during that year, it was assumed that the unknown group carrying out the attack represents at least one group active during that time period.

number of battle-related deaths for all years of the research time frame of this dissertation, I used the combined data from both datasets. Both datasets included three variables that capture the lowest estimate, highest estimate, and best estimate for annual battle fatalities (Lacina, 2009; Pettersson, 2014). The best estimate was used whenever possible. For a small percentage of cases, the best estimate was coded as missing. In these cases, the lowest estimate was used instead.

C*onflict Length* is also a count variable that measured the number of years since a conflict first began and has been continually ongoing in a country. Using the *UCDP/PRIO Armed Conflict Dataset*, I identified the number of consecutive years that a conflict resulted in more than 25 battle-related deaths (Uppsala Conflict Data Program (UCDP) & Centre for the Study of Civil Wars, International Peace Research Institute, Oslo (PRIO), 2015). In Afghanistan, for example, there were three years (2002, 2003, and 2004) in which the threshold was not met. Therefore, any attacks in 2001 were coded as 24, attack in 2002, 2003, and 2004 were coded as 0, and then attacks in 2005 were coded as 1 as the counter started over.

Muslim Majority is a dichotomous variable that measured whether a country had a majority Muslim population, which is defined as having more than half of the population identifying as Muslim.[68] This variable was available in the *Religious Characteristics of States Dataset (RCS)* from 1980 through 2010 (Brown & James, 2015). In order to update the dataset through 2015, I conducted additional research on Bosnia-Herzegovina and Eritrea, which were the only two countries that were close to the majority line in 2010.

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[68] For a similar treatment of this variable, see Wade and Reiter (2007).

There were also a number of countries for which data were not available.[69] Therefore, I also conducted independent research on each of these countries to ascertain the religious make-up of the countries. I also ran the analysis looking at a higher bar and including all countries that have a Muslim supermajority (over two-thirds). This dichotomous variable, *Muslim Supermajority*, was also derived from the *RCS* and additional research was needed on Sudan, which was the only country close to the supermajority line of two-thirds in 2010.

Collectivism is a dichotomous measure that was developed using the raw data files from Braun and Genkin (2014).[70] While I initially attempted to use the index that the authors created, which was based on six different collectivism measures, they only had scores for 76 countries, which is far fewer than the 206 countries and territories in my dataset. To identify whether a country was collectivistic or individualistic, I proceeded in three phases. In the first phase, I used the scale developed by Braun and Genkin (2014), classifying any country with a negative score as being collectivist and any country with a positive score as being individualist. In phase two, I used the raw data files for the six scales, which included a larger number of countries that did not have overall collectivism scores computed by the authors, and identified whether these countries were collectivist or individualist. In the third and final phase, I followed the imputation strategy described by Braun and Genkin (2014) and classified the remaining countries based on the classification of neighboring countries with similar languages and religious beliefs (for a detailed discussion of this imputation strategy, please refer to the online appendix in Braun and

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[69] The countries not included in the dataset were: Antigua and Barbuda, Barbados, Dominica, St. Kitts, St. Lucia, Seychelles, South Sudan, and Vatican City.

[70] I am grateful to Dr. Braun and Dr. Genkin for responding to numerous e-mail requests and for sharing their raw data files.

Genkin, 2014). In following this strategy, I classified all but four countries.[71] Collectivism was another time-invariant measure, so once a country was classified as collectivist or individualist, it remained so throughout the time period.

LN IDP looked at the natural log of the number of internally displaced persons in a country in a given year. This variable was derived from two sources of data, as I was unable to find a single source that collected this information for the entire study period. This first dataset, which is housed by the *Center for Systemic Peace*, was collected by the *United States Committee for Refugees and Immigrants (USCRI)* and contained counts of internally displaced persons (IDPs) per country, per year, from 1964 through 2008 (Marshall, 2009). Included in this dataset were counts of the number of refugees from the country, the number of IDPs, and the number of refugees hosted by each country (Marshall, 2009). The second source of data came from the *Internal Displacement Monitoring Centre (IDMC)*, which had data on IDPs per country, per year, from 2008 through 2014 (Internal Displacement Monitoring Centre (IDMC), 2015). Combining these two datasets should not cause too many issues, especially since the *IDMC* uses the data from *USCRI* in graphics depicting global trends of IDPs from 1989 through 2014.[72] I took the natural log of the count of IDPs to match the decision made by Choi and Piazza (2015).

This final set of control variables, which were mentioned briefly above, controls for potential changes in coding strategies within the GTD. Given the four different waves of data collection, there are three dichotomous variables that were created: *GTD1*, *GTD2*,

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[71] I did not classify East Timor, Fiji, Papua New Guinea, or Vanuatu, because there were no neighbors for these island countries that shared religion or language and there were no other countries, other than Australia and New Zealand, which had been classified in Oceania. I did not feel Australia and New Zealand were similar enough to these other four countries.

[72] Graphics created using both datasets can be accessed here: http://www.internal-displacement.org/global-figures.

and *GTD3*, with the most recent data collection efforts since 2012 serving as the reference category. *GTD1* identified cases that were coded from 1980 through 1997, the majority of which were identified by PGIS. *GTD2* identified cases that were coded from 1998 through 2007, which were collected by CETIS. Finally, *GTD3*, identified cases that were coded and collected by ISVG from 2008 through 2011.[73] Once again, please refer to Table 7 for the full complement of these variables. I now turn to the analytical methods employed in this research.

METHODS

Given the nature of my research question, which seeks to understand both attack- and country-level differences between suicide bombings and other terrorist attacks simultaneously, hierarchical generalized linear modeling (HGLM) is the most appropriate choice for the analytical strategy. While it is possible to run multinomial regression with the above data, it leads to problems because of the nesting of these attack within years and countries. Additionally, Johnson (2017) identified important statistical considerations for why one might use HLM rather than regression, including improved parameter estimates, standard errors that are corrected, and adjusted tests of statistical significance. I first describe the typical case of HLM and then move on to a description of multinomial HGLM, which is employed as the main analytical strategy in this dissertation.

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[73] These classifications were slightly different from the actual cutoff dates between the different data collection efforts. However, this set of variables were included with the other country-year level variables.

Multinomial Hierarchical Generalized Linear Modeling (HGLM)

In this dissertation I hope to identify the ways in which suicide bombings are distinct from other forms of terrorism. There has been a growing body of research in criminology that has used HLM to study nested data, such as court cases that are nested within judicial caseloads which are also nested within counties (Johnson, 2006; Ulmer & Bradley, 2006; Wooldredge, 2007). However, Johnson (2017) noted that this method has rarely been applied to terrorism research in general. Furthermore, there has been no study, of which I am aware, that has looked at suicide bombings in a multi-level context. While HLM is typically used with data that are assumed to be linear and normally distributed, this was not the case with this research, as the primary dependent variable was dichotomous. Furthermore, the additional dependent variables were categorical in nature, consisting of three (*Tactic Type*) and four (*S-VBIED Distinct Tactic Type*) categories. However, HLM can be viewed as a special case of Hierarchical Generalized Linear Models (HGLM). Different HGLM techniques can be used with binary outcomes, multinomial data, count data, and ordinal data (Raudenbush & Bryk, 2002).

One important consideration for my research is the importance of time in the use of different terrorism tactics. Given the relatively long time period being analyzed in this dissertation, it is important to consider whether time plays a role in the use of suicide bombings. Furthermore, time was also a factor in the data collection efforts. Of the 8 main country-level characteristics, six were time-variant, meaning that they were collected each year for each country, while the remaining two variables (cultural fractionalization and collectivism) were time-invariant, meaning that the same value was used for one country throughout the period of study. Given these concerns, the primary analysis uses a three-

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level HGLM model, with attack-level characteristics at level-1, country-year characteristics at level-2, and fractionalization and collectivism (or country-characteristics) at level-3.

For the primary analysis involving the dichotomous variable *Suicide Bombing* the logit link function is used:

$$\eta_{ijk} = \log\left(\frac{\varphi_{ijk}}{1 - \varphi_{ijk}}\right)$$

where φ_{ijk} is the probability of a suicide bombing for attack i in country-year j and country k and η_{ijk} is the log odds of a suicide bombings for attack i in country-year j and country k.

With the binomial model, there is one equation at each level of analysis that incorporates the various attack, country-year, and country characteristics as well as the random effects. The equations for the three levels of analysis for the primary dependent variable, S*uicide Bombing*, are as follows:[74]

Level 1 $\qquad \eta_{ijk} = \pi_{0jk} + \pi_{1jk}a_{1ijk} + \cdots + \pi_{pjk}a_{pijk}$

where π_{0jk} is the intercept for country-year j in country k; a_{pijk} are $p = 1, \ldots, P$ attack characteristics that predict the log odds of a suicide bombing; π_{pjk} are the level-1 coefficients that indicate the direction and strength of association between attack characteristics, a_p, and the outcome in country-year jk.

Level 2 $\qquad \pi_{pjk} = \beta_{p0k} + \sum_{q=1}^{Q_p} \beta_{pqk}X_{qjk} + r_{pjk}$

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[74] These equations and descriptions of the component parts are based on those presented in Raudenbush and Bryk (2002).

where β_{p0k} is the is the intercept for country k in modeling the country-year effect π_{pjk};

X_{qjk} are $q = 1, \dots, Q_p$ country-year characteristic that are predictors are each π_{pjk}; β_{pqk} are the level-2 coefficients that indicate the direction and strength of association between country-year characteristics X_{qjk} and π_{pjk}; and r_{pjk} is the random effect at level-2.

Level 3 $\qquad \beta_{pqk} = \gamma_{pq0} + \sum_{s=1}^{S_{pq}} \gamma_{pqs} W_{sk} + u_{pqk}$

where γ_{pq0} is the is the intercept term in the country-level model for β_{pqk}; W_{sk} are $s = 1, \dots, S_{pq}$ country characteristic that are predictors are each β_{pqk}; γ_{pqs} are the level-3 coefficients that indicate the direction and strength of association between country characteristics W_{sk} and β_{pqk}; and u_{pqk} is the random effect at level-3.

The fully specified random intercept model for *Suicide Bombing* is as follows:

$\text{Prob}(\text{Suicide} = 1|\pi_{jk}) = \varphi_{1ijk}$,

$\text{Prob}(\text{Non} - \text{Suicide} = 1|\pi_{jjk}) = 1 - \varphi_{1ijk}$,

Level 1: $\eta_{ijk} = \log\left(\frac{\varphi_{ijk}}{1-\varphi_{ijk}}\right) = \pi_{0jk} + \pi_{1jk}(\text{security targets})_{ijk} +$

$\qquad \pi_{2jk}(\text{complex attack})_{ijk} + \pi_{3jk}(\text{religious holiday})_{ijk} +$

$\qquad \pi_{4jk}(\text{election day})_{ijk} + \pi_{5jk}(\text{democratic target})_{ijk} +$

$\qquad \pi_{6jk}(\text{civilian targets})_{ijk} + \pi_{7jk}(\text{assassination})_{ijk} +$

$\qquad \pi_{8jk}(\text{city detonation})_{ijk} + \pi_{9jk}(\text{group attribution})_{ijk} + \pi_{10jk}(\text{success})_{ijk} +$

$\qquad \pi_{11jk}(\text{natural log fatalities})_{ijk} + \pi_{12jk}(\text{after 9/11})_{ijk} +$

$\qquad \pi_{13jk}(\text{international attacks})_{ijk}$,

Level 2: $\pi_{0jk} = \beta_{00k} + \beta_{01k}(\text{foreign occupation})_{jk} + \beta_{02k}(\text{democratic target} *$

$\qquad \text{foreign occupation})_{jk} + \beta_{03k}(\text{outbidding})_{jk} + \beta_{04k}(\textit{group attribution} *$

$$\text{outbidding})_{jk} + \beta_{05k}(\text{conflict lethality})_{jk} + \beta_{06k}(\text{conflict length})_{jk} +$$

$$\beta_{07k}(\text{Muslim majority})_{jk} + \beta_{08k}(\text{natural log } IDP)_{jk} + \beta_{09k}(\text{GTD1})_{jk} +$$

$$\beta_{10k}(\text{GTD1})_{jk} + \beta_{11k}(\text{GTD3})_{jk} + r_{0jk},$$

Level 3: $\beta_{00k} = \gamma_{000} + \gamma_{001}(\text{cultural fractionalization})_k + \gamma_{002}(\text{collectivism})_k +$

$$u_{00k}.$$

In subsequent analyses, variables that were operationalized differently (such as cultural fractionalization) are included in the above model and replace the primary dependent variable. Furthermore, there are slight variations in the link function and the three-level equations for the multinomial variables *Tactic Type* and *S-VBIED Distinct Tactic Type*. Please see Appendix C for a discussion and specification of these models.

In order to conduct these analyses, multilevel models are created and analyzed using the Hierarchical Linear Modeling (HLM) software package, version 7. Since parameter estimation in HGLM is more complicated than it is in HLM, maximum likelihood (ML) estimation is not appropriate (Raudenbush & Bryk, 2002). Therefore, penalized quasi-likelihood estimation (PQL) is used instead (Raudenbush & Bryk, 2002).

With HGLM estimation, there are a number of options in terms of how to center the characteristics at the three levels of analysis.[75] These characteristics can be left as raw values, they can be centered at the grand mean of each characteristic, or they can be centered at the group mean for the level above[76] (Raudenbush & Bryk, 2002). Both grand-mean and group-mean centering have their advantages and disadvantages. Grand-mean centering is more easily interpretable when compared to group-mean centering

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[75] The "a" values at level-1, the "X" values at level-2, and the "W" values at level-3.
[76] In other words, level-1 characteristics are centered on the mean for each country-year and the level-2 characteristics are centered on the mean for each country.

(Raudenbush & Bryk, 2002). Furthermore, Kreft, de Leeuw, and Aiken (1995) compared different centering strategies and argued that grand-mean centering and raw values were equivalent[77] whereas group-mean centering was akin to fitting a different model to the data. Group-mean centering is a more meaningful strategy when the level-2 or level-3 clustering is important to the research question. Given that I am interested in the differences between countries and I hypothesized that country-level differences in general will matter, group-mean centering could be appropriate for this dissertation. Therefore, I run the analyses comparing suicide bombings and all other terrorist attacks with variables at level-1 and level-2 centered on the grand mean and the group mean separately. If the results are not substantively different, I will use the more easily interpretable grand-mean centered results. For level-3, the variables are centered at the grand mean. I now briefly discuss how I dealt with missing data.

Missing Data

There were only 11 variables, out of 32 dependent, independent, and control variables, that had any missing data. Please see Table 8 for a breakdown of the variables, in terms of the total number of cases with missing information and the percentage of the overall attacks.

The first important observation from the table was that 5 of the variables were missing data for fewer than 1,000 incidents, which was an insignificant number of cases in a dataset of 146,932 terrorist incidents. For the remaining 6 variables, the injuries data were the most problematic, as almost 8 percent of all cases were missing information on this

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[77] Equivalency refers to the ability to recalculate values from one centering strategy to another (Kreft, de Leeuw, & Aiken, 1995)

variable. However, the other 5 variables[78] were right around or below 5 percent of total

cases. Scholars have argued that single imputation is a reasonable procedure when there is

little missing data (around 5 percent or less) for specific variables (Enders, 2010; Henry,

2015). With more missing data, it is generally suggested that researchers use more

advanced techniques, such as Multiple Imputations in Chained Equations (MICE) (Enders,

2010). Since I only had one variable that was well over 5 percent missing data, and this

variable was not a primary independent variable in my models (it only served as a

comparison to the fatalities data) I was not too concerned with using simple imputation

methods. Below I describe the specific steps I took to classify missing cases for each of the

above variables.

Table 8. Missing Data by Variable

Variables	# Missing	% Missing
Security Target	3,678	2.50%
Military Target	3,678	2.50%
Civilian Target	3,678	2.50%
Cultural Fractionalization	507	0.345%
Religious Fractionalization	581	0.395%
ER Polarization Index	663	0.451%
Democratic Target	95	0.065%
LN Fatalities	7,710	5.25%
LN Injuries	11,683	7.95%
Collectivism	132	0.090%
LN IDP	2,196	1.49%

Note: Variables in bold are those that are included
in the primary analysis.

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[78] Three of these variables came from the same set of dichotomous variables (civilian, security, and military targets).

For *Security Target*, *Military Target*, and *Civilian Target*, I decided to include unknown cases in the civilian category for two reasons. First, these attacks with unknown targets were normally the result of unsuccessful attacks (an explosive device being discovered and defused, for example). Excluding them entirely would have an effect on the success variable. Second, media sources were often quick to highlight when an explosive device was thought to be targeting security forces or government entities and this is recorded by the GTD. Therefore, the attacks coded as unknown were more likely to be targeting anyone who passes by.

Focusing on the fractionalization variables (*cultural fractionalization*, *religious fractionalization*, and *ER polarization index*), I went through each country that was excluded from the available data and made coding rules. Looking first at *Cultural Fractionalization*: I used the Germany fractionalization score for both East Germany and West Germany; I used the Yemen fractionalization score for both North Yemen and South Yemen; I gave Vatican City a score of 0[79]; I used the China fractionalization score for Hong Kong, Macau, and Taiwan; I used the Sudan fractionalization score for South Sudan; the average of Serbia and Montenegro was used for Serbia-Montenegro; the average of the Czech Republic and Slovakia was used for Czechoslovakia; the average of the 7 former Yugoslav countries[80] was used for Yugoslavia; and the average of the 15 former soviet republics[81] was used for the Soviet Union.

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[79] This classification was based on the *ER Polarization Index* score and the fact that people in that country have the same religion and are also likely to have extremely similar cultures
[80] These countries include; Bosnia-Herzegovina, Croatia, Kosovo, Macedonia, Montenegro, Serbia, and Slovenia.
[81] These countries include: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

Moving on to the *Religious Fractionalization* missing data decisions, I used the same rules as above for East Germany, West Germany, North Yemen, South Yemen, Vatican City, South Sudan, and the Soviet Union. New decisions included: assigning Kosovo and Serbia the score of a nearby similar neighbor country (Greece); assigning Montenegro the score of a nearby similar neighbor country (Albania); assigning Serbia-Montenegro the average score for Greece and Albania; and assigning Yugoslavia attacks after 1991 with the pre-1991 Yugoslavia score.[82]

For *ER Polarization Index* missing data, I used the same rules from *Cultural Fractionalization* for East Germany, West Germany, North Yemen, South Yemen, Hong Kong, Macau, South Sudan, Czechoslovakia, and the Soviet Union. I used the same rule from *Religious Fractionalization* for Serbia, Kosovo, and Montenegro. New decision included: assigning Yugoslavia the average scores from Bosnia-Herzegovina, Croatia, Macedonia, Serbia-Montenegro, and Slovenia; and assigning Norway the score of a nearby similar neighbor country (Finland).

For the next set of variables I used simple mean imputation strategies. The average used for *Democratic Target* was 4.132845081. This average score was used for 1 vehicle bombing case and for 94 incidents in the category of all other attacks. For the *Fatalities* and *Injuries* variables, the average used was 2.18650788 and 3.149575967, respectively. I took the average for these variables before they were transformed. Finally, an average of 0.855190736 was used with the *Collectivism* variable. These cases represented attacks that

[82] Czechoslovakia and West Bank and Gaza Strip were not included in the original data, but there was supplemental information that allowed me to calculate a score for these countries.

occurred on island countries in the Caribbean and Oceania that have never experienced vehicle or suicide bombings.

Finally, I looked at each country to determine the missing data for the *IDP* variable. The following decisions were made. Algeria from 2009 to 2013, representing 286 attacks, was coded as 0 because the years before and after had no IDPs. Angola from 2009 to 2010, representing 3 attacks, was averaged on a downward trajectory from a value of 20 in 2008 to a value of 0 in 2014. Croatia in 2013, representing 2 attacks, was averaged on a downward trajectory from a value of 2.059 in 2012 to 0 in 2014. Guatemala in 2012, representing 1 attack, was averaged downward based on a decreasing trend of IDPs from 2013 through 2015. In Israel from 2009 to 2015, representing 555 attacks, the value used was 285, which represents the number of IDPs in the three years before the missing data (2006 through 2008). Laos in 2012, representing 1 attack, was coded as 0 because the years before and after had no IDPs. For Nigeria from 2009 through 2012, representing 896 attacks, I did independent research and found a calculation of 1.86 million people displaced when fighting started in 2009 between the government and Boko Haram.[83] Therefore, I used the value of 1860 from 2009 through 2012. For the Philippines in 2012, representing 247 attacks, I took the average between the 2011 and 2013 IDP values. For Russia in 2011, representing 188 attacks, I took the average between 2010 and 2012 IDP value. Rwanda from 2009 through 2011, representing 11 attacks, was coded as 0 because the years before and after had no IDPs. Finally, Zimbabwe from 2010 through 2014, representing 6 attacks, was averaged on a downward trajectory from 785 in 2008 to 0 in 2015.

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[83] For more information, please visit the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) overview about Nigeria: http://www.unocha.org/nigeria/about-ocha-nigeria/about-crisis.

Now that I have discussed in detail how I have dealt with these issues of missing data, I look more closely at the historical use of suicide and vehicle bombing throughout the period of study and then present descriptive statistics for all independent and control variables that have been included in the analysis.

Chapter 4: Descriptive Statistics

In this chapter I highlight the descriptive statistics for the main tactics of interest and I also give an overview of the variables included in this dissertation. I begin with a general overview before taking a more in-depth look at how suicide and vehicle bombings have been carried out over time, from 1980 through 2015. I then compare the two tactics to each other, highlighting ways in which they were similar but also showing how the tactics differed from each other. I conclude the chapter by looking at the descriptive statistics for all of the independent and control variables included in the analysis that follows in Chapter 5.

Figure 1. Terrorist Attacks, 1980-2015
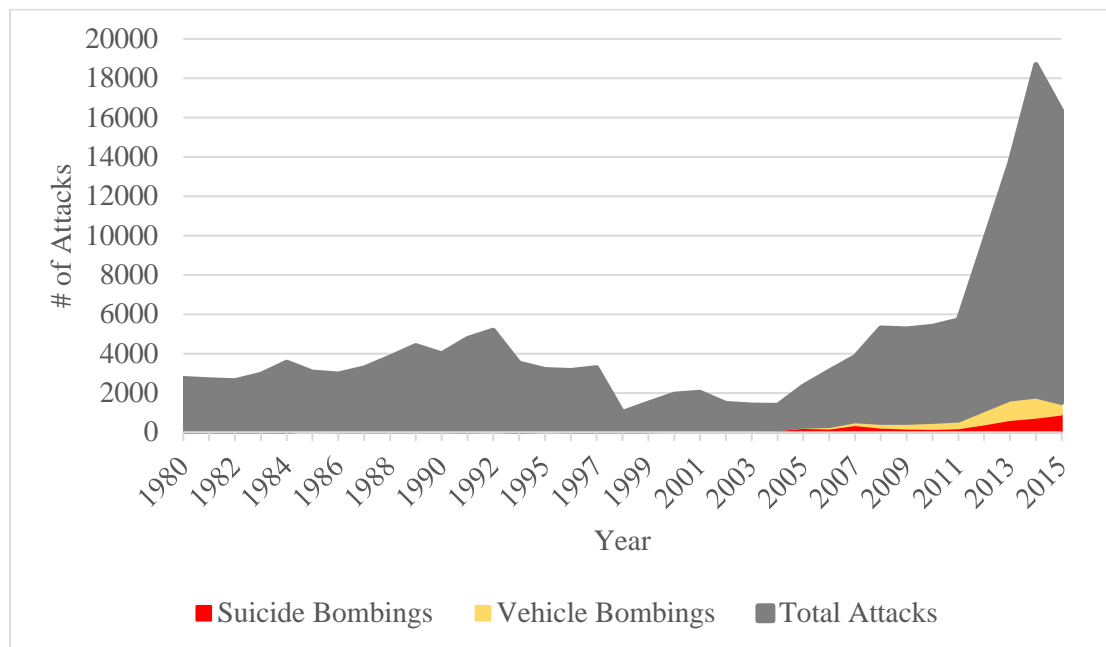
As you can see from Figure 1, vehicle and suicide bombings are hardly noticeable when compared with all terrorist attacks. As has already been described in the above chapters, vehicle and suicide bombings each represented under 5 percent of the total

number of attacks from 1980 through 2015. In the next two sections, I focus on the trends for both tactics over time, the different terrorist groups that have used, and countries that have experienced, each tactic, and the targeting strategies for both suicide and vehicle bombings. Throughout both sections, I also compare each tactic to findings across all terrorist attacks. I begin by looking at suicide bombings.

SUICIDE BOMBINGS

Suicide bombings have been used as a tactic in modern terrorism since December 15, 1981, when a suicide bomber detonated an explosives-laden vehicle at the Iraqi Embassy in Beirut, Lebanon, killing 66 people and injuring 100 others. The attack was later claimed by the Al-Da'wah Party, an Islamic political party in Iraq. Since then, suicide bombing has been used as a tactic over 4,700 times in 57 other countries and by more than 150 groups.

Trends over Time

In Figure 2, I compare the shape of total terrorist attack and suicide bombing trends over time by putting each on its own axis. In looking at Figure 2, the two trend lines are remarkably similar, especially after 1998. Since that time, both suicide bombings specifically and terrorism more generally have increased somewhat consistently. There were slight differences that could be identified, such as an initial peak in 2007 for suicide bombings, which was followed by a dip where suicide bombings did not cross the 2007 threshold again until 2012. In comparison, all terrorist attacks actually increased from 2007 to 2008 and stayed relatively consistent until a large increase in 2012 that coincided with the increase in suicide bombings.

Figure 2. Number of Suicide Bombings and Overall Terrorist Attacks, 1980-2015
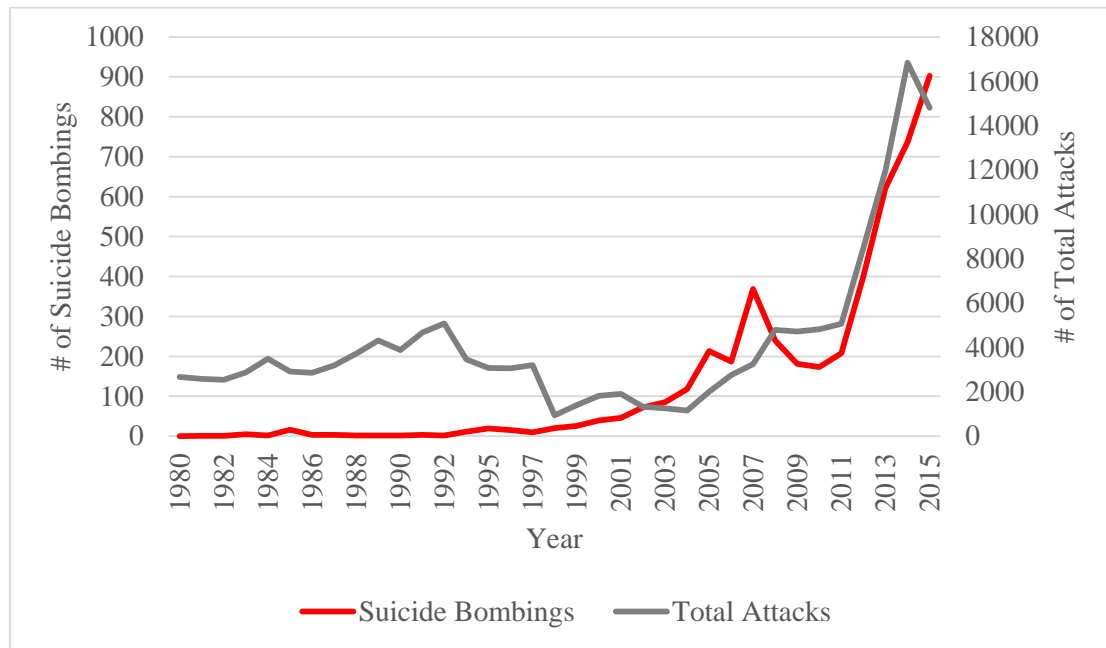
Another interesting trend was from 2014 to 2015, where suicide bombings increased by 166 attacks while overall incidents of terrorism decreased, from 16,840 to 14,806. This trend occurred at the end of the study period, so it will be interesting to see what the future trends in suicide attacks and total attacks will look like. Even with these opposing trends at the end of the time period, Figure 3 shows that suicide bombings did not have much of an impact on the overall number of terrorist incidents. Suicide bombings only climb above 10 percent of total cases on three occasions, all of which were in the mid-2000s (2004, 2005, and 2007). This also coincided with the height of the conflicts in Iraq and Afghanistan, at a time when there were fewer terrorist attacks observed in other places around the world. This contrasts with more recent years, where far more attacks have been observed in places like Pakistan, Nigeria, Somalia, and Yemen, driving up the number of terrorist incidents overall. Even though suicide bombings also occurred in these countries, they did not occur at the same rate as they did in Iraq and Afghanistan. Coincidentally, this

drove down the percentages for suicide bombings, even as the number of suicide bombings

had continually increased since 2012 (see Figure 2).

Figure 3. Suicide Bombings: Percent Attacks, 1980-2015
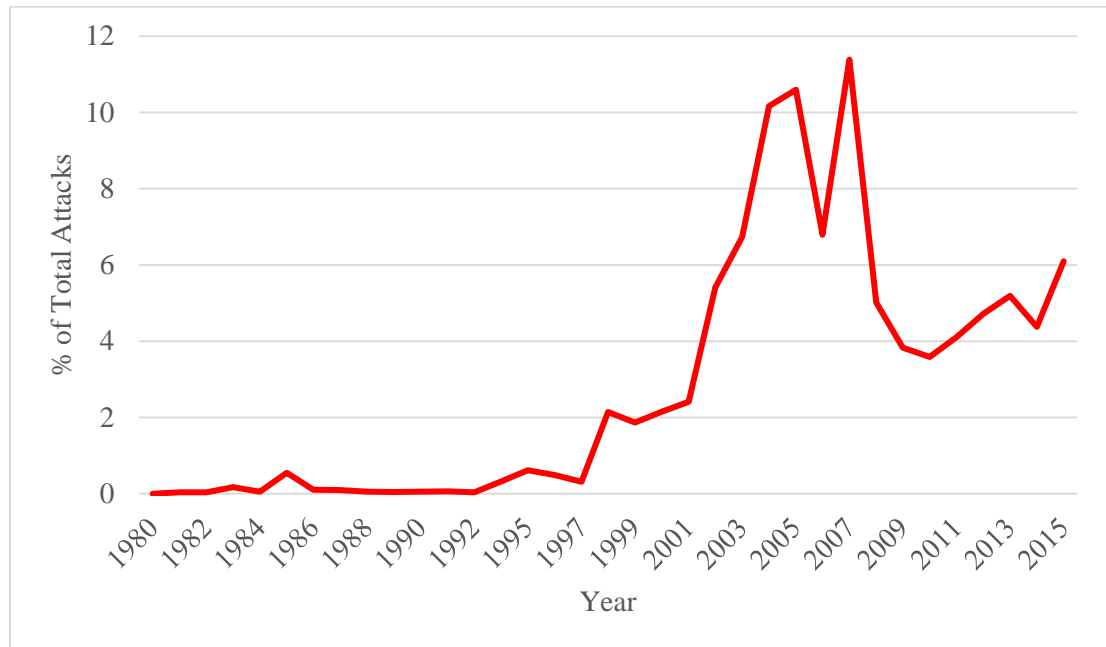
Figure 4 and Figure 5 both focus on the trends in lethality over time. As compared

to the percentage of overall attacks, suicide bombings were far more important in terms of

lethality in the overall terrorism landscape. Whereas suicide bombings were consistently

under 10 percent of total attacks throughout the study period, they were less than 15 percent

of total fatalities only once (in 2014) since 2001.[84] Furthermore, it peaked at 36 percent of

the total fatalities from terrorist attacks in 2005 and was also above 35 percent in 2007. In

more recent years, it has represented around 15 to 20 percent of all attacks.

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[84] If there is justification for Moghadam's (2006; 2008; 2009) assertion of a globalization of martyrdom,
this is it.

Figure 4. Fatalities in Suicide Bombings and Overall Terrorist Attacks, 1980-2015
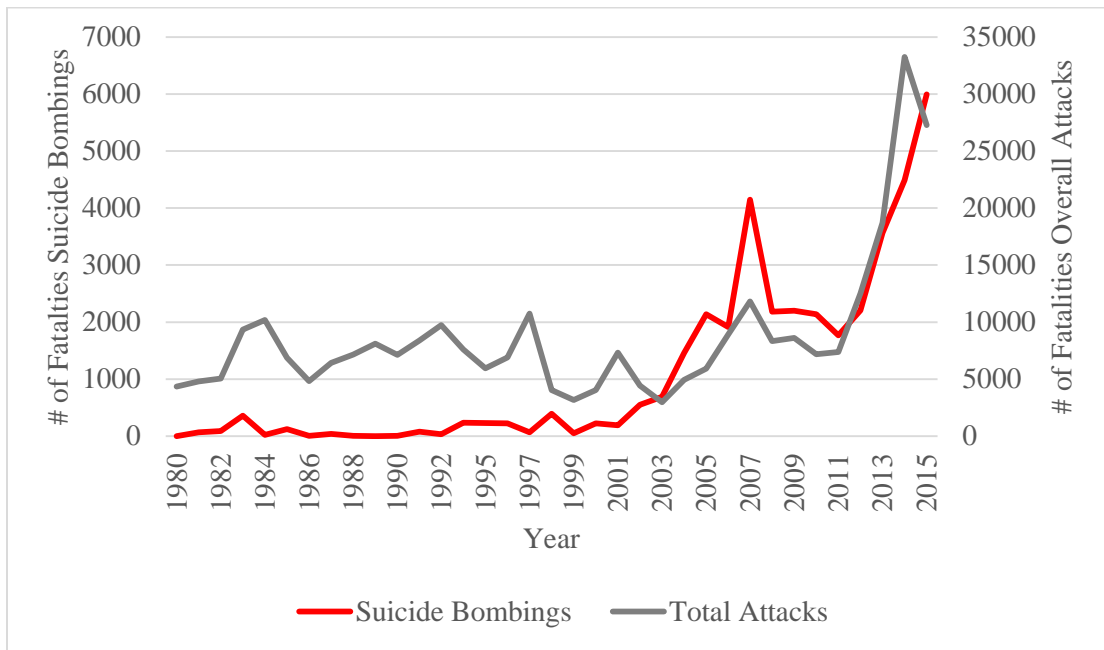
Figure 5. Suicide Bombings: Percent Fatalities, 1980-2015
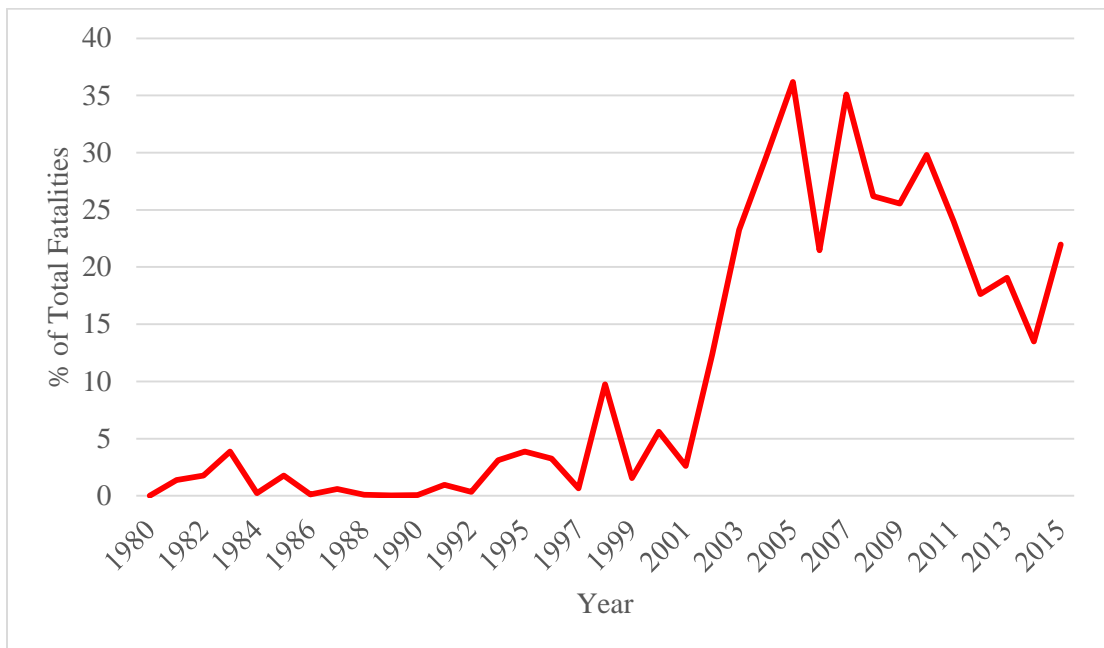
Overall, suicide bombings were unequally represented in fatality numbers, relative to their overall use as a tactic, when compared to all other forms of terrorism. The next question to be addressed is: what groups were using the tactic most frequently?

Most Active Terrorist Organizations

The groups that have carried out the most suicide bombings have tended to be organizations that we frequently hear about in the media, according to Table 9. It was unsurprising to see groups such as ISIL, the Taliban, and Boko Haram as the terrorist organizations that have used the tactic most frequently. What was somewhat surprising, however, was how big the gap was from the top groups to the next level of organizations that use the tactic. The top three groups were responsible for over 32 percent of all suicide bombings. Taking into account the 42 percent of incidents for which the perpetrator is unknown, this means that these three groups have carried out more suicide bombing attacks than all other groups combined.

Furthermore, only six groups have used the tactic over 100 times, and only one of those groups, the LTTE, was active in the early years that the tactic was used. Groups such as the Palestinian Islamic Jihad (PIJ), Al-Aqsa Martyrs Brigade (Fatah), the Kurdistan Workers' Party (PKK), Hezbollah, and Chechen Rebels (Black Widows), did not even appear among the top ten groups. This is an important observation because these groups that did not appear in the top ten represent the groups most frequently discussed in theories and early research on suicide terrorism (Bloom, 2005; Pape, 2005; Pedahzur, 2005).

Table 9. Suicide Bombings: Most Active Organizations, 1980-2015

Rank	Terrorist Organization	Total Bombings	% Suicide Bombings	Average Fatalities	Average Injuries	% Group Attacks
1	Islamic State of Iraq and the Levant (ISIL)[a]	731	15.43%	11.47	25.77	19.92%
2	Taliban	575	12.14%	4.65	12.31	10.45%
3	Boko Haram	225	4.75%	8.45	19.26	12.23%
4	Tehrik-i-Taliban Pakistan (TTP)	147	3.10%	16.42	33.69	12.75%
5	Al-Qaida in the Arabian Peninsula (AQAP)	109	2.30%	7.89	14.93	12.21%
6	Liberation Tigers of Tamil Eelam (LTTE)	107	2.26%	10.99	43.74	6.67%
7	Al-Shabaab	97	2.05%	9.81	14.07	4.56%
8	Al-Nusrah Front	78	1.65%	13.18	32.46	37.14%
9	Hamas (Islamic Resistance Movement)	68	1.44%	6.51	33.82	17.66%
10	Haqqani Network	48	1.01%	8.84	22.32	63.16%

Note: [a] This organization includes attacks carried out by ISIL, Al-Qaida in Iraq, the Islamic State of Iraq (ISI), Tawhid and Jihad, and the Mujahedeen Shura Council.

It was also interesting to note that for some groups, suicide bombings represented the dominant tactic. For example, the Haqqani Network, which has carried out 48 suicide bombings, has only carried out a total of 76 attacks, meaning that over 63 percent of their attacks have been suicide bombings. Over one-third of all attacks carried out by Al-Nusrah Front have been suicide attacks. Even for the groups that used suicide terrorism most often,

suicide bombings represented between 10 and 20 percent of total attacks carried out by the group. This far exceeds the overall average, where suicide bombings were approximately 3 percent of all attacks from 1980 through 2015.

Table 10. Suicide Bombings: Most Lethal Organizations, 1980-2015

Rank	Terrorist Organization	Average Fatalities	Total Fatalities	Average Injuries	Total Injuries	Total Bombings
1	Hezbollah	38.14	534	56.50	791	16
2	Jundallah	28.33	340	66.50	798	12
3	Al-Qaida	26.92	673	219.16	5,479	25
4	Lashkar-e-Jhangvi	24.61	763	56.29	1,745	31
5	Sanaa Province of the Islamic State	16.79	235	41.50	581	14
6	Tehrik-i-Taliban Pakistan (TTP)	16.42	2,397	33.69	4,818	147
7	Chechen Rebels[a]	13.64	341	36.13	831	25
8	Al-Nusrah Front	13.18	936	32.46	1,331	78
9	Islamic State of Iraq and the Levant (ISIL)[b]	11.47	8,085	25.77	16,238	731
10	Liberation Tigers of Tamil Eelam (LTTE)	10.99	1,110	43.74	3,980	107

Note: [a] This is a generic group, which is a designation for a perpetrator that does not represent a cohesive unit.

[b] This organization includes attacks carried out by ISIL, Al-Qaida in Iraq, the Islamic State of Iraq (ISI), Tawhid and Jihad, and the Mujahedeen Shura Council.

Focusing on the groups that were most lethal, Table 10 highlights that some of the early adopters of the tactic tended to kill and injure more people. All ten groups have killed more than ten people per attack, and have injured anywhere between 25 and 219 people, on average. These figures could be a case of a small sample size, where the top five groups

have been responsible for fewer than 100 attacks combined. In that case, the Tehrik-i-Taliban Pakistan (TTP), ISIL, and the LTTE might be considered the most lethal groups given their high average lethality and the fact that they have each carried out over 100 attacks on their own.

Another interesting result I noted in Table 10 was the average injuries for Al-Qaida attacks. This was likely driven by the small number of incidents (25) and the large casualty figures in some of these attacks, including the United States embassy bombing in Nairobi, Kenya that injured over 4,000 people. I also want to point out that there was relatively low overlap between Table 9 and Table 10. Only four groups showed up in both tables (ISIL, the TTP, the LTTE and Al-Nusrah Front). Furthermore, of the 16 groups that appeared in either table, approximately two-thirds have either pledged allegiance to Al-Qaida or to ISIL, whereas all but one of the groups[85] can be described as being motivated by Islamic fundamentalism.[86] However, some of these groups had more immediate concerns aside from their religious ideologies.[87]

Overall, it appears that religion played a role in which groups used suicide bombings as a tactic. Four of the six most active groups in terms of overall attacks, the Shining Path (SL), Farabundo Marti National Liberation Front (FMLN), Revolutionary Armed Forces of Colombia (FARC), and the New People's Army (NPA), have not used suicide bombings as a tactic. And these groups were not described as being motivated by a religious ideology. This topic is further discussed when I compared suicide and vehicle bombings below.

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[85] LTTE was the exception.
[86] All but one of these fourteen groups were motivated by a Salafi Jihadist ideology more specifically.
[87] Many of these groups, including Hezbollah, Lashkar-e-Jhangvi, Hamas, and rebels in the Chechen conflict were also motivated by nationalism.

Top Countries

Based on the discussion above regarding the terrorist organizations that carried out the most suicide bombings, the top ten countries in Table 11 should come as no surprise. There was huge overlap, as groups such as ISIL, the Taliban, the TTP, and Boko Haram, carried out the majority of their attacks in Iraq, Afghanistan, Pakistan, and Nigeria, respectively. The top six countries in Table 11 represented suicide bombings during the globalization of martyrdom wave of attacks identified by Moghadam (2006). In contrast, Israel, Sri Lanka, and Russia represented countries that experienced the early wave of suicide bombings.

Table 11. Suicide Bombings: Most Active Countries, 1980-2015

Rank	Country	Total Bombings	% Suicide Bombings	Average Fatalities	Average Injuries	% Country Attacks
1	Iraq	1,814	38.29%	8.89	21.60	9.67%
2	Afghanistan	981	20.71%	4.02	10.51	10.13%
3	Pakistan	447	9.44%	12.26	27.01	3.51%
4	Nigeria	211	4.45%	8.17	16.96	7.31%
5	Syria	206	4.35%	13.01	25.67	14.43%
6	Yemen	152	3.21%	8.19	16.52	5.85%
7	Israel	123	2.60%	5.11	31.28	6.96%
8	Sri Lanka	111	2.34%	10.96	43.36	3.73%
9	Somalia	102	2.15%	8.84	13.04	3.53%
10	Russia	78	1.65%	12.97	35.79	3.71%

Well over half of all suicide bombings were carried out in Iraq and Afghanistan, whereas two-thirds have occurred in just three countries (including Pakistan). This means that studying country and conflict context is important to better understand what conditions

might facilitate the use of this tactic in these three countries. Suicide bombings represented over 10 percent of the overall attacks in two countries, Afghanistan and Syria. However, Morocco, which witnessed only thirty attacks overall, experienced eleven suicide bombings among those attacks (which represents 36.67 percent of all attacks). On the other end of the spectrum is India, which was third in overall attacks with 9,916, but experienced only 22 suicide bombings in total (which represents 0.22 percent of all attacks). It is important to understand why suicide bombings have not been used more frequently in conflicts such as those in India while they have been used in places like Morocco, where terrorism is a rarely-used strategy. These issues are addressed in more detail in the final two chapters when discussing the macro-level variables that effect the context surrounding a country or conflict.

Targeting Strategies

Focusing on the types of targets that were most frequently victimized in suicide bombings, we see that the military and the police bore the brunt of these attacks, according to Figure 6. In suicide bombings, the military were targeted in over 25 percent of all attacks, while the police were targeted in over 20 percent of all incidents. Private Citizens and property, general government, and businesses rounded out the top five most targeted entities. Of the 22 different target types, only abortion-related targets have never been attacked in suicide bombings. Based on this cursory look at the targeting strategies, it appears that the evidence points to the use of suicide bombings against hard targets as opposed to soft targets.[88]

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[88] I defined soft targets as civilians, businesses, or transportation infrastructure, whereas hard targets are defined as military forces, paramilitary forces, or police officers.

Figure 6. Suicide Bombings: Target Types, 1980-2015
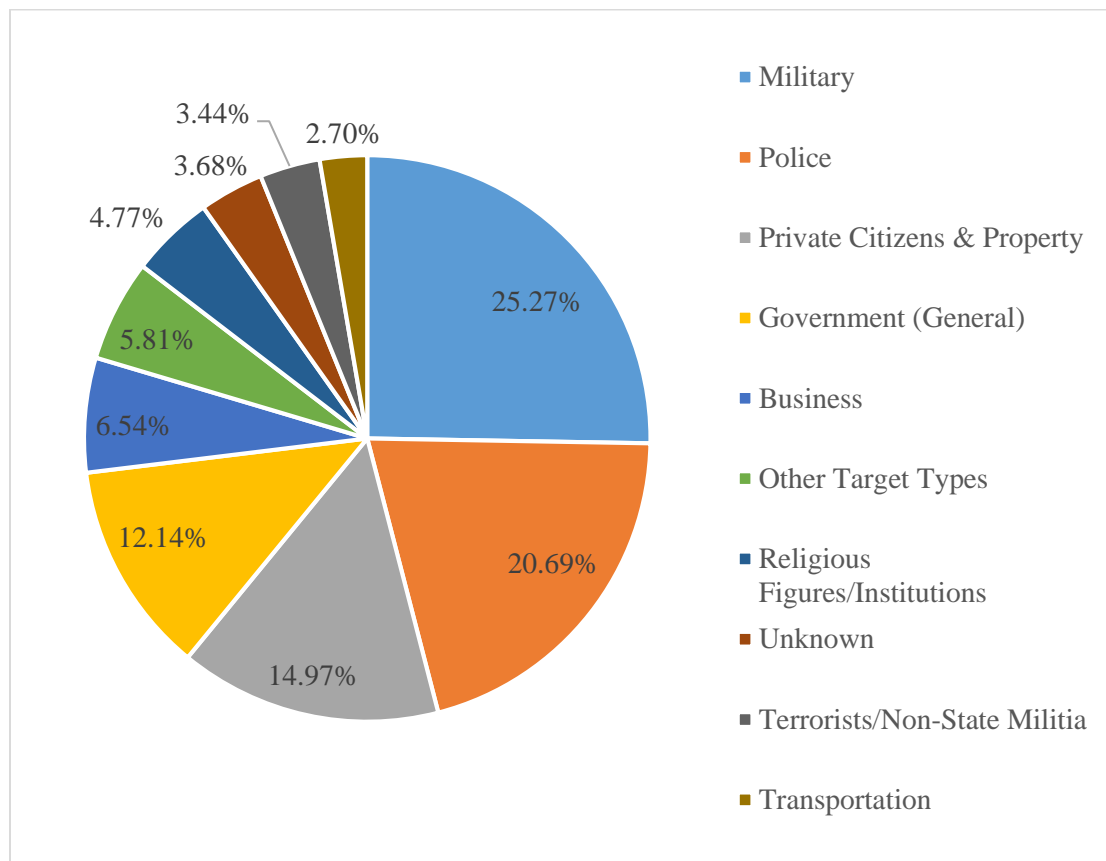
Finally, Table 12 highlights the top countries targeted in suicide bombings. This was slightly different from the discussion of where suicide bombings occurred in the section above, since this looked at the nationality of the entities being targeted in an attack. Unsurprisingly, many of the top targeted nationalities overlapped with the location of these attacks. This was because most of those attacks targeted local military, police, and civilians as opposed to foreigners. The only real addition to Table 12 that did not appear in Table 11 was attacks that targeted international entities, which included coalitions, international non-governmental organization (INGOs), and intergovernmental organizations (IGOs). International entities were targeted in 5.40 percent of all attacks, which was the fourth most likely target. Furthermore, while the United States did not experience a suicide bombing

within its borders, entities from the United States were targeted 76 times in other countries.[89] Now that I have painted a picture of the circumstances surrounding the use of suicide bombings, I turn my attention to vehicle bombings.

Table 12. Suicide Bombings: Top Targeted Nationalities, 1980-2015

Rank	Country	Total Bombings	% Suicide Bombings	Average Fatalities	Average Injuries	% Country Attacks
1	Iraq	1,776	37.49%	8.97	21.48	9.66%
2	Afghanistan	880	18.58%	4.24	10.92	9.89%
3	Pakistan	441	9.31%	12.18	26.94	3.56%
4	International	256	5.40%	4.36	12.22	9.79%
5	Nigeria	209	4.41%	8.15	16.81	7.54%
6	Syria	204	4.31%	13.09	25.94	13.71%
7	Israel	200	4.22%	4.09	21.43	5.66%
8	Yemen	145	3.06%	8.39	16.82	5.99%
9	Sri Lanka	109	2.30%	11.17	44.28	3.86%
10	Somalia	91	1.92%	8.56	13.13	3.72%

VEHICLE BOMBINGS

Just as suicide bombings had a distinct starting point in modern terrorism,[90] so too did vehicle bombings. However, the starting point for vehicle bombings occurred far outside the study period of this dissertation. Davis (2007) identified the first vehicle bombing as an attack on Wall Street in New York City on September 16, 1920. The bombing killed 38 people and injured 143 others and was the result of a horse-drawn wagon

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[89] This was the 12th highest nationality target, even though the table only showed the top 10.
[90] Although the first attack has been debated somewhat in the literature.

that was left on the side of the road and filled with dynamite.[91] The attack was carried out by an unidentified anarchist group (Davis, 2007). Since that time, vehicles have become important in terrorist attacks as a delivery method for explosive devices. This was because a group or individual were able to place a larger quantity of explosive materials inside the vehicle, allowing for larger explosions. In this section I gave an initial overview of how vehicle bombings have been used in terrorism from 1980 to 2015. Once again, I started with a discussion of the overall trends during this period.

Trends over Time

Figure 7 compares the trend lines for vehicle bombings and all terrorist attacks. As was the case with suicide bombings, the lines looked pretty similar with only a few exceptions. The major divergence was that, while overall attacks leveled off from 2008 through 2011, vehicle bombings continued a steady climb which had begun previously (in 2003). There was also a large decrease in vehicle bombings from 2014 to 2015, dropping by almost 50 percent (from 1,113 attacks in 2014 to 611 attacks in 2015). This was an interesting trend with no immediate explanation as to why it occurred. Furthermore, this dip in vehicle bombings represented almost 25 percent of the total drop in all attacks from 2014 to 2015 (502 and 2034 respectively).

Moving to Figure 8, I found that vehicle bombings showed continual growth as a terrorist tactic from 1980 up through 2012. It reached a peak in 2013, representing almost 9 percent of all terrorist attacks, before dropping over the course of the next two years. This

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[91] Although this would not meet the GTD definition of a vehicle bombing since it was not motorized, Davis (2007) describes it as the "first modern use of an inconspicuous vehicle, anonymous in almost any urban setting, to transport large quantities of high explosive into precise range of a high-value target" (p. 2).

can be contrasted with Figure 7, where suicide bombings reached a peak in terms of overall use in 2014 before a large drop in 2015.

Figure 7. Number of Vehicle Bombings and Overall Terrorist Attacks, 1980-2015
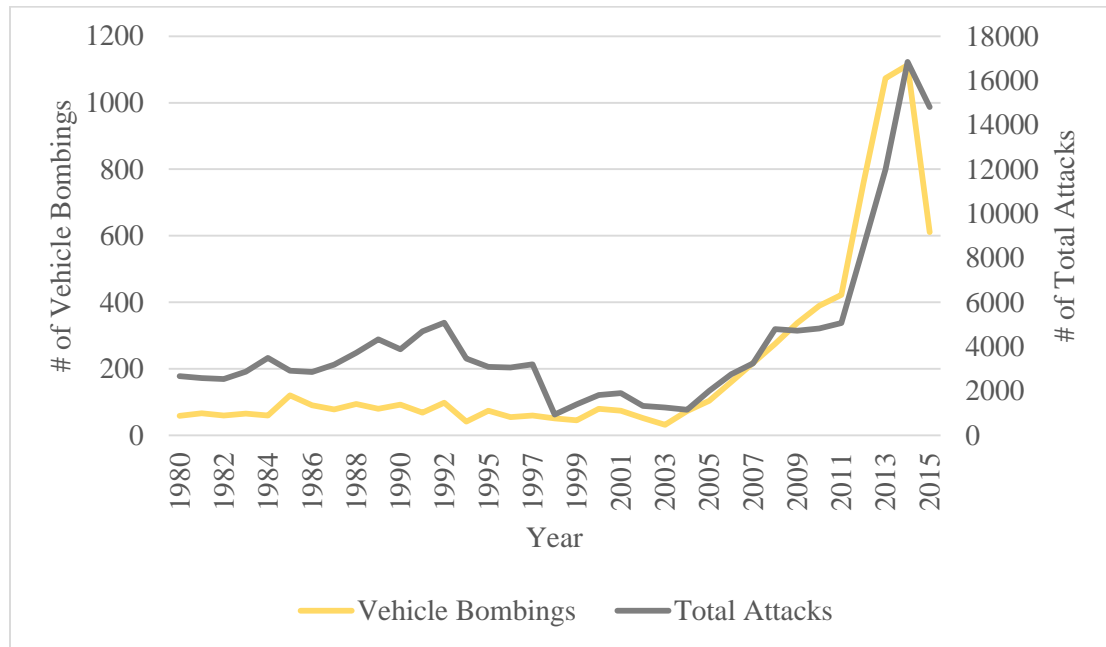
Focusing on lethality, Figure 9 shows a relatively low number of fatalities per year (under 500) until 2004. There was an initial peak in 2007 that matched a spike in overall fatalities but did not appear to have a corresponding spike in incidents during that same year (see Figure 7). The later peak in fatalities in 2013 was also at a time when vehicle bombings peaked in terms of overall attacks. Therefore, it appears that 2007 could be considered the most lethal period of vehicle bombings, at least in terms of average fatalities per attack. Looking at the data, 2004 through 2007 was the most lethal period of vehicle bombings, with both 2004 and 2007 recording an average of over 9 people killed per attack.

Figure 8. Vehicle Bombings: Percent Attacks, 1980-2015
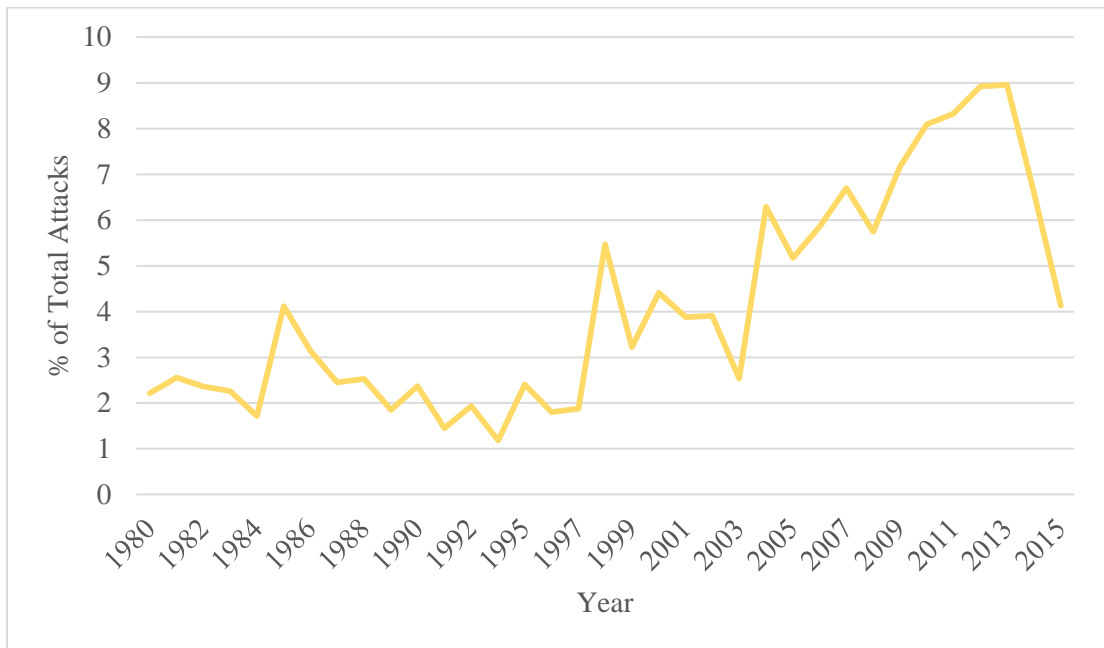
Figure 9. Fatalities in Vehicle Bombings and Overall Terrorist Attacks, 1980-2015
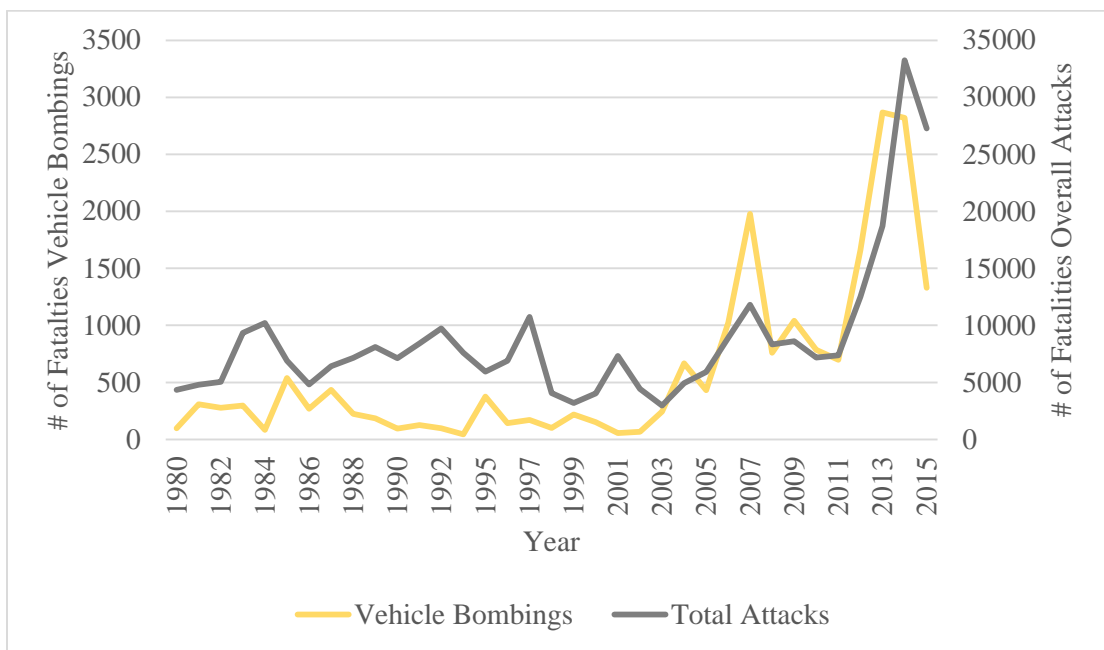
Finally, Figure 10 highlights the lethality of vehicle bombings as a percentage of all attacks. This figure showed two distinct periods in the use of vehicle bombings. The

first was from 1980 through 2002, where vehicle bombings never caused more than eight percent of the total deaths from terrorist attacks in a given year. The second period was from 2003 through 2013, where vehicle bombings became more deadly relative to other types of attacks, only dropping under eight percent one time (in 2004). This trend coincided with the involvement of the United States in Iraq starting in 2003 and, as noted above, Hafez (2006b) found that vehicles were used far more often in suicide bombings in Iraq because of the ease of access to vehicles.[92] This could also explain why the overall number of non-suicide-vehicle bombings increased and why their lethality increased during this time period as well. As noted above, 2014 and especially 2015 saw a similar drop in terms of the percentage of overall fatalities.

Figure 10. Vehicle Bombings: Percent Fatalities, 1980-2015

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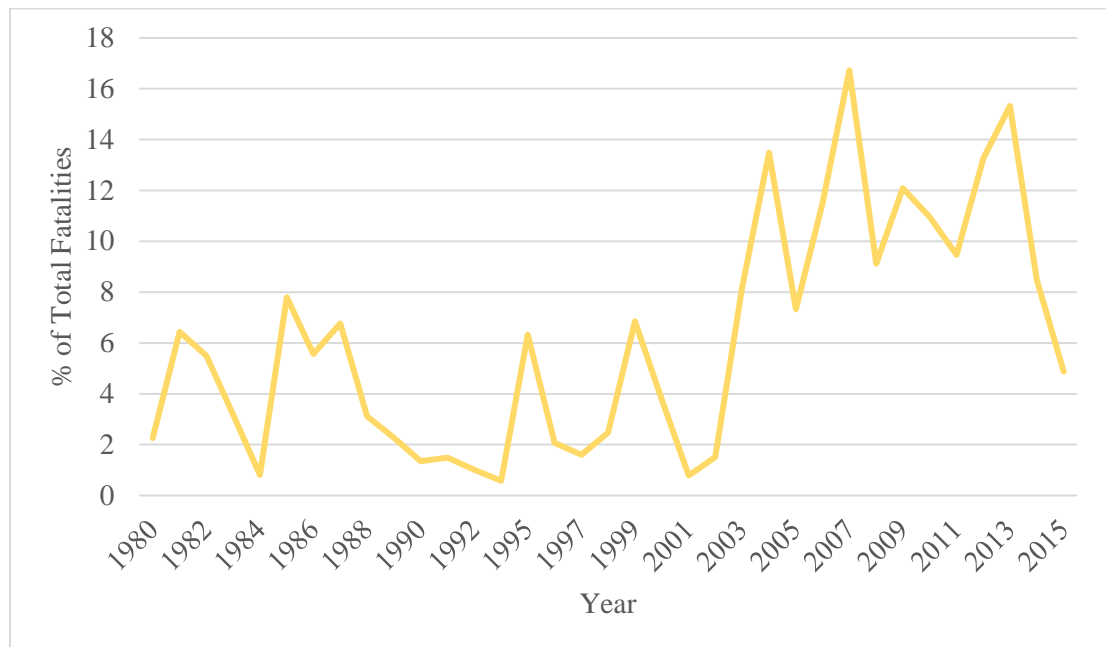
[92] As I discussed in Chapter 3, this complexity with suicide bombings that used vehicles as the delivery mechanism was addressed with the *SVBIED Distinct Target Type* dependent variable, which separated out vehicle-suicide bombings, non-vehicle-suicide bombings, and non-suicide-vehicle bombings.

Now that I discussed at the trends of vehicle bombings over time, the next step is to see what groups were using the tactic most often, as well as which groups were the most lethal. I address this issue in the section below.

Most Active Terrorist Organizations

Table 13 provides a list of the top ten terrorist organizations in terms of the overall number of vehicle bombing attacks. The groups listed in Table 13 came from a diverse set of conflicts and time periods. Seven of the ten groups were still active as of the end of 2015,[93] but even some of the active groups had peaked as terrorist organizations far earlier.[94] Furthermore, the ten groups were based in four different continents: Africa, Asia, Europe, and South America.

ISIL was by far the most active group in terms of overall attacks. The group was responsible for more than 10 percent of vehicle bombings and was second to the TTP on this list in terms of lethality in using this tactic. I also noted that three of the groups, ETA, the IRA, and SL, all killed under one person per attack. This was likely due to the tendency of groups active during the 1980s and 1990s to warn authorities and civilians ahead of time regarding an impending bombing, thereby minimizing casualties. The low lethality rates of these three groups help to explain the rates for vehicle bombings in general, especially as compared to the far more lethal use of suicide bombings.

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[93] The groups that were no longer active are: Basque Fatherland and Freedom (ETA), the Irish Republican Army (IRA), and the Shining Path (SL).

[94] Revolutionary Armed Forces of Colombia (FARC) and the National Liberation Army of Colombia (ELN) were much more active in terms of overall attacks in the 1980s and 1990s.

Table 13. Vehicle Bombings: Most Active Organizations, 1980-2015

Rank	Terrorist Organization	Total Bombings	% Vehicle Bombings	Average Fatalities	Average Injuries	% Group Attacks
1	Islamic State of Iraq and the Levant (ISIL)[a]	762	10.69%	5.43	15.95	26.90%
2	Basque Fatherland and Freedom (ETA)	188	2.64%	0.91	5.62	11.79%
3	Irish Republican Army (IRA)	176	2.47%	0.56	7.35	10.69%
4	Taliban	129	1.81%	1.81	5.38	2.35%
5	Revolutionary Armed Forces of Colombia (FARC)	96	1.35%	2.17	12.41	4.01%
6	Al-Shabaab	71	1.00%	3.00	6.86	3.34%
7	Shining Path (SL)	67	0.94%	0.95	6.36	1.47%
8	Tehrik-i-Taliban Pakistan (TTP)	52	0.73%	9.88	28.48	4.51%
9	Al-Qaida in the Arabian Peninsula (AQAP)	49	0.69%	2.38	2.32	5.49%
10	National Liberation Army of Colombia (ELN)	34	0.48%	1.35	5.16	2.46%

Note: [a] This is a generic group, which is a designation for a perpetrator that does not represent a cohesive unit.

Finally, there was also a divide between the first three groups and the remaining groups on this list in terms of the value of this tactic as a tool in their arsenal. ISIL, ETA, and the IRA all used vehicle bombings in over 10 percent of their total attacks. In fact, over 25 percent of all ISIL attacks have been vehicle bombings. For the remaining seven groups,

suicide bombings were used far less frequently when compared to other potential tactics. It would be interesting to further study the top three groups to better understand how vehicle bombings fit in as an overall strategy.

Table 14. Vehicle Bombings: Most Lethal Organizations, 1980-2015

Rank	Terrorist Organization	Average Injuries	Total Injuries	Average Fatalities	Total Fatalities	Total Bombings
1	Chechen Rebels[a]	35.76	608	11.61	209	18
2	African National Congress (South Africa)	34.82	383	3.36	37	11
3	Liberation Tigers of Tamil Eelam (LTTE)	28.78	518	13.61	245	18
4	Tehrik-i-Taliban Pakistan (TTP)	28.48	1,481	9.88	514	52
5	Real Irish Republican Army (RIRA)	24.00	240	2.90	29	10
6	Al-Nusrah Front	22.06	353	17.62	370	23
7	United Baloch Army (UBA)	21.10	211	2.80	28	10
8	United Liberation Front of Assam (ULFA)	18.54	241	4.23	55	13
9	Armed Islamic Group (GIA)	17.82	303	3.06	49	17
10	Islamic State of Iraq and the Levant (ISIL)[b]	15.95	11,656	5.43	4,028	762

Note: [a] This is a generic group, which is a designation for a perpetrator that does not represent a cohesive unit.
[b] This organization includes attacks carried out by ISIL, Al-Qaida in Iraq, the Islamic State of Iraq (ISI), Tawhid and Jihad, and the Mujahedeen Shura Council.

Moving on to the most lethal groups in terms of average injuries (Table 14), there were several new groups that appeared on this list as compared to Table 13. According to this list, Chechen rebels were the most lethal group, injuring more than 35 people per attack. However, it should be noted that none of the top three groups had carried out more than 20 vehicle bombings. In fact, only two of these groups, the TTP and ISIL, had carried out more than 23 vehicle bombings. ISIL was by far the most lethal overall, injuring over 11,000 people in these attacks. Looking at lethality in terms of injuries helps to explain why vehicle bombings appear to be more effective in injuring rather than killing people. All ten groups (as well as the Sinai Province of the Islamic State, which is eleventh) have injured more than 15 people on average.

This list also included three of the four most lethal groups that used vehicle bombings in terms of fatalities (Boko Haram, which is not listed, kills 12.68 people on average). Al-Nusrah Front, currently active in the Syrian Civil War, was the most lethal, killing 17.62 people on average. Future research should compare vehicle bombings carried out by these groups to those carried out by the IRA, ETA, and SL, which looked to minimize casualties. Next I look at the countries where vehicle bombings have occurred most frequently.

Top Countries

Table 15 lists the top ten countries in terms of the total number of vehicle bombings occurring in the country. Interestingly, even though groups such as ETA, the IRA, and SL appeared in the list of the most active groups, it did not translate to the countries they operated in being the most active. Instead, it was the countries that were most active overall, Iraq, Afghanistan, and Pakistan, that appeared at the top of this list. What I found to be

most interesting in Table 15 was that over 51 percent of all vehicle bombings have occurred in Iraq alone, while no other country experienced over 5 percent. Furthermore, there were only three countries where vehicle bombings represented over 10 percent of the overall attacks in that country: Iraq, Lebanon, and Syria.

Table 15. Vehicle Bombings: Most Active Countries, 1980-2015

Rank	Country	Total Bombings	% Suicide Bombings	Average Fatalities	Average Injuries	% Country Attacks
1	Iraq	3,639	51.04%	3.28	9.80	19.39%
2	Afghanistan	353	4.95%	1.60	5.04	3.64%
3	Pakistan	349	4.89%	3.25	12.30	2.74%
4	United Kingdom	256	3.59%	0.49	6.47	7.62%
5	Lebanon	236	3.31%	6.74	24.97	10.20%
6	Colombia	233	3.27%	1.78	11.55	3.04%
7	Spain	206	2.89%	0.90	5.43	8.81%
8	Syria	171	2.40%	8.51	16.92	11.97%
9	Thailand	167	2.34%	0.97	11.78	5.04%
10	Libya	137	1.92%	0.47	0.97	8.35%

Overall, it appears that vehicle bombings have mainly been used as a tool in the conflict in Iraq, whereas they have been used sporadically and by specific terrorist organizations in countries such as the United Kingdom, where the IRA was responsible for over two-thirds of all vehicle bombings in the country, Spain, where ETA was responsible for over 90 percent of all vehicle bombings, and Colombia, where FARC and the ELN were responsible for over 60 percent of all vehicle bombings. Finally, I look at targeting strategies for vehicle bombings.

Targeting Strategies

Figure 11 highlights the most targeted entities in vehicle bombings. Private Citizens and property were by far the most common target, accounting for 35 percent of all vehicle bombings. This was followed by police and general government targets, which were both targeted in more than 10 percent of vehicle bombings. This generally fell in line with targeting strategies in terrorism more generally, as private citizens were the most targeted entity in overall attacks as well. However, in overall attacks they were the leading category at only 23.41 percent, so they were targeted more often in vehicle bombings.

Figure 11. Vehicle Bombings: Target Types, 1980-2015
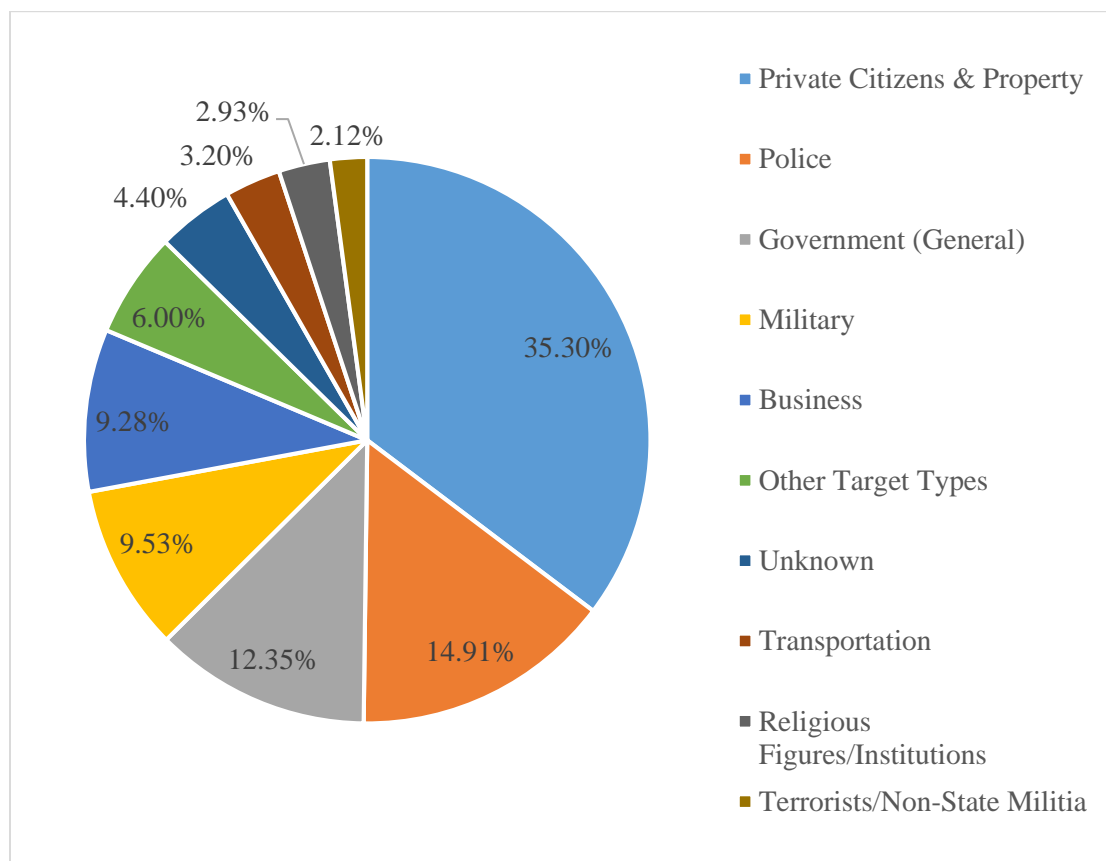
In contrast, the military was targeted 14.89 percent in overall attacks and was second after private citizens. However, they were targeted the fourth most often and

represent under 10 percent of total vehicle bombings. The figures for police and general government were about the same for both types of attacks. It appears that targeting strategies do not differ all that much for vehicle bombings when compared to terrorism more generally.

Table 16. Vehicle Bombings: Top Targeted Nationalities, 1980-2015

Rank	Country	Total Bombings	% Suicide Bombings	Average Fatalities	Average Injuries	% Country Attacks
1	Iraq	3,601	50.50%	3.28	9.80	19.59%
2	Afghanistan	343	4.81%	1.56	5.16	3.85%
3	Pakistan	342	4.80%	3.21	12.57	2.76%
4	Colombia	228	3.20%	1.81	11.66	3.09%
5	Spain	206	2.89%	0.90	5.47	9.11%
6	Syria	195	2.73%	8.19	17.81	13.10%
7	Lebanon	183	2.57%	7.17	25.93	13.31%
8	Thailand	164	2.30%	0.98	11.46	5.00%
9	Northern Ireland	151	2.12%	0.51	5.24	7.09%
10	Libya	133	1.87%	0.49	0.98	8.50%

Finally, Table 16 looks at the nationalities of the targeted entities in vehicle bombing attacks. The results did not differ too much from the list of countries where vehicle bombings occurred most often. One interesting trend was that Northern Ireland has entered the list, replacing the United Kingdom. This means that the majority of the attacks that occurred in the United Kingdom (which includes Northern Ireland) were directed at Northern Irish targets. This seems counterintuitive, since it would make more sense that groups such as the IRA would target British entities instead. However, as this table begins to show us, most of the attacks carried out by groups within a certain country targeted

people and entities within that country, as has been shown in previous research (LaFree, Yang, and Crenshaw, 2009). In the next section, I move on to a comparison of suicide and vehicle bombings along the same lines of inquiry that have been addressed above.

COMPARISON OF SUICIDE AND VEHICLE BOMBINGS

Now that I have identified the trends over time, the most active and most lethal groups, the countries most likely to witness these types of attacks, and the targeting strategies for each tactic, I now compare the two tactics to make an initial observation regarding whether the tactics were used under similar situations and in similar contexts. As in the two main sections above, I start with the overall trends.

Trends over Time

Both suicide and vehicle bombings have followed a similar trajectory since 1980. Both tactics had a flat usage rate in the 1980s and the 1990s before they experienced rapid growth over the last fifteen years. The two tactics diverged in 2013 and 2014, as vehicle bombings started a downward trajectory and suicide bombings continued with an upward growth, both in terms of overall attacks and overall fatalities. Furthermore, 2015 was the first year where there were more suicide bombings than vehicle bombings (903 and 611 respectively). This was also the largest gap in the frequency of the two tactics.

Figure 12 compares the percent of overall attacks for the two tactics. The figure showed that suicide bombings increased much more rapidly, starting in 1997, and also fell just as rapidly in 2008. This was contrasted with the steady growth[95] for vehicle bombings.

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[95] Except for 2014 and 2015.

Figure 12. Suicide and Vehicle Bombings: Percent Attacks, 1980-2015
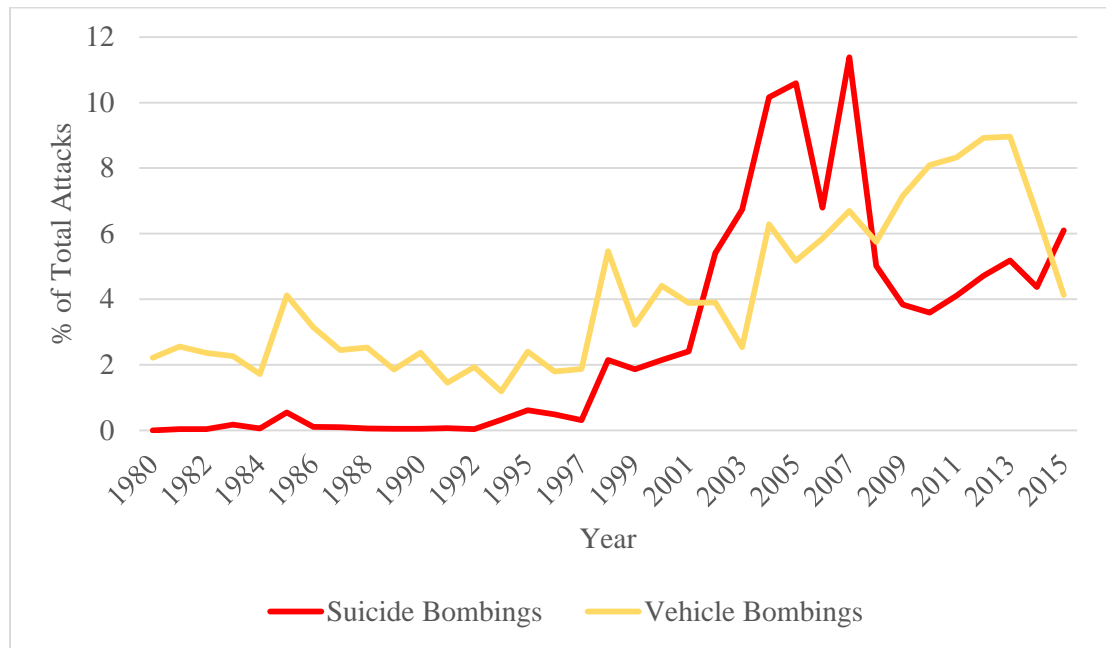
In terms of lethality, suicide bombings have steadily been ahead of vehicle bombings since 2002, even though vehicle bombings outnumbered suicide bombings in many of those years. This speaks to the devastating lethality that suicide bombings have brought to terrorist tactics. This divide in fatalities was never more evident than it was in 2015, where the overall number of people killed increased by approximately 33 percent in suicide bombings while simultaneously dropping by over 50 percent for vehicle bombings.

Looking at Figure 13, the two trend lines were much more similar in terms of increases and decreases up through 2011, although vehicle bombings appeared to be dwarfed by suicide bombings for much of the 2000s. This was representative of the overall impact that suicide bombings had on the death toll from terrorist attacks. Next I focused on a comparison of the most active users of these two tactics.

Figure 13. Suicide and Vehicle Bombings: Percent Fatalities, 1980-2015
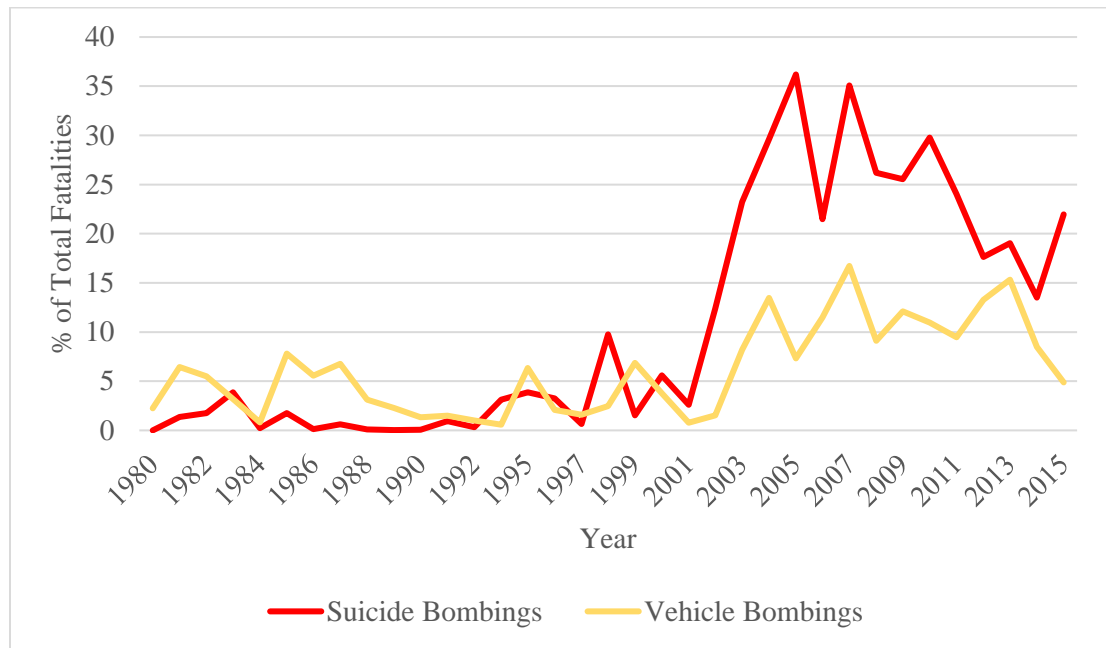
Most Active Terrorist Organizations

Whereas the list of top 10 groups involved in suicide bombings was dominated by religious organizations in a small set of countries in the Middle East, Northern Africa, and South Asia, there was more diversity in groups that most frequently used vehicle bombings. As can be seen in Table 17, this is evidence of the clear divide in the use of the two tactics. The tactic of vehicle bombings was used in Europe and South America by groups such as the IRA, ETA, SL, FARC, and the ELN in the 1980s and 1990s. This was a time when suicide bombings were a relatively new tactic, being used infrequently by groups such as Hezbollah, the LTTE, and Hamas. As suicide bombings began to become more popular with terrorist organizations, groups such as ISIL, the Taliban, and the TTP began to use the tactic. However, these were also the same groups that used vehicle bombings frequently as a tactic as well. This highlights the important ways in which suicide and vehicle bombings

have been used in different contexts and under different situations and yet have been used

by some of the same groups.

Table 17. Suicide and Vehicle Bombings: Most Active
Organization, 1980-2015

Rank	Suicide Bombings	Vehicle Bombings
1	Islamic State of Iraq and the Levant (ISIL)[a]	Islamic State of Iraq and the Levant (ISIL)[a]
2	Taliban	Basque Fatherland and Freedom (ETA)
3	Boko Haram	Irish Republican Army (IRA)
4	Tehrik-i-Taliban Pakistan (TTP)	Taliban
5	Al-Qaida in the Arabian Peninsula (AQAP)	Revolutionary Armed Forces of Colombia (FARC)
6	Liberation Tigers of Tamil Eelam (LTTE)	Al-Shabaab
7	Al-Shabaab	Shining Path (SL)
8	Al-Nusrah Front	Tehrik-i-Taliban Pakistan (TTP)
9	Hamas (Islamic Resistance Movement)	Al-Qaida in the Arabian Peninsula (AQAP)
10	Haqqani Network	National Liberation Army of Colombia (ELN)

Note: [a] This organization includes attacks carried out by ISIL, Al-Qaida in Iraq, the Islamic State of Iraq (ISI), Tawhid and Jihad, and the Mujahedeen Shura Council.

When I combined suicide and vehicle bombings for ISIL, I found that this sum

represents almost 47 percent of their total attacks. This means that these tactics, which

represented only 3.22 percent and 4.85 percent of overall attacks, accounted for a large part

of the strategy used by ISIL since it began carrying out attacks under the name of Tawhid

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and Jihad in Iraq in 1999. Clearly these tactics have driven ISIL's strategy up through 2015, and more research is needed to understand why this group relies so heavily on suicide and vehicle bombings.

Top Countries

As with the top groups, there were some important differences in terms of the countries where these tactics have been used most often. Perhaps more important, however, is that Table 18 highlights that Iraq, Afghanistan, and Pakistan remain the top three countries for both tactics.

This finding highlights the importance of understanding the context of these conflict areas. Why have both tactics flourished in Iraq, Afghanistan, and Pakistan? The most likely explanation is that the United States involvement in these countries has likely played a role in the use of suicide bombings specifically and terrorism more generally. However, future research needs to take a closer look at these three countries specifically in comparison to every other country and conflict across the globe. Why have only vehicle bombings been problematic in the United Kingdom? Some would argue that it has to do religion, while others would point to the fact that the conflict decreased before the proliferation of suicide bombings around the globe. And why has Nigeria had few vehicle bombings but is fourth in suicide bombings? As discussed above, this could partially be explained by the availability of vehicles in certain countries, such as Nigeria. Furthermore, it should be noted that a form of suicide bombing involving vehicles was actually attempted in the United Kingdom in 1990 by the IRA. Rather than willing suicide bombers, the IRA attempted to coerce individuals to drive vehicle bombs to specific destinations by holding family members hostage (Bloom & Horgan, 2008; Drake, 1991). The strategy was

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relatively ineffective as the coerced individual did not have the same desire to kill as many people as possible, so the strategy was not continued (Bloom & Horgan, 2008). This highlights ways in which suicide bombing campaigns would be difficult in countries such as the United Kingdom, where there are not a large number individuals willing to die for a terrorist cause.

Table 18. Suicide and Vehicle Bombings:
Most Active Countries, 1980-2015

Rank	Suicide Bombings	Vehicle Bombings
1	Iraq	Iraq
2	Afghanistan	Afghanistan
3	Pakistan	Pakistan
4	Nigeria	United Kingdom
5	Syria	Lebanon
6	Yemen	Colombia
7	Israel	Spain
8	Sri Lanka	Syria
9	Somalia	Thailand
10	Russia	Libya

Targeting Strategies

The targeting strategies appeared to be very different for suicide and vehicle bombings. Figure 14 gives a side-by-side comparison of the different target types. While the military and the police were most often targeted in suicide bombings, private citizens were most often the victims in vehicle bombings. Whereas military and police made up almost 46 percent of all suicide bombings, private citizens were targeted in more than 35

percent of vehicle bombings. Based on this data, it appears that these two tactics diverge in terms of targeting strategies.

Figure 14. Suicide and Vehicle Bombings: Target Types, 1980-2015
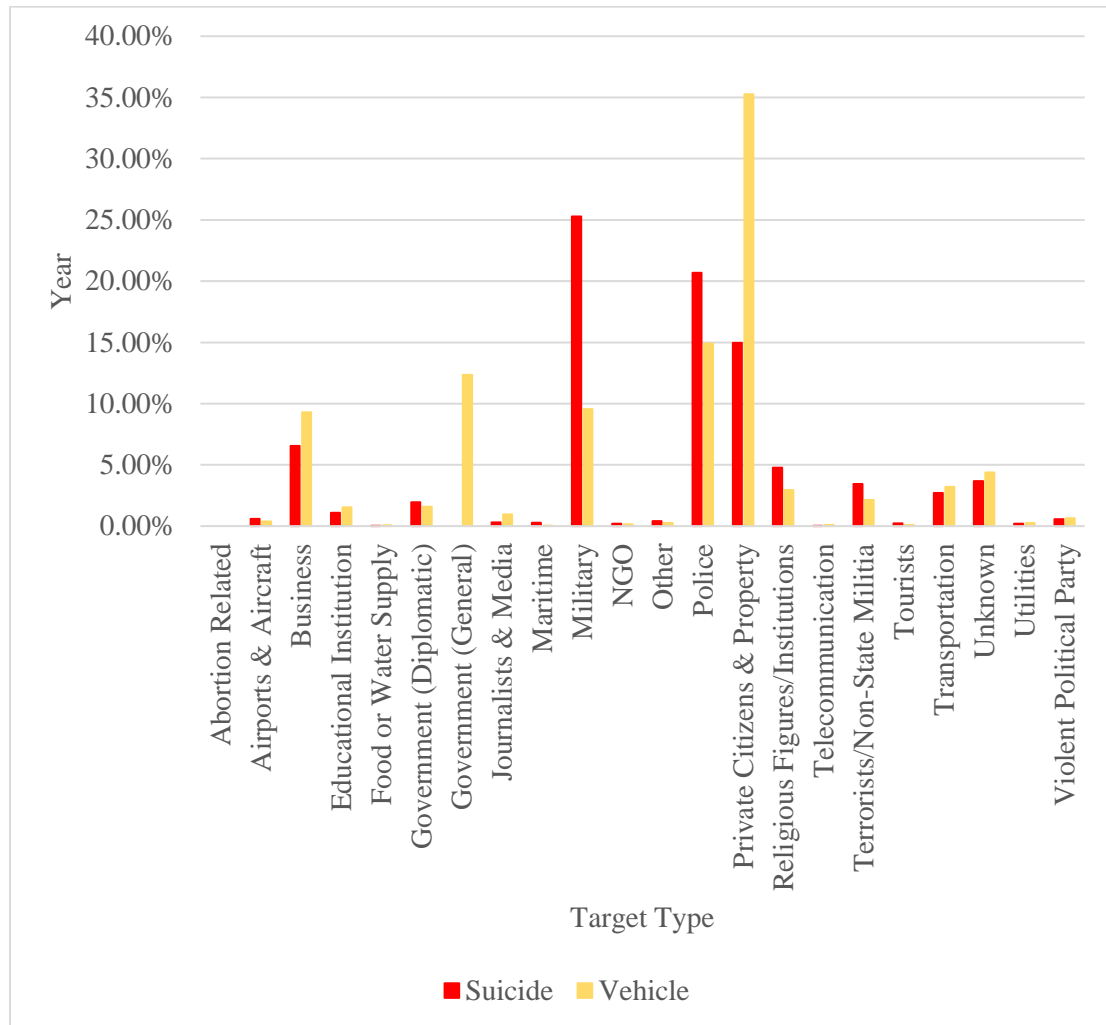
Finally, it should be noted that international entities[96] were an important target in suicide bombings, as they were the fourth most targeted nationality at 5.40 percent. In comparison, international entities ranked 20th for nationalities targeted in vehicle

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[96] International entities were coalitions, such as the International Security Assistance Force (ISAF), INGOs, such as Doctors without Borders, and IGOs, such as the United Nations.

bombings, being targeted in only 0.84 percent of bombings. Otherwise, the nationality rankings followed a similar pattern to the top countries above.

Now that I have a better understanding where, when, and how suicide and vehicle bombings were carried out, I return to the main questions of this dissertation. To start, I focused on the summary statistics for the independent and control variables that are used in the different model specifications in Chapter 5.

SUMMARY STATISTICS

In this section, I look at all variables that were included in any models in Chapter 5. This includes 16 attack-level variables, 13 country-year variables, and 4 country-level variables. For comparison, I included reference categories for some sets of dummy variables, including *Government Target* and *GTD4*.[97] Even though each level in an HGLM analysis has a different number of units for analysis (i.e. there are 146,932 attacks, 3,026 country-years, and 191 countries), the means and standard deviations presented in Table 19 are all based on the attack-level data. Also, these summary statistics are presented before the inclusion of the missing data techniques used for the 11 variables discussed above.

Table 19. Attack-Level Descriptive Statistics: Suicide vs. Non-Suicide

Panel A. Attack-Level Variables				
Variable	Mean	Standard Deviation	Minimum	Maximum
Security Target	0.305	0.461	0	1
Military Target	0.154	0.361	0	1
Complex Attack	0.061	0.239	0	1
Religious Holiday	0.077	0.267	0	1
Election Day	0.004	0.064	0	1

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[97] Once again, GTD4 represents cases from 2012 through 2015.

Variable	Mean	Standard Deviation	Minimum	Maximum
Democratic Target	4.13	1.68	1	7
Civilian Target	0.545	0.498	0	1
Government Target	0.149	0.357	0	1
Assassination	0.108	0.310	0	1
City Detonation	0.424	0.494	0	1
Group Attribution	0.443	0.497	0	1
Tactical Success	0.903	0.296	0	1
Victim Fatalities	2.19	11.06	0	1,500
Victim Injuries	3.15	23.24	0	5,500
After 9/11	0.570	0.495	0	1
International Attack	0.033	0.179	0	1

Panel B. Country-Year-Level Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Foreign Occupation	0.336	0.472	0	1
Democratic Target* Foreign Occupation	1.587	2.442	0	7
Outbidding	8.48	9.20	1	49
Group Attribution* Outbidding	3.465	6.832	0	49
Conflict Lethality	2833	5823	0	56,468
Conflict Length	2.01	3.10	0	24
Muslim Majority	0.446	0.497	0	1
Muslim Supermajority	0.440	0.496	0	1
IDP (Per 1000)	866	1,217	0	7,600
GTD1	0.392	0.488	0	1
GTD2	0.127	0.333	0	1
GTD3	0.119	0.324	0	1
GTD4	0.362	0.481	0	1

Panel C. Country-Level Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Cultural Fractionalization	0.263	0.103	0	0.636

Religious Fractionalization	0.356	0.202	0	0.860
ER Polarization Index	0.048	0.041	0	0.214
Collectivism	0.855	0.352	0	1

In looking at Table 19 I first noticed the highly skewed nature of some of the independent variable, particularly with *Victim Fatalities*, *Victim Injuries*, *Conflict Lethality*, and *IDP (Per 1000)*. Given the highly skewed nature of these variables, as was discussed in Chapter 3, the natural log transformation were used to normalize the variables.

Focusing on the mean values, the majority of terrorist attacks in the GTD targeted civilians, with only a small proportion of attacks against government targets. While 30 percent of all attacks targeted security entities,[98] only half of them targeted the military. This means that the other half of these attacks targeted police and non-state militias. Only 10 percent of attacks were identified as assassination attempts, and a small proportion of attacks were considered complex (at least based on how it was operationalized in this dissertation). Surprisingly, less than half of all attacks in the GTD occurred in large cities or regional capitals. This means that terrorism may actually be more of a rural, rather than an urban, phenomenon. Additionally, a much larger percentage of attacks occurred on religious holidays (7.7 percent) when compared with incidents that occurred on election days (0.4 percent). This highlights that religious holidays may be a more important choice for when to carry out terrorist attacks, at least in comparison to election days.

Less than half of all attacks were attributed to a known perpetrator group, which means that the majority of attacks went unclaimed and unattributed. This is a concern for

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[98] Once again, security entities included military, police, and non-state militias.

previous research on suicide terrorism that has focused on the importance of specific groups, because it would have excluded approximately 81,000 incidents from this dissertation. Most attacks were successful, based on the operationalization used in this dissertation. In general, terrorist attacks have killed 2.19 people and injured 3.15 others on average. Based on the large standard deviation, however, it is obvious that there are huge outliers, such as attacks like 9/11. Approximately 57 percent of all terrorist attacks have occurred over a 13 year period as compared to the remaining 43 percent, which occurred over a 21 year period. Clearly, terrorism (as measured by the GTD) has been on the rise since 9/11. Finally, a very small proportion of terrorist attacks can be identified as clearly international attacks, meaning that the majority of attacks were domestic in nature.[99]

As a comparison to Table 19, I also included the means and standard deviations for the 3,026 country-years and the 191 countries in Table 20. Starting with Panel A. in Table 20 and comparing it with Panel B. in Table 19, while approximately one third of all attacks have occurred in a country experiencing a foreign occupation, an occupation has occurred in only 12% of country-years. This is informative because it shows us that countries under foreign occupation were overrepresented in terms of the amount of terrorist attacks they experience.

The average terrorist attack has occurred in a country that has about 8.5 groups active, on average, in a given year. This number is representative of the fact that a number of relatively unknown groups were active in a countries at any given time. However, based on country-year as the unit of analysis, I found that there were only about 2.5 active groups on average across all 3,026 country years. Focusing now on countries experiencing

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[99] Or were highly likely to be domestic in nature, given the operationalization of this variable.

conflict, we find similar results. Terrorist attacks have occurred in countries during years where a conflict has killed an average of 2,833 people and has lasted an average of 2.01 years in length. But looking at the country-year, the average is 692 deaths and an average length between five and six months.

Table 20. Country-Level Descriptive Statistics: Suicide vs. Non-Suicide

Panel A. Country-Year-Level Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Foreign Occupation	0.123	0.330	0	1
Outbidding	2.45	3.56	1	49
Conflict Lethality	692	3,684	0	56,468
Conflict Length	0.460	1.94	0	24
Muslim Majority	0.269	0.429	0	1
Muslim Supermajority	0.242	0.443	0	1
IDP (Per 1000)	224	680	0	7,600
GTD1	0.515	0.500	0	1
GTD2	0.256	0.436	0	1
GTD3	0.107	0.309	0	1
GTD4	0.123	0.328	0	1

Panel B. Country-Level Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Cultural Fractionalization	0.261	0.159	0	0.636
Religious Fractionalization	0.437	0.235	0	0.860
ER Polarization Index	0.048	0.051	0	0.214
Collectivism	0.757	0.430	0	1

Throughout the period of study, more terrorist attacks have occurred in countries which do not have a majority Muslim population. This seems to go against the current trends where

countries with the most terrorism tend to be countries with a large Muslim population (such as Iraq, Afghanistan, and Pakistan). The same is true when looking at Panel B in Table 20, although these results highlight that only one quarter of the country-years were in Muslim majority or Muslim supermajority countries. Moving on to internally displaced persons (IDPs), the average attacks occurs in a country with over 850,000 IDPs, whereas the average country-year value is 224,000 IDPs.

Furthermore, we see that in just four years of data collection, START has identified almost as many attacks as PGIS identified in a 17 year period. This is the case even though approximately half of all country-years occurred during the PGIS phase of data collection. That is compared to only 12% of country-years from 2012 through 2015. This either reflects a large increase in terrorism or it speaks to the availability of media sources and the globalization of information. Most likely, the answer is somewhere in between these two extremes, but this should lead to the final results being looked at with this caveat in mind. This is also why these three dichotomous variables were included in this analysis, to attempt to control for potential biases arising from any data collection issues.

Finally, Panel C. in Table 19 is compared with Table B. in Table 20, focusing on the time invariant country-variables. For the three fractionalization variables, there were notable differences in the average score, which likely reflected differences in measurement. Interestingly, the means were not drastically different between the two tables. Finally, the majority of terrorist attacks have occurred in countries that can be considered

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collectivist,[100] which is an interesting deviation from the mean for the proportion of attacks in Muslim majority countries. In general, these comparisons of Table 19 and Table 20 highlight the fact that terrorism is overrepresented in countries: experiencing a foreign occupation; with a large number of active groups; experiencing longer and more lethal conflicts; that were majority Muslim; with a larger number of IDPs; and that were more collectivist.

This chapter took a detailed look at suicide bombings, including the trends over time, the groups using them most often, the countries where they occur most frequently, and the entities that were most likely to be targeted. The same was exercise was done with vehicle bombings, including a comparison of the differences between the two tactics. Finally, I looked at the overall averages for the variables included in the analysis. Now that I have a better understanding of the different tactics and a complete picture of the attack- and country-level variables, I turn to the results.

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[100] Once again, collectivism is the extent to which priority is given to the community or society rather than to the individual.

Chapter 5: Results

This chapter consists of three sections. In the first section, I briefly discuss bivariate results comparing each independent and control variable to the *Suicide Bombing* dependent variable. In the next two section, I then present the findings from the Hierarchical Generalized Linear Modeling (HGLM) analysis using the three dependent variables described above, *Suicide Bombings*, *Tactic Type*, and *SVBIED Distinct Target Type*. In the second section I focus on the primary analysis in this dissertation, a comparison of suicide bombings and all other terrorist attacks. In this section I introduce a number of models that look at different operationalizations of some of the variables. In the final section I assess the robustness of the findings with different operationalizations of the dependent variable. I first look at vehicle bombings as a separate tactic. I then separate suicide bombings into two distinct categories: vehicle-suicide and non-vehicle suicide bombings. In this final section, I use the full model that will serve as a comparison to the final model in section 2.

BIVARIATE RESULTS

To calculate the bivariate results, I used version 14 of Stata and conducted separate bivariate logistic regression models. Each independent variable was regressed onto the *Suicide Bombing* dependent variable and the results are presented in Table 21.

Unsurprisingly, given the large number of cases, the results of the bivariate analysis showed that every relationship was statistically significant. However, some of the results were opposite of the expected direction. I start by discussing the independent variables. I then briefly highlight some interesting results for the attack-level and country-level control variables.

Table 21. Bivariate Results

Variable	b	SE
Independent Variables		
Security Target	0.928***	0.030
Complex Attack	0.963***	0.043
Religious Holiday	0.356***	0.048
Election Day	-1.210**	0.411
Cultural Fractionalization	2.916***	0.140
Attack- Level Control Variables		
Democratic Target	0.445***	0.011
Civilian Target	-0.849***	0.031
Assassination	-0.909***	0.069
City Detonation	0.402***	0.030
Group Attribution	0.494***	0.030
Tactical Success	-0.119*	0.048
LN Fatalities	0.208***	0.004
After 9/11	2.847***	0.071
International Attack	0.390***	0.070
Country- Level Control Variables		
Foreign Occupation	1.244***	0.031
Democratic Target*Foreign Occupation	0.259***	0.005
Outbidding	-0.005**	0.002
Group Attribution*Outbidding	0.015***	0.002
LN Conflict Lethality	0.121***	0.004
Conflict Length	2.083***	0.042
Muslim Majority	2.039***	0.041
Collectivism	0.655***	0.053
LN IDP	0.171***	0.005
GTD1	-3.480***	0.103
GTD2	0.970***	0.034
GTD3	0.195***	0.043

† $p \leq 0.10$ * $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$

Hypothesis 1 was not supported. While I hypothesized that suicide bombings were less likely to be used against security targets, I observed the opposite relationship in the bivariate results.[101] When compared to all other attacks, suicide bombings were less likely to be used against security targets. Furthermore, suicide bombings were also more likely to be used against civilian targets. *Hypothesis 2*, however, did receive support in the bivariate results. When compared to all other attacks, suicide bombings were more likely to be used in complex attacks.

There was also partial support for the hypotheses regarding the use of the suicide bombing tactic on specific, meaningful days. While *Hypotheses 3* received support in the bivariate results, *Hypothesis 4* did not. When compared to all other attacks, suicide bombings were more likely to be used on religious holidays but were less likely to be used on election days. Finally, turning to the one country-level hypothesis, *Hypothesis 5* received bivariate support. When compared to all other attacks, suicide bombings were more likely to be used in countries with greater cultural fractionalization.

Turning to the control variables, I begin with the three variables that were created based upon the work of Pape (2005).[102] The bivariate results indicate only partial support for his thesis. Compared to all other attacks, suicide bombings were more likely to occur in a country under foreign occupation, but they were less likely to target democratic entities.[103] Furthermore, when compared to all other attacks, suicide bombings were also less likely to target democratic entities in countries under foreign occupation.

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[101] This relationship does not change if I only look at military targets, although the magnitude of the coefficient decreases.

[102] These include the variables for democratic targets, foreign occupation, and the interaction of these two variables, democratic targets in foreign occupations.

[103] Remember that larger values on the *Democratic Target* variable signifies a target from a less democratic country.

Moving on to the three variables that focus on the theory put forth by Bloom (2005), I also found only partial support. When compared to all other attacks, suicide bombings were more likely to be attributed to or claimed by a known organization and they were also more likely to be carried out by a known terrorist group in countries with more active organization. However, when compared to all other attacks, suicide bombing were also less likely to be carried out in countries with more active terrorist organizations in a given year.

In general, 3 of the 5 hypotheses were supported by the bivariate results. However, only partial support was found for the two main theories of suicide bombings. With these findings in mind, I now transition to the multivariate results that used HGLM techniques.

SUICIDE BOMBINGS VERSUS ALL OTHER TERORRIST ATTACKS

Since the hypotheses I put forth in Chapter 2 dealt with the relationship between suicide bombings and all other terrorist incidents, it is this comparison that I first address. I start by presenting the results of the unconditional model, which includes no independent variables. I then present a number of models that start to add independent and control variables to the model.

The unconditional model is a good starting point for running multilevel models because it estimates the relative amount of variation in the use of suicide bombings at the country-year-level and country-level of analysis. This allows me to assess the relative importance of overall country characteristics as it pertains to the use of suicide bombings. Table 22 provides the results of the unconditional model for suicide bombings.

The results in Table 22 support the importance of studying country characteristics when looking at the use of suicide bombings. Approximately 22 percent of the variance was attributed to difference between country-years while almost 39 percent of the variance

in the use of suicide bombings was attributable to between country differences. Overall this means that the majority of the variance in the use of suicide bombings was attributed to general country-level differences as compared to attack-level differences. This is an important consideration as I move forward to discuss the full results, because it bounds my discussion of the influence and importance of the independent variables at the different levels of analysis. I now turn to the random intercept models, which include the full complement of independent and control variables but do not allow for any random effects aside from the intercepts.

Table 22. Three-Level Unconditional Hierarchical Model

Suicide Bombings	b	SE
Fixed Effects		
Intercept	-5.578	0.199
Random Effects		
Level 1	---	---
Level 2	1.853	1.361
Level 3	3.276	1.810
Between-country-year proportion of variance		
	0.220	
Between-country proportion of variance		
	0.389	

Note: Intraclass correlations are based on the assumption that the level 1 random effects has a variance $= \pi^2/3$.

$^{\dagger} p \leq 0.10$ $^{*} p \leq 0.05$ $^{**} p \leq 0.01$ $^{***} p \leq 0.001$

Table 23 provides the results of the four random intercept models comparing suicide bombings and all other terrorist attacks, while Table 24 adds the country-year and

country-level variables to the analysis, providing an additional seven models.[104] Starting

with the results from the random intercept models, which only include the attack-level

variables, Model 1 presents the 4 primary attack-level independent variables, excluding the

9 control variables. Model 2 incorporates an alternate variable for security targets, whereas

Model 3 and Model 4 introduce the control variables into the analysis.

Before discussing the specific results, I first compare the different models more

generally. The first comparison is between Model 1 and Model 2, where *Security Target*

was replaced in the model with *Military Target*. Substantively, this meant that police and

non-state militia were removed from the *Security Target* variable and were instead

classified into the reference category, *Government Target*. I first noticed that both *Military*

Target and *Security Target* were significant, although the primary variable had a slightly

larger coefficient (0.759 versus 0.704). When compared to all other attacks, security

entities were 2.136 times as likely to be targeted in suicide bombings whereas military

entities were only 2.021 times as likely to be targeted. The results did not change much for

the other three independent variables across Model 1 and Model 2. Given these results,

Security Target is used in all subsequent analyses, as this was my primary variable to test

the first hypothesis.

Moving to a comparison of Model 3 and Model 4, which looked at the difference

between fatalities and injuries, there was not a difference in terms of the statistical

significance for the coefficients for both variables. The magnitude of the coefficient was

larger for the injuries variables. When compared to all other attacks, a one-unit increase in

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[104] I compared the results using group-mean and grand-mean centering and the results were not
substantively different. The coefficient values were similar and the significance tests for the independent
variables remained unchanged. Therefore, I present the results with variables centered around the grand
mean.

Table 23. Suicide Bombing Random Intercept Models

Variable	Model 1			Model 2			Model 3			Model 4		
	b	SE	Exp(b)	b	SE	Exp(b)	b	SE	Exp(b)	b	SE	Exp(b)
Attack-Level												
Intercept	-5.599***	0.199	0.004	-5.612***	0.199	0.004	-5.879***	0.190	0.003	-6.189***	0.190	0.002
Security Target	0.759***	0.033	2.136				0.157**	0.053	1.170	0.080	0.055	1.083
Military Target				0.704***	0.038	2.021						
Complex Attack	0.939***	0.050	2.558	0.969***	0.050	2.636	0.696***	0.053	2.005	0.679***	0.054	1.972
Religious Holiday	0.026	0.052	1.026	0.030	0.052	1.031	-0.009	0.054	0.991	0.018	0.054	1.018
Election Day	-1.289**	0.418	0.276	-1.417***	0.417	0.242	-1.376***	0.424	0.253	-1.318**	0.425	0.268
Democratic Target							-0.039*	0.019	0.962	-0.059**	0.020	0.943
Civilian Target							-0.742***	0.055	0.476	-0.819***	0.056	0.441
Assassination							-1.083***	0.081	0.338	-1.154***	0.092	0.315
City Detonation							0.684***	0.036	1.981	0.501***	0.036	1.651
Group Attribution							0.878***	0.039	2.406	0.905***	0.039	2.472
Success							-1.542***	0.064	0.214	-1.706***	0.069	0.182
LN Fatalities							0.171***	0.006	1.187			
LN Injuries										0.245***	0.006	1.278
After 9/11							1.947***	0.150	7.008	1.833***	0.147	6.250
International Attack							0.647***	0.130	1.911	0.646***	0.132	1.908
	Variance	*SD*		*Variance*	*SD*		*Variance*	*SD*		*Variance*	*SD*	
Level 2	1.873***	1.369		1.859***	1.363		1.461***	1.209		1.321***	1.149	
Level 3	3.215***	1.793		3.240***	1.800		2.542***	1.594		2.542***	1.594	

† $p \leq 0.10$ * $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$

the log odds of injuries led to an increase in the odds of a suicide bombing by almost 30 percent. In comparison, when compared to all other attacks, each one unit increase in the log odds of fatalities led to an almost 19 percent increase in the odds of a suicide bombing.

Since Model 3 and Model 4 both included all other attack-level control variables, the inclusion of the injuries variable also had consequences for some of these variables as well. *Security Target* was no longer significant when injuries were included in the model instead of fatalities. While *Religious Holiday* was not significant in either model, the sign of the coefficient changed. The coefficient was negative in Model 3 and positive in Model 4. Furthermore, *Election Day* went from being significant at a 0.001 level in Model 3 to a 0.05 level when injuries were included. This leads to the conclusion that injuries were a mediating factor for the relationship between *Election Day* and suicide bombings. In contrast, *Democratic Target*, which was significant at a 0.05 level in Model 3, was significant at a 0.01 level in Model 4. This finding informs me that fatalities plays a mediating role in the relationship between democratic targets and suicide bombings. While these results could have implications for some of my main independent variables, there is still a concern with the larger amount of missing data for injuries as compared to fatalities. Therefore, I continue to use fatalities in subsequent analyses, as it was a more stable lethality estimate.

Focusing more closely on the results in the final random intercept model (Model 3), I noted that three of the four independent variables were significant. The lone exception was for religious holidays. Compared to all other attacks, suicide bombings were no more likely to occur on religious holidays. Even though these findings indicated that religious holidays were not a significant determinant of suicide bombings, the variable is kept in

subsequent models to serve as a comparison to the results in the next section, when vehicle bombings are added as a separate tactic and then when suicide bombings are split into two separate categories.[105]

For both *Security Target* and *Complex Attack*, the magnitude of the coefficient decreased when the control variables were included in the model.[106] When compared to all other attacks, suicide bombings were 17 percent more likely to target security entities. This finding was very different from the model that excluded the independent variables, when suicide bombings were almost twice as likely to target security entities. As with the bivariate results, this was opposite of the hypothesized direction. When compared to all other attacks, suicide bombings were approximately twice as likely to be used in complex attacks. Therefore, at this stage only *Hypothesis 2* has received support.

The magnitude of the coefficient for *Election Day* slightly increased with the inclusion of the independent variables. However, this relationship was also opposite of what was expected from *Hypothesis 4*. When compared to all other attacks, suicide bombings were almost 4 times less likely to occur on election days. This result is significant and consistent across all four models.

Turning to the control variables, all 9 were significant in Model 3. Four of these variables had negative coefficients. These included *Democratic Target*, *Civilian Target*, *Assassination*, and *Success*. This means that, when compared to all other attacks, suicide bombings were less likely to: target entities that were more democratic; [107] be used against

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[105] Those that included a vehicle as a delivery mechanism and those that did not.

[106] Although both remained statistically significant.

[107] Remember that a larger value for this variables means that a targeted entity is less democratic. For example, Somalia has a value of 7 in a given year and the United States has a value of 1. An entity from the United States is considered more democratic than an entity from Somalia.

civilian targets; be used in assassinations; and be successful. When compared to suicide bombings, all other attacks were twice as likely to be used against civilian targets. This relationship is stronger than the relationship for security targets. Furthermore, when compared to suicide bombings, all other attacks were 3 times more likely to be classified as assassinations and were almost 5 times more likely to be successful.

Conversely, the other five control variables were significant and positive. These included *City Detonation*, *Group Attribution*, *LN Fatalities*, and *After 9/11*, and *International Attack*. When compared to all other attacks, suicide bombing were more likely to: occur in cities; be carried out by a known organization; cause a greater number of casualties; occur after September 11, 2001; and be an international, rather than a domestic, attack. When compared to all other attacks, suicide bombings were 7 times as likely to have occurred after the September 11th attacks. When compared to all other attacks, suicide bombings were also almost twice as likely to be an international attack and be carried out in a city and were almost 2.5 times as likely to be carried out by a known group.

In general, while most of the variables were significant, only one of the four attack-level hypotheses received support. Furthermore, most of the variables pointed to distinguishing qualities of suicide bombings, although a number of the relationships were not as expected based on theory and prior research.

Including country-level variables does not have much of an impact on the results for the attack-level variables that have been discussed up to this point. Table 24 provides results for an additional seven models, which focus on the inclusion of country-year and country-level variables, as well as the different specifications for the fractionalization

variable and the Muslim majority variable. Once again, I first focus on any differences when different variable operationalizations were included before looking more closely at Model 4 from Table 24, which included all independent and control variables across the three hierarchical levels of analysis.

The first three models in Table 24 included all four attack-level independent variables and the three different operationalizations of the fractionalization variable. Whereas the *Cultural Fractionalization* coefficient was positive and not significant, the *Religious Fractionalization* coefficient was negative and significant. In comparison, *ER Polarization Index* had a much larger coefficient and a greater odds ratio, although it did not reach significance due to a correspondingly large standard error. None of the attack-level variables changed across the three models. Given the disparate findings, Model 4 and Model 5 include the *Cultural Fractionalization* variable, whereas Model 6 and Model 7 include the *Religious Fractionalization* variable.

Starting with Model 4, all control variables at the three levels of analysis were included. The only difference between the two models was that Model 4 included the *Muslim Majority* variables whereas Model 5 included the *Muslim Supermajority* variable. The same was true when comparing Model 6 and Model 7. In general, when compared to all other attacks, suicide bombings were more likely to occur in countries during years in which they had a Muslim majority or a Muslim supermajority.[108] The results were significant across all four models, although the magnitude of this relationship was much larger when *Muslim Supermajority* was included instead of *Muslim Majority*. The results

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[108] While these two variables were relatively stable over time, they were assessed separately each year. Additionally, there were some countries, including Albania, Bosnia-Herzegovina, Burkina Faso, Kazakhstan, Lebanon, and Sierra Leone, for which their status as a Muslim majority or a Muslim supermajority country changed during the study period.

remained unchanged across all four models for the attack-level variables. For the country-year and country-level variables, some coefficients changed slightly but the substantive findings were not affected. Even with large shifts in the magnitude of the coefficients and a switch from negative to positive for *Cultural Fractionalization*, *Religious Fractionalization*, and *Collectivism*, they still did not reach statistical significance in any of the four models. In any model, years in which countries had a Muslim majority were among the strongest country-year and country-level predictors. When compared to all other attacks, suicide bombings were 2.7 (or 2.3) times more likely to occur in countries during years where there was a Muslim majority and 7.5 (or 9.7) times more likely to occur for years when countries were a Muslim supermajority.

As I stated above when discussing Model 3 in Table 23, the results did not change much for the attack-level variables in Model 4 through Model 7 of Table 24, with the lone exception of the relationship between democratic targets and suicide bombings. With the inclusion of all independent and control variables, the relationship between democratic targets and suicide bombings was no longer significant. At this stage then, only one of the attack-level hypotheses were supported in Model 4, (*Hypothesis 2*)[109] whereas the other three attack-level hypotheses were not supported. This includes one hypothesis (*Hypothesis 3*) for which there were null findings and two hypotheses (*Hypothesis 1* and *Hypothesis 4*) in which the results were significant but opposite of the expected direction.[110]

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[109] When compared to all other attacks, suicide bombings were more likely to be used in complex attacks.
[110] When compared to all other attacks, suicide bombings were less likely to be used on election days and were more likely to target security entities.

Table 24. Suicide Bombing Full Random Intercept Models

Variables	Model 1			Model 2			Model 3		
	b	SE	Exp(b)	b	SE	Exp(b)	b	SE	Exp(b)
Attack-Level									
Intercept	-5.607***	0.200	0.004	-5.684***	0.205	0.003	-5.607***	0.198	0.004
Security Target	0.759***	0.033	2.136	0.758***	0.033	2.135	0.759***	0.033	2.136
Complex Attack	0.939***	0.050	2.557	0.940***	0.050	2.559	0.939***	0.050	2.558
Religious Holiday	0.026	0.052	1.026	0.026	0.052	1.026	0.026	0.052	1.026
Election Day	-1.289**	0.418	0.275	-1.289**	0.418	0.276	-1.289**	0.418	0.276
Democratic Target									
Civilian Target									
Assassination									
City Detonation									
Group Attribution									
Success									
LN Fatalities									
After 9/11									
International Attack									
Country-Year-Level									
Foreign Occupation									
Democratic Target*Foreign Occupation									
Outbidding									
Group Attribution*Outbidding									
LN Conflict Lethality									
Conflict Length									
Muslim Majority									
Muslim Supermajority									
LN IDP									
GTD1									
GTD2									
GTD3									
Country-Year-Level									
Cultural Fractionalization	0.767	1.365	2.153						
Religious Fractionalization				-2.011*	0.838	0.134			
ER Polarization Index							5.278	3.989	195.9
Collectivism									
	Variance	*SD*		*Variance*	*SD*		*Variance*	*SD*	
Level 2	1.870***	1.368		1.877***	1.370		1.874***	1.369	
Level 3	3.218***	1.794		3.164***	1.779		3.165***	1.874	

† $p \leq 0.10$ * $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$

Table 25. Suicide Bombing Full Random Intercept Models

Variables	Model 4			Model 5			Model 6			Model 7		
	b	SE	Exp(b)	b	SE	Exp(b)	b	SE	Exp(b)	b	SE	Exp(b)
Attack-Level												
Intercept	-6.367***	0.200	0.002	-6.545***	0.212	0.001	-6.398***	0.207	0.002	-6.506***	0.206	0.001
Security Target	0.157**	0.053	1.170	0.157**	0.053	1.170	0.157**	0.053	1.170	0.157**	0.053	1.170
Complex Attack	0.689***	0.053	1.991	0.689***	0.053	1.991	0.689***	0.053	1.991	0.689***	0.053	1.991
Religious Holiday	-0.005	0.054	0.995	-0.006	0.054	0.994	-0.005	0.053	0.995	-0.006	0.054	0.994
Election Day	-1.363***	0.425	0.256	-1.362***	0.424	0.256	-1.363***	0.424	0.256	-1.362***	0.424	0.256
Democratic Target	-0.023	0.039	0.977	-0.027	0.039	0.973	-0.022	0.039	0.978	-0.029	0.039	0.971
Civilian Target	-0.743***	0.055	0.476	-0.742***	0.055	0.476	-0.742***	0.055	0.476	-0.741***	0.055	0.476
Assassination	-1.077***	0.081	0.340	-1.078***	0.081	0.340	-1.078***	0.081	0.340	-1.078***	0.081	0.340
City Detonation	0.686***	0.036	1.986	0.685***	0.036	1.983	0.686***	0.036	1.986	0.685***	0.036	1.983
Group Attribution	0.749***	0.051	2.115	0.750***	0.051	2.116	0.749***	0.051	2.116	0.750***	0.051	2.117
Success	-1.555***	0.064	0.211	-1.556***	0.064	0.211	-1.555***	0.064	0.211	-1.556***	0.064	0.211
LN Fatalities	0.171***	0.006	1.186	0.171***	0.006	1.186	0.171***	0.006	1.186	0.171***	0.006	1.186
After 9/11	0.851***	0.206	2.341	0.836***	0.205	2.307	0.844***	0.205	2.327	0.843***	0.205	2.324
International Attack	0.695***	0.129	2.003	0.684***	0.129	1.983	0.693***	0.129	2.001	0.685***	0.129	1.985
Country-Year-Level												
Foreign Occupation	-0.122	0.298	0.885	-0.130	0.296	0.878	-0.094	0.304	0.910	-0.187	0.297	0.829
Democratic Target*Foreign Occupation	-0.025	0.049	0.976	-0.020	0.049	0.980	-0.026	0.049	0.975	-0.018	0.049	0.983
Outbidding	-0.019	0.015	0.981	-0.023	0.015	0.977	-0.020	0.015	0.980	-0.023	0.015	0.977
Group Attribution*Outbidding	0.021***	0.005	1.021	0.021***	0.005	1.021	0.021***	0.005	1.021	0.021***	0.005	1.021
LN Conflict Lethality	0.074***	0.016	1.077	0.070***	0.016	1.073	0.075***	0.016	1.077	0.072***	0.016	1.074
Conflict Length	0.045	0.030	1.046	0.045	0.030	1.046	0.046	0.030	1.047	0.044	0.030	1.045
Muslim Majority	0.977**	0.327	2.657				0.827*	0.362	2.286			
Muslim Supermajority				2.020***	0.387	7.536				2.271***	0.444	9.692
LN IDP	-0.045**	0.017	0.956	-0.043*	0.017	0.958	-0.045**	0.017	0.956	-0.043**	0.017	0.958
GTD1	-1.728***	0.312	0.178	-1.796***	0.306	0.166	-1.749***	0.312	0.174	-1.791***	0.305	0.167
GTD2	0.590**	0.189	1.803	0.576**	0.187	1.778	0.586**	0.189	1.796	0.578**	0.187	1.783
GTD3	0.346†	0.196	1.414	0.324†	0.194	1.382	0.340†	0.195	1.405	0.329†	0.194	1.390
Country- Level												
Cultural Fractionalization	-0.076	1.231	0.927	0.897	1.280	2.452						
Religious Fractionalization							-0.552	0.819	0.576	1.143	0.863	3.135
ER Polarization Index												
Collectivism	-0.239	0.455	0.788	-0.593	0.472	0.553	-0.240	0.466	0.787	-0.503	0.452	0.605
	Variance	SD		Variance	SD		Variance	SD		Variance	SD	
Level 2	1.156***	1.075		1.103***	1.050		1.132***	1.064		1.106***	1.051	
Level 3	1.950***	1.396		1.994***	1.412		2.142***	1.464		1.893***	1.376	

† $p \leq 0.10$ * $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$

As I alluded to above, *Hypothesis 5* has also not received support up to this point. Whereas *Religious Fractionalization* was significant in Model 2,[111] both fractionalization variables were not significant in the four models that include all variables. Furthermore, with all variables included in the model the magnitude for the two fractionalization variables were not as far apart as they were in comparing Model 1 and Model 2. Given these results, I continue to use *Cultural Fractionalization* as the primary variable in subsequent analyses.

Moving on to the 12 country-year and country-level control variables, the results were mixed. Five of the variables, including *Foreign Occupation*, *Democratic Target*Foreign Occupation*, *Outbidding*, *Conflict Length*, and *Collectivism*, were not significant. In other words, when compared to all other attacks, suicide bombings were no more likely to: occur in countries experiencing a foreign occupation in a given year; target democratic entities in these countries; occur in countries with a greater number of active groups; occur in countries experiencing longer conflicts; and occur in countries that were collectivist.

Of the seven remaining control variables, five were significant and positive whereas two were significant and negative. When compared to all other attacks, suicide bombings were more likely to: be carried out by a known group in a country with a greater number of active organizations; be carried out in a country with a more lethal conflict taking place; occur in a country with a Muslim majority population; and take place during the second and third phase of GTD data collection. Conversely, when compared to all other attacks,

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[111] Although it was opposite of the expected direction.

suicide bombings were less likely to: occur in countries with a larger number of IDPs; and take place during the first phase of GTD data collection.

In general, these results indicate that there were a fair number of distinguishing qualities of suicide bombings, especially at the attack-level. While a large proportion of the variance in the use of suicide bombings over all other terrorist attacks was found to be at the country-year and country-level of analysis, many of the variables at these levels were not significant, including the main independent variable, *Cultural Fractionalization*. Furthermore, while many of the attack-level variables and some of the country-year-level variables were significant, most were not in the hypothesized direction (for the independent variables) or in the expected direction based on prior research (for the control variables). I discuss this in greater detail in Chapter 6. For now, I turn to the results from analyses conducted with the two alternative dependent variables: *Tactic Type* and *SVBIED Distinct Tactic Type*.[112]

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[112] In subsequent analyses, I attempted to allow the slopes to vary randomly to see if the results differed in random coefficient models. However, I quickly realized that, given the large number of parameters already included the model, allowing every slope to vary at each level of analysis quickly diminished the degrees of freedom, leading to the inability of the model to calculate significance tests for a large portion of the random coefficient variance estimates. In other forms of HGLM analysis, I could use the deviance estimates from the different models to test whether the random coefficient model was more appropriate than the random intercept model. However, since binary and multinomial HGLM use penalized quasi-likelihood estimation (PQL), hypothesis tests comparing models were not available (Raudenbush, Bryk, Cheong, Congdon Jr., and du Toit, 2011). I also attempted to use the reliability estimates for each random coefficient included in the output for each model. These estimates denoted the level of reliability we have in distinguishing among level-2 units and Raudenbush and colleagues (2011) argued that very low reliability estimates suggested that, in subsequent analyses, random coefficients could be considered fixed. They used a benchmark of 0.100 or below in their definition of very low. Upon reviewing the reliability estimates from the random coefficients model, I included only those variables with reliability estimates above 0.100 in a subsequent analysis (with the exception of *Foreign Occupation* because the model would not converge with this variable included). But the model was still too complex and the results were unreliable. Please refer to Appendix D for the results of these models.

ALTERNATE DEPENDENT VARIABLES

In this section I address the inclusion of vehicle bombings into the comparison of suicide bombings with other forms of terrorism. I first introduce the full random intercept model using *Tactic Type* as the dependent variable. I compare the results across the three pairings within the table and then the results from this model are compared with the results from Table 24. Next, I discuss the differences between vehicle and non-vehicle suicide bombings before presenting the final model of the *SVBIED Distinct Tactic Type* variable. These results are also compared to Table 24.

Including Vehicle Bombings

Table 25 presents the results of the full random intercept model, including all independent and control variables. I start by discussing the findings for the five independent variables before moving on to the attack- and country-level control variables.

Suicide bombings were 54 percent more likely than vehicle bombings to target security entities and were 13 percent more likely than all other attacks. Furthermore, vehicle bombings were also less likely to target security forces when compared to all other attacks. All of these comparisons were significant. The same was true for complex attacks as well. Suicide bombings were 2.5 times as likely to be used in complex attacks when compared to vehicle bombings and were almost twice as likely when compared to all other attacks. Vehicle bombings were, once again, less likely when compared to all other attacks. The difference between these two variables was that the observed relationship was expected for complex attacks but the opposite was true for security targets.

There was no significant difference between any of the three categories for religious holidays. However, there was an interesting relationship for election days. Whereas suicide

bombings were 4 times less likely to occur on election days when compared to all other attacks, they were not significantly different in their occurrence when compared to vehicle bombings. Relatedly, vehicle bombings were also less likely when compared to all other attacks. This was the first instance where suicide and vehicle bombings were similar to each other but were significantly different from all other attacks. Finally, for every one unit increase in cultural fractionalization, attacks were almost 12 times more likely to be a suicide bombing as compared vehicle bombings. However, the comparison between suicide bombings and all other attacks was not significant.

Five of the attack-level control variables were significantly different across all three comparisons. Suicide bombings were significantly less likely to be used in assassinations when compared to both vehicle bombings and all other attacks. Additionally, vehicle bombings were significantly less likely when compared to all other attacks. Suicide bombings were more likely than all other attacks and less likely than vehicle bombings to occur in cities. When compared to all other attacks, vehicle bombings were also more likely to occur in cities. Suicide bombings were also more likely to be carried out by known organization when compared to the other two categories. Furthermore, vehicle bombings were more likely to be carried out by known groups when compared to all other attacks. Vehicle bombings were significantly more likely than the other two categories to be successful whereas suicide bombings were less likely than all other attacks as well. Finally, suicide bombings were more likely than both vehicle bombings and all other attacks to be lethal. Vehicle bombings were also significantly more lethal than all other attacks.

The remaining four attack-level control variables had more complex relationships among the three comparisons. When compared to all other attacks, vehicle bombings were

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significantly less likely to target more democratic entities. Suicide bombings were more likely to target more democratic entities when compared to vehicle bombings, but this relationship is only marginally significant. There was still no significant difference between suicide bombings and all other attacks. Suicide bombings were significantly less likely to target civilian entities and more likely to occur after September 11th when compared to both vehicle bombings and all other attacks. However, there was no difference between the other two categories for these two variables. Finally, suicide bombings were significantly more likely to be international attacks when compared to the other two categories. Furthermore, compared to all other attacks, vehicle bombings were marginally less likely to be international attacks.

For the country-year and country-level control variables, only *GTD1* was significant across all three comparison, with all other attacks being the most likely and suicide bombings being the least likely. *Foreign Occupation* was only significantly different when the comparison was between vehicle bombings and all attacks. When compared to all other attacks, vehicle bombings were significantly less likely to occur during a year when a country was under foreign occupation. Vehicle bombings were also significantly more likely to occur against less democratic targets in a year that a country is experiencing foreign occupation when compared to the other two categories. Suicide bombings and all other attacks, however, were not significantly different.

Collectivism was the only country-year or country-level variable for which the three categories were not significantly different from each other. For every additional active terrorist group, vehicle bombings were 98 percent as likely as all other terrorist attacks and this relationship was significant. However, suicide bombings were not significantly

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different from the other two categories. The results were flipped, however, for the interaction term, as suicide bombings were significantly more likely under this circumstance when compared to the other two categories. In this instance, vehicle bombings and all other attacks were not significantly different from each other.

Suicide bombings were significantly more likely to occur in more lethal conflicts when compared to the other two categories. And once again, vehicle bombings were not significantly different from all other attacks for this variable. However, with conflict length the only significant comparison is between vehicle bombings and all other attacks. Each additional year of conflict in a country in a given year makes a vehicle bombing 4 percent more likely when compared to all other attacks. Whereas suicide bombings were more likely to occur in Muslim majority countries, vehicle bombings and all other attacks were not significantly different from each other. Finally, suicide bombings were significantly less likely to occur in countries with larger number of IDPs when compared to the other two categories. Once again, however, vehicle bombings and all other attacks were not significantly different from each other.

Table 26. Tactic Type Full Random Intercept Models

Variables	Suicide versus Vehicle			Suicide versus All Other Attacks			Vehicle versus All Other Attacks		
	b	SE	Exp(b)	b	SE	Exp(b)	b	SE	Exp(b)
Attack-Level									
Intercept	-2.139***	0.206	0.118	-6.401***	0.205	0.002	-4.262***	0.116	0.014
Security Target	0.429***	0.066	1.536	0.121*	0.053	1.128	-0.308***	0.045	0.735
Complex Attack	0.916***	0.086	2.498	0.673***	0.053	1.960	-0.242***	0.074	0.785
Religious Holiday	-0.073	0.067	0.929	0.002	0.054	1.002	0.076	0.047	1.079
Election Day	-0.323	0.554	0.724	-1.407***	0.425	0.245	-1.084**	0.366	0.338
Democratic Target	-0.080†	0.044	0.923	-0.011	0.039	0.990	0.070**	0.023	1.072
Civilian Target	-0.687***	0.065	0.503	-0.738***	0.055	0.478	-0.051	0.040	0.951
Assassination	-0.480***	0.094	0.619	-1.152***	0.081	0.316	-0.672***	0.054	0.511
City Detonation	-0.115**	0.044	0.891	0.784***	0.036	2.191	0.899***	0.029	2.458
Group Attribution	0.551***	0.063	1.736	0.789***	0.051	2.201	0.238***	0.042	1.268
Success	-0.774***	0.075	0.461	-1.644***	0.064	0.193	-0.870***	0.045	0.419
LN Fatalities	0.115***	0.007	1.122	0.178***	0.006	1.195	0.063***	0.004	1.065
After 9/11	1.022***	0.226	2.778	0.850***	0.206	2.339	-0.173	0.141	0.841
International Attack	0.869***	0.161	2.385	0.679***	0.129	1.971	-0.191†	0.105	0.826
Country-Year-Level									
Foreign Occupation	0.337	0.308	1.401	-0.084	0.302	0.920	-0.422*	0.198	0.656
Democratic Target*Foreign Occupation	-0.151**	0.059	0.860	-0.023	0.049	0.977	0.128***	0.037	1.137
Outbidding	-0.004	0.015	0.996	-0.021	0.015	0.979	-0.018*	0.009	0.983
Group Attribution*Outbidding	0.020**	0.007	1.020	0.020***	0.005	1.020	0.001	0.005	1.001
LN Conflict Lethality	0.074***	0.017	1.077	0.076***	0.016	1.079	0.002	0.009	1.002
Conflict Length	0.008	0.031	1.008	0.047	0.030	1.048	0.039*	0.020	1.040
Muslim Majority	0.925**	0.334	2.522	0.990**	0.335	2.692	0.062	0.214	1.064
LN IDP	-0.047**	0.018	0.995	-0.038*	0.017	0.962	0.008	0.009	1.008
GTD1	-0.947**	0.327	0.388	-1.697***	0.311	0.183	-0.752***	0.183	0.472
GTD2	0.739***	0.199	2.094	0.658***	0.190	1.931	-0.082	0.137	0.921
GTD3	0.494*	0.200	1.639	0.432	0.196	1.540	-0.064	0.139	0.938
Country-Year-Level									
Cultural Fractionalization	2.476†	1.314	11.895	-0.295	1.281	0.744	-2.775***	0.823	0.062
Collectivism	0.097	0.460	1.101	-0.193	0.467	0.825	-0.286	0.260	0.751
	Variance	SD		Variance	SD		Variance	SD	
Level 2	0.867***	0.931		1.238***	1.113		0.647***	0.804	
Level 3	1.869***	1.367		2.257***	1.502		1.229***	1.108	

† *p* ≤ 0.10   * *p* ≤ 0.05   ** *p* ≤ 0.01   *** *p* ≤ 0.001

In comparing the results in Table 25 for suicide bombings versus all other terrorist attacks with those from Model 3 in Table 24, I found that they do not shift dramatically. This was unsurprising, given that the 7,130 vehicle bombings represent only 5 percent of the total number of terrorist attacks from the category in Table 24. There were, however, a few relationships between suicide bombings and independent variables that did change. For example, suicide bombings went from being 17 percent more likely to target security forces to 13 percent when vehicle bombings were removed from all other terrorist attacks.[113] The magnitude of the coefficient also tripled for cultural fractionalization once vehicle bombings were removed from the all other attacks category, but the comparison still did not reach significance. Looking at the city detonation variable, the odds ratio did change from suicide bombings being 1.99 times more likely to occur in cities to 2.19 once vehicle bombings were removed from all other terrorist attacks. However, in general, the results remained relatively unchanged when vehicle bombings were removed.

Distinguishing Vehicle and Non-Vehicle-Suicide Bombings

Now that vehicle bombings were introduced into the models, it is important to consider the case of vehicle-suicide (VS) bombings. As I described in Chapter 2, vehicle bombings present an interesting challenge because in about half of all suicide bombings, the assailant used a vehicle to carry out the attack. While I initially decided to include all VS bombings in the suicide bombing category, I also thought it prudent to separate these bombings out from non-vehicle-suicide (NSV) bombings to assess the robustness of my findings from the analyses above. At this point, I distinguished between VS and NVS

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[113] The same trend was noted with *LN IDP*.

bombings to see if they were different from each other and to see whether they had any unique relationships to non-suicide vehicle (NSV) bombings and all other terrorist attacks more generally.

Table 26 presents the results from a pared-down version of the dataset that only includes suicide bombing attacks. I start by looking only at suicide bombings to see if a full comparison between the four categories (VS, NVS, NSV, and all other attacks) is warranted. These attacks were separated into the two categories described above. Many of the relationships between the two suicide bombing categories were not significant. However there a handful of differences that could lead to important findings when these two categories of suicide bombings were separately compared to vehicle bombings and all other terrorist attacks.

The first shift from previous results is that there was a significant difference for security targets. When compared to NVS bombings, VS bombings were 44 percent more likely to target security entities. Additionally, when compared to NVS bombings, VS bombings were 71 percent as likely to be used in complex attacks. The remaining three independent variables were not significantly different between the two suicide bombings categories.

Moving on to the attack-level control variables, five additional variables were also significant. When compared to NVS bombings, VS bombings were more likely to: target entities that were more democratic; be successful; and be more lethal. VS bombings were also less likely to target civilian entities and occur in cities when compared to NVS bombings. The remaining 4 attack-level control variables were not significantly different between the two suicide bombings categories.

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Table 27. VS versus NVS Bombings Full Random Intercept Model

Variables	b	SE	Exp(b)
Attack-Level			
Intercept	-0.600**	0.216	0.549
Security Target	0.361***	0.105	1.435
Complex Attack	-0.345***	0.100	0.708
Religious Holiday	0.141	0.109	1.151
Election Day	-0.235	0.897	0.790
Democratic Target	-0.197**	0.063	0.821
Civilian Target	-0.518***	0.112	0.596
Assassination	-0.056	0.170	0.946
City Detonation	-0.152*	0.069	0.859
Group Attribution	0.128	0.088	1.137
Success	0.543***	0.131	1.722
LN Fatalities	0.024*	0.010	1.024
After 9/11	-0.368	0.336	0.692
International Attack	-0.140	0.263	0.869
Country-Year-Level			
Foreign Occupation	0.498	0.337	1.645
Democratic Target*Foreign Occupation	0.000	0.097	1.000
Outbidding	-0.005	0.017	0.995
Group Attribution*Outbidding	-0.006	0.012	0.994
LN Conflict Lethality	0.051*	0.025	1.052
Conflict Length	-0.087*	0.039	0.917
Muslim Majority	0.653	0.418	1.922
LN IDP	0.026	0.024	1.027
GTD1	0.622	0.498	1.863
GTD2	0.129	0.234	1.137
GTD3	-0.239	0.220	0.787
Country-Year-Level			
Cultural Fractionalization	-2.042	1.496	0.130
Collectivism	-0.319	0.516	0.727
	Variance	*SD*	
Level 2	0.456***	0.676	
Level 3	0.897***	0.947	

† $p \leq 0.10$ * $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$

Only two of the country-year and country-level control variables were significant and these were both at the 0.05 level. When compared to NVS bombings, VS bombings were more likely to be used in more lethal conflict country-years and were less likely to be used in conflicts of a longer duration. In general, the majority of the variables were not significantly different between the two suicide bombing categories. However, given some of the relationships that were significant, I felt that it warranted a comparison of the full data with separate suicide bombing categories. Table 27 presents the results of this model.[114]

I first noticed in Table 27 that the results for security targets were partially dictated by the differences between VS and NVS bombings. When compared to NSV bombings, both VS and NVS bombings were 72 percent and 27 percent more likely to target security entities, respectively. However, when compared to all other attacks, VS bombings were 27 percent more likely but NVS bombings were not significantly different from all other attacks. In fact, this relationship is actually negative. This might explain why the relationship between suicide bombings and all other attacks in Table 25 was only significant at a 0.005 level of analysis.

Although there was a significant difference between VS and NVS bombings for complex attacks, this did not affect the relationship noted in Table 27. In all four comparison, suicide bombings were significantly more likely to be used in complex attacks. Religious holiday was also consistent across all four comparisons but in this case the relationship did not reach significance. The comparison between VS and NVS

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[114] This table only presents the results for the relevant comparison categories (Vehicle-Suicide versus Non-Suicide Vehicle; Non-Vehicle-Suicide versus Non-Suicide Vehicle; Vehicle-Suicide versus All Other Attacks; Non-Vehicle-Suicide versus All Other Attacks). For the results of the other comparisons (Vehicle-Suicide versus Non-Vehicle Suicide and Vehicle versus All Other Attacks) please see Appendix E.

bombings did not differ when looking at election days. When compared to all other attacks, VS and NVS bombings were 22 percent and 27 percent as likely to occur on election days, respectively. The relationship did not reach significance when the comparison was made between the two suicide bombings categories and NSV bombings. Finally, *Cultural Fractionalization* was significant in one of the four comparison. For every one unit increase in cultural fractionalization in a country, NVS bombings were 25 times more likely to occur when compared to NSV bombings. This relationship was in the hypothesized direction and lends some limited support to *Hypothesis 5*.

Focusing on the attack-level control variables that were significantly different in Table 26, it appears that the delivery mechanism of a suicide bombing played a role in the targeting of democratic entities. VS bombings were significantly more likely to target entities that were more democratic when compared to either NSV bombings or all other attacks. However, the relationship failed to reach significance when NVS bombings were compared with either category. The substantive findings did not change for civilian targets, as suicide bombings were significantly less likely to target these entities across all four comparisons. However, it should be noted that the magnitude of the coefficient was much greater when the comparison was made with VS bombings as opposed to NVS bombings. Looking at *City Detonation*, NVS bombings were only marginally less likely to occur in cities when compared to NSV bombings. The other three comparisons were statistically significant. Although VS bombings were found to be significantly more likely to be successful when compared with NVS bombings, this relationship had no effect on the four comparisons in Table 27 in terms of significance. The same result was observed for *LN Fatalities*.

Table 28. SVBIED Distinct Tactic Type Full Random Intercept Model

Variables	Vehicle-Suicide versus Non-Suicide-Vehicle			Non-Vehicle-Suicide versus Non-Suicide-Vehicle			Vehicle-Suicide versus All Other Attacks			Non-Vehicle-Suicide versus All Other Attacks		
	b	SE	Exp(b)	b	SE	Exp(b)	b	SE	Exp(b)	b	SE	Exp(b)
Attack-Level												
Intercept	-3.447***	0.248	0.032	-2.620***	0.233	0.073	-7.713***	0.259	0.000	-6.893***	0.227	0.001
Security Target	0.543***	0.080	1.721	0.240**	0.084	1.271	0.237***	0.070	1.267	-0.066	0.074	0.936
Complex Attack	0.851***	0.097	2.342	0.970***	0.098	2.639	0.609***	0.070	1.838	0.728***	0.070	2.071
Religious Holiday	-0.033	0.081	0.968	-0.120	0.087	0.887	0.043	0.070	1.044	-0.044	0.076	0.957
Election Day	-0.432	0.802	0.649	-0.238	0.628	0.788	-1.514*	0.719	0.220	-1.320*	0.516	0.267
Democratic Target	-0.155**	0.053	0.857	-0.028	0.053	0.973	-0.087†	0.050	0.917	0.042	0.049	1.043
Civilian Target	-1.028***	0.084	0.358	-0.385***	0.081	0.681	-1.081***	0.077	0.339	-0.437***	0.073	0.646
Assassination	-0.667***	0.128	0.513	-0.285*	0.117	0.752	-1.340***	0.118	0.262	-0.957***	0.106	0.384
City Detonation	-0.291***	0.054	0.747	-0.096†	0.056	1.101	0.605***	0.047	1.831	0.993***	0.049	2.699
Group Attribution	0.694***	0.079	2.002	0.403***	0.078	1.497	0.933***	0.071	2.543	0.643***	0.069	1.901
Success	-0.567***	0.103	0.567	-0.902***	0.090	0.406	-1.435***	0.096	0.238	-1.770***	0.081	0.170
LN Fatalities	0.135***	0.009	1.144	0.095***	0.008	1.100	0.198***	0.008	1.219	0.159***	0.007	1.172
After 9/11	0.879***	0.275	2.409	1.132***	0.264	3.102	0.695**	0.266	2.005	0.950***	0.241	2.585
International Attack	0.872***	0.209	2.393	0.832***	0.185	2.297	0.691***	0.187	1.996	0.649***	0.157	1.913
Country-Year-Level												
Foreign Occupation	0.571†	0.306	1.769	0.110	0.357	1.117	0.171	0.320	1.187	-0.289	0.340	0.749
Democratic Target*Foreign Occupation	-0.115†	0.069	0.892	-0.153*	0.072	0.858	0.014	0.062	1.014	-0.027	0.063	0.974
Outbidding	-0.003	0.015	0.997	-0.008	0.018	0.992	-0.020	0.016	0.980	-0.025	0.017	0.975
Group Attribution*Outbidding	0.009	0.009	1.009	0.031***	0.008	1.031	0.010	0.008	1.010	0.031***	0.007	1.031
LN Conflict Lethality	0.103***	0.020	1.109	0.055**	0.020	1.056	0.105***	0.020	1.111	0.056**	0.019	1.058
Conflict Length	-0.050	0.034	0.951	0.038	0.035	1.039	-0.010	0.035	0.990	0.079*	0.033	1.082
Muslim Majority	1.204***	0.362	3.334	0.906*	0.376	2.474	1.242***	0.387	3.464	0.946**	0.365	2.574
LN IDP	-0.031	0.020	0.970	-0.058**	0.020	0.943	-0.023	0.020	0.977	-0.050*	0.020	0.951
GTD1	-0.487	0.385	0.614	-1.285***	0.393	0.277	-1.226***	0.382	0.293	-2.029***	0.373	0.131
GTD2	0.891***	0.211	2.437	0.604**	0.231	1.829	0.834***	0.214	2.303	0.539*	0.215	1.713
GTD3	0.447*	0.204	1.564	0.491*	0.232	1.634	0.411†	0.214	1.508	0.452*	0.219	1.572
Country-Year-Level												
Cultural Fractionalization	1.070	1.483	2.916	3.216*	1.402	24.923	-1.659	1.561	0.190	0.486	1.336	1.626
Collectivism	-0.031	0.501	0.970	0.150	0.494	1.162	-0.306	0.543	0.736	-0.134	0.489	0.875
	Variance	SD		Variance	SD		Variance	SD		Variance	SD	
Level 2	0.626	0.791		1.257*	1.121		1.129***	1.063		1.43***	1.195	
Level 3	1.703***	1.305		2.047***	1.431		2.595***	1.611		2.121***	1.456	

† $p \le 0.10$ * $p \le 0.05$ ** $p \le 0.01$ *** $p \le 0.001$

Turning to the country-year and country-level control variables, *LN Conflict Lethality* was not affected by the significant difference between VS and NVS bombings. In all four comparisons, suicide bombings were significantly more likely to occur in countries during years with more lethal conflicts. However, *Conflict Length* was affected by the noted relationship in Table 26. When compared to all other attacks, NVS bombings were significantly more likely to occur in countries experiencing longer conflicts. The other three comparisons, however, failed to reach significance.

There were also some relationships in Table 27 that were not based upon a significant difference between the two suicide bombings categories in Table 26. VS bombings were marginally more likely to occur in countries during years they were experiencing a foreign occupation when compared to NSV bombings. The other three comparisons remained not significant. The interaction term was marginally significant when the comparison was between VS and NSV bombings and it was significant at a 0.05 level when the comparison was between NVS and NSV bombings. The *Group Attribution* and *Outbidding* interaction term also differed across the four models. NVS bombings were significantly more likely when compared to both NSV bombings and all other attacks. However, the relationship was not significant when VS bombings were compared to the two categories. Finally, the same trend was noted with the *LN IDP* variable.

Overall, these final sets of results highlight the importance of separating suicide bombings into distinct categories based on whether a vehicle was used as a delivery mechanism, especially if you are trying to create a suicide bombing profile. In the final chapter, I go more in depth to discuss what these results mean for my hypotheses

specifically, what they mean more generally for theory and policy, and what the implications are for future research on this topic.

Chapter 6: Discussion and Conclusion

In this chapter I link the results from Chapter 5 to previous research on suicide bombings. I split the chapter into five sections. In the first section, I discuss the results and what they mean more generally for our ability to create a profile for suicide bombings. In the second section I then acknowledge some of the limitations of this work and potential ways to correct these issues in future research in this area. In the third section I focus on the theoretical implications of the results and the ways that the profile of suicide bombings can be used to address policy issues around the globe. In section four I speculate where the research on suicide bombings goes from here, the role that vehicle bombings play moving forward, and how these analytical techniques can be used to study other terrorist tactics. Finally, I finish with a few general concluding thoughts on suicide bombings, vehicle bombings, and their proliferation.

DISCUSSION

This discussion is broken down into three sub-sections. In the first sub-section, I discuss what the results tell us regarding the hypotheses put forth in Chapter 2. In the second-subsection, I look more broadly at the significance of the results and create a profile for suicide bombings. In the final sub-section, I focus on the exploratory results for vehicle bombings, including how they were similar to suicide bombings and also how they differ.

Questioning the Hypotheses Regarding Suicide Bombings

Table 28 restates the 5 hypotheses from Chapter 2 and breaks down how they fared across all of the models presented in Chapter 5. Only *Hypothesis 2* received consistent support across all 17 models presented in the previous chapter. As compared to other

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attacks, suicide bombings were more likely to be used in complex attacks. This result is likely due to the fact that suicide bombings serve a dual function for terrorist organizations. Since this tactic is deadly, it can be used to draw security forces away from an area, thereby weakening the defenses of a targeted entity. Since suicide bombings are also destructive, they could also be used as an initial penetration of a target, thereby weakening the defenses at a specific place, allowing other assailants to enter the facility or attack the main target.

On the opposite end of the spectrum, both *Hypothesis 3* and *Hypothesis 4* received no support across the 17 models. Compared to other attacks, suicide bombings were no more likely to occur on religious holidays and were actually consistently less likely to be used on election days. Given these results, it might be necessary to address the arguments used to derive the hypotheses or to address a more basic concern, is terrorism generally more likely to occur on or around religious holidays or election days when compared to all other potential days.[115] At this point, I should also note that the occurrence of attacks on these days in general is a relatively rare event. Only 8 percent of attacks overall occurred on religious holidays and less than 1 percent occurred on election days. Rather than identifying these attacks in comparison to all other attacks identified in the GTD, it might be more informative to only look at attacks that occur on religious holidays and election days separately to assess trends in the use of different tactics. Conversely, other important days I identified in Chapter 2, such as national independence days or group anniversaries, should also be studied to see if specific tactics are used in these instances.

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[115] This is a slightly different research question than that posed in this dissertation.

Table 29. Suicide Bombing Hypothesis Tests

	Models	H1: Security Targets	H2: Complex Attacks	H3: Religious Holidays	H4: Election Days	H5: Cultural Diversity
Table 23	*M1*	No	Yes	No	No	N/A
	M2	No	Yes	No	Yes	N/A
	M3	No	Yes	No	No	N/A
	M4	No	Yes	No	No	N/A
Table 24	*M1*	No	Yes	No	No	No
	M2	No	Yes	No	No	No
	M3	No	Yes	No	No	No
	M4	No	Yes	No	No	No
	M5	No	Yes	No	No	No
	M6	No	Yes	No	No	No
	M7	No	Yes	No	No	No
Table 26	*S/V*	No	Yes	No	No	No
	S/O	No	Yes	No	No	No
Table 27	*VS/NSV*	No	Yes	No	No	No
	NVS/NSV	Yes	Yes	No	No	Yes
	VS/O	No	Yes	No	No	No
	NVS/O	No	Yes	No	No	No
	Support?	1/17	17/17	0/17	0/17	1/13

Note: S – Suicide   O – All other attacks   NVS – Non-Suicide-Vehicle
         V – Vehicle   VS – Vehicle-Suicide   NSV – Non-Vehicle-Suicide

Finally, *Hypothesis 1* and *Hypothesis 5* received virtually no support as well. There was only one model that was significant and in the expected direction for each hypothesis. The only model in which suicide bombings were used less often against security targets was when vehicle-suicide (VS) bombings were compared with non-suicide-vehicle (NSV) bombings. Instead, the results consistently pointed to the fact that security targets were

significantly more likely to be targeted in suicide bombings when compared to other forms of terrorism. It appears from this finding that, since military officers are difficult to target with other tactics, groups or organizations may believe that suicide bombings are the only way to effectively reach and attack these hard targets. Similarly, the only model where suicide bombings were used more often in countries with greater diversity was when non-vehicle-suicide (NVS) bombings were compared with NSV bombings. This does not lend support to the argument laid out by Berman and Laitin (2008) that suicide bombings are used to achieve strategic goals against individuals of different religions, at least at the country-level of analysis.

In general, looking at the results through the lens of the hypotheses does not lend strong support to the overall uniqueness of suicide bombings. However, I also wrestled with the fact that several relationships for both independent and control were significant even though they were not in the hypothesized direction. In the next sub-section I look more broadly at the significant findings with the goal of creating a profile for suicide bombings.

Creating a Profile of Suicide Bombings

While it is important to assess this research in terms of the five hypotheses laid out in Chapter 2, the more general goals of this dissertation were to begin to unpack the uniqueness of suicide bombings more generally and to begin to create a profile of suicide bombings. Therefore, Table 29 presents the results for all independent and control variables in terms of whether the relationship was positive or negative, whether the relationship was significant, and the level of significance. In this table I only included the seven models in which every primary independent and control variable were included.

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I first noticed that a number of the variables included in the analysis were significant across the various models presented in Chapter 5. While only one hypothesis received consistent support across all 17 models in Table 28, two other independent variables were consistent but opposite the expected direction. This includes security targets, for which 6 of the model specification yielded positive and significant results. The last specification, comparing NVS bombings and all other terrorist attacks, yielded a result that was not significant and negative. However, in general, the finding that suicide bombings were more likely to be used against security targets was rather robust. For election days, only 4 of the 7 models yielded results that were negative and significant. The only comparison for which the results were not significant was when suicide bombings, and the two categories of suicide bombings, were compared to vehicle bombings. However, I should not that the results were negative across all 7 model specifications.

Beyond the independent variables, a number of attack-level control variables were consistently significant as well. For example, civilian targets were less likely to be targeted in suicide bombings across all 7 model specifications, and each coefficient was significant at a 0.001 level. Success also presented similarly strong results, indicating that suicide bombings were less likely to be successful than other types of terrorism. While this result is surprising, it does make sense in the context of these attacks being more infrequent and security forces being more alert to suspicious behavior of individuals. I should also not that in all instances success in the GTD falls between 88 and 92 percent.

Group Attribution, *LN Fatalities*, *After 9/11* and *International Attack*, also exhibited consistently strong and positive significant findings. With the exception of the comparison between vehicle and suicide bombings, and specifically between vehicle-

suicide (VS) bombings and NSV bombings, suicide bombings were consistently and significantly more likely to occur in cities. Vehicle bombing were significantly more likely to occur in cities only when compared with VS bombings. Finally, democratic targets were consistently more likely to be targeted with suicide bombings but this relationship was significant only once and marginally significant two other times. Therefore, this relationship was tenuous at best.

Moving on to the country-level control variables, the relationship between Muslim majority populations and suicide bombings was consistently positive and significant, although the strength of the relationship weakened when the comparison was between NVS bombings and both NSV bombings and all other attacks.[116] The relationship between suicide bombings and conflict lethality was consistently strong and positive once all control and interaction variables were added to the model. In comparison, conflict length was consistently positive except when the comparison was between NVS bombings and both NSV bombings and all other attacks. In these two instances the relationship was negative. However, there was only one instance where conflict lethality was significant, so these results were also tenuous.

The outbidding variable, which measured the number of groups active in a country in a given year, maintained a consistently negative relationship with suicide bombings that never reached statistical significance. However, the interaction between the *Group Attribution* and *Outbidding* variable was consistently positive and it was also significant in 5 of the models. In contrast, foreign occupation exhibited both a positive and a negative relationship across the models, reaching marginal significance only once. Both of these

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[116] This was the only comparison in which the relationship was significant at a 0.05 level.

results highlight the importance of readdressing some of the main tenets in the work of Pape (2005) and Bloom (2005).

Table 30. Suicide Bombings Significance Tests

Variables	Table 24 Model 4	Table 25 S/V	S/O	Table 27 VS/NSV	NVS/NSV	VS/O	NVS/O
Security Target	$(+)^{**}$	$(+)^{***}$	$(+)^{*}$	$(+)^{***}$	$(+)^{**}$	$(+)^{***}$	$(-)$
Complex Attack	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$
Religious Holiday	$(-)$	$(-)$	$(+)$	$(-)$	$(-)$	$(+)$	$(-)$
Election Day	$(-)^{***}$	$(-)$	$(-)^{***}$	$(-)$	$(-)$	$(-)^{*}$	$(-)^{*}$
Democratic Target	$(-)$	$(-)^{\dagger}$	$(-)$	$(-)^{**}$	$(-)$	$(-)^{\dagger}$	$(+)$
Civilian Target	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$
Assassination	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$	$(-)^{*}$	$(-)^{***}$	$(-)^{***}$
City Detonation	$(+)^{***}$	$(-)^{**}$	$(+)^{***}$	$(-)^{***}$	$(-)^{\dagger}$	$(+)^{***}$	$(+)^{***}$
Group Attribution	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$
Success	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$
LN Fatalities	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$
After 9/11	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{**}$	$(+)^{***}$
International Attack	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$
Foreign Occupation	$(-)$	$(+)$	$(-)$	$(+)^{\dagger}$	$(+)$	$(+)$	$(-)$
Democratic Target* Foreign Occupation	$(-)$	$(-)^{**}$	$(-)$	$(-)^{\dagger}$	$(-)^{*}$	$(+)$	$(-)$
Outbidding	$(-)$	$(-)$	$(-)$	$(-)$	$(-)$	$(-)$	$(-)$
Group Attribution* Outbidding	$(+)^{***}$	$(+)^{**}$	$(+)^{***}$	$(+)$	$(+)^{***}$	$(+)$	$(+)^{***}$
LN Conflict Lethality	$(+)^{**}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{**}$	$(+)^{***}$	$(+)^{**}$
Conflict Length	$(+)$	$(+)$	$(+)$	$(-)$	$(+)$	$(-)$	$(+)^{*}$
Muslim Majority	$(+)^{**}$	$(+)^{**}$	$(+)^{**}$	$(+)^{***}$	$(+)^{*}$	$(+)^{***}$	$(+)^{**}$
LN IDP	$(-)^{**}$	$(-)^{**}$	$(-)^{*}$	$(-)$	$(-)^{**}$	$(-)$	$(-)^{**}$
GTD1	$(-)^{***}$	$(-)^{**}$	$(-)^{***}$	$(-)$	$(-)^{***}$	$(-)^{***}$	$(-)^{***}$
GTD2	$(+)^{**}$	$(+)^{***}$	$(+)^{***}$	$(+)^{***}$	$(+)^{**}$	$(+)^{***}$	$(+)^{*}$
GTD3	$(+)^{\dagger}$	$(+)^{*}$	$(+)$	$(+)^{*}$	$(+)^{*}$	$(+)^{\dagger}$	$(+)^{*}$
Cultural Fractionalization	$(+)$	$(+)^{\dagger}$	$(-)$	$(+)$	$(+)^{*}$	$(-)$	$(+)$
Collectivism	$(-)$	$(+)$	$(-)$	$(-)$	$(+)$	$(-)$	$(-)$

Note: S – Suicide   O – All other attacks   NSV – Non-Vehicle-Suicide
      V – Vehicle   VS – Vehicle-Suicide   NVS – Non-Suicide-Vehicle
      $^{\dagger} p \leq 0.10$ $^{*} p \leq 0.05$ $^{**} p \leq 0.01$ $^{***} p \leq 0.001$

Looking at the relationship between IDP and suicide bombings, the relationship was negative across all 7 models and it was significant in 5 of the models. This relationship was also driven by the strong negative and significant relationship between NVS bombings and both NSV bombings and all other terrorist attacks. Finally, collectivism never reached statistical significance in any of the 7 models.

In general then, the results begin to paint a picture of the varying circumstances under which suicide bombings occur. When compared to other forms of terrorism, suicide bombings were more likely to: occur against security targets (except when the comparison is between NVS bombings and all other attacks); be used in complex attacks; be carried out by known organizations; cause a greater number of fatalities; be used since 9/11; be used in international attacks; be used in years that a country experienced a more lethal internal conflict; and be used in countries during years when there was a Muslim majority population. Conversely, when compared to other forms of terrorism, suicide bombings were less like to; target civilians; be used in an assassination attempt; and be successful. Tenuously, suicide bombings were also more likely to be used by known organizations in countries with more active groups and were less likely to be used in countries during years with a greater IDP number. Finally, when excluding NSV bombings from the analysis, suicide bombings were more likely to be used in cities and were less likely to be used on election days.

These above statements form the initial baseline for the profile of suicide bombings that can be used in future research and also in policy decisions based on situational crime prevention (SCP). Before discussing these implications and future research, I first address the exploratory results for vehicle bombings.

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Exploring the Uniqueness of Vehicle Bombings

In Chapter 2, I predicted that vehicle bombings would fall in between suicide bombings and all other attacks for the hypothesized relationships described above. However, the relationship between the three categories is much more complicated than my previous prediction. Table 30 presents the overall results of the comparisons of vehicle bombings with both suicide bombings and all other attacks.

In general, the coefficient for vehicle bombings fell somewhere between that for suicide bombings and all other attacks for 12 of the variables in Table 30. Six of these variables were at the attack-level. Compared to suicide bombings, vehicle bombings were significantly more likely to target civilians, be used in assassinations, and be successful. In contrast, compared to suicide bombings, vehicle bombings were significantly less likely to be carried out by a known terrorist organization and were less likely to be successful, although they were significantly more likely when compared to all other attacks. Regarding election days, vehicle bombings were significantly less likely to occur on these days when compared to all other attacks. In comparing them to suicide bombings, they were more likely, although this relationship was not significant.

Moving on to the country-year variables, compared to suicide bombings, vehicle bombings were significantly less likely to be carried out in Muslim majority countries and countries with greater conflict lethality. In contrast, compared to all other attacks, vehicle bombings were less likely to be carried out in countries with a greater number of active terrorist organizations. However, they were more likely when compared to suicide bombing, but this relationship is also not significant. Finally, vehicle bombings were more likely to be used in longer conflicts when compared to all other attacks. Compared to

suicide bombings, there was a non-significant negative relationship, with VS bombings

being more likely than NSV bombings and NVS bombings being less likely.

Table 31. Vehicle Bombings Significance Tests

Variables	Table 24		Table 26	
	V/S	V/O	NSV/VS	NSV/NVS
Security Target	(-)***	(-)***	(-)***	(-)**
Complex Attack	(-)***	(-)***	(-)***	(-)***
Religious Holiday	(+)	(+)	(+)	(+)
Election Day	(+)	(-)**	(+)	(+)
Democratic Target	(+)†	(+)**	(+)**	(+)
Civilian Target	(+)***	(-)	(+)***	(+)***
Assassination	(+)***	(-)***	(+)***	(+)*
City Detonation	(+)**	(+)***	(+)***	(+)†
Group Attribution	(-)***	(+)***	(-)***	(-)***
Success	(+)***	(-)***	(+)***	(+)***
LN Fatalities	(-)***	(+)***	(-)***	(-)***
After 9/11	(-)***	(-)	(-)***	(-)***
International Attack	(-)***	(-)†	(-)***	(-)***
Foreign Occupation	(-)	(-)*	(-)†	(-)
Democratic Target*Foreign Occupation	(+)**	(+)***	(+)†	(+)*
Outbidding	(+)	(-)*	(+)	(+)
Group Attribution*Outbidding	(-)**	(+)	(-)	(-)***
LN Conflict Lethality	(-)***	(+)	(-)***	(-)**
Conflict Length	(-)	(+)*	(+)	(-)
Muslim Majority	(-)**	(+)	(-)***	(-)*
LN IDP	(+)**	(+)	(+)	(+)**
GTD1	(+)**	(-)***	(+)	(+)***
GTD2	(-)***	(-)	(-)***	(-)**
GTD3	(-)*	(-)	(-)*	(-)*
Cultural Fractionalization	(-)†	(-)***	(-)	(-)*
Collectivism	(-)	(-)	(+)	(-)

Note: S – Suicide   V – Vehicle
        O – All other attacks   VS – Vehicle-Suicide
        NSV – Non-Vehicle-Suicide   NVS – Non-Suicide-Vehicle
        † $p \leq 0.10$ * $p \leq 0.05$
        ** $p \leq 0.01$ *** $p \leq 0.001$

For 5 of the remaining variables, vehicle bombings were more likely to be used

than both suicide bombings and all other attacks. Vehicle bombings were significantly

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more likely to be used in cities compared to the other two categories. However, the relationship between suicide and vehicle bombings was driven by a significant positive and strong relationship between NSV and VS bombings, whereas there was actually a marginally significant and negative relationship between NSV and NVS bombings. Similarly, compared to suicide bombings, vehicle bombings were significantly more likely as the number of IDPs is increased, although this relationship was only significant for one of the two suicide bombing categories, NSV. Vehicle bombings were also more likely when compared to all other attacks, but this relationship was not significant. When compared to suicide bombings and all other attacks, vehicle bombings were more likely to occur on religious holidays, although this relationship was not significant. Finally, compared to all other attacks, vehicle bombings were significantly more likely to target less democratic entities. They were also marginally more likely when compared to suicide bombings, although this relationship was driven by the significant relationship with VS bombings. A similar relationship was noted with the cross-level interaction, although in this instance the positive relationship between vehicle and suicide bombings was driven by a significant relationship with NVS bombings.[117]

Vehicle bombings were significantly less likely to be used against security targets and in complex attacks when compared to the other two categories. Compared to suicide bombings and all other attacks, vehicle bombings were also less likely to be used in countries experiencing foreign occupations, although only the relationship with all other attacks was significant. Moving on to both country-level variables, vehicle bombings were less likely than both suicide bombings and all other attacks. Focusing on cultural

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[117] Whereas the relationship between NSV and VS bombings was only marginally significant.

fractionalization, relationship with all other attacks was significant. Furthermore, the relationship was marginally significant with suicide bombings, which was driven by the significant comparison between NSV and NVS bombings. Finally, the relationship for collectivism was insignificant between the three categories.

In general, this points to a complex relationship between vehicle bombings and suicide bombings. The two tactics were significantly different for 2 of the 5 independent variables and a marginally different for a third. They were also significantly different for 16 of the control variables. Another variable, *Democratic Target*, was marginally significant, while the remaining six variables were similar between the two categories. This lends support to the notion put forth by Clarke and Newman (2006) that terrorist tactics need to be studied separately. There appears to be more of a story when comparing two tactics directly rather than comparing a tactic to all other terrorist attacks. Clearly there are different costs and benefits to using these two tactics, and future research should address this. In terms of policy, there are clearly instances where vehicle bombings are more problematic, whether that is against civilian targets, in assassination attempts, or in cities. These results should be considered when security officials and practitioners develop policies against suicide and vehicle bombings. I now discuss the general limitations with this dissertation.

LIMITATIONS

Although the results point to some important ways in which suicide bombings were different from other forms of terrorism, it is imperative to address some of the limitations inherent in this study. First, as was described in detail in Chapter 3, there were several limitations with the GTD data. This included the missing 1993 data, the different phases

of data collection, and the other limitations as described by LaFree, Dugan, and Miller (2015). Including dummy variables in the models above for the different collection phases alleviated some of the concerns, but it was not a perfect solution. This not only has an effect on the number of incidents in earlier years of data collection but it also could potentially have an effect on missing or inaccurate data. More advanced techniques to address these concerns will need to continue to be developed in the future.

Furthermore, some of the variables included in the above models might be considered crude approximations of the intended or desired variables. The dichotomous variable for Muslim majority countries was consistently positive and significant, but would the same relationship hold true if the actual proportion of the Muslim population were included for each country? Collectivism was also coded as a dummy variable but was consistently nonsignificant. However, the results might differ if a better measure of collectivism was used. The same argument could be made for the outbidding variable, which may not be the best measure that truly gets at the heart of Bloom's (2005) argument. This variable might be better measured at the group-level of analysis, looking at rivalries and cooperation between competing organizations, and is something that should be considered in future research. Similarly, success is coded as whether an explosive device detonated. However, is this really the way terrorists groups or individuals think of success when they determine whether or not to use suicide bombing as a strategy? Future research should address some of these measurement issues.

Missing variables are also an important consideration. A large proportion of the variance in suicide bombings is explained at the country-level (almost 60 percent). However, the majority of the variables included at these two levels of analysis were not

significant predictors. Therefore, it may be that other country-level predictors need to be included in future research on suicide bombings. Looking at attack-level characteristics, it would also be beneficial to include more variables that are situational, akin to data collected in the United States studies of crime that look at block-level characteristics. However, collecting that type of data on a worldwide scale is very difficult to achieve, even if some of that information may be crucial to our full understanding of suicide bombings. Therefore, future research must compare the feasibility of this type of data collection with the value added to our understanding of how suicide bombings are deployed as a tactical strategy by organizations or individuals.

Finally, research is always limited by missing data. Luckily, there was not a large amount of missing data with all of the independent and control variables included in the above models. However, even with a small percentage of missing data, the results could still be biased. In the future, researchers may want to take the time to review cases, especially when it comes to information on the number of people killed and injured, which created the largest amount of missing data. Other political science datasets should also be identified to see if there is better data coverage across all countries and all years. I will now turn my attention to the theoretical and policy implications from the results in Chapter 5.

THEORETICAL AND POLICY IMPLICATIONS

As I stated in Chapter 1, this dissertation was in response to a call by Clarke and Newman (2006) for more fine-grained research that looks at specific terrorist tactics and identifies the situations and contexts under which they occur. Furthermore, as far as I am aware, this is the first research endeavor to apply hierarchical generalized linear modeling (HGLM) to terrorist suicide bombings. Previous studies have included attack-level and

country-level variables in the same model, but this was the first study to take into account the nested nature of suicide attacks within countries. While situations and opportunities matter, they are driven by the larger context within a conflict or a country.

Regarding SCP as it is applied to terrorism, this study follows the path of Freilich and Newman (2009) and uses the SCP model to begin to build a profile for a relevant terrorist tactic that continues to be used more frequently over time. It is my opinion that this research strategy should continue to be applied to other tactics of terrorism with the hope that profiles can be created for these different tactics, which can then be used by policy makers and practitioners.

In terms of criminological theory, this research also highlights how situational theory can be applied to explain terrorist attacks. I found limited support for my hypotheses in this research. Therefore, it is unclear whether there are situational aspects to the decision to use suicide bombings. Opportunities, as they were operationalized in this research, do not appear to play a role in how suicide bombings were used. While it was hypothesized that suicide bombings would be more likely to be used against targets were the bomber could be anonymous and blend in, that was not the case. It would be easier for a bomber to blend in with civilians, but suicide bombings were more likely to be used against security targets and less likely to be used against civilians when compared to all other attacks. Furthermore, I hypothesized that suicide bombers would have easier access to religious institutions and polling stations or political victory celebrations. This was also found to not have an effect, as suicide bombings were less likely to be used on election days and the relationship with religious holidays did not reach statistical significance. Since there was apparently more complexity when the comparison was between vehicle and suicide

bombings alone, it might be imperative that this research endeavor further identify different tactics and compare each one to suicide bombings to create a more complex and accurate picture of how the tactic is used.

Furthermore, this research can be added to the literature testing the theories by Bloom (2005) and Pape (2005), which have attempted to explain the onset and continuation of suicide bombing campaigns. As discussed above, the results were mixed for both of these theories. The attack-level variables testing a portion of their hypotheses were supported, whereas the country-level variables were not. Regarding Pape (2005), there was no indication that suicide bombings were uniquely utilized in foreign occupations when compared to other terrorist tactics. This is a main crux of his argument, as he hypothesized that organizations using suicide bombings were frustrated and upset with foreign interference in local affairs, and they were driven by nationalism. However, these results do not bear out this argument. Regarding Bloom (2005), compared to all other attacks, suicide bombings were not more likely to occur in years when there were more active groups in a country. Therefore, these results indicate that a competitive environment in a specific country does not necessarily lead to the deployment of suicide bombings as a tactical strategy. This should lead to continued research looking at both of these theories. Given the limited support for these theories, it may be the case that a simpler explanation carries more weight. Moghadam (2006; 2008) has argued that globalization and religion have both played a part in the proliferation of suicide bombings and this research has generally supported these two arguments. Rather than continuing to test the same theories, I believe it might be important to focus our attention on the religious aspect of suicide

bombings to see whether it is religion in general, as some studies have found (Henne, 2012) or whether it is a specific strand of Islam, as Moghadam (2008) has argued.

There was also no support for the limited research on collectivism and internally displaced persons (IDPs) and suicide terrorism. Choi and Piazza (2015) found a relationship between IDPs and suicide terrorism, with human rights violation as the main mediating factor that was consistently significant across model specifications. My results may differ from those of Choi and Piazza (2016) because the relationship between IDPs and terorrism more generally might be just as important. Since Choi and Piazza (2016) did not include a comparison group of non-suicide attacks, they were unable to determine whether their results were unique to suicide bombings. My results indicate that this is not the case. As for collectivism, Pedahzur (2005) theorized that there was an important relationship between the societal structure and where the individual fits into that structure. Braun and Genkin (2014) also found support for Pedahzur's (2005) theorized relationship, looking at the level of collectivism as ascribed to specific terrorist organizations. Since this dissertation includes attacks that were not ascribed to a specific organization, this may have led to the diverging findings. It is my hope that researchers do not abandon these factors, as they could still prove to be important with better measurement and a better understanding about how they are actually related to the use of suicide bombings in specific countries or conflicts.

As for policy implications, this research was a first step towards a clearer understanding of how terrorist tactics are deployed more generally. This dissertation developed a profile of suicide bombings that policy makers can use when they are looking at ways to limit the use of this tactic or ways to harden targets from being victimized by

these types of attacks. While this profile of suicide bombings is in no way a complete picture of when, where, and how the tactic is used, it should serve as a starting point for future research as well as a starting point for some general situations and contexts under which suicide bombings are more likely to occur. Policy makers could use this profile to understand the larger context under which suicide bombings occur, helping them to identify the likelihood of a suicide bombing campaign occurring as new conflicts in different countries crop up. At the micro-level of analysis, policy makers could use this profile to understand what targets needs to be hardened and what types of entities are more likely to be targeted with suicide bombings. Practitioners could also use this profile to understand how to limit the effectiveness of the suicide bombings against their personnel. I now address ways to improve upon this profile as well as avenues for creating profiles for other relevant terrorist tactics.

FUTURE RESEARCH

This dissertation leads in several different directions for a future research agenda in this area. First, I hope to improve upon the analyses conducted above. The first way to accomplish this is to include group-level characteristics and variables into the analysis. While this would exclude a large number of cases, it would allow us to begin to gain a fuller understanding of how some of the relationships noted in this dissertation might change and differ when only attacks with a known terrorist organization are analyzed. I believe that group-level characteristics could hold a large amount of explanatory power.

A second direction for future research is to simply improve upon the research conducted in this dissertation by collecting more and better country-year and country-level data. As I discussed above, a number of the dichotomous variables could be transformed

and their results may be more meaningful at that point. There are also other important country-level variables that may have not yet been considered by theorists or previous researchers. Further examination of other country-level studies in terrorism and homicide may provide insights into other relevant variables.

The third direction for future research is further study of other terrorist tactics using the same analytical strategy as was used above. Now that this dissertation has explored the relationship between vehicle bombings and suicide bombings, more attention can be paid to how vehicle bombings is unique in its own ways. Future researchers can start to compare vehicle bombings with other forms of terorrism and a whole area of theory and empirical research can be built around this tactic, which is used more frequently than suicide bombings and is more lethal than other tactics of terrorism. Furthermore, as suicide bombings were split into vehicle and non-vehicle, a similar approach can be taken with NSV bombings. Vehicle bombings can be separated into two categories: sticky bombs or bombs placed inside a target's vehicle; and those where the vehicle appears to have been in control of the group or individual prior to the attack. This split could highlight important differences in how vehicle bombings are deployed as a terrorist tactic.

The fourth direction for future research is a further development of the different categories of suicide bombings. Are there other important categorizations of suicide bombings that could yield different results? Are there other variables that might distinguish different types of suicide bombing strategies from each other but that are not important in the larger comparisons with non-suicide vehicle bombings or other terrorist attacks? Future research should continue to become even more fine-grained to better develop these profiles for the different types of suicide bombings and other tactics as well.

Finally, future research could use this profile to begin to assess the vulnerabilities of specific targets, as was described by Clarke and Newman (2006). They argued that policymakers create a worksheet to assess the vulnerabilities of specific targets in a specific city to a specific tactic (Clarke and Newman, 2006). As one example, researchers could use this approach to assess whether specific airports in the United States or abroad are particularly vulnerable to suicide bombings or any other tactic for which a profile has been developed. This type of analysis can also be applied to vulnerabilities of different religious institutions across a state, military bases in a country, train stations along a specific route, etc. This can also be done by comparing the vulnerabilities of different types of targets within a city, such as New York City, London, or Paris. For example, vulnerabilities in Washington, D.C. can be assessed comparing the Washington Monument, the Metro Center subway station, the Metropolitan Police Department First District Headquarters, etc. Once a profile is created for a tactic, it can be compared to any targets to assess the vulnerabilities.

CONCLUSIONS

This research highlights the importance of thinking of the nested nature of terrorist attacks more generally. Whether looking at suicide bombings, vehicle bombings, or any other relevant tactic of terrorism, it is important to understand the ways that these attacks are nested within countries or conflicts. The results of this dissertation showed that the majority of the variation in the use of suicide bombings was at the country-level rather than the attack-level. It is important to see whether this is relevant with other terrorist tactics as well.

At the end of the day, it is highly unlikely that suicide terrorism will disappear completely, given the growing use of the tactic. However, there are clearly ways that this tactic is unique from other forms of terrorism. Understanding this uniqueness is key to limiting the effectiveness of the tactic as a whole. This may, in turn, decrease the use of the tactic more generally. As I described throughout the document, suicide bombings are devastatingly lethal and are becoming more of a global phenomenon with each passing year. Even as new and innovative tactics are deployed by terrorist organizations and individuals, such as the increase in the use of vehicles as a weapon in and of themselves,[118] suicide bombings still remain a top security concern. Early returns from 2016 show that suicide bombings have reached a new yearly high, now peaking at 970 attacks.[119] This represents an additional 67[120] suicide bombings, or 7.4 percent more attack, when compared to 2015, even as the overall number of terrorist attacks decreased.[121] As this tactic continues to be a global concern, it is important that we understand how, where, and when this tactic is being used. This dissertation was a first step in this direction, but further research is still needed to better understand this phenomenon and how it compares to other tactics of terrorism.

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[118] Recent examples include the Bastille Day attack in Nice on July 14, 2016, the Ohio State University attack in Columbus on November 28, 2016, the Christmas market attack in Berlin on December 19, 2016, the Westminster Bridge attack in London on March 22, 2017, and the Drottninggatan attack in Stockholm, Sweden on April 7, 2017.

[119] These results are considered preliminary as the 2016 data have not yet been finalized nor has it been released to the public.

[120] Remember that the previous high was 903, which was recorded in 2015.

[121] Once again, these numbers for 2016 are preliminary.

Appendices

APPENDIX A1. List of International Coalitions

International Coalition	Countries
African Union Mission in Somalia (AMISOM)	Burundi, Djibouti, Ethiopia, Ghana, Kenya, Nigeria, Sierra Leone, Uganda
African Union Multinational Force for Central Africa (FOMAC)	Cameroon, Chad, Equatorial Guinea, Gabon, Republic of the Congo
African Union Mission in Sudan (AMIS)	Gambia, Kenya, Nigeria, Rwanda, Senegal, South Africa
African Union/United Nations Hybrid operation in Darfur (UNAMID)	Bangladesh, Burkina Faso, Burundi, Cambodia, Cameroon, China, Djibouti, Ecuador, Egypt, Ethiopia, Gambia, Germany, Ghana, Indonesia, Iran, Jamaica, Jordan, Kenya, Kyrgyzstan, Lesotho, Madagascar, Malawi, Malaysia, Mali, Mongolia, Namibia, Nepal, Nigeria, Pakistan, Papua New Guinea, Peru, Rwanda, Samoa, Senegal, Sierra Leone, South Africa, South Korea, Tanzania, Thailand, Togo, Tunisia, Turkey, Yemen, Zambia, Zimbabwe
African-led International Support Mission to the Central African Republic (MISCA)	Burkina Faso, Burundi, Cameroon, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Ivory Coast, Republic of the Congo, Rwanda, Senegal
Economic Community of West African States Monitoring Group (ECOMOG)	Burkina Faso, Gambia, Guinea, Liberia, Mali, Niger, Nigeria, Sierra Leone
European Rapid Operational Force (Eurofor)	France, Italy, Portugal, Spain
European Union (EU) Task Force for Greece	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

European Union Force RCA (EUFOR RCA)	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom
European Union Naval Force Somalia (EUNAVFOR)	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Ukraine, United Kingdom
European Union Rule of Law Mission in Kosovo (EULEX)	Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States
International Force for East Timor (INTERFET)	Australia, Bangladesh, Brazil, Canada, Denmark, Egypt, France, Germany, Ireland, Italy, Jordan, Kenya, Malaysia, New Zealand, Norway, Philippines, Portugal, Singapore, South Korea, Thailand, United Kingdom, United States
Multi-National Force – Iraq (MNF-I)	Albania, Armenia, Australia, Azerbaijan, Bosnia-Herzegovina, Bulgaria, Czech Republic, Denmark, Dominican Republic, El Salvador, Estonia, Georgia, Honduras, Hungary, Italy, Japan, Kazakhstan, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Netherlands, New Zealand, Nicaragua, Norway, Philippines, Poland, Portugal, Republic of Korea, Romania, Slovakia, Spain, Thailand, Tonga, Ukraine, United Kingdom, United States
Multinational Force and Observers (MFO)	Australia, Canada, Colombia, Czech Republic, Fiji, France, Italy, New Zealand, Norway, United Kingdom, United States, Uruguay
Multinational Force in Lebanon (MNF)	France, Italy, United Kingdom, United States
Multinational Joint Task Force (MNJTF)	Benin, Cameroon, Chad, Niger, Nigeria
North Atlantic Treaty Organization (NATO):	Albania, Armenia, Australia, Austria, Azerbaijan, Belgium, Bosnia-Herzegovina, Bulgaria, Canada,

International Security Assistance Force (ISAF)	Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Jordan, Latvia, Lithuania, Luxembourg, Macedonia, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Singapore, Slovakia, Slovenia, Spain, Sweden, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States
North Atlantic Treaty Organization (NATO): Kosovo Force (KFOR)	Albania, Argentina, Armenia, Austria, Azerbaijan, Belgium, Bosnia-Herzegovina, Bulgaria, Canada, Chile, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, India, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malaysia, Moldova, Mongolia, Morocco, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States
North Atlantic Treaty Organization (NATO): Operation Resolute Support	Albania, Armenia, Australia, Austria, Azerbaijan, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, Georgia, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Mongolia, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey, Ukraine, United Kingdom, United States
North Atlantic Treaty Organization (NATO): Stabilization Force (SFOR)	Albania, Argentina, Austria, Australia, Belgium, Bulgaria, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Morocco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Turkey, United Kingdom, United States
Operation Restoring Hope	Bahrain, Egypt, Jordan, Kuwait, Morocco, Qatar, Saudi Arabia, Sudan, United Arab Emirates
Organization for Security and Cooperation in Europe (OSCE): Kosovo Verification Mission (KVM)	Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States

Organization for Security and Cooperation in Europe (OSCE): Special Monitoring Mission to Ukraine (SMM)	Albania, Armenia, Austria, Belarus, Belgium, Bosnia-Herzegovina, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States
Sri Lanka Monitoring Mission (SLMM)	Denmark, Finland, Iceland, Norway, Sweden
Temporary International Presence in Hebron (TIPH)	Denmark, Italy, Norway, Sweden, Switzerland, Turkey
United Nations Advance Mission in Cambodia (UNAMIC)	Algeria, Argentina, Australia, Austria, Belgium, Canada, China, France, Germany, Ghana, India, Indonesia, Ireland, Malaysia, New Zealand, Pakistan, Poland, Russia, Senegal, Thailand, Tunisia, United Kingdom, United States, Uruguay
United Nations Assistance Mission for Rwanda (UNAMIR)	Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Canada, Chad, Djibouti, Egypt, Ethiopia, Fiji, Germany, Ghana, Guinea, Guinea-Bissau, Guyana, India, Jordan, Kenya, Malawi, Mali, Netherlands, Niger, Nigeria, Pakistan, Poland, Republic of the Congo, Romania, Russia, Senegal, Slovakia, Spain, Switzerland, Togo, Tunisia, United Kingdom, Uruguay, Zambia, Zimbabwe
United Nations Disengagement Observer Force (UNDOF)	Bhutan, Fiji, India, Ireland, Nepal, Netherlands
United Nations Force Intervention Brigade (FIB)	Malawi, South Africa, Tanzania
United Nations Interim Administration Mission in Kosovo (UNMIK)	Argentina, Austria, Bangladesh, Belgium, Benin, Bolivia, Brazil, Bulgaria, Canada, Chile, China, Croatia, Czech Republic, Denmark, Dominican Republic, Egypt, Estonia, Fiji, Finland, France, Germany, Ghana, Greece, Hungary, Iceland, India, Ireland, Italy, Jordan, Kenya, Kyrgyzstan, Lithuania, Malawi, Malaysia, Mauritius, Nepal, Netherlands, New Zealand, Niger, Nigeria, Norway, Pakistan, Philippines, Poland, Portugal, Romania, Russia, Senegal, Slovenia, Spain, Sweden,

	Switzerland, Tunisia, Turkey, Uganda, Ukraine, United Kingdom, United States, Zambia, Zimbabwe
United Nations Interim Force in Lebanon (UNIFIL)	Armenia, Austria, Bangladesh, Belarus, Belgium, Brazil, Brunei, Cambodia, China, Croatia, Cyprus, El Salvador, Estonia, Fiji, Finland, France, Germany, Ghana, Greece, Guatemala, Hungary, India, Indonesia, Ireland, Italy, Kenya, Macedonia, Malaysia, Mexico, Nepal, Nigeria, Qatar, Serbia, Sierra Leone, Slovenia, South Korea, Spain, Sri Lanka, Tanzania, Turkey
United Nations Interim Security Force for Abyei (UNISFA)	Benin, Brazil, Burkina Faso, Burundi, Cambodia, Ecuador, Ethiopia, Ghana, Guatemala, Guinea, India, Indonesia, Kyrgyzstan, Malawi, Malaysia, Mali, Mongolia, Namibia, Nepal, Nigeria, Russia, Rwanda, Sri Lanka, Tanzania, Ukraine, Yemen, Zimbabwe
United Nations International Police Task Force (IPTF)	Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia-Herzegovina, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Moldova, Monaco, Mongolia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Turkey, Turkmenistan, Ukraine, United Kingdom, United States, Uzbekistan, Vatican City
United Nations Iraq-Kuwait Observation Mission (UNIKOM)	Argentina, Austria, Bangladesh, Canada, Chile, China, Denmark, Fiji, Finland, France, Germany, Ghana, Greece, Hungary, India, Indonesia, Ireland, Italy, Kenya, Malaysia, Nigeria, Norway, Pakistan, Poland, Romania, Russia, Singapore, Soviet Union, Sweden, Switzerland, Thailand, Turkey, United Kingdom, United States, Uruguay, Venezuela
United Nations Mission for the Referendum in Western Sahara (MINURSO)	Argentina, Australia, Austria, Bangladesh, Canada, China, Egypt, France, Ghana, Greece, Guinea, Ireland, Italy, Kenya, Malaysia, Nigeria, Pakistan, Peru, Poland, Russia, Switzerland, Tunisia, United Kingdom, United States Venezuela
United Nations Mission in Bosnia and Herzegovina (UNMIBH)	Argentina, Austria, Bangladesh, Bulgaria, Canada, Chile, China, Czech Republic, Denmark, Egypt, Estonia, Fiji, Finland, France, Germany, Ghana, Greece, Hungary, Iceland, India, Indonesia, Ireland, Italy, Jordan, Kenya, Lithuania, Malaysia, Nepal, Netherlands, Nigeria,

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	Norway, Pakistan, Poland, Portugal, Romania, Russia, Senegal, Spain, Sweden, Switzerland, Thailand, Turkey, Tunisia, Ukraine, United Kingdom, United States, Vanuatu
United Nations Mission in Central African Republic and Chad (MINURCAT)	Albania, Austria, Bangladesh, Benin, Bolivia, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, Croatia, Democratic Republic of the Congo, Denmark, Ecuador, Egypt, Ethiopia, Finland, France, Gabon, Gambia, Ghana, Guinea, Ireland, Italy, Ivory Coast, Jordan, Kenya, Kyrgyzstan, Libya, Madagascar, Malawi, Mali, Mongolia, Namibia, Nepal, Niger, Nigeria, Norway, Pakistan, Paraguay, Poland, Portugal, Russia, Rwanda, Senegal, Serbia, Spain, Sri Lanka, Sweden, Togo, Tunisia, Turkey, Uganda, United States, Uruguay, Yemen, Zambia
United Nations Mission in East Timor (UNAMET)	Argentina, Australia, Austria, Bangladesh, Brazil, Canada, Denmark, Egypt, Ghana, Ireland, Italy, Japan, Jordan, Malaysia, Mozambique, Nepal, New Zealand, Pakistan, Philippines, Portugal, Russia, Senegal, South Korea, Spain, Sweden, Thailand, United Kingdom, United States, Uruguay, Zimbabwe
United Nations Mission in Haiti (UNMIH)	Algeria, Antigua and Barbuda, Argentina, Austria, Bahamas, Bangladesh, Barbados, Belize, Benin, Canada, Djibouti, France, Guatemala, Guinea Bissau, Guyana, Honduras, India, Ireland, Jamaica, Jordan, Mali, Nepal, Netherlands, New Zealand, Pakistan, Philippines, Russia, Saint Kitts and Nevis, Saint Lucia, Suriname, Togo, Trinidad and Tobago, Tunisia, United States
United Nations Mission in Sierra Leone (UNAMSIL)	Australia, Bangladesh, Bolivia, Cameroon, Canada, China, Croatia, Egypt, Gambia, Germany, Ghana, Guinea, India, Indonesia, Jordan, Kenya, Kyrgyzstan, Malawi, Malaysia, Mauritius, Namibia, Nepal, Niger, Nigeria, Norway, Pakistan, Russia, Senegal, Slovakia, Sri Lanka, Sweden, Tanzania, Turkey, Ukraine, United Kingdom, United States, Uruguay, Zambia, Zimbabwe
United Nations Mission in the Republic of South Sudan (UNMISS)	Albania, Argentina, Australia, Bangladesh, Benin, Bhutan, Bolivia, Bosnia-Herzegovina, Brazil, Cambodia, Canada, China, Denmark, East Timor, Egypt, El Salvador, Ethiopia, Fiji, Germany, Ghana, Guatemala, Guinea, India, Indonesia, Japan, Jordan, Kenya, Kyrgyzstan, Mongolia, Namibia, Nepal, Netherlands, New Zealand, Nigeria, Norway, Paraguay, Peru, Poland, Romania, Russia, Rwanda, Samoa, Senegal, Sierra Leone, South Africa, South Korea, Sri Lanka, Sweden,

	Switzerland, Tanzania, Togo, Turkey, Uganda, Ukraine, United Kingdom, United States, Vietnam, Yemen, Zambia
United Nations Mission of Observers in Tajikistan (UNMOT)	Austria, Bangladesh, Bulgaria, Czech Republic, Denmark, Ghana, Hungary, Indonesia, Jordan, Nepal, Nigeria, Poland, Switzerland, Ukraine, Uruguay
United Nations Missions in Sudan (UNMIS)	Argentina, Australia, Bangladesh, Belgium, Benin, Bolivia, Bosnia-Herzegovina, Brazil, Burkina Faso, Cambodia, Canada, China, Croatia, Ecuador, Egypt, El Salvador, Ethiopia, Fiji, Finland, Gambia, Germany, Ghana, Greece, Guatemala, Guinea, India, Indonesia, Jamaica, Japan, Jordan, Kenya, Kyrgyzstan, Malaysia, Mali, Moldova, Mongolia, Namibia, Nepal, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Paraguay, Peru, Philippines, Poland, Romania, Russia, Rwanda, Samoa, Sierra Leone, South Korea, Sri Lanka, Sweden, Switzerland, Tanzania, Thailand, Turkey, Uganda, Ukraine, United Kingdom, United States, Yemen, Zambia, Zimbabwe
United Nations Multidimensional Integrated Stabilization Mission in Mali (MINUSMA)	Bangladesh, Benin, Bhutan, Bosnia-Herzegovina, Burkina Faso, Burundi, Cambodia, Cameroon, Chad, China, Denmark, Djibouti, Democratic Republic of the Congo, Egypt, El Salvador, Estonia, Finland, France, Gambia, Germany, Ghana, Guinea, Guinea-Bissau, Indonesia, Italy, Ivory Coast, Jordan, Kenya, Liberia, Madagascar, Mauritania, Nepal, Netherlands, Niger, Nigeria, Norway, Portugal, Romania, Rwanda, Senegal, Sierra Leone, Sweden, Switzerland, Togo, Tunisia, Turkey, United Kingdom, United States, Yemen
United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA)	Bangladesh, Benin, Bhutan, Bolivia, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, Czech Republic, Djibouti, Democratic Republic of the Congo, Egypt, France, Gabon, Ghana, Guatemala, Guinea, Hungary, Indonesia, Ivory Coast, Jordan, Kenya, Madagascar, Mali, Mauritania, Moldova, Morocco, Nepal, Niger, Nigeria, Pakistan, Paraguay, Peru, Republic of the Congo, Romania, Rwanda, Senegal, Serbia, Sri Lanka, Thailand, Tunisia, Turkey, United States, Vietnam, Yemen, Zambia
United Nations Observer Group in Central America (ONUCA)	Argentina, Brazil, Canada, Colombia, Ecuador, India, Ireland, Spain, Sweden, Venezuela, West Germany

United Nations Observer Mission in Angola (MONUA)	Argentina, Bangladesh, Bolivia, Brazil, Bulgaria, Egypt, France, Gambia, Ghana, Guinea Bissau, Hungary, India, Jordan, Kenya, Malaysia, Mali, Namibia, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Poland, Portugal, Republic of the Congo, Romania, Russia, Senegal, Slovakia, Spain, Sweden, Tanzania, Ukraine, Uruguay, Zambia, Zimbabwe
United Nations Observer Mission in El Salvador (ONUSAL)	Argentina, Austria, Brazil, Canada, Chile, Colombia, Ecuador, France, Guyana, India, Ireland, Italy, Mexico, Norway, Spain, Sweden, Venezuela
United Nations Observer Mission in Georgia (UNOMIG)	Czech Republic, Germany, Ghana, Hungary, India, Israel, Philippines, Poland, Russia, Sweden, Switzerland, Ukraine
United Nations Observer Mission Uganda-Rwanda (UNOMUR)	Bangladesh, Botswana, Brazil, Canada, Hungary, Netherlands, Senegal, Slovakia, Zimbabwe
United Nations Operation in Burundi (ONUB)	Algeria, Bangladesh, Belgium, Benin, Bolivia, Burkina Faso, Cameroon, Chad, China, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guatemala, Guinea, India, Jordan, Kenya, Kyrgyzstan, Madagascar, Malawi, Malaysia, Mali, Mozambique, Namibia, Nepal, Netherlands, Niger, Nigeria, Pakistan, Paraguay, Peru, Philippines, Portugal, Romania, Russia, Senegal, Serbia-Montenegro, South Africa, South Korea, Spain, Sri Lanka, Thailand, Togo, Tunisia, Turkey, Uruguay, Yemen, Zambia
United Nations Operation in Côte d'Ivoire (UNOCI)	Argentina, Bangladesh, Benin, Bolivia, Brazil, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, China, Djibouti, Democratic Republic of the Congo, Ecuador, Egypt, El Salvador, Ethiopia, France, Gambia, Ghana, Guatemala, Guinea, India, Ireland, Jordan, Kazakhstan, Madagascar, Malawi, Mauritania, Moldova, Morocco, Namibia, Nepal, Niger, Nigeria, Pakistan, Paraguay, Peru, Poland, Romania, Russia, Rwanda, Senegal, Serbia, South Korea, Spain, Switzerland, Togo, Tunisia, Turkey, Uganda, Ukraine, Uruguay, Vanuatu, Yemen, Zambia, Zimbabwe
United Nations Operation in Somalia I (UNOSOM I)	Australia, Austria, Bangladesh, Belgium, Canada, Czechoslovakia, Egypt, Fiji, Finland, Indonesia, Jordan, Morocco, New Zealand, Norway, Pakistan, Zimbabwe
United Nations Operation in Somalia II (UNOSOM II)	Australia, Bangladesh, Belgium, Botswana, Canada, Egypt, France, Germany, Ghana, Greece, India, Indonesia, Ireland, Italy, Kuwait, Malaysia, Morocco,

	Nepal, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Philippines, Romania, Saudi Arabia, South Korea, Sweden, Tunisia, Turkey, United Arab Emirates, United States, Zambia, Zimbabwe
United Nations Operations in Mozambique (UNOMOZ)	Argentina, Australia, Austria, Bangladesh, Bolivia, Botswana, Brazil, Canada, Cape Verde, China, Czech Republic, Egypt, Finland, Ghana, Guinea Bissau, Guyana, Hungary, India, Indonesia, Ireland, Italy, Japan, Jordan, Malaysia, Nepal, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Portugal, Russia, Spain, Sri Lanka, Sweden, Switzerland, Togo, United States, Uruguay, Zambia
United Nations Organization Mission in the Democratic Republic of the Congo (MONUC)	Algeria, Argentina, Bangladesh, Belgium, Benin, Bolivia, Bosnia-Herzegovina, Burkina Faso, Cameroon, Canada, Central African Republic, Chad, Chile, China, Czech Republic, Denmark, Egypt, El Salvador, France, Ghana, Guatemala, Guinea, India, Indonesia, Ireland, Italy, Ivory Coast, Jordan, Kenya, Libya, Madagascar, Malawi, Malaysia, Mali, Mongolia, Morocco, Mozambique, Nepal, Netherlands, Niger, Nigeria, Norway, Pakistan, Paraguay, Peru, Portugal, Romania, Russia, Senegal, Serbia, Serbia and Montenegro, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Tanzania, Togo, Tunisia, Turkey, Ukraine, United Kingdom, United States, Uruguay, Vanuatu, Yemen, Zambia
United Nations Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO)	Bangladesh, Belgium, Benin, Bolivia, Bosnia-Herzegovina, Brazil, Burkina Faso, Cameroon, Canada, Chad, China, Czech Republic, Egypt, France, Ghana, Guatemala, Guinea, India, Indonesia, Ireland, Ivory Coast, Jordan, Kenya, Madagascar, Malawi, Malaysia, Mali, Mongolia, Morocco, Nepal, Niger, Nigeria, Pakistan, Paraguay, Peru, Poland, Romania, Russia, Senegal, Serbia, South Africa, Sri Lanka, Sweden, Switzerland, Tanzania, Togo, Tunisia, Turkey, Ukraine, United Kingdom, United States, Uruguay, Yemen, Zambia
United Nations Protection Force (UNPROFOR)	Argentina, Australia, Bangladesh, Belgium, Brazil, Canada, Colombia, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Ghana, India, Indonesia, Ireland, Italy, Jordan, Kenya, Lithuania, Luxembourg, Malaysia, Nepal, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Poland, Portugal,

	Russia, Slovakia, Spain, Sweden, Switzerland, Tunisia, Turkey, Ukraine, United Kingdom, United States
United Nations Special Commission (UNSCOM)	Australia, Austria, Belgium, Canada, China, Czech Republic, Finland, France, Germany, Indonesia, Italy, Japan, Netherlands, Nigeria, Norway, Poland, Russia, Sweden, United Kingdom, United States, Venezuela
United Nations Stabilization Mission in Haiti (MINUSTAH)	Argentina, Benin, Bolivia, Bosnia-Herzegovina, Brazil, Burkina Faso, Cameroon, Canada, Chad, Chile, China, Croatia, Ecuador, Egypt, El Salvador, France, Ghana, Guatemala, Guinea, Jordan, Malaysia, Mali, Mauritius, Morocco, Nepal, Niger, Nigeria, Pakistan, Paraguay, Peru, Philippines, Romania, Russia, Senegal, Sierra Leone, Spain, Sri Lanka, Togo, Turkey, United States, Uruguay, Vanuatu, Yemen, Zambia
United Nations Supervision Mission in Syria (UNSMIS)	Armenia, Bangladesh, Benin, Brazil, Burkina Faso, Burundi, Cambodia, Chad, China, Croatia, Czech Republic, Denmark, Ecuador, Egypt, Fiji, Finland, France, Ghana, Indonesia, Ireland, Italy, Jordan, Kenya, Kyrgyzstan, Mauritania, Morocco, Nepal, Netherlands, New Zealand, Niger, Nigeria, Norway, Paraguay, Philippines, Romania, Russia, Senegal, Slovenia, Switzerland, Togo, Yemen, Zimbabwe
United Nations Transition Assistance Group (UNTAG)	Australia, Austria, Bangladesh, Barbados, Belgium, Canada, China, Costa Rica, Czechoslovakia, Denmark, East Germany (GDR), Egypt, Fiji, Finland, France, Ghana, Greece, Guyana, Hungary, India, Indonesia, Ireland, Italy, Jamaica, Japan, Kenya, Malaysia, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Panama, Peru, Poland, Portugal, Republic of the Congo, Singapore, Spain, Sudan, Sweden, Switzerland, Thailand, Togo, Trinidad and Tobago, Tunisia, Soviet Union, United Kingdom, West Germany, Yugoslavia
United Nations Transition Mission in Haiti (UNTMIH)	Argentina, Benin, Canada, France, India, Mali, Niger, Pakistan, Senegal, Togo, Tunisia, United States
United Nations Transitional Administration in East Timor (UNTAET)	Argentina, Australia, Austria, Bangladesh, Benin, Bolivia, Bosnia-Herzegovina, Brazil, Canada, Chile, China, Denmark, Egypt, Fiji, Gambia, Ghana, Ireland, Japan, Jordan, Kenya, Malaysia, Mozambique, Namibia, Nepal, New Zealand, Niger, Nigeria, Norway, Pakistan, Philippines, Portugal, Russia, Samoa, Senegal, Singapore, Slovakia, Slovenia, South Korea, Spain, Sri

	Lanka, Sweden, Thailand, Turkey, Ukraine, United Kingdom, United States, Uruguay, Vanuatu, Zimbabwe
United Nations Transitional Authority in Cambodia (UNTAC)	Algeria, Argentina, Australia, Austria, Bangladesh, Belgium, Brunei, Bulgaria, Cameroon, Canada, Chile, China, Colombia, Egypt, Fiji, France, Germany, Ghana, Hungary, India, Indonesia, Ireland, Italy, Japan, Jordan, Kenya, Malaysia, Morocco, Namibia, Nepal, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Philippines, Poland, Russia, Senegal, Sweden, Thailand, Tunisia, United Kingdom, United States, Uruguay
United Nations Truce Supervision Organization (UNTSO)	Argentina, Australia, Austria, Belgium, Bhutan, Canada, Chile, China, Denmark, Estonia, Fiji, Finland, France, Ireland, Nepal, Netherlands, New Zealand, Norway, Russia, Serbia, Slovakia, Slovenia, Sweden, Switzerland, United States
United Nations Verification Mission in Guatemala (MINUGUA)	Argentina, Australia, Austria, Brazil, Canada, Ecuador, Germany, Norway, Russia, Singapore, Spain, Sweden, Ukraine, United States, Uruguay, Venezuela
West-East Economic Summit	Belarus, Canada, Czechoslovakia, France, Germany, Hungary, Italy, Japan, Kazakhstan, Poland, Russia, Ukraine, United Kingdom, United States, Uzbekistan

APPENDIX A2. List of International Coalitions

INGO/IGO	Headquarters
Action Against Hunger (ACF)	New York, United States
Afghanaid	London, United Kingdom
Aga Khan Foundation	Geneva, Switzerland
Agency for Aerial Navigation Safety in Africa and Madagascar (ASECNA)	Dakar, Senegal
Agency for Technical Cooperation and Development (ACTED)	Paris, France
Agha Khan Development Network (AKDN)	Geneva, Switzerland
Al-Furqan Relief	Oslo, Norway
American Education and Training Organisation (AMIDEAST)	Washington D.C., United States
Amnesty International	London, United Kingdom
Andean Development Corporation (CAF) - Development Bank of Latin America	Caracas, Venezuela
Argos Energy International	Austin, United States
Behbood-e-Niswan Network (BNN)	Faisalabad, Pakistan
Biological Science Club (BScC)/World Wide Fund for Nature (WWF)	Gland, Switzerland Indonesia
CARE Australia	Canberra, Australia
CARE International	Chatelaine, Switzerland
Carter Center	Atlanta, United States
Catholic Relief Services (CRS)	Baltimore, United States
Central Bank of West African States (BCEAO)	Dakar, Senegal
Charity Children Foundation Inc. (CCFI)	Washington D.C., United States
Common Organization for the Control of Desert Locusts and Bird Pests (OCLALAV)	Dakar, Senegal
Concern Worldwide	Dublin, Ireland
Conservation International (CI)/Propeten	Arlington, United States Calle Central, Guatemala
Coordination of Humanitarian Assistance (CHA)	Kabul, Afghanistan
CZN Consortium	Melbourne, Australia London, United Kingdom

	Baare, Switzerland
Danish Committee for Aid to Afghan Refugees (DACAAR)	Denmark
Development Alternative Incorporated (DAI)	Washington D.C., United States
Diocesan Health Coordination Office (CODIS)	France
Doctors of the World	New York, United States
Doctors without Borders	Geneva, Switzerland
Ecobank	Lome, Togo
Eurojust	The Hague, Netherlands
European Commission (EC)	Brussels, Belgium
European Community Humanitarian Aid Office (ECHO)	Brussels, Belgium
European Economic Community (EEC)	Brussels, Belgium
European Investment Bank	Luxembourg, Luxembourg
European Space Agency (ESA)	Paris, France
European Union (EU)	Brussels, Belgium
European Union (EU) Election Observation Mission to Burundi	Brussels, Belgium
European Union Police Mission in Afghanistan (EUPOL Afghanistan)	Brussels, Belgium
European Union Training Mission in Mali	Brussels, Belgium
Foreign Press Association (FPA)	New York, United States
Global Strategies Group	London, United Kingdom
GOAL Aid Agency	Dun Laoghaire, Ireland
Halo Trust	London, United Kingdom
Handicap International	Lyon, France
HART International	Dubai, United Arab Emirates
Helping Hand	Islamabad, Pakistan
Helvetas	Switzerland
Himilo Relief and Development Association (HIRDA)	Amsterdam, Netherlands
Ibero-American Summit	Madrid, Spain

ICF(NFI)	France
Instituto Cultural Peruano Norteamericano (ICPNA)	Lima, Peru
Interchurch Organization for Development Cooperation (ICCO)	Utrecht, Netherlands
International Aid Services (IAS)	Stockholm, Sweden
International Assistance Mission (IAM)	Geneva, Switzerland
International Catholic Migration Commission (ICMC)	Geneva, Switzerland
International Civil Aviation Organization (ICAO)	Montreal, Canada
International Committee of the Red Cross (ICRC)	Geneva, Switzerland
International Criminal Police Organization (INTERPOL)	Lyon, France
International Federation of the Red Cross and Red Crescent (IFRC)	Vernier, Switzerland
International Medical Corps (IMC)	Los Angeles, United States
International Organization for Migration (IMO)	Geneva, Switzerland
International Relief and Development	Arlington, United States
International Rescue Committee (IRC)	New York, United States
INTERSOS	Rome, Italy
Islamic Relief Organization	Jeddah, Saudi Arabia
Movement for Peace, Disarmament, and Freedom (MPDL)	Madrid, Spain
North Atlantic Treaty Organization (NATO)	Brussels, Belgium
Norwegian People's Aid	Oslo, Norway
Norwegian Refugee Council (NRC)	Oslo, Norway
Office of the United Nations High Commissioner for Human Rights (OHCHR)	Geneva, Switzerland
Olive Security	London, United Kingdom
Operation Blessing International Relief and Development Corporation	Virginia Beach, United States
Operation Lifeline Sudan (OLS)	New York, United States
Organisation of African Unity (OAU)	Addis Ababa, Ethiopia
Organization for Security and Cooperation in Europe (OSCE)	Vienna, Austria

Organization for the Prohibition of Chemical Weapons (OPCW)	The Hague, Netherlands
Organization of American States (OAS)	Washington D.C., United States
Oxfam	Oxford, United Kingdom
People In Need (PIN)	Prague, Czech Republic
Roots of Peace	California, United States
Save the Children	London, United Kingdom
Shelter For Life International	Minnetonka, United States
Skanska	Stockholm, Sweden
Solidarity	Clichy La Garenne, France
South Asia Foundation	New Delhi, India
South Asian Association for Regional Cooperation (SAARC)	Kathmandu, Nepal
Special Emergency Response and Assistance (SERA)	Indiana, United States
Sterling Global Operation Incorporated	Lenoir City, United States
Swedish Committee for Afghanistan (SCA)	Stockholm, Sweden
The Experiment in International Living	Brattleboro, United States
Trocaire	Ireland
United Nations (UN)	New York, United States
United Nations (UN) Chemical Weapons Investigation Team	New York, United States
United Nations Assistance Mission in Afghanistan (UNAMA)	New York, United States
United Nations Children's Fund (UNICEF)	New York, United States
United Nations Department of Safety and Security (UNDSS)	New York, United States
United Nations Development Programme (UNDP)	New York, United States
United Nations Educational, Scientific and Cultural Organization (UNESCO)	Paris, France
United Nations Environment Programme (UNEP)	Nairobi, Kenya
United Nations Food and Agriculture Organization (FAO)	Rome, Italy
United Nations High Commissioner for Refugees (UNHCR)	Geneva, Switzerland

United Nations International Fund for Agriculture and Development (IFAD)	Rome, Italy
United Nations International Organization for Migration (IOM)	Geneva, Switzerland
United Nations Millennium Development Goals	New York, United States
United Nations Mine Action Service (UNMAS)	New York, United States
United Nations Mission for Iraq (UNAMI)	New York, United States
United Nations Office for Project Services (UNOPS)	Copenhagen, Denmark
United Nations Office for the Coordination of Humanitarian Affairs (OCHA)	New York, United States
United Nations Office on Drugs and Crime (UNODC)	Vienna, Austria
United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA)	Amman, Jordan Gaza City, Palestine
United Nations Support Mission in Libya (UNSMIL)	New York, United States
United Nations World Food Programme (WFP)	Rome, Italy
US-Based NGO	United States
World Bank	Washington D.C., United States
World Concern	Seattle, United States
World Health Organization (WHO)	Geneva, Switzerland
World Relief	New York, United States
World Vision International	Uxbridge, United Kingdom
World Wildlife Fund (WWF)	Gland, Switzerland
Xstrata	Zug, Switzerland

APPENDIX B. List of Foreign Occupations (1980-2015)

Occupier	Occupied	Start	End
Soviet Union	Lithuania	1944	1991
Soviet Union	Latvia	1944	1991
Soviet Union	Estonia	1944	1991
Soviet Union	Japan	1945	Ongoing
Soviet Union	Hungary	1945	1991
China	India	1962	Ongoing
South Africa	Namibia	1966	1990
Israel	Egypt	1967	1982
Israel	Palestine	1967	Ongoing
Israel	Syria	1967	Ongoing
Libya	Chad	1973	1994
Turkey	Cyprus	1974	1983
Cuba	Angola	1975	1991
Indonesia	East Timor	1975	1999
Morocco	Western Sahara	1975	Ongoing
South Africa	Angola	1975	1988
Syria	Lebanon	1976	2005
Tanzania	Uganda	1978	1981
Soviet Union	Afghanistan	1979	1989
Vietnam	Cambodia	1979	1989
Argentina	**Falkland Islands** (United Kingdom)	1982	1982
Israel	Lebanon	1982	2000
United States, France, Italy	Lebanon	1982	1984
France, Zaire	Chad	1983	1984
United States	Grenada	1983	1983
India	Sri Lanka	1987	1990
United Nations (UNTAG)	Namibia	1989	1990
United States	Panama	1989	1990
ECOWAS/ECOMOG	Liberia	1990	1998
Iraq	Kuwait	1990	1991
United Nations (ONUSAL)	El Salvador	1991	1995
United States	Iraq	1991	1991
United Nations (UNTAC)	Cambodia	1992	1993
United Nations (UNISOM I)	Somalia	1992	1993
United Nations (UNPROFOR)	Bosnia-Herzegovina	1992	1995
United Nations (UNPROFOR)	**Croatia**	**1992**	**1995**
United Nations (UNPROFOR)	**Serbia and Montenegro**	**1992**	**1995**
United Nations (UNPROFOR)	**Macedonia**	**1992**	**1995**

United Nations (UNISOM II)	Somalia	1993	1995
United Nations (UNAMIR)	Rwanda	1993	1996
United Nations (UNMIH)	Haiti	1993	1996
Armenia	Azerbaijan	1994	Ongoing
United States	Haiti	1994	1995
NATO (IFOR)	Bosnia-Herzegovina	1995	1996
NATO (SFOR)	Bosnia-Herzegovina	1996	2005
United Nations (UNTAES)	Croatia	1996	1998
ECOWAS/ECOMOG	Sierra Leone	1997	2000
South Africa	Lesotho	1998	1999
Uganda, Rwanda, Zimbabwe, Angola,, Namibia, Chad, Sudan	Democratic Republic of the Congo	1998	2002
United Nations (MINURCA)	Chad	1998	2000
United Nations (MINURCA)	Central African Republic	1998	2000
NATO (KFOR/UNMIK)	Yugoslavia (**KOSOVO)**	1999	Ongoing
United Nations (UNAMSIL)	Sierra Leone	1999	2005
United Nations (UNTAET)	East Timor	1999	2002
United Nations (MONUC/**MONUSCO)**	Democratic Republic of the Congo	1999	**Ongoing**
Ethiopia	Eritrea	2000	2001
ISAF	Afghanistan	2001	**2014**
NATO (Allied Harmony)	Macedonia (FYROM)	2002	2003
UN (UNMISET)	East Timor	2002	2005
African Union (AMIB)	Burundi	2003	2004
European Union (EUFOR Artemis)	Democratic Republic of the Congo	2003	2003
European Union (EUFOR Concordia)	Macedonia (FYROM)	2003	2003
MNF-Iraq	Iraq	2003	**2011**
RAMSI	Solomon Islands	2003	**2013**
African Union (AMIS)	Sudan	2004	2007
European Union (EUFOR Althea)	Bosnia-Herzegovina	2004	Ongoing
United Nations (ONUB)	Burundi	2004	2006
United Nations (ONUCI)	Ivory Coast	2004	Ongoing
European Union	Democratic Republic of the Congo	2005	2006
United Nations **(UNMIS)**	Sudan	2005	**2011**
Australia, New Zealand, Malaysia, Portugal	East Timor	2006	**2012**
Ethiopia	Somalia	2006	2009
United Nations (UNIFIL II)	Lebanon	2006	Ongoing
African Union (AMISOM)	Somalia	2007	Ongoing
European Union (EUFOR Chad)	Chad	2008	**2009**

United Nations (MINURCAT)	Chad	2009	**2010**
United Nations (MINURCAT)	Central African Republic	2009	**2010**
United States	Haiti	2010	2010
United Nations (UNISFA)	**Sudan**	**2011**	**Ongoing**
United Nations (UNMISS)	**South Sudan**	**2011**	**Ongoing**
United Nations (MISCA/MINUSCA)	**Central African Republic**	**2013**	**Ongoing**
United Nations (AFISMA /MINUSMA)	**Mali**	**2013**	**Ongoing**
CJTF-OIR	**Iraq**	**2014**	**Ongoing**
Russia	**Ukraine**	**2014**	**Ongoing**
Operation Decisive Storm/Restoring Hope	**Yemen**	**2015**	**Ongoing**

Source: Collard-Wexler (2013)

Note: Entries highlighted in **bold** represent personal research and updates.

APPENDIX C. Additional Model Specifications

Since these data are not ordered, the assumption of proportional odds is not appropriate (Raudenbush & Bryk, 2002). Therefore, as with general multinomial regression analysis, the multinomial logit link function is used:

$$\eta_{mijk} = \log\left(\frac{\varphi_{mijk}}{\varphi_{Mijk}}\right) = \log\left(\frac{\text{Prob}(R_{ijk} = m)}{\text{Prob}(R_{ijk} = M)}\right)$$

where m is the outcome category, M is the reference category, R is the outcome, φ_{mijk} is the probability of success, and η_{mijk} is the log odds of an attack using tactic m compared to M for individual incidents i in country-year j and country j.

At all three levels, the multinomial model has multiple equations based on the number of categories included in the dependent variable. For this dependent variable, there a two equations at level-1, two equations at level-2, and two equations at level-3, which take the following general form:

Level 1 $\quad \eta_{mijk} = \pi_{0jk(m)} + \pi_{1jk(m)} a_{1ijk} + \cdots + \pi_{pjk(m)} a_{pijk}$

Level 2 $\quad \pi_{pjk(m)} = \beta_{p0k(m)} + \sum_{q=1}^{Q_p} \beta_{pqk(m)} X_{qjk} + r_{pjk(m)}$

Level 3 $\quad \beta_{pqk(m)} = \gamma_{pq0(m)} + \sum_{s=1}^{S_{pq}} \gamma_{pqs(m)} W_{sk} + u_{pqk(m)}$

As noted above, there are three distinct attack types being studied and with the other terrorist attacks (not suicide or vehicle bombings) serving as the reference category, the fully specified random intercept model is as follows for $m=1, 2$:

$\text{Prob}(\text{Suicide} = 1|\pi_{jk}) = \varphi_{1ijk}$,

$\text{Prob}(\text{Vehicle} = 1|\pi_{jk}) = \varphi_{2ijk}$,

$\text{Prob}(\text{Other} = 1|\pi_{jk}) = \varphi_{3ijk} = 1 - \varphi_{1ijk} - \varphi_{2ijk}$,

Level 1: $\eta_{mijk} = \log\left(\dfrac{\varphi_{mijk}}{\varphi_{Mijk}}\right) = \pi_{0jk(m)} + \pi_{1jk(m)}(\text{security targets})_{ijk} +$

$\pi_{2jk(m)}(\text{complex attack})_{ijk} + \pi_{3jk(m)}(\text{religious holiday})_{ijk} +$

$\pi_{4jk(m)}(\text{election day})_{ijk} + \pi_{5jk(m)}(\text{democratic target})_{ijk} +$

$\pi_{6jk(m)}(\text{civilian targets})_{ijk} + \pi_{7jk(m)}(\text{assssassinations})_{ijk} +$

$\pi_{8jk(m)}(\text{city detonation})_{ijk} + \pi_{9jk(m)}(\text{group attribution})_{ijk} +$

$\pi_{10jk(m)}(\text{success})_{ijk} + \pi_{11jk(m)}(\text{natural log fatalities})_{ijk} + \pi_{12jk(m)}(\text{after 9/}$

$11)_{ijk} + \pi_{13jk(m)}(\text{international attacks})_{ijk},$

Level 2: $\pi_{0jk(m)} = \beta_{00k(m)} + \beta_{01k(m)}(\text{foreign occupation})_{jk} +$

$\beta_{02k(m)}(\text{democratic target} * \text{foreign occupation})_{jk} +$

$\beta_{03k(m)}(\text{outbidding})_{jk} + \beta_{04k(m)}(group\ attribution * \text{outbidding})_{jk} +$

$\beta_{05k(m)}(\text{conflict lethality})_{jk} + \beta_{06k(m)}(\text{conflict length})_{jk} +$

$\beta_{07k(m)}(\text{Muslim majority})_{jk} + \beta_{08k(m)}(\text{natural log } IDP)_{jk} +$

$\beta_{09k(m)}(\text{GTD1})_{jk} + \beta_{10k(m)}(\text{GTD1})_{jk} + \beta_{011k(m)}(\text{GTD3})_{jk} + +r_{0jk(m)},$

Level 3: $\beta_{00k(m)} = \gamma_{000(m)} + \gamma_{001(m)}(\text{cultural fractionalization})_k +$

$\gamma_{002(m)}(\text{collectivism})_k + u_{00k(m)}.$

    The categorical variable that splits suicide bombings into those including the use of vehicles and those that do not use vehicles will have the same exact models as above, with the one exception that there will be four probabilities for the full random intercept model rather than 3.

Appendix D1. Suicide Bombings Full Random Coefficients Model

Variables	b	SE	Exp(b)
Attack-Level			
Intercept	-6.802***	0.241	0.001
Security Target	-0.022	0.093	0.978
Complex Attack	0.201	0.129	1.223
Religious Holiday	0.042	0.071	1.043
Election Day	-2.101***	0.764	0.122
Democratic Target	-0.041	0.048	0.959
Civilian Target	-0.478***	0.090	0.620
Assassination	-0.994***	0.152	0.370
City Detonation	0.890***	0.117	2.436
Group Attribution	1.151***	0.138	3.162
Success	-1.203***	0.104	0.300
LN Fatalities	0.187***	0.014	1.206
After 9/11	1.163***	0.248	3.198
International Attack	0.646**	0.232	1.909
Country-Year-Level			
Foreign Occupation	-0.728*	0.346	0.483
Democratic Target*Foreign Occupation	-0.020	0.084	0.980
Outbidding	-0.088***	0.020	0.915
Group Attribution*Outbidding	0.012	0.014	1.012
LN Conflict Lethality	0.061**	0.022	1.063
Conflict Length	0.085*	0.034	1.088
Muslim Majority	1.628***	0.350	5.095
LN IDP	-0.035†	0.019	0.965
GTD1	-2.271***	0.381	0.103
GTD2	0.287†	0.169	1.333
GTD3	0.231	0.180	1.260
Country-Year-Level			
Cultural Fractionalization	-0.163	1.214	0.850
Collectivism	-0.594	0.453	0.552

† $p \leq 0.10$ * $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$

Note: The significance test for Muslim Majority is a rough approximation.

Appendix D2. Suicide Bombings Full Random Coefficients Random Variance Coefficients

Variables	Variance	df	χ^2
Attack-Level			
Level 2 Intercept	0.595	NA	NA
Security Target	0.451	NA	NA
Complex Attack	1.546	NA	NA
Religious Holiday	0.121	NA	NA
Election Day	2.537	NA	NA
Democratic Target	0.036	NA	NA
Civilian Target	0.226	NA	NA
Assassination	0.582	NA	NA
City Detonation	0.180	NA	NA
Group Attribution	0.318	NA	NA
Success	0.355	NA	NA
LN Fatalities	0.015	NA	NA
International Attack	1.475	NA	NA
Country-Year-Level			
Level 3 Intercept	1.945	2	7.651[*]
Foreign Occupation	0.631	4	3.768
Democratic Target*Foreign Occupation	0.018	4	0.393
Outbidding	0.003	4	7.671
Group Attribution*Outbidding	0.000	4	1.353
LN Conflict Lethality	0.008	4	6.805
Conflict Length	0.004	4	6.310
LN IDP	0.002	4	4.153
GTD1	1.051	4	2.555
GTD2	0.061	4	2.913
GTD3	0.254	4	9.421[†]
Security Target	0.012	4	4.869
Complex Attack	0.028	4	3.421
Religious Holiday	0.001	4	0.444
Election Day	0.091	4	0.182
Democratic Target	0.005	4	1.106
Civilian Target	0.024	4	8.535[†]
Assassination	0.095	4	9.701[*]
City Detonation	0.263	4	76.473[***]
Group Attribution	0.238	4	25.667[***]
Success	0.026	4	10.724[*]
LN Fatalities	0.001	4	8.286[†]
After 9/11	0.509	4	3.163
International Attack	0.497	4	2.100

[†] $p \leq 0.10$ [*] $p \leq 0.05$ [**] $p \leq 0.01$ [***] $p \leq 0.001$

Appendix D3. Suicide Bombings Full Random Coefficients Model Reliability Estimates

Variables	Variance
Attack-Level	
Security Target	0.060
Complex Attack	0.100
Religious Holiday	0.020
Election Day	0.021
Democratic Target	0.035
Civilian Target	0.045
Assassination	0.030
City Detonation	0.064
Group Attribution	0.059
Success	0.039
LN Fatalities	0.071
After 9/11	0.067
International Attack	0.078
Country-Year-Level	
Foreign Occupation	**0.135**
Outbidding	**0.185**
LN Conflict Lethality	**0.190**
Conflict Length	**0.285**
Muslim Majority	**0.143**
LN IDP	**0.201**
GTD1	0.075
GTD2	**0.157**
GTD3	**0.143**
Security Target	**0.119**
Complex Attack	**0.172**
Religious Holiday	**0.124**
Election Day	0.010
Democratic Target	0.095
Democratic Target*Foreign Occupation	0.060
Civilian Target	0.098
Assassination	0.056
City Detonation	**0.156**
Group Attribution	**0.131**
Group Attribution*Outbidding	**0.124**
Success	0.099
LN Fatalities	**0.173**
After 9/11	**0.125**
International Attack	**0.167**

$^{†} p \leq 0.10$ $^{*} p \leq 0.05$ $^{**} p \leq 0.01$ $^{***} p \leq 0.001$

Appendix D4. Suicide Bombings Full Random Coefficients Model

Variables	b	SE	Exp(b)
Attack-Level			
Intercept	-6.744***	0.208	0.001
Democratic Target	-0.011	0.040	0.989
Civilian Target	-0.648***	0.057	0.523
Security Target	-0.165	0.108	0.848
Assassination	-1.096***	0.082	0.334
Complex Attack	0.314*	0.128	1.369
City Detonation	0.981***	0.144	2.666
Religious Holiday	0.033	0.077	1.033
Election Day	-1.421***	0.428	0.242
Group Attribution	1.299***	0.174	3.666
Success	-1.508***	0.067	0.221
LN Fatalities	0.176***	0.019	1.192
After 9/11	1.237***	0.240	3.445
International Attack	0.494***	0.147	1.639
Country-Year-Level			
Foreign Occupation	-0.213	0.302	0.808
Democratic Target*Foreign Occupation	-0.030	0.050	0.970
Outbidding	-0.158***	0.038	0.854
Group Attribution*Outbidding	-0.001	0.022	0.999
LN Conflict Lethality	0.043*	0.017	1.044
Conflict Length	0.005	0.091	1.005
Muslim Majority	1.788***	0.340	5.977
LN IDP	-0.019	0.026	0.981
GTD1	-1.910***	0.329	0.148
GTD2	0.360†	0.206	1.433
GTD3	0.115	0.247	1.121
Country-Year-Level			
Cultural Fractionalization	-0.027	1.102	0.974
Collectivism	-0.739†	0.416	0.478

† $p \leq 0.10$ * $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$

Appendix D5. Suicide Bombings Full Random Coefficients Random Variance Coefficients

Variables	Variance	df	χ^2
Attack-Level			
Level 2 Intercept	0.772	52	101.432***
Country-Year-Level			
Level 3 Intercept	0.804	NA	NA
Outbidding	0.150	1	19.277***
LN Conflict Lethality	0.015	1	2.078
Conflict Length	0.304	1	0.733
Muslim Majority	1.573	1	2.555
LN IDP	0.126	1	0.732
GTD2	0.498	1	0.699
GTD3	0.987	1	2.139
Security Target	0.426	1	6.736**
Complex Attack	0.557	1	33.652***
City Detonation	0.750	1	25.938***
Religious Holiday	0.163	1	0.611
Group Attribution	0.855	1	44.871***
Group Attribution*Outbidding	0.062	1	29.702***
LN Fatalities	0.102	1	65.006***
After 9/11	0.580	1	2.710†
International Attack	0.122	1	1.500

† $p \leq 0.10$ * $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$

Appendix E. Alternate Table 26 Comparisons

Variables	Vehicle-Suicide versus Non-Vehicle-Suicide			Non-Suicide-Vehicle versus All Other Attacks		
	b	SE	Exp(b)	B	SE	Exp(b)
Attack-Level						
Intercept	-0.824***	0.255	0.439	-4.260***	0.116	0.014
Security Target	0.303**	0.097	1.354	-0.306***	0.045	0.737
Complex Attack	-0.120	0.092	0.887	-0.242***	0.074	0.785
Religious Holiday	0.087	0.099	1.091	0.076	0.047	1.078
Election Day	-0.194	0.876	0.824	-1.082**	0.366	0.339
Democratic Target	-0.127*	0.062	0.881	0.069**	0.023	1.071
Civilian Target	-0.644***	0.102	0.525	-0.052	0.040	0.949
Assassination	-0.383*	0.154	0.682	-0.672***	0.054	0.511
City Detonation	-0.388***	0.065	0.678	0.896***	0.029	2.451
Group Attribution	0.291**	0.095	1.337	0.239***	0.042	1.270
Success	0.335**	0.120	1.398	-0.868***	0.045	0.420
LN Fatalities	0.039***	0.011	1.040	0.063***	0.004	1.065
After 9/11	-0.253	0.301	0.776	-0.184	0.142	0.832
International Attack	0.041	0.225	1.042	0.181†	0.105	0.834
Country-Year-Level						
Foreign Occupation	0.459	0.301	1.583	-0.400*	0.198	0.671
Democratic Target*Foreign Occupation	0.039	0.079	1.040	0.127***	0.037	1.136
Outbidding	0.005	0.016	1.005	-0.017*	0.009	0.983
Group Attribution*Outbidding	-0.021*	0.010	0.979	0.000	0.005	1.000
LN Conflict Lethality	0.049*	0.022	1.050	0.002	0.009	1.002
Conflict Length	-0.089*	0.035	0.915	0.040*	0.020	1.041
Muslim Majority	0.294	0.351	1.342	0.048	0.214	1.050
LN IDP	0.028	0.021	1.028	0.008	0.009	1.008
GTD1	0.798†	0.440	2.220	-0.738***	0.184	0.478
GTD2	0.288	0.216	1.334	-0.063	0.138	0.939
GTD3	-0.042	0.209	0.959	-0.039	0.139	0.962
Country-Year-Level						
Cultural Fractionalization	-2.156	1.306	0.116	-2.710***	0.822	0.067
Collectivism	-0.175	0.438	0.839	-0.289	0.260	0.749
	Variance	*SD*		*Variance*	*SD*	
Level 2	0.570	0.755		0.657***	0.811	
Level 3	0.772	0.879		1.148***	1.071	

† *p* ≤ 0.10   * *p* ≤ 0.05   ** *p* ≤ 0.01   *** *p* ≤ 0.001

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