Deadly Dates: The Relationship Between Holy Days and Terrorism*

Caleb Lucas†

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Abstract

How do religious holidays affect the incidence of terror attacks? I argue multiple incentives exist that encourage violence on these days. For example, attacks on holidays allow terrorists to signal their religiosity and impose extra terror on their targets. Governments understand they are triggers for violence though and increase security surrounding them. However, their ability to do this is limited by the length of the holiday due to resource constraints and practical concerns. I consequently expect the probability of an attack occurring on holidays that last a few days to be lower than on non-holidays since state security is at its peak. However, holidays that last weeks are more difficult to protect and still provide payoffs to terror groups. They should therefore have a higher likelihood of witnessing an attack than non-holidays. Data from all Arab League countries support these claims.

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†Caleb Lucas (clucas@msu.edu) is a graduate student in the Department of Political Science, Michigan State University.

1 Motivation

A great deal of research explores the effect of religion on terrorism. Scholars argue that, due to a variety of factors, religion is positively associated with violence (Toft 2011; Asal and Rethemeyer 2008; Horowitz and Potter 2014). For example, conflicts fought over religious issues are difficult to resolve due to their indivisibility (Toft 2006; Hassner 2009) and religious armed groups are particularly durable (Toft and Zhukov 2015; Berman and Laitin 2008). Competition within and between religious groups might also explain this positive relationship (Breslawski and Ives 2019; Isaacs 2017). To understand when and how this increase in terrorism occurs, recent studies focus on attacks conducted on religious holy days. However, these studies produce mixed results and differ in their theoretical expectations. Some scholars predict more terrorism surrounding holy days since coordination costs for armed groups decrease during these times (Toft and Zhukov 2015). Others expect the opposite, as committing violence during holy periods might risk offending a group's civilian supporters (Reese, Ruby, and Pape 2017).

I contribute to this debate by developing a novel theory regarding the way in which religion informs the strategy of terrorists and, in turn, the government. I argue that the symbolic and spiritual meaning that religion assigns to certain days creates focal points that are natural objectives for terrorists because attacks conducted during these times are particularly shocking for civilians and disrupt sacred ceremonies. They consequently impose relatively more terror on victims than attacks during other times (Hassner 2011). Attacks on religious holidays can also be used to expose the government's weakness, demonstrate a group's resolve, activate societal divisions, and punish the supporters of a group's opponent. Armed groups can strategically target the government and areas inhabited by supporters of their enemies to prevent angering their own constituency. As such, my theory suggests that religion informs the timing of terrorism due to strategic and rational calculations by armed groups.

However, the occurrence of violence is also influenced by the strategies of the govern-

ment, which is embedded in the same religious context as the terrorists. Governments consequently understand that religion influences the strategies of armed groups and that focal points exist that incentivize attacks. Protecting civilians and political targets during these times is crucial to maintaining their support and legitimacy. Governments therefore seek to deter violence surrounding natural religious focal points. As such, they commonly implement tailored counter-terror plans on these days. This typically involves dramatically increasing police patrols during religious commemorations, expanding security around sacred spaces, and deploying additional vehicular checkpoints in strategic locations (Petra 2015; Walker 2016; Zaptia 2016). However, since governments face resource constraints and fear backlash resulting from continuously applying harsh counter-terror measures, they are limited in their ability to consistently employ security procedures that can prevent attacks. Instead, states cluster their efforts to prevent attacks on dates that are most likely to be perceived as focal points for terrorists.

While existing research regarding religious observances and terrorism generally predicts *either* a positive or negative association, my argument suggests a heterogeneous effect. I argue that expectations about a government's counter-terrorism capacity will influence terrorists' decisions to engage in violent acts on religious holidays. Although terrorists expect greater benefits from attacking on religious dates, they are only likely to do so when they believe they will be able to execute attacks with minimal costs. When the government is able to raise the costs of attacking sufficiently high on these dates, terrorists will refrain from conducting an attack. Instead, terrorists will select a proximate date where they expect to encounter less resistance from the government, but that that can still provide similar benefits to conducting violence on a religious holiday.

My specific expectation is that temporally short holidays, those that last a few days or less, experience less terrorism than nonholidays. This is because, despite these days being attractive targets for terrorists, the government is able to concentrate counter-terror resources on them to prevent violence from occurring. Due to the increased costs and

risks associated with added security during short holidays, I expect terror groups to be restrained by the state and commit fewer attacks on these days. However, most states are unable to implement similarly complex security plans during holidays that are much longer, such as the holy month of Ramadan. My expectation is therefore that terrorists seize on these days to commit attacks. This is because they are opportunities to benefit from a day's religious symbolism while assuming only marginally higher costs relative to nonholidays to overcome security.

I test this argument by conducting a series of statistical tests with data regarding Arab League countries (2001-2016) and all countries where at least 90% of citizens identify as Muslim. Both samples support my argument. However, while I focus on countries with a high proportion of Muslims, I expect this theory to generalize to other religious contexts where counter-terrorism is salient. I substantiate this by demonstrating terrorism on Jewish holy days in Israel is consistent with the theory. I also provide evidence that counter-terrorism efforts are highest on short holidays by measuring the proportion of articles about security measures published on different types of days by the Syrian Arab News Agency, Syria's official national news outlet.

This article aids our understanding of terrorism in several ways. First, this study interrogates a common finding, that religious conflicts are more deadly, and explores the production of that violence. In doing so, I engage an important debate concerning the effect of religious holidays on the incidence of terror attacks. The results of my statistical analysis demonstrate that religious holy days can incentivize violence, but the ability of groups to conduct attacks is sometimes restrained by the government. Second, scholars of religion and terrorism, along with those studying civil conflict more broadly, are interested in the rationality of armed groups and their ability to strategically adapt to their environments (Abrahms 2012; Bloom 2007; Pape 2006; Thomas 2014). This article provides additional evidence that these organizations are calculating actors. Terrorists appear to be selective about which holidays they target; the timing of their attacks is consistent with efforts to

avoid holidays that are likely to attract considerable counter-terrorism efforts. Third, this articles contributes to our understanding of the logic that informs the timing of terror attacks. In particular, it departs from existing research that focuses on the logic armed groups use to substitute their targets based on counter-terrorism in *space*, and instead demonstrates counter-terrorism efforts can create substitution effects across *time*.

2 Theory

2.1 Existing Explanations

Existing research proposes three different factors that explain the behavior of terror groups on religious holy days. First, some authors argue violence on these days is appealing for reasons internal to the group. For example, Jurgensmeyer (2017) argues religious groups might seek to communicate with the divine through terror attacks. Their choice to attack on holy days could therefore be a result of their desire to appease or worship a higher authority. Such an approach deemphasizes the role of a group's relationship with civilians in favor of their ideological commitment.

Second, groups might commit violence on these days to gain a tactical advantage. For example, Hassner (2011) contends that leaders of religious groups may recognize the usefulness of holy days to motivate or encourage their fighters. This can lead them to fight harder and with more eagerness. Their civilian supporters might share this sentiment and support attacks on these days. Toft and Zhukov similarly emphasize the tactical benefits of committing violence around Islamic holidays. They argue these days can reduce coordination costs by gathering individuals espousing similar ideologies together. Given these lower costs, groups are more likely to conduct attacks on days surrounding holidays. They expect that groups are more likely to attack on holidays that match their ideological type (i.e. religious or nationalist). Their study finds robust statistical support for this theory in the Caucasus region.

Third, extant research argues that terror groups fear provoking anger among their supporters for committing violence on sanctified dates. Reese, Ruby, and Pape (2017) argue that civilians are generally offended by violence during such occasions and will punish terror groups that violate a day's importance with bloodshed. They contend this is the case when there is unambiguous agreement in a society concerning a day's importance. Such days should experience relatively lower levels of terror attacks because terror groups fear civilian sanctions. They find support for this argument using data from Iraq, Afghanistan, and Pakistan. However, this theory does not consider the benefits that can be gained by terrorizing opponents on holy days (Hassner 2011). An additional complication is the effect of credit claiming, as a large majority of terrorist attacks are perpetrated by unknown individuals, particularly in Muslim-majority countries (Kearns, Conlon, and Young 2014). Terror groups are not presented with the binary choice of assuming the cost of committing an attack or not committing an attack at all. Rather, groups can claim attacks that they forecast will enhance their political position (Bueno de Mesquita and Dickson 2007; Thomas 2014) while anonymously conducting violence that might anger their supporters (Kearns, Conlon, and Young 2014).

Existing research either prioritizes a terror group's decision to abstain from violence during holidays or their choice to utilize them strategically. I argue that they do both. Groups' choices are influenced by expectations of government efforts to deter terror attacks. When terrorists believe that governments will make a concerted effort to increase security to prevent violence on holidays, they abstain from engaging in violence. However, terrorists choose to utilize violence when governments are unable to effectively deter terrorism on holy days. This represents an important theoretical contribution, as scholars have yet to integrate the role of the state and its ability to deter attacks within this literature. Instead, they either overlook the effect of counter-terror measures implemented during these periods (Hassner 2011) or argue large-scale increases in security are unable to explain reductions in violence on these occasions (Reese, Ruby, and Pape 2017). The

theory I develop in this manuscript explains why terror groups have an incentive to commit violence on religious holidays, while emphasizing the ability of the state to deter attacks during certain periods.

2.2 Synchronizing Attacks and Religious Holy Days

Terror groups[1] regularly synchronize their attacks and activities with religious holidays. The Islamic State infamously proclaimed itself the leader of Muslims worldwide and declared an Islamic caliphate on the first day of the holy month of Ramadan in 2014. Directly acknowledging the significance of the group's timing, their official written declaration of the caliphate ends by "congratulat[ing] the Muslims on the advent of the blessed month of Ramadan" and asking Allah "to make its days and its nights a curse for the rāfidah [derogatory term for Shiites], the sahwāt [derogatory term for Sunnis that do not side with the group], and the murtaddīn [apostates]." The spokesperson for the Islamic State encouraged the group's followers to "rush and go to make Ramadan a month of disasters for the infidels" the following year (Hubbard 2015).

Examples regarding other holy days are plentiful. For example, intercepted communications between Ayman al-Zawahiri and other top al-Qaeda leaders in 2013 revealed they "wanted to do something big" on Laylat al-Qadr, a holy day commemorating when the Quran was revealed to Muhammad (Miklaszewski, Mitchell, and Williams 2013). US authorities suspected one of their diplomatic posts in the Middle East was the target and closed a number of them to prevent an attack. Further, the Taliban released a statement in 2018 during the holy day of Eid al-Fitr that congratulated Muslims on successful "Jihadi conquests in these joyous days of Eid-ul-Fitr" (Zelin 2018).

Unsurprisingly, the connection between religious holy days and violence is not limited to the statements made by terror groups. It is also manifested in their actions, as terror

[1] I follow Phillips (2015) and employ an expansive definition of terror groups - any subnational political organization that uses terrorism.

groups routinely employ violence on these days. For example, Boko Haram committed multiple suicide bombings in 2015 on Eid al-Fitr, an important Islamic holy day (BBC 2015). The Armed Islamic Group of Algeria killed nearly one thousand individuals during Ramadan in 1998 (Moghadam 2008, 161). Such violence is not always claimed, suggesting non-state groups might develop strategies that enable them to exploit a holiday's importance while limiting possible civilian sanctions or other reprecussions. For example, a suicide bomber in Afghanistan in 2018 targeted an event celebrating the Prophet Muhammad's birthday, an Islamic holiday (Ashford 2018). The attack killed over 40 people, most of whom were religious scholars. Similarly, a terror attack on the border of Turkey and Iraq killed four Turkish soldiers during Laylat al-Bara'at in 2019 (Ozer 2019).

These examples illustrate the ways in which terror groups can time their attacks to co-occur with holy days to signal their religiosity, justify the use of violence, or to reinforce a conflict's sectarian divide. Matusitz (2014) demonstrates this more generally with a range of case studies from around the world. He argues terror groups benefit from synchronizing their attacks with important religious dates and against sanctified targets. Such symbolism is an alluring quality to terror groups and often a key consideration when they plan attacks. Matusitz argues they serve as shared frames of meaning through which a group or individual can communicate. I develop a theoretical explanation for this behavior in this paper that integrates the ability of the state to alter the costs of committing attacks on certain holidays.

2.3 Holy Days As Focal Points for Violence

I argue that committing violence on days of religious importance is appealing to terror groups for several reasons. First, it allows a group to signal religious devotion. Terror groups that espouse a religious ideology seek legitimacy from their supporters as dedicated adherents to their faith and the manifestation of a divine cause. Conducting attacks on holy days allows them to situate their activities within a faith-based struggle and signal

their devotion to the belief system. This has the added benefit of decreasing the likelihood that the terror group's use of violence appears self-serving. An excerpt from one of al-Qaeda's official magazines exemplifies this dynamic in practice. Saud Bin Hamoud al-Utaybi, a senior leader of al-Qaeda, implored jihadists to "come closer to Allah through the blood of infidels" during the coming month of Ramadan and to "make [Ramadan] like the month of the Battle of Badr, the conquest of Mecca, [the conquest] of Shaqhab, and other Islamic victories" (Aaron 2008). The conquests al-Utaybi mentions, two of which Muhammed led, all occurred during Ramadan and are defining moments in Islamic history. The passage therefore suggests that, through the use of terrorism, al-Qaeda's fight is similar in importance for modern Muslims. The symbolism of religious dates creates space for this sort of aggrandizing by armed groups. Al-Qaeda conducted multiple massive attacks during the Ramadan immediately following the publication of al-Utaybi's article. In doing so, they instrumentalized the holiday's symbolism in an attempt to enhance their legitimacy as a religious organization.

Second, committing attacks on holy days amplifies their effect and imposes relatively more terror on their targets.[2] These days typically host sanctified ceremonies and cherished religious traditions. Families often congregate and expect a secure environment to celebrate in during these special periods. Due to this, the salience of one's faith is often highest surrounding these occasions. A terror attack on a holy day that disrupts these religious practices and the safety surrounding them consequently generates more terror than the same attack on an ordinary day. A period previously associated with peace and meditation is marred by memories and anniversaries of death. Since terrorism is used to coerce and intimidate a larger audience than the attack's specific target,[3] groups prefer violence when it is most likely to evoke a strong reaction from the public. As such, all else equal, the payoff for a terror group to conduct an attack against their target on a holy day is higher

[2]Hassner (2011) argues that terror attacks on holy days can be force multipliers.

[3]More than 99% of terror attacks are intended to influence a larger audience than the target according to the Global Terrorism Database (LaFree and Dugan 2011).

than on all other days.

This dynamic motivates the third incentive armed groups have to use violence on holy days. Attacks on these days can embarrass the government and expose its weakness. Civilians expect a peaceful environment to observe their religion and the inability of the government to provide it has important repercussions. Attacks on these days demonstrate the armed group has some sort of advantage over the government in the conflict. It is also likely these attacks gain more attention in the press and therefore assist in promoting a group's political agenda. This enables a group to make more credible public demands for concessions. This logic applies to contexts where belligerents are fighting over the very issues of governance and when terrorism is used in pursuit of more narrow objectives.

Terrorists can employ multiple strategies to mitigate the possibility of offending or angering their supporters for committing violence during holy days. First, as discussed earlier, they can justify attacks during these periods by framing them as divinely ordained. Second, terrorists can target the civilian supporters of their opposition or the government to ensure their civilian constituency is not physically affected by an attack. This is a common tactic employed more generally by armed groups (Goodwin 2006). Third, groups are not bound to claim responsibility for these attacks publicly. This can insulate them from possible blowback. They may benefit from simply executing attacks on these days and privately claiming responsibility among their sponsors (Kearns, Conlon, and Young 2014). Indeed, unclaimed attacks can serve a number of strategic ends, particularly during important holy periods.

These dynamics do not require a terror group to share the same beliefs with the target of an attack. In fact, some of the incentives generalize to non-religious armed groups. This makes sense, as there is obvious utility for a secular armed group to terrorize their opponent's religious supporters on a day they believe is holy. However, the intent of an attack and the symbolism of the occasion must be obvious to the society, so I expect this logic to apply in countries where a majority of citizens share the same religion. Due to this,

the government does not need to be religious. The logic detailed above that argued attacks on these days can embarrass or weaken the government applies regardless of its identity. The other incentives for armed groups to use violence on holy days similarly apply whether or not the government is religious.

2.4 The Increased Cost of Committing Violence on Holy Days

Governments are not passive actors in this process. They anticipate the incentives for terror groups to exploit holy days and understand attacks during these periods weaken their position. In response, governments commonly implement specialized security plans during periods of religious significance that are likely to attract the attention of armed groups. These security measures typically entail extra checkpoints in urban areas, large police deployments in public spaces, 'see something say something' campaigns, and proactively searching for explosive devices in vulnerable areas (Berwani 2012; Walker 2016; Zaptia 2016). Security plans during religious holidays are sometimes more general as well. For example, in order to protect the day of Ashura during 2012, the Iraqi government deployed some 30,000 troops to a shrine in Karbala that Shiite Muslims visit on the holiday (Arraf 2012). They also banned vehicles from entering the area and worked with their intelligence services to identify and prevent attacks in the planning phase. Consequently, the holiday did not suffer a terrorist attack.

However, the ability of governments to maintain these enhanced levels of security and specialized measures is constrained by the length of a holiday. There are no practical impediments to clustering these counter-terror tactics on holy days that last a few days or less. This is not true of long holidays, such as the month of Ramadan, for two reasons. First, counter-terror measures meant to deter or root out terrorism can backfire and actually result in a net increase in attacks because they are perceived as being repressive. For example, Benmelech, Berrebi, and Klor (2015) demonstrate that indiscriminate policies like curfews and precautionary house demolitions that do not directly target terrorists can

lead to an increase in suicide attacks. This is in line with research that shows that governments that violate the physical integrity rights of their citizenry experience more terrorism than those that do not (Walsh and Piazza 2010). This domestic security dilemma forces governments to balance the costs of various counter-terror measures with their associated benefits (Field 2017).

Second, resource constraints prevent governments from maintaining high levels of security for extended periods or across their whole territory due to limited budgets and personpower. Powell (2007) argues that governments allocate their scarce resources across physical sites (e.g. nuclear reactors) to defend against terror attacks. He argues that terrorists attack where expected payoffs are large and costs are low. By increasing security around the most important sites, governments can increase the costs of attacking targets that have the highest payoffs for terror groups while efficiently allocating their scarce resources. This changes the incentives for terror groups and encourages violence where payoffs are still high, but costs are lower. Evidence of counter-terror strategies producing these types of substitutions is abundant (Enders, Sandler, and Cauley 1990; Enders and Sandler 1993; LaFree, Dugan, and Korte 2009). I apply the framework developed by Powell to symbolic days and argue that counter-terror resources can create *temporal* substitution effects.

2.5 The Behavior of Armed Groups on Holy Days

I apply the logic of substitution effects to the case of Islamic holidays. As discussed, terror groups have multiple incentives to commit attacks on these days. However, they do not all offer the same payoff. I argue the payoff for committing terror attacks is generally the highest during short holidays, or those that last only a few days or less. This is because violence on these days is entirely unambiguous. It is obvious to the target and to the public that the timing of an attack during such a short religious period is due to the period's significance. The entire commemoration is consequently defined and remembered in terms

of the attack. This provides the offending group the maximum amount of public exposure for its attack. In other words, the relatively short length of the holiday makes it easy to associate with terrorism. This makes violence particularly enticing on these days for armed groups.

As a result, the logic of substitution effects suggests governments have an incentive to focus their scarce resources to mitigate the risk of attacks during short holidays. This is doubly the case because it is relatively harder for them to protect long holidays. Evidence of this in practice is plentiful. State security forces around the world commonly implement strict and oftentimes extraordinary measures during short holidays such as Eid al-Adha and Eid al-Fitr (Zaptia 2016). Such plans often include massive increases in the number of police officers and military troops deployed to the streets and the expanded use of various counter-terror measures around the country (Walker 2016; Berwani 2012). These measures are typically far more expansive than what governments are able to do during long holidays such as Ramadan. It is unsurprising that governments are generally aware of the increased threat these days pose and respond accordingly. They strategically cluster counter-terrorism efforts on days where the payoffs to terror groups are high and the efficacy of their efforts is the highest. I therefore expect terror groups to be deterred from committing violence on short Islamic holidays, despite their benefits, because governments can muster massive amounts of military and police to protect them. A testable implication of this logic is that the probability of observing a terror attack on a short Islamic holiday is lower than on a nonholiday.

Hypothesis 1 *The probability of terrorism occurring on a short Islamic holiday is lower than the probability of an attack on a day that is not an Islamic holy day.*

The theoretical logic produces a different expectation for religious celebrations that last multiple weeks, such as Ramadan. They should be relatively more likely to experience terrorism for several reasons. First, as discussed, an attack during a long holiday offers a higher payoff to terrorists than an attack on a nonholiday. At the same time, the cost to

conduct an attack during a long holiday is lower than on a short holiday, as shorter holidays are likely to be more heavily guarded by the government. Again, resource constraints and caution regarding the use of repressive security measures prevent the government from implementing broad counter-terror policies during weeks-long holidays. Long holidays consequently offer the highest ratio of benefits to costs for terror groups.

Second, these holidays are more forgiving to terror since they last multiple weeks. Since plans for an attack are subject to perturbations caused by logistics, counter-terrorism efforts, and practical concerns, it is difficult for terror groups to be confident that an attack intended to occur on a short holiday will actually occur during that minimal window. This is especially likely due to the government's active role in trying to prevent terrorism on major holidays. Long holidays offer a larger temporal window that is more forgiving of these problems. This decreases the likelihood that a promised attack happens to occur outside of the holiday or is unable to be conducted altogether. I expect these factors to encourage terror groups to plan and execute more attacks during long Islamic holidays than nonholidays. This logic leads to my second hypothesis.

Hypothesis 2 *The probability of terrorism occurring during a long Islamic holiday is higher than the probability of an attack on a day that is not an Islamic holy day.*

3 Data and Research Design

I collect data regarding a sample of countries where Islam is the predominant religion to test my hypotheses regarding the occurrence of terrorism on Islamic holidays. Specifically, I analyze the members of the Arab League.[4] I use this regional organization, which is comprised of 22 countries largely in the Middle East and North Africa, for several reasons. First, the region that the organization represents is a conflict-prone area and experiences

[4]The Online Supplementary Appendix lists and maps these countries. 17 of the League's 22 countries are represented in the data due to data limitations (3) or because they did not experience any terrorism during the study's timeframe (2).

high levels of terrorism. Counter-terrorism is consequently a salient security issue for member countries. Their governments design and implement security measures aimed to prevent attacks from occurring within their territory. This makes it possible to test the theoretical logic I detail. Second, the vast majority of their citizens identify as Muslim. This meets a scope condition of the theory- a society with broad awareness and observance of Islamic holidays.[5] Third, the regional organization provides a sampling frame that avoids the analysis of an ad hoc collection of countries. Choosing a set of countries where counter-terrorism is salient, which is a scope condition of the theory, that also has a large proportion of Muslims requires multiple arbitrary decisions regarding what sort of countries to include in an analysis. I instead focus on the Arab League for the reasons specified.

As such, it is possible to test the implications of my theory using the members of the Arab League by assessing whether there is a lower probability of a terror attack during short holidays and a higher probability during long holidays relative to nonholidays in these countries. However, I provide additional analyses in the Online Supplementary Appendix that use a dataset comprised of all countries where at least 90% of citizens[6] identify as Muslim.[7] The main findings are consistent in this additional sample, which represents approximately 40% of the world's terrorism. Less than half of the countries are shared between these two datasets, so it is meaningful that the findings are consistent between them. I analyze all available post-9/11 years (2001-2016) in both samples because of the salience of both terrorism and counter-terrorism during this period, particularly in the Arab League. I use country-days as the unit of analysis, as my theory relates to variation at that temporal level.

[5]A few of these countries, such as Egypt and Lebanon, have established populations of people of other faiths. The results are consistent when countries with sizable populations of non-muslims (>10%) are excluded from the data.

[6]I use data from 2010 provided by the Pew Research Group to identify these countries: https://www.pewforum.org/2015/04/02/religious-projection-table/.

[7]See models 5a-7a. The Online Supplementary Appendix also lists and maps these countries.

3.1 Dependent Variable

I use the Global Terrorism Database (GTD), one of the most comprehensive sources of terrorism data (Findley and Young 2012), to code the outcome variable (LaFree and Dugan 2011). The GTD codes specific incidents of terror across the world from a diverse set of newspapers and news-related sources. The GTD considers an event "terrorism" if it is intentional, employs violence, and is conducted by a subnational actor. Attacks must also be outside of legitimate warfare, conducted to attain social or religious goals, and be used to intimidate individuals beyond the immediate victims.[8] Specifically, the outcome variable is a dichotomous variable representing whether or not an attack occurred on a specific country-day (*Terror Attack*).[9]

This variable includes attacks against all targets regardless of whether they killed anyone. I include both claimed and unclaimed attacks[10] because it is likely terror groups sometimes commit violence on holy days anonymously to achieve their goals while limiting the possibility of public backlash. Approximately 11% of the country-days experience a terror attack. A dichotomous measure of terrorism is appropriate since 96% of the country-days experience two attacks or fewer.[11] I also use the count of terror attacks as an outcome variable and the regression results do not substantively change.

3.2 Independent Variable of Interest

The independent variable of interest (*Day Type*) sorts each country-day, the unit of analysis, into one of three mutually exclusive categories based on its length in days. A simple coding scheme is employed to differentiate these categories that is derived from the natu-

[8] At least two of these three requirements must be met.

[9] The results are consistent when events that the Global Terrorism Database codes as possibly *not* being terrorism are excluded. See model 8a.

[10] The majority of terror attacks are not claimed.

[11] Due to this, dependent variables analyzed in other studies of terrorism, such as the ratio of attacks to population, are inappropriate for this study.

ral groupings within Islamic holidays.[12] *Short Holidays* are Islamic holidays that last three days or less while *Long Holidays* include days within the important month-long holiday of Ramadan. The difference between these two categories is clear, as Ramadan lasts about 30 days and the next longest holidays span just three days. *Nonholidays* is the baseline category, which is comprised of days that are not in either of the other categorizations.

Short Holidays generally either prescribe some important religious act, such as engaging in a feast, or commemorate an important moment in Islam's history. They are typically observed or acknowledged widely. Social sanctions potentially result from public nonobservance due to their importance. As such, religious observance and respect is generally at its peak on short holy days. This category includes the weekly liturgical service held on Friday afternoon.[13] Adherents observe this holy day by partaking in attending a communal sermon and prayer service at a mosque. It also includes the important holidays of Eid al-Fitr and Eid al-Adha along with the Day of Arafah, which commemorates Muhammad's final sermon.

Long Holidays are days that occur within the holy month of Ramadan, which lasts about 30 days and commemorates the revelation of the Quran to Muhammad. Muslims are generally expected to abstain from food and drink between sunrise and sunset during this time. This enables adherents to pray and meditate about their faith. Participation is extremely high in the region represented by the Arab League. About 94% of Muslims in the region reported that they observed the holy month and fasted in a survey fielded by Pew during 2011-2012 (Lugo et al. 2012). If a day is both a *Short Holiday* and a *Long Holiday*, such as a Friday, I code it as *Short*. I perform this step since my expectation is that the government will still cluster security measures on these days even though they occur

[12]The findings are robust to alternate, but possibly reasonable, codings of the this variable, which I demonstrate in the Online Supplementary Appendix.

[13]The weekly liturgical day (Friday) could arguably constitute another category because it occurs so regularly and is possibly qualitatively different from the other short holidays. As such, I estimate models with Friday as its own category in *Day Type* and with Friday excluded from the variable altogether. The results are consistent with the main model in both of these robustness checks.

within the month of Ramadan. Collectively, this categorical variable gives me leverage to test my hypotheses concerning the effect of individual days on the incidence of terrorism.

While the timing of months in the Gregorian calendar is reliable, they are not in the Islamic calendar. The beginning of each month is determined by the first unaided sighting of the moon after a new moon. Since the average length of a lunation varies, months are typically 28-30 days long. The Islamic calendar is consequently not fixed to the Gregorian calendar. It is also not consistent across space, as lunar sightings occur at different times across the world. The calendar does behave predictably, with the Islamic New Year occurring about two weeks earlier each year in relation to the Gregorian New Year. Due to these issues, many Muslim-majority countries rely on Saudi Arabia's calendar to code the occurrence of holidays. This helps synchronize holidays that otherwise would occur on different days around the world. I therefore use Saudi Arabia's Umm al-Qura calendar to code the occurrence of Islamic holidays. The full specification of the *Day Type* variable is displayed in table 1.[14] The baseline category of *Day Type* is all other days.

Table 1: *Day Type* - Short and Long Islamic Holidays

Islamic Holiday	Hijri Date	Length	Type
Islamic New Year	1/1	1 day	Short
Ashura	1/10	1 day	Short
Prophet's Birthday	3/12	1 day	Short
Isra & Miraj	7/27	1 day	Short
Laylat al-Bara'at	8/15	1 day	Short
Laylat al-Qadr	9/27	1 day	Short
Eid al-Fitr	10/1	3 days	Short
Day of Arafah	12/9	1 day	Short
Eid al-Adha	12/10	3 days	Short
Friday	Weekly	1 day	Short
Ramadan	9^{th} Month	1 month	Long

[14]The results are consistent when holidays that are specific to Shiite Muslims, such as Ashura, are included in the coding of the *Day Type* variable. Shiites are a minority of the Muslim population both globally and in the Arab League.

3.3 Control Variables

I include a number of variables in the model that also affect the incidence of terror attacks to decrease the probability of a confounder biasing the results.[15,16] Since terror attacks can be a result of conflict between armed groups and the state (Findley and Young 2012; Stanton 2013), I include a count of battlefield events lagged by one day.[17] This is measured at the country-day level and is taken from the Uppsala Conflict Data Program Georeferenced Events Dataset (Sundberg and Melander 2013). I also include a dichotomous variable that indicates whether a country-day is a secular national holiday, as it might be the case that there is not a religious component to how terrorists time their attacks. I code this variable using data from HolidayAPI, a company that uses large-scale web scraping and text mining of news articles to identify holidays in countries around the world.

I also include a variety of controls related to characteristics of the countries represented in the data that might affect the incidence of terrorism. I add the country's logged total population since countries with more people have a higher likelihood of producing terror groups and relatively more targets exist for attacks (Chenoweth 2010). In order to control for disparate levels of economic attainment across countries, I also include the country's gross domestic product per capita. I collect both of these variables from the World Bank (World Bank 2018). Beyond that, I include a covariate to control for the variation in terrain across countries. Research demonstrates that more rugged and inhospitable territory decreases the state's ability to project power and is associated with civil conflict (Tollefsen and Buhaug 2015). These landscapes provide insurgent groups more opportunities to hide and engage in rebellion. I therefore also include the country's area in square kilometers

[15]Simpler models that exclude these controls are consistent with the main model. I include some of these results in Section A.5 of the Online Supplementary Appendix.

[16]I scale continuous predictors to avoid convergence issues with the multilevel model by subtracting their means and dividing by their standard deviations (Gelman and Hill 2006).

[17]The results are consistent when this variable is excluded.

(Zhukov, Davenport, and Kostyuk 2017).[18] Table A.2 in the Online Supplementary Appendix displays these variables' descriptive statistics. I also include a linear counter of time within countries to control for temporal dependence and a lagged dependent variable.

3.4 Research Design

The data used in my analysis exhibit a clear nested structure. Days occur within years that are grouped in countries. The characteristics of each of these levels are important predictors of whether any individual country-day will experience a terror attack. Due to this, I employ a multilevel model to test my hypotheses. Multilevel models estimate parameters that take these types of spatial and temporal groupings into account. It also enables the inclusion of covariates at the same level of these groupings.

Recent research concerning terrorism recognizes the usefulness of employing this type of model in this domain. Johnson argues that studying terrorism is "inherently a multilevel enterprise" (Johnson 2017, 252), with observations grouped across different levels of analysis such as terror groups and countries. Building models that reflect this not only makes theoretical sense, but also ensures standard errors and parameter estimates are properly estimated given the different dependent levels of analysis represented in the data (Gelman 2006; Gill and Womack 2013). Related studies use these models to study variation in terrorist tactics across regime types (Lee 2013), investigate the effect of conflict on public opinion (Hutchison 2014), and to study the use of domestic and international attacks by terror groups (Boyd 2016).

The outcome variable in the regression model is binary and indicates whether a country-day experienced a terror attack. I estimate a logistic regression model since the outcome variable is dichotomous. The first level in the hierarchical model occurs at the country-day and is indexed with i in the equation below. I include a lag_{t-1} of the dependent variable, a

[18] The results are robust to other geographic variables, such as a country's mean elevation, as well.

lag_{t-1} of the number of battlefield events, the *National Holiday* indicator variable, and a linear counter of time at this level along with the categorical *Day Type* variable. Country-years constitute the second level of the model and are indexed with *j* in the equation. I include a random intercept at this level and the variables *Population* and *GDP PC*, both of which vary across country-years. The third level of the model occurs at the country level and is indexed with *k*. I include a random intercept at this level as well and *Land Area*, as it is a time-invariant measure. I estimate the model using maximum likelihood and assume the random intercepts are drawn from a normal distribution. I display the equation below.

$$p(y_{ijk} = 1) = \text{logit}^{-1}\,(\beta_0 + \beta_1 \cdot X_{1ijk} + \beta_2 \cdot X_{2jk} + \beta_3 \cdot X_{3k} + \text{country year}_{jk} + \text{country}_k)$$

4 Results

Table 2 provides the results of the estimated multilevel regression model.[19] Both of the variables extracted from *Day Type* are significantly different from the baseline (days that are nonholidays). The coefficient on *Short Holiday* is negative and statistically significant. This supports my first hypothesis. Terrorism is less likely to occur on Islamic holidays that are relatively short, such as Eid al-Fitr or the celebration of Prophet Muhammad's birthday, than on nonholidays. I argue this is the case because the government is able to effectively deter terror groups from conducting operations on these days.

Further, the coefficient on *Long Holiday* is positive and significant, suggesting that days within the holy month of Ramadan are associated with an increase in the likelihood of a terror attack. This supports my second hypothesis. My theory suggests this is the case

[19]The results are robust to various fixed and mixed effects specifications. A likelihood ratio test suggests the main model is significantly different from a null model that only includes the multilevel structure (province-years nested within provinces) along with a fully specified model that excludes *Day Type*, the key independent variable.

because the government is unable to effectively deter terrorism during these holidays due to resource constraints and a fear of backlash resulting from long-term repressive counter-terror measures. Terror groups strategically conduct attacks on these days since they offer a higher payoff than nonholidays and the cost of overcoming security is relatively lower than on short holidays.

Table 2: Main Model

	Dependent variable:
	Terror Attack
Day Type - Long Holiday	0.218^{***}
	(0.062)
Day type - Short Holiday	-0.224^{***}
	(0.043)
Attack Lag_{t-1}	0.482^{***}
	(0.038)
Battlefield $Events_{t-1}$	0.043^{***}
	(0.013)
log(Population)	0.655
	(0.606)
GDP PC	-1.328^{**}
	(0.551)
Land Area (km^2)	0.389
	(0.567)
National Holiday	-0.118
	(0.139)
Intercept	-5.082^{***}
	(0.511)
Observations	93,862
Var(Country)	3.973
Var(Country Year : Country)	2.595
Num(Country)	17
Num(Country Year : Country)	257
Log Likelihood	$-13{,}428.200$
Akaike Inf. Crit.	26,880.410
Bayesian Inf. Crit.	26,993.800
Note:	$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

While the regression coefficients and their significance support my hypotheses, I also calculate the predicted probability of a terror attack occurring across the categories of the *Day Type* variable using the estimated regression model. This enables a better substantive

understanding of the effects different types of holidays have on encouraging or restraining violence. I employ the observed value approach to calculate these probabilities (Hanmer and Kalkan 2012). This calculates average effects within the population, rather than effects on an average observation, by utilizing the actual data (the observed values) used when estimating the model to calculate predictions.

I generate these predicted probabilities by creating a profile for each category within the *Day Type* variable (Nonholiday, Short Holiday, and Long Holiday) and sampling the distributions of the coefficients in the estimated regression model 1,000 times. The results suggest that, on average and controlling for other factors, terror attacks are least likely to occur on a *Short Holiday*. The mean predicted probability of an attack on a *Short Holiday* is 8.4% lower than on a nonholiday. Again, this supports my first hypothesis, which theorized these days experience less terrorism because the government clusters its counter-terror efforts on them. The predictions also support my second hypothesis, as the probability of an attack on a *Long Holiday* is 8.7% more likely than on a nonholiday. I argue terror groups commit attacks during these longer holy periods because they offer a number of payoffs without the additional costs related to conducting operations on highly protected days.

I also estimate the first differences between these categories in order to verify there is a significant difference between their predictions. I display the difference between *Nonholidays* and both *Short Holidays* and *Long Holidays* in figure 1. The dot represents the mean difference and the line segment is a 95% prediction interval. Both differences are significant. We can interpret the results by noting whether the difference is positive or negative. A positive value suggests that the value being subtracted from is more likely to experience a terror attack than the baseline. A negative value conveys the opposite. In this case, the difference between *Short Holidays* and *Nonholidays* is negative and significant. These holidays are therefore less likely to experience a terror attack than nonholidays. The difference between *Long Holidays* and *Nonholidays* is positive and significant. This sug-

gests that these holidays are more likely to experience terrorism than nonholidays. These findings are robust to alternate, but possibly reasonable, codings of the *Day Type* variable, which I demonstrate in the Online Supplementary Appendix.

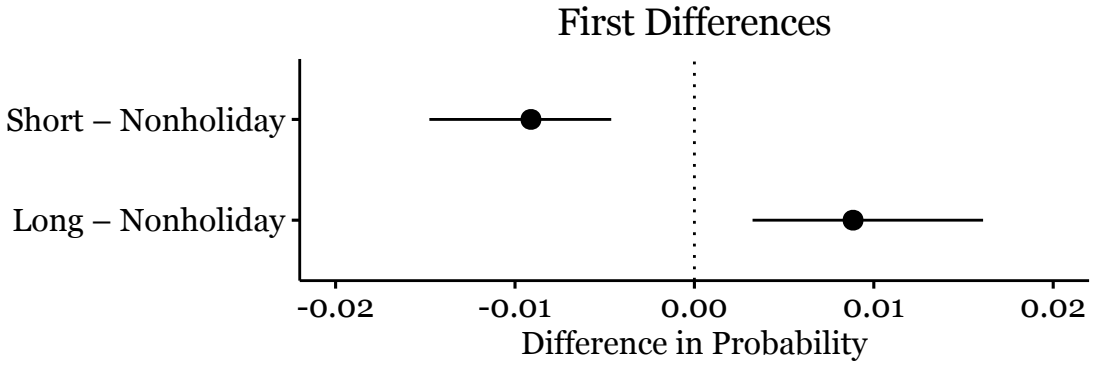

Figure 1: Dots represent the mean difference between predictions while line segments represent a 95% prediction interval.

I return to the regression results to interpret the coefficients on the control variables, all of which behave as expected. *Population* is positive, suggesting that increases in population are associated with higher probabilities of experiencing a terror attack, but not significant. *GDP PC* is negative and significant which suggests that countries with relatively higher levels of GDP per capita are less likely to experience terror attacks. Both of these relationships conform to findings in existing studies regarding terrorism. The count of battlefield events is also significant and positive. *Land Area* is positively associated with the incidence of a terror attack, but not significantly. Finally, *National Holiday*, which coded secular, national holidays, is negative but not significant. The negative relationship makes sense, as the state might also protect secular holidays.

4.1 Evidence for the Mechanism

The statistical analysis supports the hypothesized relationship between terrorism and religious holidays, but it does not provide direct evidence for the theoretical mechanism. This section substantiates that governments increase security during short religious holi-

days with day-level news data from Syria. I focus on Syria due to the salience of counter-terrorism in the country and because the government manages an official news agency that is likely to report on important security efforts. Of course, directly measuring day-level counter-terror efforts is difficult because governments have an incentive to keep this information private. Broadcasting specific troop deployments or providing security plans to the public offers terrorists the opportunity to overcome these measures. Due to this, I examine news articles and calculate the percent that mention counter-terrorism on different types of days. Other studies regarding government counter-terror strategies employ similar approaches. For example, Dugan and Chenoweth (2012) use news reports to code actions taken by Israel against Palestinian groups.[20] However, it is likely some security plans that governments implement are not reported due to other events or are intentionally clandestine. Possible bias resulting from this likely makes it harder to detect increases in counter-terrorism on certain types of days.

Specifically, I collect all articles published by the Syrian Arab News Agency (SANA) in Arabic that are available on LexisNexis. This results in 36,883 articles published between 2011-2020.[21] SANA is an ideal outlet to examine because it is a major news agency and is controlled by the Syrian government. As such, SANA is likely to broadcast information regarding the government's efforts to keep the public safe. Security and counter-terrorism were also particularly salient issues in Syria during the period covered by the data. This makes it likely that possible security plans made it into the news. I use the Arabic version of SANA because it is the outlet's primary language. It is also the language of their domestic and regional audiences, which are likely the intended recipients of information regarding domestic security plans. I employ the same scheme detailed in table 1 to determine whether each article was published on a short holiday, long holiday, or nonholiday. I

[20]Their data is monthly, so it is not possible to use it for this analysis.

[21]I clean the text using standard procedures, such as dropping Latin characters and stripping punctuation, and reduce each word to its stem with arabicStemR (Nielsen 2017).

then use a set of keywords to ascertain whether each article refers to counter-terrorism.[22] Using this information, I calculate the percent of the articles published on each type of day that refer to counter-terrorism.

Figure 2 displays the result of this process. The x-axis shows the percent of news articles published by SANA that mention words related to counter-terrorism. The dashed line represents the percent of articles published on nonholidays. Articles published on short holidays have the highest proportion that mention counter-terrorism. This is consistent with my theory, as this increase suggests the Syrian state pays particular attention to securing these days. A greater number of articles about counter-terrorism is likely correlated with increased efforts to deter attacks. Nonholidays and long holidays have relatively similar proportions of articles that refer to counter-terrorism. This suggests the Syrian government does not increase security across *all* holy days, but instead focuses on those that are short.

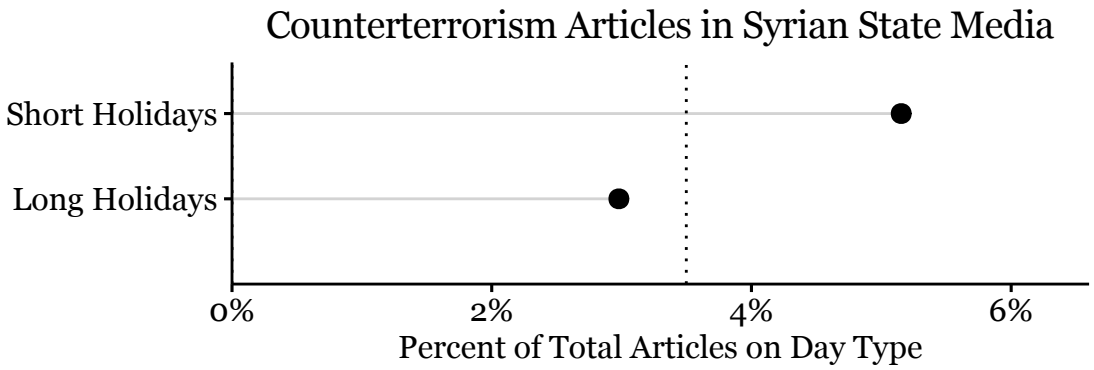

Figure 2: The figure displays the percent of news articles published in Arabic by the Syrian Arab News Agency (2011-2020) that mention words related to counter-terrorism on short and long holidays. The dashed line displays the percent of articles that mention counter-terrorism on nonholidays.

[22]I use the following terms in Arabic: *security plan* OR *counter-terrorism* OR *security measures*.

4.2 Evidence from Jewish Holy Days in Israel

The main analysis examines countries with large Muslim populations, but I expect the theory to generalize to other religions. I examine terrorism on Jewish holidays in Israel in this section to demonstrate the logic applies elsewhere. Israel is an appropriate case for several reasons. First, similar to the members of the Arab League, the majority of Israelis adhere to the same religion and practice it openly. Second, Judaism has a number of short holy days and several long holy days spread across the year. This provides more variation in the timing of long holy days than Islam, which only observes the month-long commemoration of Ramadan. Third, Israel has consistently experienced terrorism for decades, which makes counter-terrorism perpetually salient. This provides a suitable context to examine the strategic logic proposed by the theory. Fourth, Israel is an interesting case to examine because they built a barrier around the West Bank in 2004.[23] The "significant defense," which has drawn international condemnation, integrates a number of security measures beyond simply being a fence (Dicter and Byman 2006). Authorities routinely close the barrier surrounding Jewish holy days to counter the threat of terrorism on these important days, including during the duration of long Jewish holidays that last over a week (Najjar 2017). This allows examining whether the data is consistent with the theory *before* the barrier's construction and if *after* it was built authorities were able to use this significant security measure to deter terrorism on all holy days.

I employ the Global Terrorism Database (2001-2016), the same source and time period used in the main analysis, to measure the incidence of terrorism in Israel (LaFree and Dugan 2011). Judaism uses a lunisolar calendar, so I rely on Hebcal to convert Gregorian dates to their Jewish equivalent and consequently identify the timing of holy days. I specifically use Hebcal's REST API to perform these date conversions.[24] I use a list of Jewish holy days observed in Israel maintained by the Israeli Ministry of Foreign Affairs

[23]The first continuous segment of the barrier in an area the government deemed critical was completed in late 2003. Construction of other segments continued after that.

[24]https://www.hebcal.com/home/developer-apis

to determine which holidays to include in the analysis. They are detailed in table A.1 of the Online Supplementary Appendix. I categorize the holy days as "short" and "long" using the same rule applied to the Islamic calendar. Commemorations that are three days or less are short and all others are long. Judaism celebrates multiple long holidays, including Sukkot and Shemini Atzeret-Simchat Torah (8 days); Hanukkah (8 days); and Passover (7 days).

Figure 3 displays the results of this analysis. The percent of days that experience a terror attack is displayed on the x-axis across short and long holidays. The dashed line represents the percent of attacks on nonholidays. As expected, the rate of attacks on long holy days is higher than on short holy days and nonholidays before the separation wall. Short holidays are the least likely to experience terrorism. This matches the results of the main analysis and provides additional evidence for the theory in a different religious context. After the wall, when authorities routinely shut the border down during holy periods, both short and long holidays experienced less terrorism than nonholidays. This supports the theory's assertion that terror groups conduct attacks when their expectation of government counter-terror measures are relatively low and illustrates the logic of substitution effects.

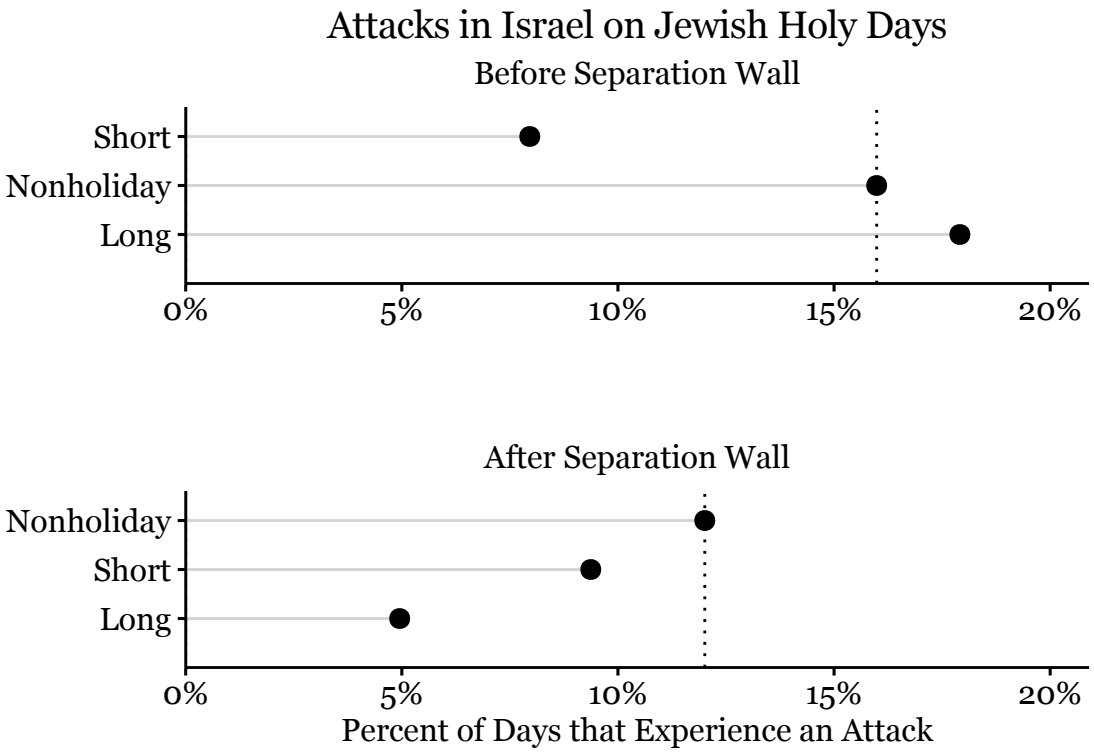

Figure 3: The figure displays the percent of days that Israel experienced terrorism on the different categories of *Day Type*. The top plot displays the period before the separation wall was built (2001-2003) while the plot on the bottom displays the period after its construction (2004-2016). Dashed lines display the percent of nonholidays that experienced a terror attack in each period.

5 Conclusion

In this article I argued that religious holy days are attractive outlets for terror attacks due to their symbolic value. Interrupting the religious practices associated with these days and violating their sanctity with violence can amplify the effect of an attack and serve a variety of strategic purposes. Extant research regarding this topic produces mixed findings though; holidays are expected to increase (Hassner 2011) and decrease (Reese, Ruby, and Pape 2017) the risk of violence on these days. This article attempts to resolve these disparate conclusions by arguing that a heterogeneous effect exists. I argue that, relative to nonholidays, more terrorism occurs during long holidays because governments are

unable to effectively protect them while less terrorism occurs on short holidays because state security is massively increased. Statistical analyses that used data regarding terror attacks in all Arab League countries and all countries comprised of at least 90% Muslims supported these claims. More so, since the main analysis did not measure it directly, I provided evidence that security is relatively higher during short holy days by examining media reports in Syria. Finally, I supplied data regarding terrorism on Jewish holy days in Israel to demonstrate the logic detailed in this study applies to other religious contexts as well.

The principal contributions of this article are twofold. First, it interrogates a common finding, that religious conflicts are more deadly, and explores the production of that violence. I argue that religion informs the organization and timing of terrorism due to strategic and rational calculations by armed groups. Their perception of the government's counter-terror capacity is central to their choice of whether or not to conduct an attack. As such, this study also aids our understanding of the logic terrorists use when timing attacks more broadly. Indeed, this article's second major contribution is demonstrating that counter-terrorism efforts can create substitution effects across *time*, not just in terms of *targets*, which is the focus of existing research. Heavy security on certain days can effectively reduce attacks, but might lead to an increase in violence on other days.

A number of extensions exist for future work. First, research that builds on this study can provide additional information for policy-makers to understand the temporal effects of their security plans and offer insight into the logic that armed groups employ when confronting *temporal* targets with varying levels of counter-terror measures. Second, the effect of increased security on the variation in attacks is not directly tested or observed in this study. Both scholars and policymakers are acutely interested in the manner in which armed groups, particularly those that claim a religious identity, weigh the costs and benefits of an attack. Studying attacks on holy days could offer insight into when and how different levels of specific counter-terror measures can act as a deterrent to violence. Future

studies could therefore rely on historic military records or use geospatial data regarding a specific city or country to test this directly. Third, scholars are interested in how non-state groups adapt to their environment and the ways in which they evolve. Future studies could explore how groups learn to overcome certain types of security that governments deploy during these focal points for violence.

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A Online Supplementary Appendix

A.1 Additional Tables

Table A.1: *Day Type* - Short and Long Jewish Holidays

Jewish Holiday	Hebrew Date	Length	Type
Fast of Gedaliah	3 Tishre	1 day	Short
Yom Kippur	10 Tishre	1 day	Short
Rosh Hashanah	15 Shevat	1 day	Short
Tu B'Shevat	15 Shevat	1 day	Short
Fast of Esther	11 Adar	1 day	Short
Purim	14/15 Adar	1 day	Short
Holocaust Martyrs' & Heroes' Remembrance Day	27 Nisan	1 day	Short
Remembrance Day	3 Iyar	1 day	Short
Lag B'Omer	18 Iyar	1 day	Short
Shavuot	6 Sivan	1 day	Short
17th of Tammuz	18 Tammuz	1 day	Short
Ninth of Av	10 Av	1 day	Short
Sabbath	Weekly	1 day	Short
Sukkot & Shemini Atzeret-Simchat Torah	15-22 Tishre	8 days	Long
Hannukah	25 Kislev - 2/3 Tevet	8 days	Long
Passover	15-21 Nisan	7 days	Long

Table A.2: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Median
Terror Attack	93,862	0.10	0.31	0
Terror Attack Lag_{t-1}	93,862	0.10	0.31	0
Battlefield $Events_{t-1}$	93,862	0.34	1.66	0
log(Population)	93,862	16.11	1.26	16.07
GDP PC	93,862	28,905.31	33,230.47	11,756.97
Land Area (km^2)	93,862	787,060.80	856,337.20	472,021.50
National Holiday	93,862	0.01	0.11	0
Day Type - Non-Holiday	93,862	0.76	0.43	1
Day Type - Short Holiday	93,862	0.17	0.38	0
Day Type - Long Holiday	93,862	0.07	0.25	0

A.2 Countries in the Data

Figures A.1 and A.2 visualize the countries in the Arab League dataset and in the dataset with all countries comprised of at least 90% Muslims respectively. Countries included in the data are colored royal blue and those that are omitted from the analysis due to entirely incomplete data or because they experienced no terrorism during the study's timeframe are magenta.

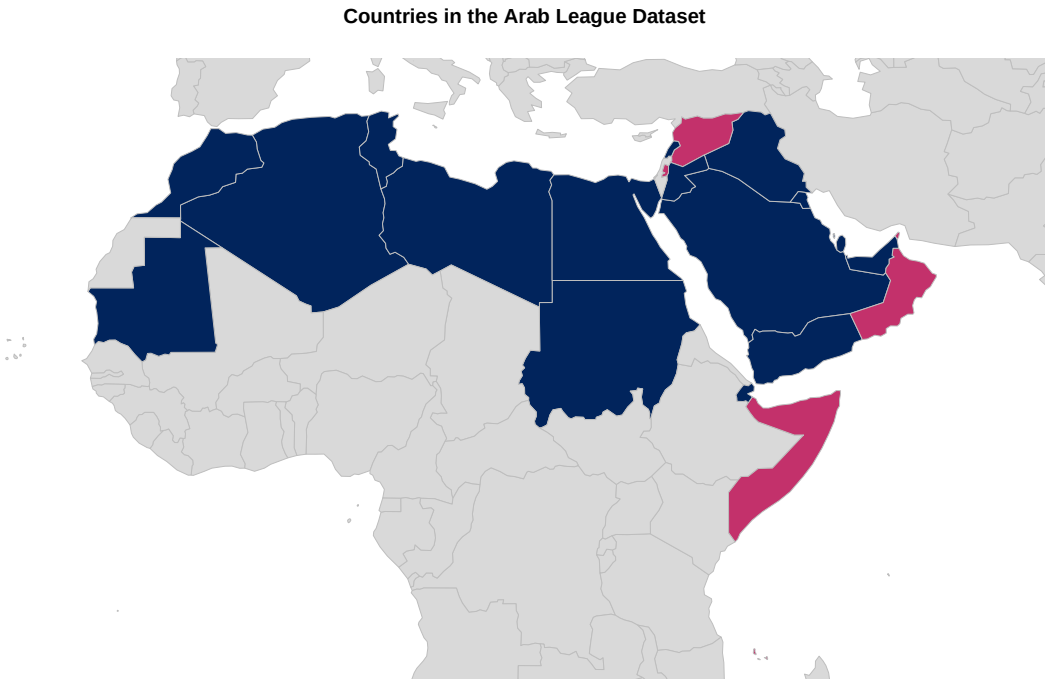

Figure A.1: *Countries represented in the main analysis (Arab League).* Royal blue denotes countries in the data while magenta highlights those that are omitted from the analysis due to entirely incomplete data or because they experienced no terrorism during the study's timeframe (Union of the Comoros, Oman, the Palestinian Territories, Somalia, and Syria).

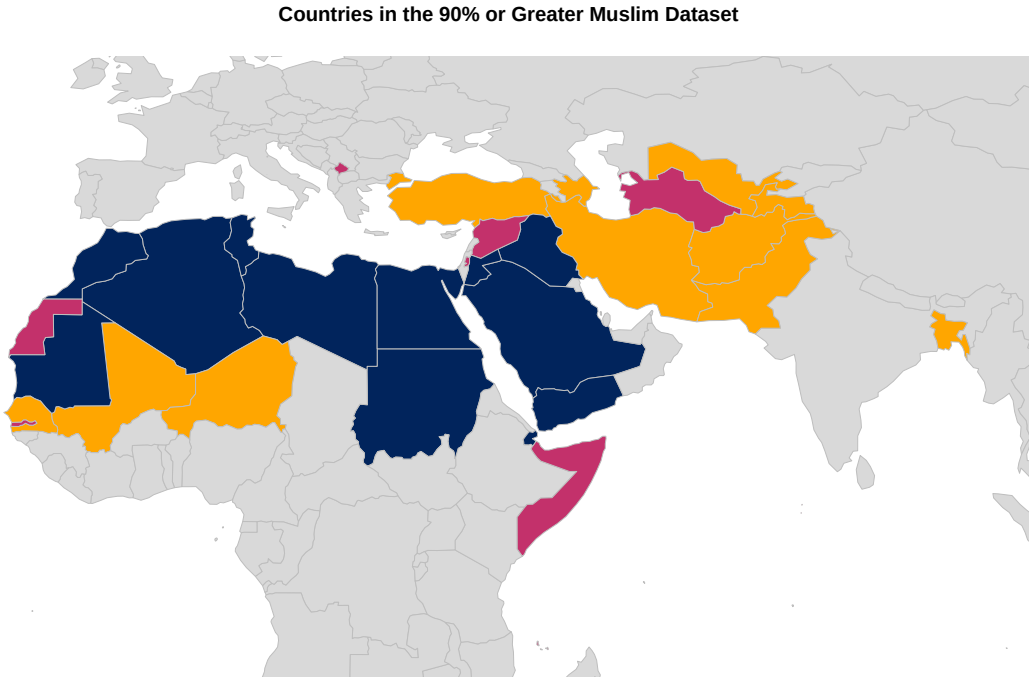

Figure A.2: *Countries represented in the dataset of all countries comprised of at least 90% Muslims*. Royal blue denotes countries in the data while magenta highlights those that are omitted from the analysis due to entirely incomplete data or because they experienced no terrorism during the study's timeframe (Gambia, Kosovo, Maldives, Somalia, Syria, Turkmenistan, Palestinian Territories, Union of the Comoros, Western Sahara).

Observed Countries in the Arab League: Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Qatar, Saudi Arabia, Sudan, Tunisia, Yemen, and the United Arab Emirates.

Observed Countries with ≥90% Muslims: Afghanistan, Algeria, Azerbaijan, Bangladesh, Djibouti, Egypt, Iran, Iraq, Jordan, Libya, Mali, Mauritania, Morocco, Niger, Pakistan, Saudi Arabia, Senegal, Sudan, Tajikistan, Tunisia, Turkey, Uzbekistan, and Yemen.

A.3 Attacks on Holidays Across Countries

Figure A.3 displays the percent of days within each category of *Day Type* (short, long, nonholiday) that experience terrorism. The figure is faceted by country and I order the plots by the number of days each country experiences terrorism. Countries where the percent of days that experience terrorism is highest during long holidays (Ramadan) are colored red. Countries where a different category (short or nonholiday) has the highest percent of days that experience terrorism are colored teal.

Note that long holidays experience the most terrorism in the majority of countries. Long holidays are also the highest category in the countries that experience the most terrorism - Iraq, Somalia, Yemen, etc. The majority of the countries where terrorism is *not* the highest during long holidays are also countries that experience relatively little terrorism. Note that the majority of countries where the long holiday category is not the highest are in the bottom row of the figure, which is arranged by the percent of days that experience terrorism. These countries (the United Arab Emirates, Djibouti, Qatar) experience relatively little terrorism, only 5-20 attacks in total during 16 years covered by the data.

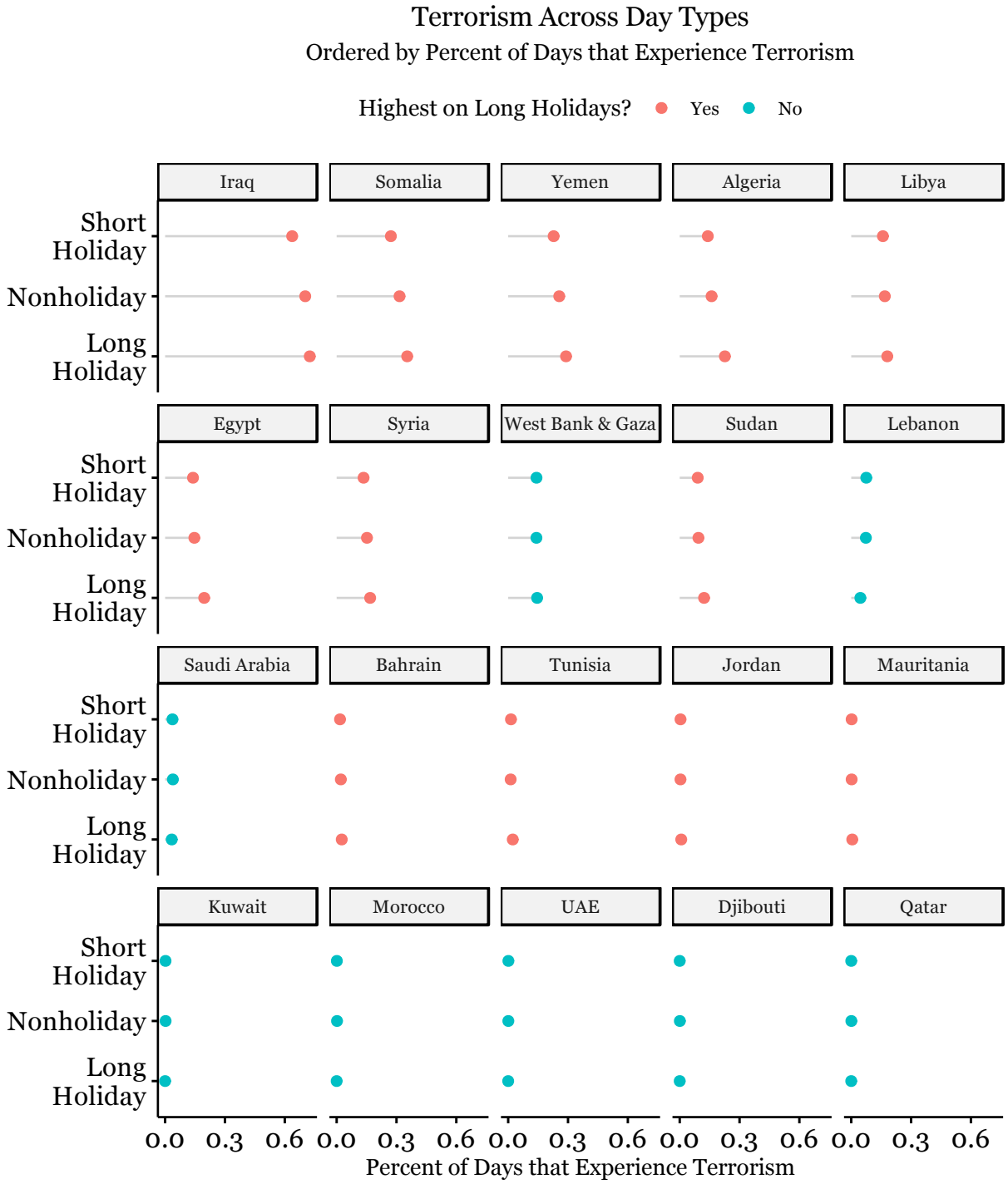

Figure A.3: The figure displays the percent of days that experience terrorism on the x-axis across each category of the *Day Type* variable on the y-axis and is faceted by country. The countries are ordered by the number of days each country experiences terrorism. Countries where the percent of days that experience terrorism is highest during long holidays are colored red and all others are colored teal.

A.4 Alternate *Day Type* Codings

I consider several alternate codings of the *Day Type* variable to ensure the robustness of the results. Recall that the coding of this variable is straightforward. *Short Holidays* are Islamic holidays that last three days or less while *Long Holidays* are days within the important month of Ramadan. However, the weekly liturgical day (Friday) could arguably constitute another category because it occurs regularly and therefore be qualitatively different from the other short holidays. I therefore estimate two additional models. First, I include Friday as a separate category within the *Day Type* variable (table A.3). *Friday* is negatively associated with terrorism and statistically significant in this model. The coefficients on the other holiday variables do not substantively change. This supports my theory, as Fridays are a short one day holiday and are associated with a decrease in the likelihood of terrorism when included in the model separately. Second, I estimate a model with Friday excluded from the *Short* category altogether (table A.3). The results are consistent with the main model.

A.5 Alternative Model Specifications

Table A.3: Model 1a is estimated with Friday, which hosts Islam's weekly liturgical service, omitted from the *Short Holiday* category of *Day Type*. Model 2a is estimated with Friday as a separate variable. I move Fridays from the *Short Holiday* category to the indicator variable *Friday*. The models are otherwise identical to the main model in table 2.

	Dependent variable:	
	Terror Attack	
	(1a)	(2a)
Day Type - Long Holiday (No Friday)	0.249^{***}	
	(0.061)	
Day Type - Short Holiday (No Friday)	-0.278^{***}	
	(0.091)	
Day Type - Long Holiday (Friday separate)		0.218^{***}
		(0.062)
Day Type - Short Holiday (Friday separate)		-0.309^{***}
		(0.091)
Friday		-0.203^{***}
		(0.047)
Attack Lag_{t-1}	0.480^{***}	0.482^{***}
	(0.038)	(0.038)
Battlefield Events_{t-1}	0.042^{***}	0.043^{***}
	(0.013)	(0.013)
log(Population)	0.654	0.647
	(0.606)	(0.609)
GDP PC	-1.328^{**}	-1.332^{**}
	(0.552)	(0.553)
Land Area (km^2)	0.389	0.392
	(0.564)	(0.570)
National Holiday	-0.117	-0.118
	(0.139)	(0.139)
Intercept	-5.112^{***}	-5.082^{***}
	(0.509)	(0.510)
Observations	93,862	93,862
Var(Country)	3.974	3.977
Var(Country Year : Country)	2.595	2.594
Num(Country)	17	17
Num(Country Year : Country)	257	257
Log Likelihood	$-13,436.850$	$-13,427.640$
Akaike Inf. Crit.	26,897.710	26,881.280
Bayesian Inf. Crit.	27,011.100	27,004.120
Note:	$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$	

Table A.4: Model 3a is estimated without *Battlefield Events* and model 4a omits several additional control variables. The results of both models are consistent with the main model in table 2.

	Dependent variable:	
	Terror Attacks	
	(3a)	(4a)
Day Type - Long Holiday	0.220^{***}	0.209^{***}
	(0.061)	(0.051)
Day type - Short Holiday	-0.221^{***}	-0.210^{***}
	(0.043)	(0.035)
Attack Lag_{t-1}	0.498^{***}	
	(0.038)	
log(Population)	0.676	1.252^{**}
	(0.600)	(0.503)
GDP PC	-1.326^{**}	
	(0.551)	
Land Area (km^2)	0.382	
	(0.560)	
National Holiday	-0.114	-0.136
	(0.138)	(0.117)
Intercept	-5.092^{***}	-4.747^{***}
	(0.512)	(0.520)
Observations	93,862	116,889
Log Likelihood	$-13,433.780$	$-19,533.290$
Akaike Inf. Crit.	26,889.570	39,082.570
Bayesian Inf. Crit.	26,993.510	39,159.930
Note:	$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$	

Table A.5: Model 5a is the same as the main model, except it is estimated with data regarding all countries comprised of at least 90% Muslims. The results are consistent with the main model.

	Dependent variable:
	Terror Attack
	(5a)
Day Type - Long Holiday	0.086^{*}
	(0.049)
Day type - Short Holiday	-0.203^{***}
	(0.033)
Attack Lag_{t-1}	0.534^{***}
	(0.030)
Battlefield Events_{t-1}	0.052^{***}
	(0.011)
log(Population)	2.555^{***}
	(0.640)
GDP PC	-0.997^{***}
	(0.344)
Land Area (km^2)	0.741
	(0.495)
National Holiday	-0.049
	(0.102)
Intercept	-4.988^{***}
	(0.512)
Observations	128,588
Var(Country)	4.766
Var(Country Year : Country)	1.827
Num(Country)	23
Num(Country Year : Country)	352
Log Likelihood	$-22{,}094.450$
Akaike Inf. Crit.	44,212.890
Bayesian Inf. Crit.	44,330.070
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A.6: Models 6a and 7a are the same as models 1a and 3a, except they are estimated with data regarding all countries comprised of at least 90% Muslims. The results are consistent with the models fit to data regarding countries in the Arab League.

	Dependent variable:	
	Terror Attack	
	(6a)	(7a)
Day Type - Long Holiday (No Friday)	0.110^{**}	
	(0.049)	
Day Type - Short Holiday (No Friday)	-0.356^{***}	
	(0.069)	
Day Type - Long Holiday (Friday separate)		0.086^{*}
		(0.049)
Day Type - Short Holiday (Friday separate)		-0.380^{***}
		(0.070)
Friday		-0.158^{***}
		(0.037)
Attack Lag_{t-1}	0.533^{***}	0.534^{***}
	(0.030)	(0.030)
Battlefield Events_{t-1}	0.052^{***}	0.052^{***}
	(0.011)	(0.011)
log(Population)	2.542^{***}	2.536^{***}
	(0.634)	(0.630)
GDP PC	-1.001^{***}	-1.004^{***}
	(0.344)	(0.344)
Land Area (km^2)	0.746	0.748
	(0.493)	(0.495)
National Holiday	-0.048	-0.048
	(0.102)	(0.102)
Intercept	-5.007^{***}	-4.982^{***}
	(0.510)	(0.508)
Observations	128,588	128,588
Var(Country)	4.764	4.766
Var(Country Year : Country)	1.826	1.827
Num(Country)	23	23
Num(Country Year : Country)	352	352
Log Likelihood	$-22{,}099.410$	$-22{,}090.190$
Akaike Inf. Crit.	44,222.820	44,206.380
Bayesian Inf. Crit.	44,339.990	44,333.310
Note:	$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$	

Table A.7: The outcome variable in model 8a excludes attacks that are included in the Global Terrorism Database, but are coded as possibly not being terrorism. It is otherwise identical to the main model. The results are consistent with the the main model.

	Dependent variable:
	Terror Attack
	(8a)
Day Type - Long Holiday	0.173^{***}
	(0.064)
Day type - Short Holiday	-0.211^{***}
	(0.045)
Attack Lag_{t-1}	0.435^{***}
	(0.040)
Battlefield $Events_{t-1}$	0.034^{***}
	(0.013)
log(Population)	0.887
	(0.606)
GDP PC	-1.207^{**}
	(0.539)
Land Area (km^2)	0.330
	(0.554)
National Holiday	−0.195
	(0.144)
Intercept	-5.286^{***}
	(0.500)
Observations	93,862
Var(Country)	3.788
Var(Country Year : Country)	2.342
Num(Country)	17
Num(Country Year : Country)	257
Log Likelihood	−12,627.650
Akaike Inf. Crit.	25,279.290
Bayesian Inf. Crit.	25,392.690
Note:	*p<0.1; **p<0.05; ***p<0.01