Conflict and Religion: Evidence from Ramadan

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Abstract

This study explores how religious observance affects the incidence of conflict in the context of Ramadan. Using Ramadan's plausibly exogenous timing as a quasi-natural experiment, I analyze its effect on the occurrence of state-based armed conflicts and public demonstrations in a cross-country setting, leveraging daily data from the Uppsala Conflict Data Program (1989–2022; 107 countries) and the Armed Conflict Location and Event Data for African countries (1997–2023; 48 countries). I find that Ramadan has a positive effect on armed conflicts between the government and other organized groups compared to other months. In contrast, the findings reveal a marked decline in public demonstrations, likely reflecting the physical demands and communal focus of fasting on civilians. I formulate a simple actor-based framework that provides possible explanations for these results by elaborating on the motivations and constraints of the government, rebel factions, and civilians. These insights underscore Ramadan's unique influence on social stability and highlight the importance of peace agreements, especially during periods of religious observance.

JEL classification: Z12; D74; O57; F51

Keywords: Armed Conflict; Demonstrations; Religion; Ramadan

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1 Introduction

Conflicts have been a defining feature of human history, acting both as a destructive force and a catalyst for change. Despite the devastation of World War II and major efforts for global world order, the latter half of the 20th century was marked by a prevalence of state-based conflicts,[1] often fueled by Cold War rivalries and proxy wars between superpowers. The collapse of the Soviet Union in the early 1990s ended many Cold War-era conflicts, but the new century has seen a sharp rise in state-based conflicts (Palik et al., 2022), including the Russo-Ukrainian War and renewed escalations in the Middle East in the past few years. Among the causes of these conflicts, such as resource competition, ethnic divisions, and power struggles, this paper focuses on the role of religion, a powerful force that can both bring peace and fuel conflict.

Throughout history, religion has been another defining feature of human societies. In the early 21st century, at least 84% of the global population is affiliated with an organized religion or has beliefs in a spiritual or higher power (Pew Research Center, 2017). Religious doctrines, rituals, and services are known to influence socioeconomic activities and attitudes of people.[2] Among other factors, religiosity can have varying effects on conflicts, including both the potential to alleviate them by fostering dialogue and forgiveness, and the possibility of fueling them by perpetuating intolerance and violence.

Economists (e.g., Iyer, 2016; Becker et al., 2021) and other social scientists (e.g., Finke, 2013; Silvestri and Mayall, 2015) have produced extensive surveys of research on religion, politics, and conflict. However, the scholarly investigation into the causal effect of religious practices on the occurrence of conflict, encompassing both armed and non-armed instances, appears to be significantly underexplored. One enormous challenge is that religious behavior is endogenous; for instance, people might turn to religion for solace after conflicts or find scriptural reasons to further engage in them. Finding convincing evidence of a causal effect driving these relationships has been difficult. Iyer (2016) elaborates on this challenge and advocates a more nuanced understanding of identification issues and a deeper consideration of causality. She also suggests that improved conflict datasets offer opportunities for exploring the connections between religion, politics, and conflict, noting the under-explored nature of this research area.

In this paper, I try to address these identification challenges by exploiting the exogenous timing of the Islamic lunar month of Ramadan relative to the Gregorian solar calendar. I investigate the effects of the advent of Ramadan on two types of conflict,

[1] According to the definition by the Uppsala Conflict Data Program (UCDP), a state-based conflict is a dispute over government or territory that involves the use of armed force between two parties, including at least one state government, and leads to a minimum of 25 battle-related deaths in a single calendar year (Högbladh, 2023).

[2] Iannaccone (1998) & McCleary and Barro (2006) offer comprehensive studies of how religion affects socioeconomic outcomes and vice versa.

namely state-based armed conflicts and non-armed conflicts in the form of demonstrations. I use comprehensive incident-level conflict datasets to analyze these relationships. I also provide a simple, stylized conceptual framework to gain insight into the different pathways through which Ramadan can influence conflict dynamics and explain the empirical results.

In the main analysis, I use the event-level conflict dataset from the UCDP, constructing both monthly and yearly cross-country panels, converted to the Islamic calendar, to examine armed conflict patterns across 107 countries from 1989 to 2022. I also use data for 48 countries in Africa from the Armed Conflict Location & Event Data (ACLED) project, which is one of the few cross-country panel sources that includes demonstration activity from 1997 to 2023. This data allows me to capture the potential influence of Ramadan on political activism, providing a more nuanced understanding of how religious observance may impact different forms of civilian political engagement.

I find that during Ramadan, there is a modest but steady uptick in state-based armed conflicts, especially in countries where most of the population is Muslim. In these Muslim-majority nations, the start of Ramadan is linked to about a 3.5% increase in armed clashes between government forces and organized rebel groups. It seems that rebel factions might use Ramadan as a strategic moment to boost their cause or intensify confrontations, possibly leveraging the religious significance of the period.

However, Ramadan seems to calm things down when it comes to public protests, with noticeable drops in demonstration activities during the fasting period. For example, in African countries with Muslim majority, protests decrease by about 8.5% to 9.6% compared to other months. This reduction is likely because fasting is physically demanding and people tend to focus more on religious gatherings and community during Ramadan than on civic protests. The decline in demonstrations is most evident in regions with large Muslim populations, highlighting how Ramadan's communal and spiritual focus can redirect public energy away from activism and toward personal and collective observance, leading to a temporary dip in social unrest.

Empirical research that focuses on the relationship between religion and conflict is most relevant to this study. Several recent papers have investigated the causal effect of conflicts on religiosity, mainly using the idiosyncratic variation in exposure to violence in their identification strategy (e.g., Zussman, 2014; Henrich et al., 2019; Cesur et al., 2020). Exploring this dynamic from a reverse perspective, Clingingsmith et al. (2009) find that randomly drawn participation in the Hajj, another pillar of Islam, leads to "increased belief in peace, and in equality and harmony among adherents of different religions". In another study, Becker and Pascali (2019) reveal a post-Reformation rise in anti-Semitism, particularly in killings and expulsions of Jews, in Protestant compared to Catholic Germany through an extensive dataset covering pogroms and anti-Semitic acts in

over 2,000 German cities from 1300 to 1900. Despite these insights, the effect of recurrent religious practices on broader cross-country conflict dynamics in the contemporary world remains largely unexplored.

A related strand of literature exploits the exogenous spatio-temporal variation in Ramadan fasting hours or Ramadan as a treatment variable to examine the impact of religious observance, namely fasting, on outcomes such as long-term health and economic outcomes of children whose mother's pregnancy coincided with Ramadan (Almond and Mazumder, 2011; Majid, 2015), output growth and wellbeing (Campante and Yanagizawa-Drott, 2015), academic performance (Oosterbeek and van der Klaauw, 2013; Hornung et al., 2023), sports performance (Kirkendall et al., 2008), and criminality (Birkholz and Gomtsyan, 2023). Building on this body of work, my study examines the causal relationship between Ramadan and conflict, extending the analysis of religious observance to its impact on social stability.

The closest forerunners to this paper are Reese et al. (2017) and Hodler et al. (2024), which explore the effects of Islamic holidays and variations in fasting hours on terrorism, respectively. However, these studies focus solely on terrorist attacks, a narrow subset of armed conflicts involving rebel groups. To my knowledge, this is the first paper to analyze how increased religious observance during Ramadan, such as fasting and other acts of worship, influences state-based armed conflicts, the most common form of conflict globally. An additional focus of this paper is Ramadan's impact on protest dynamics, which directly involves ordinary civilians and reflects the broader concerns of society.

2 Ramadan Background

Ramadan is the ninth month of the Hijri calendar.[3] Ramadan holds profound significance for Muslims as the month in which the Qur'an was first revealed. Observing Ramadan through fasting is a key practice, known as one of the five pillars of Islam. Fasting from true dawn until sunset is obligatory for all Muslims who have reached puberty,[4] with exceptions for those who are acutely or chronically ill, traveling, elderly, breast-feeding, diabetic, pregnant, or experiencing intense hunger and thirst. Fasting during Ramadan involves abstaining from food, drink, tobacco products, sexual relations, and all forms of sinful behavior.

Ramadan significantly transforms the social and individual lives of those who observe it. Participants wake up before true dawn to eat and drink (*suhur*) and carry on with their daily activities, before breaking their fast (*iftar*) at sunset, often in the com-

[3] Also known in English as the Islamic calendar, it is a purely lunar calendar that consists of twelve months that are either 30 or 29 days long. This causes Ramadan to occur 10 to 12 days earlier each year in relation to the Gregorian calendar.

[4] True dawn (*subh sadiq*) is when the sun is about 15° below the horizon and when the rays of light begin to spread over the horizon.

pany of family and friends. Mosques also host iftar meals, attracting large gatherings throughout the month. Among various religions, predominantly Muslim countries have the highest daily and weekly rates of worship (Pew Research Center, 2018). Muslims pray five times a day, either in the mosque or individually, and gather for weekly Friday congregational prayers around noon throughout the year, with heightened emphasis on these practices during Ramadan. Both men and women frequently attend additional congregation prayers (*tarawih*) after iftar, which typically last 1-2 hours.

Another widely practiced observance, particularly among men, is *i'tikaf*, performed during the last ten days of Ramadan. This involves secluding oneself in the mosque from sunrise to sunset, focusing on reciting the Qur'an and seeking spiritual knowledge. The Qur'an is believed to have been revealed on one of the odd nights of the last ten days of Ramadan known as the Nights of Decree (*laylat al-qadr*), prompting many believers to engage in all-night worship during the last ten days in search of this blessed night. In line with this, Pope (2024) uses evidence from US cellphone data to report large spikes in Muslim worship attendance during Ramadan, especially the last week, and during Eid al-Fitr, which marks the end of the month-long fasting.

In almost all Muslim-majority countries, the Hijri calendar is primarily used for religious purposes, rather than for civil or administrative functions. This calendar is essential for determining the dates of these religious observances, which are central to Muslim practices and community life. For day-to-day civil, commercial, and governmental activities, most Muslim countries use the Gregorian calendar, which aligns with international standards and simplifies coordination with the global economy. Even a country like Saudi Arabia, which historically used the Hijri calendar for official purposes, has recently shifted to the Gregorian calendar for administrative functions to streamline operations and align with the global system.

3 Conceptual Framework

Existing theory provides no clear answers on whether intense religious observance during Ramadan encourages or discourages participation in conflict-related activities. Neither theory nor analysis can possibly provide definitive answers on this. It appears to be more a matter of empirical inquiry. Although there is no grand unified theory to answer this question, I present potential mechanisms that act as channels through which Ramadan may affect conflict in Figure 1.

These mechanisms may not operate uniformly across individuals with varying degrees of agency in conflicts. For instance, civilians, who typically do not participate in armed conflict, may instead engage in demonstrations. For them, the physical demands of fasting, combined with other daily responsibilities, can significantly increase the opportunity cost of protest activities during Ramadan. In contrast, fighters in rebel groups—actively

Figure 1: The Potential Mechanisms for the Ramadan-Conflict Relationship

Notes: This figure outlines key mechanisms by which Ramadan influences armed conflicts and demonstrations. Ramadan's most immediate impacts stem from the physiological demands of fasting and a range of psychological experiences, such as heightened social cohesion, self-discipline, and compassion. Armed conflicts commonly involve incidents like direct firearm engagements, shelling, and airstrikes. Demonstrations typically involve groups of three or more individuals protesting against political entities, government institutions, and policies.

engaged in armed conflict—may experience no unique physiological constraints during Ramadan, as they are often exempt from fasting due to travel or active combat duties. Instead, political mechanisms such as disrupting social order, especially when people's religious sensitivities are high, to damage state reputation may be more salient. We can expect these mechanisms to be more potent for one party than another, as motivations for conflict can vary significantly across the government, rebel groups, and civilians.

Hence, I adopt an actor-based framework to analyze these mechanisms, carefully accounting for the distinct roles and choices of each group. I structure the analysis around the distinct roles and motivations of three actors: the ruling group (G), rebel group (R), and civilians (C). This approach is particularly useful in this context where agency and constraints differ sharply between groups, allowing us to isolate each actor's incentives and behavioral responses to Ramadan's arrival. It also helps clarify assumptions about role exclusivity, an important consideration in this context.

For analytical clarity, I assume that each group's agency is mutually exclusive, with no overlapping or switching of roles. Civilians can participate only in demonstrations, bearing a high opportunity cost for engaging in armed conflict, which restricts their actions to lower-cost, typically violent expressions of dissent. In contrast, I assume that armed conflict is the domain of the ruling and rebel groups, who typically resort to forceful armed measures given their competing stakes in power and control.

Ruling Group (G): The ruling group's primary objective is to maintain control and social order, especially during Ramadan, a period when tensions may be heightened due to religious and social sensitivities. Anticipating potential increases in both combat activity from rebel groups and civilian unrest, G may respond by amplifying social control measures during Ramadan, including heightened police presence, welfare provisions, and symbolic gestures aimed at pacifying civilians. The ruling group's costs for these measures, denoted c_G, reflect both functional and symbolic strategies to counteract potential rebel attacks and manage civilian behavior during this period. The utility function for the ruling group, U_G, can be modeled as:

$$U_G = V - c_G(P_D + \lambda P_A) \tag{1}$$

where V denotes the ruling group's valuation of retained power, P_D represents the probability of civilian demonstrations, P_A denotes the probability of rebel attacks during Ramadan, C_G is the cost per unit of managing either civilian demonstrations or rebel attacks, and λ represents the relative impact of rebel attacks compared to civilian demonstrations on the ruling group's costs. Thus, U_G decreases as either P_D or P_A rises, incentivizing the ruling group to invest in measures that minimize both civilian unrest and rebel attacks.

Rebel Group (R): The rebel group's primary objective is to destabilize the ruling group and garner civilian support. I assume that the rebel group benefits from increased civilian demonstrations (P_D) against the ruling group, as civilian unrest signals potential support for the rebels' cause. Ramadan may also serve as a strategic period for R to intensify armed conflict, using the month's symbolic importance to frame their struggle as part of a religious or ideological cause, which could enhance the perceived legitimacy of their actions. The rebel group's utility U_R is thus a function of the probability of civilian demonstrations and the intensity of armed conflict (P_A):

$$U_R = f(P_D, P_A) - c_R \tag{2}$$

where c_R represents the cost per unit of armed conflict, and $f(P_D, P_A)$ captures the combined benefits of civilian unrest and conflict escalation in weakening G. Here, U_R is positively related to both P_D and P_A, suggesting that R has an incentive to exploit Ramadan's symbolic and destabilizing potential.

Civilians (C): Civilians have the option to participate only in demonstrations, with prohibitively high costs associated with joining armed conflict. During Ramadan, civilians are assumed to prioritize spiritual practices and communal bonding, which raises the opportunity cost of participating in demonstrations. Let c_C denote this opportunity

cost, which is expected to be higher during Ramadan due to religious obligations and the physical toll associated with fasting. The probability of civilian participation in demonstrations (P_D) is thus inversely related to c_C:

$$P_D = \frac{\alpha}{c_C} \tag{3}$$

where α represents the baseline propensity for civilian demonstration participation. As c_C increases with Ramadan observance, P_D declines, suggesting that civilians are less likely to protest during this period.

Each group interacts with the mechanisms in Figure 1 differently. Political mechanisms are the most salient for the ruling and rebel groups. Rebel groups aim to create instability and damage the government's reputation. They may also capitalize on Ramadan by framing their actions as a struggle for justice or a religiously motivated cause. The primary objective of the state government is to maintain control and combat any threats to its rule. Taking these incentives into account, we may expect incidents of state-based conflicts to increase.

When it comes to civilians, we can expect fasting and other religious rituals to place more physical demands on them, potentially raising their opportunity cost of engaging in protest. This physiological toll makes demonstrations less likely during Ramadan. The emphasis on spiritual practices and community bonding during Ramadan may decrease civilians' inclination toward protest, aligning their behavior more closely with introspective and peaceful activities. During Ramadan, heightened religious and social activity may increase the government's fear of rebel attacks and/or protest activity, prompting them to invest more in social control measures, police enforcement, and state benefits.

4 Data and Empirical Methodology

4.1 Data

The primary source of armed conflict data is the UCDP Georeferenced Event Dataset (GED) covering the period from 1989 to 2023 (34 Hijri years). I focus on state-based armed conflicts, that account for more than 70% of all armed conflict types within this dataset. An individual "event" in UCDP-GED involves the use of armed force by the government of a state against one or more opposition groups, with at least one direct battle death (Sundberg and Melander, 2013). This panel dataset covers nearly all Muslim-majority countries and spans one complete cycle of Ramadan's progression through the solar year,[5] with a sample of 107 countries. Figure 2 shows these countries on the world

[5]Since a lunar month is about 29.5 days long, the Hijri calendar shifts by around 1.5 weeks each year compared to the Gregorian calendar, with 34 Hijri years approximately corresponding to 33 Gregorian years.

map.

For non-armed conflict data involving demonstrations, I use the Armed Conflict Location & Event Data (ACLED) project in Africa over the period 1997-2023, involving 48 countries (Raleigh et al., 2023). I use the definition of demonstration from the ACLED codebook that defines it as "an in-person public gathering of three or more people advocating for a shared cause". The project started by focusing on Africa, allowing for coverage dating back to 1997, thus making it the only continent with the most extensive data. The rationale behind additionally focusing on Africa in this part is its significant Muslim population, with over half a billion Muslims and at least 17 Muslim-majority countries, comprising nearly a third of the global Muslim population (Kettani, 2010). In a global survey examining the significance of religion within various religious traditions, Pew Research Center (2018) documents that Africa exhibits the highest average percentages of individuals who consider religion to be very important in their lives as well as the highest percentages of individuals who pray daily (around 80%). The countries are shown in Figure 3.

These publicly available conflict datasets, characterized by their high frequency and structured around individual events, are collected in real-time and adhere to a rigorous and established set of methodologies. I construct daily conflict data by summing the incidents of state-based conflict and demonstrations for each day and country, and then I replace days with no reported conflict by setting the value to zero. To convert these dates from the Gregorian calendar to the Hijri calendar, I use an expert reviewed HijriDate Python package in the widely recognized Python Package Index (PyPI) repository.[6] Then I crosscheck these dates using Islamic Philosophy Online.[7]

I separately combine the conflict datasets with datasets on the Muslim population share in each country from the World Religion Project (WRP) (Maoz and Henderson, 2013) and the Pew Research Center. The WRP provides data on the number of followers and total population in five-year intervals from 1985 to 2010. I interpolate these figures to create an annual cross-country dataset for the years between the WRP's five-year markers. For the period from 2010 to 2023, I interpolate data from the Pew Research Center, which offers similar data at ten-year intervals.

4.2 Baseline Specifications

To examine the causal change in conflict frequency during Ramadan compared to other months, I use a Hijri calendar balanced panel setup. I estimate the following

[6] Available at https://pypi.org/project/hijridate.

[7] Available at https://www.muslimphilosophy.com/ip/hijri.htm from the Institute of Oriental Studies, Zürich University.

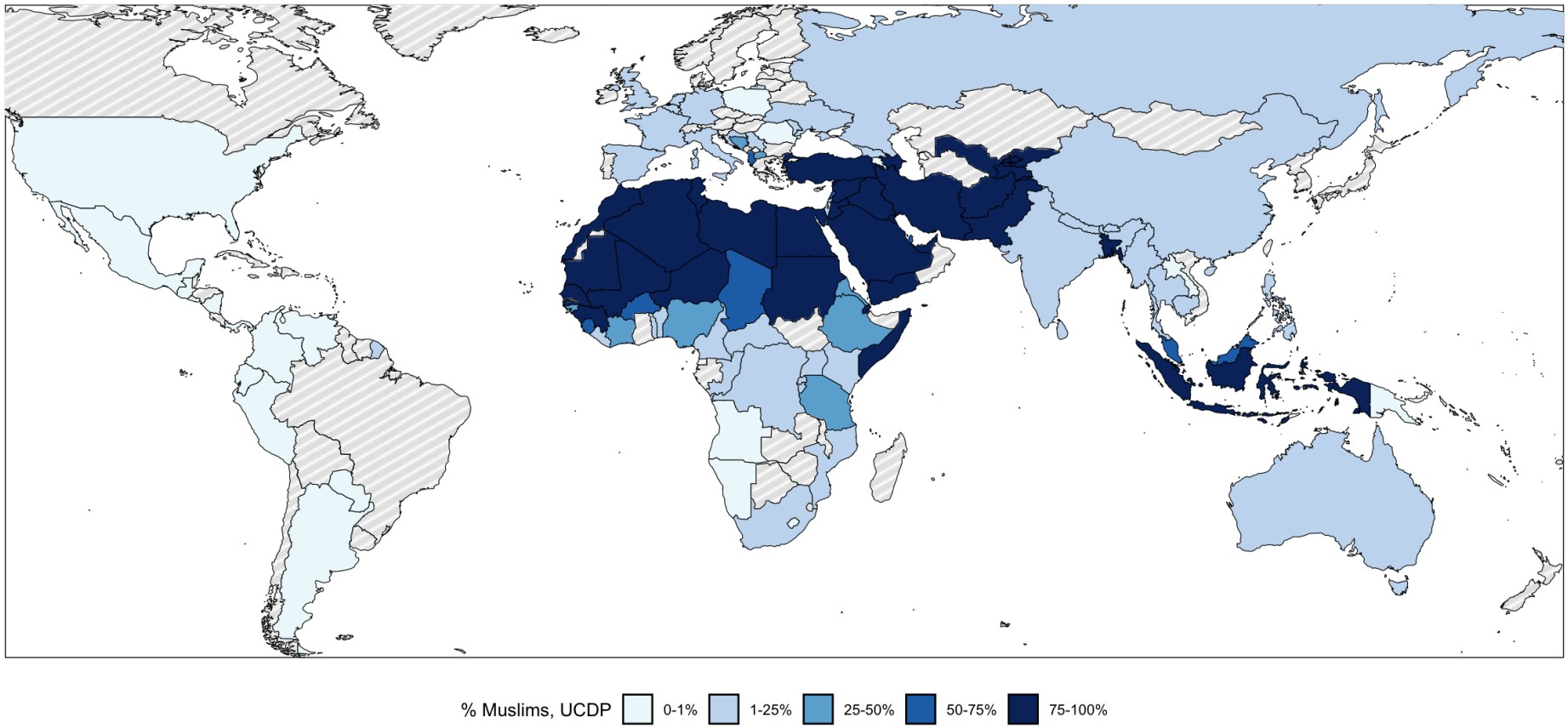

Figure 2: Countries by Share of Muslim Population

Notes: There are 107 in-sample countries in the UCDP dataset. Hatched countries in gray do not appear in the dataset. Countries are grouped according to their average share of Muslim population from 1989 to 2022.

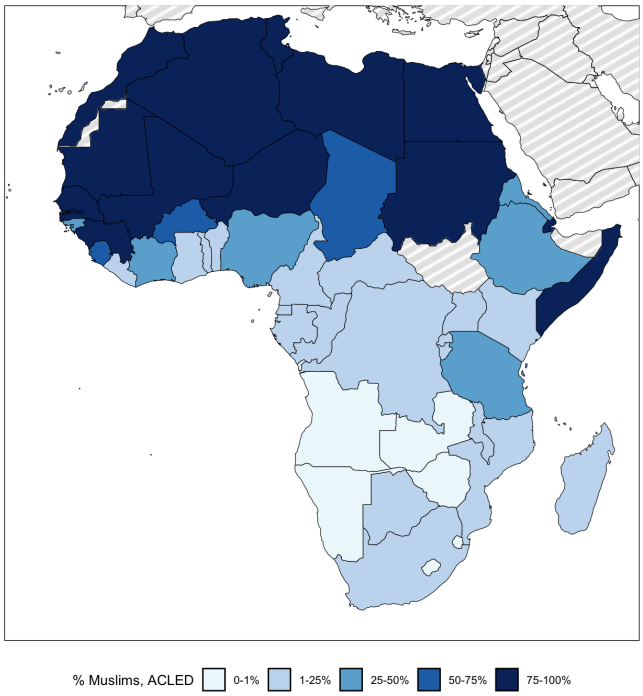

Figure 3: African Countries by Share of Muslim Population

Notes: There are 48 in-sample countries in the ACLED dataset. Hatched countries in gray do not appear in the dataset. Countries are grouped according to their average share of Muslim population from 1997 to 2023.

baseline model, focusing on countries with a Muslim population share above 75%:

$$log(y_{cmt} + 1) = \beta_1 Ramadan_{mt} + X_{cmt}\gamma' + \theta_{ct} + \epsilon_{cmt} \tag{4}$$

where y_{cmt} is either the number of state-based armed conflicts or demonstrations in country c, month m and Hijri year t. The log transformation of the dependent variable reduces skewness in conflict count data, allows for interpretation in relative percentage changes, and handles zero counts by adding 1. $Ramadan_{mt}$ is an indicator variable equal to 1 if the month in a given year is Ramadan and 0 otherwise. Since Ramadan is consistent across countries in the Hijri calendar, this variable does not vary by country. X_{cmt} is a vector conflict-related controls.[8] θ_{ct} denotes country by year fixed effects and control for any unobserved, time-varying factors within each country that could influence conflict levels, such as economic conditions, political changes, or seasonal patterns that vary year to year.

The identification strategy leverages the exogenous variation in the timing of Ramadan due to the Islamic lunar calendar, which shifts approximately 10-12 days earlier each year relative to the Gregorian calendar. This shift enables a natural experiment, isolating the

[8]The controls - conflict duration and fatality - are only available for the state-based armed conflicts. Controlling for duration and fatalities helps ensure that any observed effect of Ramadan is on the number of conflicts, not their severity or length.

effects of Ramadan from other seasonal and yearly influences on armed conflict and protest activity. By including country-by-year fixed effects, I additionally place a more restrictive control on time-varying factors specific to each country in a given year. This framework mitigates concerns over omitted variable bias, providing a clearer view of Ramadan's causal influence on conflict and demonstrations.

In the spirit of Campante and Yanagizawa-Drott (2015), I estimate the following regression for the whole sample to observe how the relative effect of Ramadan varies with relative size of the Muslim population:

$$log(y_{cmt} + 1) = \beta_1 Ramadan_{mt} + \beta_2 Ramadan_{mt} \times \%Muslim_{ct} + X_{cmt}\gamma' + \theta_{ct} + \epsilon_{cmt} \quad (5)$$

where β_2 measures how the relative impact of Ramadan on conflict changes as the proportion of Muslims in the population varies. Since the specification includes country-year fixed effects, the yearly Muslim share variable does not need to be included separately as a control.

The interaction in the previous specification assumes a linear relationship between the percentage of Muslims and the relative effect of Ramadan on conflict. Therefore, I also estimate the following to capture the relative effect of Ramadan on conflict within specific ranges of the Muslim population share, enabling a more flexible, piecewise approach that can reveal potential nonlinear patterns:

$$log(y_{cmt}+1) = \beta_1 Ramadan_{mt} + \sum_{k=1}^{4} \theta_k \cdot (D_{k,ct} \times Ramadan_{mt}) + X_{cmt}\gamma' + \theta_{ct} + d_{kt} + \epsilon_{cmt} \quad (6)$$

where $D_{k,ct}$ represents a set of indicator variables that correspond to different categories based on the percentage of Muslims in a country.[9] For instance, θ_1 captures the effect of Ramadan on conflict in countries where the Muslim population share is above 75%, relative to countries with less than 1% Muslim population. d_{kt} serves as a category-specific fixed effect for each of the Muslim population share categories defined by the indicator variables.

[9] $D_{1,ct}$, $D_{2,ct}$, $D_{3,ct}$, $D_{4,ct}$ are indicators for countries where the Muslim population is greater than 75% (31 countries for UCDP and 14 for ACLED), between 50%-75% (7 for UCDP and 3 for ACLED), between 25%-50% (8 for UCDP and 6 for ACLED), and between 1%-25% (39 for UCDP and 19 for ACLED), respectively. The baseline category consist of countries where the Muslim population is less than 1% (22 for UCDP and 6 for ACLED).

5 Basic Results

5.1 Effects on Armed Conflicts

Table 1 provides insights into how Ramadan influences the frequency of state-based armed conflicts in predominantly Muslim countries. Across the first six columns, where the sample focuses on countries with a Muslim population share exceeding 75%, the presence of Ramadan corresponds to a consistent rise in armed conflicts. The Ramadan indicator is significant at conventional levels, suggesting an approximate 3.7% increase in armed conflicts compared to other months. By computing $\exp(\beta) - 1$ and multiplying it by the baseline mean, we can interpret these effects in levels, providing a clearer picture of their real-world impact. 3.7% translates into a tangible increase of nearly 0.5 incidents on average compared to other months, given the baseline mean of 11.83. Considering that the average fatality per one state-based armed conflict event is about 240 deaths, this is a pitiful and economically significant result. The results are robust to the inclusion of controls and increasingly restrictive fixed effects. This trend implies armed clashes between the government and other organized groups in countries where Islam holds a deep social significance for the populace intensifies with the arrival of Ramadan.

The results in column (7) of Table 1 indicate a positive, albeit statistically insignificant, association between Ramadan and state-based armed conflicts as the share of Muslims in the population increases. This lack of significance could imply that the relationship between Ramadan and conflict does not follow a simple linear pattern. Instead, it is likely that Ramadan's impact on armed conflict intensity varies non-linearly with the share of Muslims, with effects that may become more pronounced or diminish at certain population thresholds. As a natural solution to this, column (8) further highlights variations in Ramadan's effects by interacting it with different Muslim population shares. The coefficient on the interaction between Ramadan and indicator representing countries with more than 75% share of Muslim population (0.033, $p < 0.05$) indicates that during Ramadan, the level of armed conflict in countries with a Muslim population share exceeding 75% is approximately 3.3% higher relative to countries with less than 1% Muslim population. This significant result highlights that the impact is the strongest in predominantly Muslim countries where observance of Ramadan is the highest. By contrast, in country groups with smaller Muslim population shares (between 1% and 75%), Ramadan does not significantly influence conflict rates relative to the baseline group, suggesting that the heightened religious observance and communal aspects of Ramadan is most potent in countries with a more concentrated Muslim population.

Table 1: The Relative Effects of Ramadan on State-Based Armed Conflicts in Muslim Countries, 1989-2022

	Dependent Variable: log(armed conflict+1)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ramadan	0.037***	0.037***	0.035***	0.037***	0.037***	0.036***	0.008	0.002
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)	(0.008)	(0.009)
Ramadan × % Muslim							0.022	
							(0.016)	
Ramadan× >75% Muslim								0.033**
								(0.015)
Ramadan× 50–75% Muslim								-0.017
								(0.025)
Ramadan× 25–50% Muslim								-0.023
								(0.025)
Ramadan× 1-25% Muslim								0.020
								(0.014)
Conflict mean	11.83	11.83	11.83	11.83	11.83	11.83	5.046	5.046
Sample	Muslim	Muslim	Muslim	Muslim	Muslim	Muslim	All	All
Observations	12648	12648	12648	12648	12648	12648	43656	43656
Adj. R^2	0	0.464	0.0526	0.518	0.896	0.900	0.876	0.876
Country FE		✓		✓				
Year FE			✓	✓				
Controls						✓	✓	✓
Country-by-year FE					✓	✓	✓	✓
Share-by-year FE							✓	✓

Notes: In columns (1)–(6), the sample consists of the 31 countries with at least 75% muslims on average for the given period in the World Religion Project (WRP) and PEW database. In columns (7)-(8), the sample consists of 107 countries. In column (8), the reference group consists of 22 countries with an average Muslim population of 1% or less. Conflict mean provides the average of the outcome in levels. Robust standard errors are in parentheses, clustered at the country level. Significance levels are denoted by ** $p < 0.05$, *** $p < 0.01$.

These results remain robust across various sensitivity checks. First and foremost, I restricted the control group of months to periods 1, 2, 3, 4, and 5 months before and after Ramadan. The estimates remain the same, although the precision decreases slightly only in the estimates involving all countries when focusing on the narrower windows of 1 and 2 months before and after Ramadan. Since Ramadan is the ninth month in the Hijri calendar, I report the estimates where the control group of months include 3 months before and after in Table A2. This results confirm that the observed effects are specific to Ramadan and not a result of broader seasonal patterns.

Next, I run baseline regressions for a group of countries with less than 1% Muslim population as a placebo test. 1 in 5 countries in the whole sample fulfill this criterion. This approach ensures that the observed results are not driven by non-religious factors, as Ramadan observance is minimal or nonexistent in these countries. I expect to find results that are not statistically different from zero. In columns (7)–(8), instead of using the share of Muslims and Muslim population categories, I include analogous variables for Christians in Table A3. As expected, the results in columns (1)–(6) are not statistically significant, indicating no meaningful effect. Additionally, the findings suggest that as Christian populations increase and become the majority, the number of relative demonstrations during Ramadan decreases. This is most likely because the reference group of countries with less than 1% Christian populations consists predominantly of Muslim-majority countries.

The estimates remain robust when using the levels of state-based armed conflicts as the dependent variable. Additionally, I estimate a Poisson regression to account for the count nature of the conflict data and potential overdispersion, ensuring that the findings are not sensitive to the functional form of the outcome. The results of the Poisson pseudo-maximum likelihood (PPML) in Table A4 are consistent with the main findings and demonstrate even stronger effects, both in magnitude and statistical significance, achieving significance at the 1% level.

5.2 Effects on Demonstrations

Table 2 examines the effect of Ramadan on the number of public demonstrations, focusing on a subset of African countries where Muslims make up more than 75% of the population in first five columns. Column (5) displays the coefficient for the baseline regression in equation 4: Ramadan is linked to a relative reduction in demonstrations of 8.5% at the 10% significance level. This suggests that Ramadan may dissuade people from participating in protests and public gatherings, possibly due to the increased opportunity cost of fasting and/or a stronger emphasis on religious reflection and social harmony during this period. Given a baseline mean of 9.78 demonstrations, this translates to nearly one less demonstration per county in Ramadan compared to other months on

average. This translates into a cumulative reduction of around 33 demonstrations on average over the given period compared to non-Ramadan months.

In column (6), the coefficient for the interaction between Ramadan and the share of Muslims is -0.137, statistically significant at the 5% level. This indicates a dampening effect on public demonstrations during Ramadan, with higher Muslim population shares correlating with a decrease in demonstrations. Specifically, the coefficient implies that for each additional quarter-unit increase in the interaction term (i.e., a 0.25 increase in the population share when the Ramadan dummy equals 1), the number of demonstrations decreases by approximately 3.5%. Assuming linearity for this relationship may not be appropriate, as effects can vary across shares of the Muslim population. Turning to column (7), where the model controls for Muslim population share categories, we see that countries with a Muslim population above 75% experience a notable reduction in demonstrations during Ramadan, with a statistically significant relative decrease of approximately 18.3% compared to the baseline. For countries with smaller shares of Muslims, there is no significant difference in the frequency of demonstrations during the religious month. In predominantly Muslim countries, religious obligations and communal norms appear to lead to a pause or reduction in this form of public dissent, as people shift focus toward introspective and spiritual practices.

In a similar fashion to the effects of armed conflicts, I test the robustness of the baseline results for demonstrations. I start by examining the sensitivity of the results to the choice of control months. Table B1 shows that the estimates remain to the choice of including 3 months before and after Ramadan (months 6-12). Next, I shift my focus to running the baseline regressions for the subsamples of countries with a share of Muslim population below 1%. Table B2 demonstrate null results for this selection of countries.

Finally, I test the robustness of the results to the choice of the form of the outcome variable. I find that the results are largely the same for using plain levels with OLS or Poisson pseudo maximum likelihood regression with the levels. I report the results of the PPML in Table B3. The results are stronger and statistically significant at conventional levels.

Table 2: The Relative Effects of Ramadan on the Number of Demonstrations in Muslim Countries, 1997-2023

	Dependent Variable: log(demonstrations +1)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ramadan	-0.085*	-0.085*	-0.096**	-0.085*	-0.085*	0.068***	0.098
	(0.043)	(0.043)	(0.039)	(0.043)	(0.043)	(0.023)	(0.063)
Ramadan × % Muslim						-0.137**	
						(0.053)	
Ramadan× >75% Muslim							-0.183**
							(0.076)
Ramadan× 50–75% Muslim							0.028
							(0.091)
Ramadan× 25–50% Muslim							-0.028
							(0.072)
Ramadan× 1-25% Muslim							-0.078
							(0.065)
Demonstration mean	9.78	9.78	9.78	9.78	9.78	6.05	6.05
Sample	Muslim	Muslim	Muslim	Muslim	Muslim	All	All
Observations	4536	4536	4536	4536	4536	15552	15552
Adj. R^2	0	0.172	0.419	0.594	0.846	0.803	0.803
Country FE		✓		✓			
Year FE			✓	✓			
Country-by-year FE					✓	✓	✓
Share-by-year FE						✓	✓

Notes: In columns (1)–(5), the sample consists of 14 African countries with at least 75% muslims on average for the given period in the World Religion Project (WRP) and PEW database. In columns (6)-(7), the whole sample consists of 48 African countries. In column (8), the reference group consists of 6 African countries with an average Muslim population of 1% or less. Demonstration mean provides the average of the outcome in levels. Robust standard errors are in parentheses, clustered at the country level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$.

5.3 Weekly Variation within Ramadan

In this subsection, I additionally present the results of the following regression graphically to analyze the weekly variation in conflict around Ramadan:

$$log(y_{ct}+1) = \sum_{w=-6}^{8} \theta_w RelativeWeek_{wt}) + X_{ct}\gamma' + \nu_i \times year_t + \epsilon_{ct} \quad (7)$$

where y_{ct} is the weekly number of either state-based armed conflicts or demonstrations in country c and week t. $RelativeWeek_{wt}$ indicates a set a dummy variables indicating the relative weeks of date t compared with the start of Ramadan in this year. θ_w estimate the percentage change in conflicts relative to the omitted group of 12-7 weeks before Ramadan. The rationale for this selection is that Muslims start making preparations for Ramadan a month in advance. Weeks 7-10 are highlighted in gray in the graphs.[10]

In Figure 4, armed conflicts show an overall relative increase during Ramadan. In the immediate week prior to Ramadan, we see a statistically significant surge in armed conflicts. This coincides with the last week of Sha'ban where Muslims may make up for the fasts they missed in the previous year and/or spiritually, physically, and financially prepare for the fasting month. The first week of Ramadan (relative week 7) starts with a statistically significant decrease of almost 5% compared to the baseline weeks. This pattern could be driven by increased security measures, or simply a period where all parties adjust to the arrival of Ramadan in relative peace. There is a reversing upward trend starting from week 2 of Ramadan. This relative positive change lasts till the end of the month, peaking in the last 10 days that coincide with the Nights of Decree. This upward trend in the armed clashed between the government of a state and other organized groups suggests that armed conflicts intensify as the celebration of Eid al-Fitr marking the end of Ramadan draws close. In the immediate week that postdates Ramadan, we observe a statistically significant decrease in the relative number of state-based conflicts. The result may stem from a respite during Eid al-Fitr celebrations, which lasts several days, and potential ceasefires or agreements tied to the festivities.

The results for the placebo group of countries with less than 1% Muslim share of population in Figure A1 are not statistically significant from zero and do not show any striking patterns, suggesting that the relative difference in armed clashed for the Muslim countries are being driven by the arrival of Ramadan.

[10] Week 10 includes 8 or 9 days since the lunar month of Ramadan is 29-30 days long.

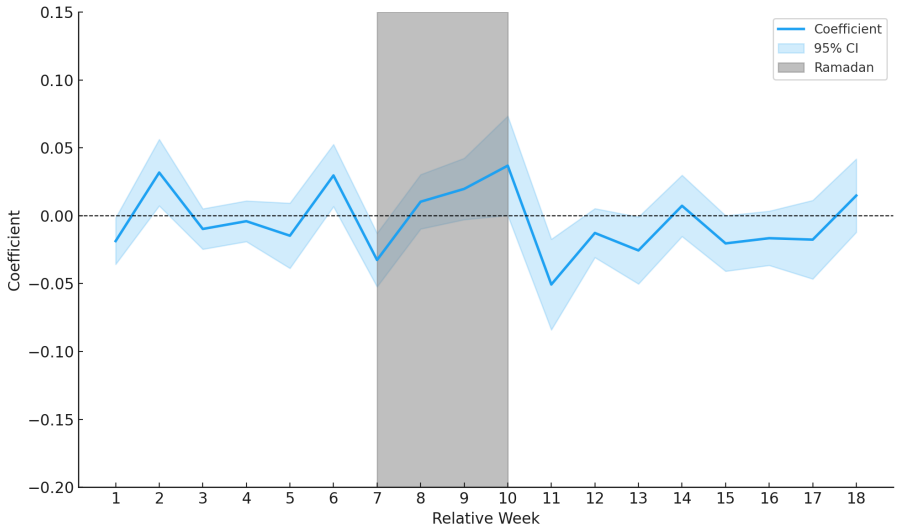

Figure 4: Ramadan Weeks and Armed Conflict in Muslim Countries

Notes: The sample consists of 31 countries with a Muslim share of population above 75%. The dependent variable is the log(armed conflict+1). The control group of weeks include 7-14 weeks before Ramadan.

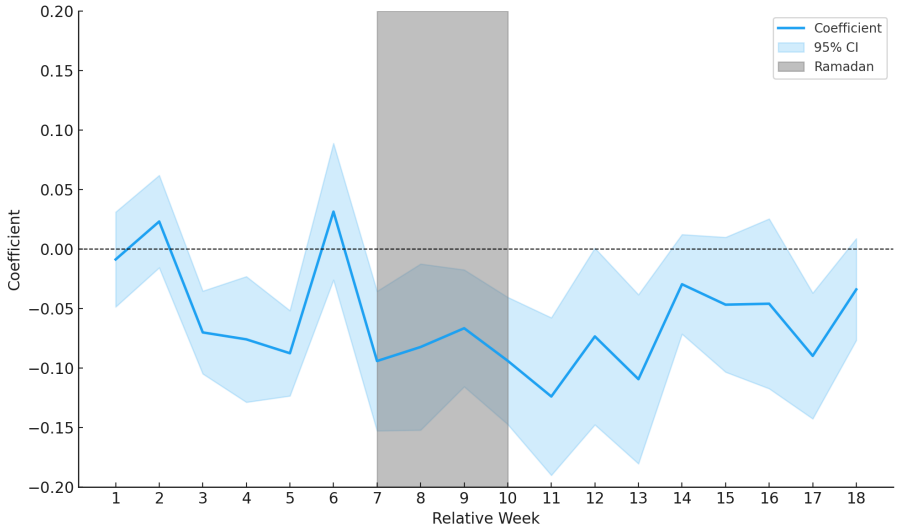

Figure 5: Ramadan Weeks and Demonstrations in Muslim Countries

Notes: The sample consists of 14 African countries with a Muslim share of population above 75%. The dependent variable is the log(demonstrations+1). The control group of weeks include 7-12 weeks before Ramadan.

In Figure 5, public demonstrations exhibit a clear reduction during Ramadan, weeks 7 to 10, marked in gray. In the weeks leading to Ramadan, demonstrations occur at relatively lower and consistent rates, with the exception of week 6. This could be associated with preparations people make for Ramadan. However, as Ramadan begins, a sharp decline in demonstrations is observed in week 7 and continues to the end, with the highest relative difference occurring in the week after Ramadan that marks the beginning of Eid al-Fitr. This suggests that Ramadan has a calming effect on public protests. The reduction could be attributed to increased religious activities and fasting, which may lessen individuals' energy and motivation for public dissent and redirect their focus toward spiritual practices and non-political community gatherings.

The trend indicates that, during Ramadan, there may be a temporary shift away from political activism as people prioritize religious observance. The consistent decline across these weeks could imply that the physical and spiritual demands of Ramadan decrease public engagement in demonstrations, as individuals may be less inclined to express opposition during this time. Yet again, the results for the placebo group of countries with less than 1% Muslim share of population in Figure A2 are not statistically different from zero and suggest that the results for the Muslim countries are being driven by the observance of Ramadan.

6 Discussion

The main analysis demonstrates that the lunar month of Ramadan has a robust, statistically significant, and quantitatively meaningful positive effect on the incidence of state-based armed conflicts in predominantly Muslim countries, where religious rituals are observed en masse nationwide. In contrast, Ramadan is associated with a robust, statistically significant, and quantitatively meaningful negative effect on public demonstrations. This contrasting pattern suggests that Ramadan may intensify armed tensions while simultaneously mitigating public unrest in the form of demonstrations.

Building on the theoretical mechanisms discussed in Section 3, this part of the paper taps into individual survey data, takes a deeper look at the conflict data, and rules out alternative explanations to empirically explore the mechanisms behind the contrasting effects observed in the main results.

6.1 Addressing Potential News Biases

One possible explanation for the baseline results could be that if news coverage of armed conflicts during is especially stronger and that more events are making their way into these news-based datasets[11]. Although, it is hard to reconcile with the second result

[11]It needs to be mentioned that both datasets extensively incorporate local sources, with ACLED explicitly prioritizing them, and do not rely solely on traditional media.

that there are fewer demonstrations, and it is also not immediately obvious why relative news coverage for demonstrations in Ramadan would be lower than relative coverage for armed conflicts during Ramadan.

Nevertheless, to test the hypothesis that news coverage of conflict outcomes differs during Ramadan compared to other months, I first restrict the sample to events with non-zero fatalities, as these events are more likely to receive consistent coverage both during and outside Ramadan. In another specification, I limit the sample to conflict events reported by at least two sources, which helps ensure greater reliability by reducing the impact of single-source biases. Lastly, I examine the results separately for events covered by international media and those reported by non-international or local media.[12]

Table 3: The Ramadan Effect and News Reporting

	log(armed conflict +1)			log(demonstrations +1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Ramadan	0.030**	0.031*	0.030**	-0.039**	-0.062*	-0.054
	(0.012)	(0.015)	(0.012)	(0.018)	(0.031)	(0.036)
Dataset	UCDP	ACLED	UCDP	ACLED	ACLED	ACLED
Fatality threshold	≥5	≥5	None	None	None	None
News sources per event	≥1	≥1	≥2	≥2	≥1	≥1
Source type					International	Other
Outcome mean (levels)	8.696	0.797	8.696	7.397	3.259	14.76
Observations	11016	4536	11016	4536	4536	4536
Adj. R^2	0.895	0.716	0.895	0.677	0.556	0.888
Controls	✓		✓			
Country-by-year FE	✓	✓	✓	✓	✓	✓

Notes: All the samples include countries where at least 75% of the population is Muslim. Robust standard errors are in parentheses, clustered at the country level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

In column (1) of Table 3, I restrict the sample to state-based armed conflicts with at least five fatalities, retaining approximately one-fourth of the original events. In column (2), I apply a similar restriction but focus on political violence events from the ACLED dataset where at least one party represents a state government.[13] The results are robust, showing positive and statistically significant effects at conventional levels. Furthermore, the findings in columns (3) and (4) for UCDP and ACLED, respectively, provide additional reassurance, as they suggest that the results are not driven by single-source biases.

Next, in column (5), I restrict the sample to events where at least one source is international traditional media, which accounts for approximately one-quarter of all ACLED

[12]International traditional media tends to focus on high-profile or large-scale events, whereas local sources offer broader coverage, including smaller incidents, prolonged conflicts, and events in inaccessible regions that global outlets may miss. Separating the samples helps mitigate the biases of traditional media, which are influenced by factors like (English speaking) audience demand, limited space, and the pressures of continuous news cycles, allowing for a more accurate analysis of conflict patterns.

[13]Fatalities are rare in demonstrations, so this variable is used to better capture differences in ACLED event coverage based on the severity of the conflict.

events. The results remain robust under this specification. Finally, in column (6), I exclude events that rely solely on international news media, keeping those covered by national, local partner, or subnational sources. While the results remain negative, there is a modest decrease in precision. Taken together, these findings suggest that reporting bias during Ramadan is unlikely to explain the results.

7 Conclusions

This paper examines the impact of Ramadan on state-based armed conflict and demonstrations, providing new insights into the influence of religious observance on conflict dynamics. The findings show a consistent relationship where, in predominantly Muslim countries, the period of Ramadan is associated with an increase in state-based armed conflicts. This increase, while modest, indicates that factors unique to Ramadan, such as increased importance of religion, might amplify strategic intent for combat among the ruling and rebel groups. Conversely, the data reveal a notable reduction in public demonstrations during Ramadan, pointing toward a pacifying effect likely driven by the physical demands of fasting and the communal focus on spirituality and social cohesion during the holy month.

Overall, this study contributes to the broader literature on the intersection of religion and conflict by demonstrating that religious observance can have varying impacts on social stability, dependent on the type of conflict and agency. These findings underscore the nuanced roles that religious practices like Ramadan play in shaping social dynamics, where increased religiosity may simultaneously encourage intra-group warfare and reduce certain tensions in state-society interactions. The research highlights the need for further exploration into how religious observance influences behavior and outcomes across different conflict types and actors. It also suggests that policymakers should consider the timing of religious observances when assessing potential risks or implementing interventions in conflict-prone regions.

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Online Appendix

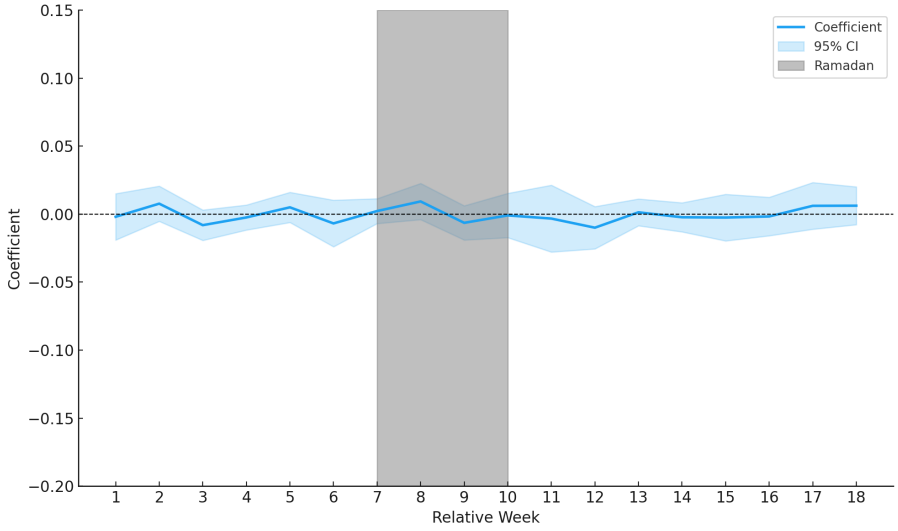

Figure A1: Ramadan Weeks and Armed Conflict for the Placebo Group

Notes: The sample consists of 29 countries with a Muslim share of population below 1%. The dependent variable is the log(armed conflict+1). The control group of weeks include 7-12 weeks before Ramadan.

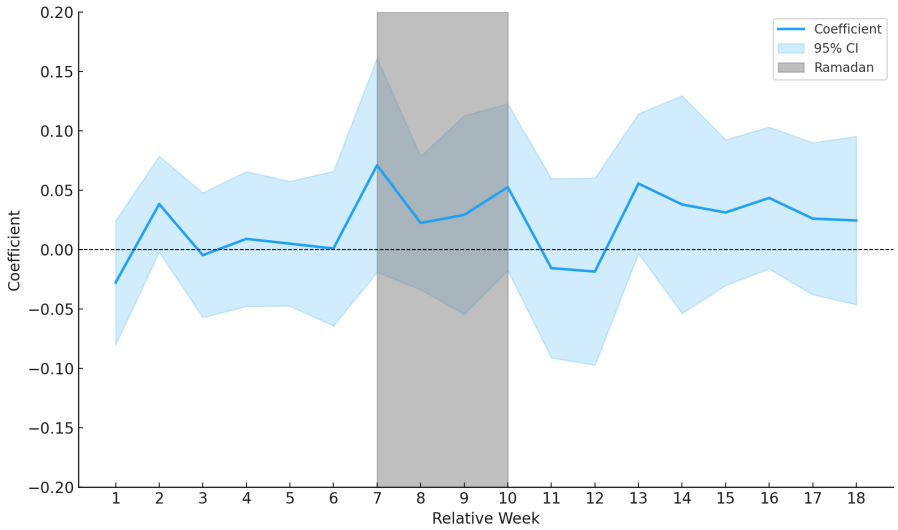

Figure A2: Ramadan Weeks and Demonstrations for the Placebo Group

Notes: The sample consists of 6 African countries with a Muslim share of population below 1%. The dependent variable is the log(demonstrations+1). The control group of weeks include 7-14 weeks before Ramadan.

Table A1: Summary Statistics

Notes:

Table A2: The Relative Effects of Ramadan on State-Based Armed Conflicts in Muslim Countries, 1989-2022 (Months 6-12)

	Dependent Variable: log(armed conflict +1)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ramadan	0.030**	0.030**	0.030**	0.030**	0.030**	0.030**	0.007	0.003
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)	(0.008)	(0.009)
Ramadan × % Muslim							0.017	
							(0.016)	
Ramadan× >75% Muslim								0.025*
								(0.015)
Ramadan× 50–75% Muslim								-0.020
								(0.024)
Ramadan× 25–50% Muslim								-0.011
								(0.025)
Ramadan× 1-25% Muslim								0.015
								(0.014)
Conflict mean	12.18	12.18	12.18	12.18	12.18	12.18	5.19	5.19
Sample	Muslim	Muslim	Muslim	Muslim	Muslim	Muslim	All	All
Observations	7378	7378	7378	7378	7378	7378	25466	25466
Adj. R^2	0	0.460	0.0561	0.518	0.910	0.914	0.891	0.891
Country FE		✓		✓				
Year FE			✓	✓				
Controls						✓	✓	✓
Country-by-year FE					✓	✓	✓	✓
Share-by-year FE							✓	✓

Notes: The control group of months includes the three months preceding and following Ramadan. In columns (1)–(6), the sample consists of the 31 countries with at least 75% muslims on average for the given period in the World Religion Project (WRP) and PEW database. Columns (7) and (8) expand the sample to include countries with varying Muslim population percentages. Conflict mean provides the average number of conflicts. Robust standard errors are in parentheses, clustered at the country level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$.

Table A3: The Relative Effects of Ramadan on Conflict in Non-Muslim Countries, 1989-2022

	Dependent Variable: log(armed conflict +1)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ramadan	0.002	0.002	0.006	0.002	0.002	0.003	0.023**	0.049**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.011)	(0.021)
Ramadan × % Christian							-0.021	
							(0.016)	
Ramadan× >75% Christian								-0.038*
								(0.022)
Ramadan× 50–75% Christian								-0.056**
								(0.025)
Ramadan× 25–50% Christian								-0.063*
								(0.033)
Ramadan× 1-25% Christian								-0.030
								(0.024)
Conflict mean	0.88	0.88	0.88	0.88	0.88	0.88	5.04	5.04
Sample	Non-Muslim	Non-Muslim	Non-Muslim	Non-Muslim	Non-Muslim	Non-Muslim	All	All
Observations	5236	5236	5236	5236	5236	5236	25466	25466
Adj. R^2	0	0.551	0.0267	0.581	0.844	0.851	0.891	0.891
Country FE		✓		✓				
Year FE			✓	✓				
Controls						✓	✓	✓
Country-by-year FE					✓	✓	✓	✓
Share-by-year FE							✓	✓

Notes: Columns (1)–(6) focus on 22 predominantly non-Muslim countries, while columns (7) and (8) include all countries, with reference groups representing different Christian population shares. Conflict mean provides the average number of conflicts. Robust standard errors are in parentheses, clustered at the country level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$.

Table A4: The Relative Effects of Ramadan on State Based Armed Conflict in Muslim Countries, 1989-2022 (PPML)

	Dependent Variable: Number of Armed Conflicts							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ramadan	0.066***	0.066***	0.083***	0.066***	0.066***	0.069***	0.061	-0.079*
	(0.022)	(0.022)	(0.023)	(0.022)	(0.022)	(0.026)	(0.118)	(0.042)
Ramadan × % Muslim							0.007	
							(0.120)	
Ramadan× >75% Muslim								0.155***
								(0.048)
Ramadan× 50–75% Muslim								0.146
								(0.277)
Ramadan× 25–50% Muslim								-0.314
								(0.255)
Ramadan× 1-25% Muslim								0.244*
								(0.136)
Sample	Muslim	Muslim	Muslim	Muslim	Muslim	Muslim	All	All
Observations	12648	12648	12648	12648	6672	6672	16692	16692
Pse. R^2	0	0.595	0.203	0.798	0.935	0.937	0.895	0.896
Country FE		✓		✓				
Year FE			✓	✓				
Controls						✓	✓	✓
Country-by-year FE					✓	✓	✓	✓
Share-by-year FE							✓	✓

Notes: In columns (1)–(6), the sample consists of the 31 countries with at least 75% muslims on average for the given period in the World Religion Project (WRP) and PEW database. In columns (7)-(8), the sample consists of 107 countries. In column (8), the reference group consists of 22 countries with an average Muslim population of 1% or less. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B1: The Relative Effects of Ramadan on Demonstrations in Muslim Countries, 1997-2023 (Months 6-12)

	Dependent Variable: log(demonstrations +1)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ramadan	-0.061*	-0.061*	-0.058	-0.061*	-0.061*	0.063***	0.096
	(0.034)	(0.034)	(0.033)	(0.034)	(0.034)	(0.023)	(0.058)
Ramadan × % Muslim						-0.106**	
						(0.045)	
Ramadan× >75% Muslim							-0.158**
							(0.067)
Ramadan× 50–75% Muslim							0.031
							(0.090)
Ramadan× 25–50% Muslim							-0.001
							(0.070)
Ramadan× 1-25% Muslim							-0.081
							(0.060)
Demonstrations mean	9.4	9.4	9.4	9.4	9.4	6.03	6.03
Sample	Muslim	Muslim	Muslim	Muslim	Muslim	All	All
Observations	2646	2646	2646	2646	2646	9072	9072
Adj. R^2	0	0.161	0.429	0.594	0.866	0.818	0.818
Country FE		✓		✓			
Year FE			✓	✓			
Country-by-year FE					✓	✓	✓
Share-by-year FE						✓	✓

Notes: The control group of months includes the three months preceding and following Ramadan. Columns (1)–(5) use a sample of 14 countries with at least 75% muslims on average for the given period in the World Religion Project (WRP) and PEW database. Columns (6) and (7) expand the sample to include countries with varying Muslim population percentages. Conflict mean provides the average number of demonstrations. Robust standard errors are in parentheses, clustered at the country level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B2: The Relative Effects of Ramadan on Demonstrations in Non-Muslim Countries, 1997-2023

	Dependent Variable: Demonstrations						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ramadan	0.098	0.098	0.087	0.098	0.098	-0.059	-0.130*
	(0.068)	(0.068)	(0.071)	(0.069)	(0.068)	(0.038)	(0.075)
Ramadan × % Christian						0.147**	
						(0.059)	
Ramadan× >75% Christian							0.185**
							(0.081)
Ramadan× 50–75% Christian							0.162**
							(0.079)
Ramadan× 25–50% Christian							0.171**
							(0.079)
Ramadan× 1-25% Christian							0.117
							(0.088)
Demonstrations mean	2.001	2.001	2.001	2.001	2.001	6.047	6.047
Sample	Non-Muslim	Non-Muslim	Non-Muslim	Non-Muslim	Non-Muslim	All	All
Observations	1944	1944	1944	1944	1944	15552	15552
Adj. R^2	0	0.168	0.244	0.413	0.569	0.803	0.803
Country FE		✓		✓			
Year FE			✓	✓			
Country-by-year FE					✓	✓	✓
Share-by-year FE						✓	✓

Notes: Columns (1)–(5) focus on pred countries, while columns (6) and (7) include all countries. Demonstrations mean provides the average number of demonstrations. Robust standard errors are in parentheses, clustered at the country level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B3: The Relative Effects of Ramadan on Demonstrations in Muslim Countries, 1997-2023 (PPML)

	Dependent Variable: Number of Demonstrations						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ramadan	-0.145*	-0.145*	-0.160***	-0.145*	-0.145*	0.038	0.232*
	(0.074)	(0.074)	(0.062)	(0.074)	(0.074)	(0.048)	(0.139)
Ramadan × % Muslim						-0.181*	
						(0.095)	
Ramadan× >75% Muslim							-0.377**
							(0.156)
Ramadan× 50–75% Muslim							-0.108
							(0.172)
Ramadan× 25–50% Muslim							-0.273*
							(0.141)
Ramadan× 1-25% Muslim							-0.236
							(0.144)
Sample	Muslim	Muslim	Muslim	Muslim	Muslim	All	All
Observations	4536	4536	4536	4536	4044	13488	13488
Pse. R^2	0	0.273	0.414	0.688	0.832	0.813	0.813
Country FE		✓		✓			
Year FE			✓	✓			
Country-by-year FE					✓	✓	✓
Share-by-year FE						✓	✓

Notes: In columns (1)–(5), the sample consists of 14 countries with at least 75% Muslims on average for the given period in the World Religion Project (WRP) and PEW database. In columns (6)-(7), the sample consists of 48 countries. In column (7), the reference group consists of 7 countries with an average Muslim population of 1% or less. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.