The Impact of Terrorism on Education: Evidence from the Death of Osama bin Laden in Pakistan

Saqib Hussain* Chungeun Yoon†

Abstract

This paper investigates the impact of terrorism on educational outcomes following the death of Osama bin Laden in Pakistan. The unexpected death of bin Laden, Al-Qaeda's founder and symbolic leader, triggered a significant escalation in retaliatory terrorist attacks. Terrorist groups perceived Pakistan as complicit in the U.S. operation, leading to increased attacks on government, military, and civilian targets, with assaults on educational institutions rising by 50 percent. This surge led to a significant decline in educational attainment, reducing average years of schooling by 0.52 years and lowering primary school completion rates by 5.9 percentage points, with a more pronounced impact on girls. Furthermore, academic performance declined, with math, English, and reading scores falling by approximately 0.1 standard deviations. These findings highlight that the elimination of a terrorist leader can incite retaliatory violence, significantly undermining the educational prospects of children, particularly girls.

JEL classification: D74, I25, N35

Keywords: Terror, Conflict, Education

*KDI School of Public Policy and Management, saqibhussain@kdis.ac.kr

†KDI School of Public Policy and Management, cyoon@kdis.ac.kr

This work was supported by the National Research Foundation of Korea (NRF) Grant through the Korea Government [Ministry of Science and ICT (MSIT)] under Grant NRF-2022R1A5A7033499. We are grateful to the KDI School of Public Policy and Management for providing financial support.

Appendix: https://chungeunyoon.github.io/HussainYoon_Appendix.pdf

Full paper including Appendix: https://chungeunyoon.github.io/HussainYoon_Full.pdf

1 Introduction

Terrorism has direct economic and human impacts (Collier, 1999; Brodeur, 2018), with terrorists aiming to maximize their influence (Krueger and Malečková, 2002; Brandt and Sandler, 2010; Santifort et al., 2013). To send a powerful message and disrupt societal progress, terrorists often target schools, which are symbols of a society's future and development. Attacking these educational institutions generates widespread fear, panic, and media attention. Furthermore, Al-Qaeda and various jihadist groups view contemporary educational systems as promoting secularism, liberal values, and Western influence, which they believe are in direct conflict with their interpretation of Islamic teachings, particularly concerning the education of girls. By hindering education, terrorists aim to prevent the emergence of educated individuals who might resist extremist ideologies (Krueger and Malečková, 2002; Alfano and Görlach, 2024; Bertoni et al., 2019). However, the relationship between terrorism and education remains underexplored. Our study investigates the impact of terrorist attacks, in response to the unexpected death of Osama bin Laden, on the education of children.

Do operations to combat terrorism inadvertently ignite further acts of terrorism, resulting in unintended consequences for civilians? The death of Osama bin Laden in 2011 dealt a significant blow to Al-Qaeda and its affiliated jihadist groups, yet it also triggered a wave of retaliatory attacks against government, military, and civilian targets perceived to be complicit in his killing. Furthermore, his death disrupted the hierarchical structure of Al-Qaeda, leading to the decentralization of extremist factions and an escalation of terrorist activities. These anti-terrorism operations and the subsequent rise in terrorist attacks had profound implications for civilian populations. Specifically, militants targeted educational institutions, driven by their opposition to what they perceive as Western-style education, particularly for girls.

To investigate the relationship between counter-terrorism operations and subsequent terrorist activities, we utilize data from the Global Terrorism Database (GTD)[1]. To estimate the impact of terrorism on children's educational outcomes, we draw on data from the Pakistan Social & Living Standard Measurement Survey (PSLM)[2] data published by the Pakistan Board of Statistics (PBS). To measure the academic performance of children, we employ data from the Annual Status of Education Report (ASER[3]). This dataset allows for a comprehensive evaluation of educational outcomes, including math scores, English scores, and reading scores, and serves as a supplementary source for corroborating findings from the PSLM dataset.

[1]The Global Terrorism Database™ (GTD) is an open-source database that includes information on terrorist events around the world from 1970 through 2020.

[2]The PSLM Survey has been a regular activity of the PBS since July 1, 2015. Before that, it was a PSDP-funded project launched in July 2004 and continued through June 30, 2015. It was designed to provide social and economic indicators at the provincial and district levels in alternate years. In total, it covers the years from 2006 to 2020.

[3]ASER is the largest citizen-led, household-based initiative designed to provide reliable estimates of the schooling status of children aged 3 to 16 years residing in both rural and select urban districts of Pakistan. It covers the years from 2012 to 2021.

We first identified more than 15,000 terrorism events that occurred from 1970 to 2020 and aggregated this data across 573 sub-districts (tehsils)[4] on a monthly basis. We calculated the monthly number of attacks by target type and normalized these figures per hundred thousand of the population. We found that the death of Osama bin Laden led to a doubling of total terrorist attacks and an approximately 50 percent increase in attacks targeting educational institutions. Using the unexpected death of Osama bin Laden as an instrument for estimating terrorist attacks, we examined their effect on the educational outcomes of school-aged children. Our findings show that this surge in terrorist attacks against educational institutions led to a reduction in educational attainment, with years of education decreasing by 0.52 years and the primary school completion rate dropping by 5.9 percentage points. Furthermore, we explored the differential impact of terrorism based on individual characteristics and found that the negative effects were more pronounced for girls. In terms of academic performance, the terrorist attacks decreased approximately 0.1 standard deviation in math, English, and reading scores, respectively.

Our paper contributes to several strands of existing literature. It extends the body of research that measures various causes and consequences of terrorism, including its economic outcomes, educational impacts, and effects on political instability. For instance, a segment has identified a significant impact of GDP per capita (Jetter et al., 2024), poverty (Berman et al., 2009), inequality (Salvatore, 2007), unemployment (Abadie, 2006), inflation (Caruso and Schneider, 2011), political instability (Bandyopadhyay et al., 2011), literacy (Krueger, 2008) and unintended terror financing (Limodio, 2022) on terrorism. In contract, a couple of papers have reported an insignificant effect of GDP per capita (Abadie, 2006; Krueger and Laitin, 2008), poverty (Krueger and Malečková, 2002; Abadie, 2006), inequality (Abadie, 2006; Kurrild-Klitgaard et al., 2006), unemployment (Thompson, 1989; Krueger and Malečková, 2002), inflation (Kurrild-Klitgaard et al., 2006; Krueger and Laitin, 2008), political instability (Wade and Reiter, 2007) and literacy (Krueger and Malečková, 2002; Krueger and Laitin, 2008) on terrorism. The findings are mixed across different contexts.

Our paper closely aligns with the literature estimating the effect of terrorism on education. Specifically, Alfano and Görlach (2024) examined the impact of a local terrorist group's revenues and its affiliation with al-Qaeda in Kenya, finding that terrorist attacks suppress school enrollment due to fears and concerns rather than issues with educational supply. Moreover, numerous studies have documented the negative effects of terror and conflict on educational outcomes (Koppensteiner and Menezes, 2021; Bertoni et al., 2019; Di Maio and Nisticò, 2019; Brück and d'Errico, 2019; Brown and Velásquez, 2017). We extend these findings by investigating the unexpected death of Osama bin Laden in Pakistan as an instrumental variable, leveraging extensive individual-level survey data that includes years of education, enrollment, dropout rates, child labor, and academic performance. Our unique context in Pakistan and empirical methods, utilizing the unanticipated nature of bin Laden's death by the US Navy SEAL team, allow us to provide causal evidence on the relationship between operations targeting terrorist leaders, subsequent retaliatory attacks, and their impact on education.

[4]In Pakistan, a tehsil is an administrative sub-division of a District.

The remainder of the manuscript is organized as follows: Section 2 provides the contextual background for the study, including a literature review that explores the intersections of terrorism, Section 3 describes the dataset utilized in this study, Section 4 outlines the empirical strategy, Section 5 presents the findings, Section 6 explores the mechanisms through which terrorism affects educational outcomes, and Section 7 concludes with a discussion of policy implications.

2 Background

2.1 Historical Background

The Soviet-Afghan war in 1979 catalyzed a transformative period in the region that ultimately caused a significant loss of economic and human resources (Nizami et al., 2018). This conflict engendered fundamental shifts within Pakistani society, particularly marked by heightened violence and the widespread proliferation of weapons, leading to the emergence of what came to be known as the 'Kalashnikov culture' and 'Talibanization' (Wadhwani, 2011). These developments sparked terror, particularly in the province of Khyber Pakhtunkhwa (KP) and the Federally Administered Tribal Areas of Pakistan (FATA). The signing of the Waziristan Accord, a peace deal with the Taliban, in 2006 offered a brief respite from the conflict. However, this period of tranquility came to an end in July 2007 with the Pakistan military's siege of the Red Mosque, marking a significant inflection point in the regional dynamics.

The Red Mosque Siege: The Pakistan-Afghan border, particularly Waziristan,[5] became a stronghold of al-Qaeda and its affiliates after 9/11. Osama bin Laden and his deputy Ayman al-Zawahiri[6] lived in the region from 2003 to 2004. During those years, the Pakistan Army launched its first military operation in Waziristan, the Battle of Wana,[7] joining the Global War on Terror. Al-Qaeda, in response, devised a plan for Pakistan, selecting al-Masri,[8] who had historical ties with Bin Laden and had supported him since the Soviet-Afghan war. In collaboration with the scholars of Red Mosque which had substantial support from the military and government since the coup of General Zia ul Haq,[9] the leader of the Red

[5]Waziristan, characterized by rugged terrain and porous borders, is known for its tribal autonomy and its resistance to outside authority, which have earned it the moniker "the wild west" of Pakistan. The region within the province of Khyber Pakhtunkhwa has been a focal point for insurgent and militant activities, and it has served as a safe haven for various armed groups, including the Taliban, al-Qaeda, and the Haqqani Network.

[6]Ayman Mohammed Rabie al-Zawahiri was an Egyptian-born militant who served as the second general of al-Qaeda from June 2011 until his death in July 2022.

[7]The Battle of Wana was a March 2004 military engagement between the Pakistan Army and members of Osama bin Laden's al-Qaeda, which occurred near the South Waziristan town of Wanna.

[8]Mustafa Ahmed Muhammad Uthman Abu al-Yazid, alias Saeed al-Masri, purportedly served as the financial chief for al-Qaeda. His alleged involvement in the assassination of Egyptian President Anwar Al-Sadat led to his imprisonment.

[9]A Pakistani military officer who orchestrated the 1977 Pakistani military coup amidst escalating social

Mosque,[10] al-Masri announced the implementation of Sharia law in a sermon[11] on April 6, 2007, in Pakistan. This incident represented a direct challenge to the government's authority, and it prompted a series of violent developments, including the takeover of a children's library and attacks on music and movie shops by religious students. On June 24, 2007, a group of students from the Red Mosque, armed with sticks, forcibly abducted staff members of a Chinese massage center. China adopted a strict 'zero tolerance' policy, advocating for severe punishment of the implicated terrorists. In parallel, General Musharraf[12] declared a state of emergency and besieged the Red Mosque in a raid known as Operation Silence. The mosque's refusal to surrender led to a violent confrontation that revealed a significant cache of weapons and a militant presence within its confines. The violent end to the standoff left more than 100 militants and 11 armed forces personnel dead(Hussain, 2017). It began a bloody month for Pakistan and set off a barrage of suicide bombings that became a source of inspiration for the militants (Aslam, 2010). Following the siege, there was a sharp escalation in terrorist attacks by the Taliban in Pakistan (Kanniainen and Poutvaara, 2018; Jaeger and Siddique, 2018). In the first year following the siege, more than 88 bombings killed 1,188 people and wounded 3,209 (Aslam, 2010). In response to the mosque siege, the government of Khyber Pakhtunkhwa retaliated, sparking thousands of public protests, which provided an opportunity for al-Qaeda to exploit public sentiment. Numerous attacks followed, which particularly targeted educational institutions. Consequently, the Tehrik-i-Taliban Pakistan (TTP) seized control of the province and FATA.

The Death of Osama bin Laden: After the success of Al-Qaeda's plan with al-Masri, the group made a spectacular resurrection in Pakistan, particularly in Khyber Pakhtunkhwa. Al-Qaeda offered a safe haven to Bin Laden in Pakistan, and it has been reported that he began living in Khyber Pakhtunkhwa following the siege of the Red Mosque (Soherwordi and Khattak, 2011). Meanwhile, the war on terror was approaching its peak. On May 2, 2011, the U.S. carried out Operation Geronimo,[13] in which a U.S. Navy SEAL team assassinated

unrest and political discord between the ruling leftist Pakistan Peoples Party (PPP) government led by Bhutto and the right-wing Islamist opposition the Pakistan National Alliance. The opposition accused Bhutto of rigging the 1977 general elections, fueling the tensions that culminated in the coup.

[10]Established in 1965 by General Zia ul Haq, the Red Mosque occupied a strategic position in Islamabad, Pakistan, just 1.5 kilometers from Central Intelligence Agency and Inter-Services Intelligence Agency (ISI) sites. The surrounding area remained largely undeveloped in its early years, with clear sightlines between Parliament, the Red Mosque, and the Ministry of External Affairs. Over time, the mosque transitioned into a focal point of political influence, attracting government officials and serving as a hub for religious and political activities. During the Afghan-Soviet conflict, it emerged as a crucial waypoint for young Muslims worldwide who were drawn to fight in Afghanistan under the banner of Islam, and potent connections among global jihadist networks were forged there. This role solidified the mosque's stature, and it hosted influential figures like Afghan Mujahideen and later Taliban leaders, including Osama bin Laden and Ayman al-Zawahiri. Their presence underscored the mosque's significance as a nexus for Islamist activism, firmly establishing its place in the annals of jihadist history.

[11]According to the sermon also known as a fatwa, Pakistani soldiers who lost their lives fighting the Taliban and al-Qaeda should not be buried in Muslim cemeteries. The fatwa said that these soldiers neither deserved funeral prayers nor they could be called martyrs. The fatwa was spread across Pakistan and was signed by 500 other scholars.

[12]Pervez Musharraf, a Pakistani military officer and politician was the tenth President of Pakistan, serving from 2001 to 2008. He rose to prominence as the primary orchestrator of the 1999 military coup in Pakistan.

[13]Operation Geronimo, also known as Operation Neptune Spear, was the U.S. operation that killed Osama

Osama Bin Laden, bringing a fifteen-year manhunt to an end (Soherwordi and Khattak, 2011). His death had a number of implications for Pakistan–US relations, the decentralization of terrorist groups, and the dynamics of terrorism in the region. His killing resulted in public support for the slain al-Qaeda leader and his successor Ayman al-Zawahiri (Gaibulloev and Sandler, 2019). Funeral prayers for Bin Laden were offered in absentia in most areas of Khyber Pakhtunkhwa and FATA, and a huge number of protests and processions against the U.S. killing of Bin Laden took place (Soherwordi and Khattak, 2011). Extremism and intolerance began to proliferate quickly in the region. It has been suggested that should this trajectory persist, Pakistan's demographic divide will function like a gunpowder magazine. Only a spark and it will explode; resulting in burnt fingers all over Pakistan (Soherwordi and Khattak, 2011). The weak economy of Pakistan, like that of Afghanistan in the 1990s, has provided opportunities for terrorists and extremists to operate, threatening the security of Pakistan in general, but particularly soft targets such as educational facilities. Although the death of Bin Laden was expected to weaken al-Qaeda's global presence, it did not fully alleviate Pakistan's internal security concerns nor did it signify the completion of the mission in Afghanistan. In fact, a significant increase in extremism has been observed since his death, as evidenced by a surge in terrorist attacks. Khyber Pakhtunkhwa has become a battleground between the U.S. and al-Qaeda. U.S. drone strikes targeting al-Qaeda hideouts have resulted in casualties of Pakistani civilians. Al-Qaeda has struck back, targeting and attacking citizens, military personnel, and paramilitary forces. For instance, the tragic 2014 attack on the Army Public School (APS) in Peshawar, Khyber Pakhtunkhwa, perpetrated by the TTP, resulted in the loss of over 140 lives, predominantly those of children.

2.2 Terrorism

Terrorism's roots delve deep into a complex nexus of political instability, economic disparity, societal division, and international intricacies. From governmental repression to ethnic tensions, and from economic woes to minority grievances, it's a perfect storm, ready to destroy at the slightest provocation (Frey et al., 2007; Freytag et al., 2011; Krieger and Meierrieks, 2011). The presence of terrorism reflects societal weaknesses. The term remains contentious due to the political and ideological perspective-taking it entails, exemplified by the adage *"One man's terrorist is another man's freedom fighter"* (Sick, 1990; Ayres, 2000; Europol, 2007, 2010, 2013; Bruckberger, 2018).

A growing literature has begun to examine the socioeconomic determinants of terrorism. A segment of the extant research has identified a significant impact of GDP per capita (Fearon and Laitin, 2003; Collier and Hoeffler, 2004; Bloom, 2005; Freytag et al., 2011; Ali and Li, 2016; Jetter et al., 2024), poverty (Gurr, 1970; Friedman, 2002; Moghaddam,

bin Laden in Abbottabad, Pakistan. The operation, approved by President Barack Obama, involved a team of more than two dozen Navy SEALs who descended on Bin Laden's mansion in two Black Hawk helicopters, killing him on May 2, 2011. The raid was launched from Afghanistan, about 120 miles (190 km) away, and the U.S. did not inform the government of Pakistan of the operation in advance.(Soherwordi and Khattak, 2011).

2005; Berman et al., 2009), inequality (Turk, 1982; Midlarsky, 1988; Salvatore, 2007), unemployment (Abadie, 2006; Harrison, 2006; Kalyvas, 2006; Berman et al., 2009), inflation (Coomer, 2003; Caruso and Schneider, 2011), political instability (Kis-Katos et al., 2011; Bandyopadhyay et al., 2011), literacy (De Mesquita, 2005; Krueger, 2008) and un-intended terror financing (Limodio, 2022) on terrorism. Conversely, several studies have reported an insignificant effect of GDP per capita (Abadie, 2006; Krueger and Laitin, 2008; Sambanis, 2008), poverty (Krueger and Malečková, 2002; Abadie, 2006; Piazza, 2011), inequality (Abadie, 2006; Kurrild-Klitgaard et al., 2006), unemployment (Thompson, 1989; Krueger and Malečková, 2002), inflation (Kurrild-Klitgaard et al., 2006; Krueger and Laitin, 2008), political instability (Wade and Reiter, 2007) and literacy (Krueger and Malečková, 2002; Krueger and Laitin, 2008) on terrorism. The debate persists, with different studies yielding varying results across different contexts. Ismail and Amjad (2014) have investigated the determinants of terrorism, finding that in the short term, inflation, repression, GDP per capita, and poverty significantly influence terrorism rates, while inequality, literacy, and unemployment do not show any significant effects. In the long term, the study suggests that literacy, GDP per capita, poverty, and inflation become significant determinants of terrorism, while repression, inequality, and unemployment have little impact.

However, stringent governmental measures imposed on terrorist groups sometimes result in backlashes (Rosendorff and Sandler, 2004; Siqueira and Sandler, 2007; Arce and Sandler, 2010; Rosendorff and Sandler, 2010; Dugan and Chenoweth, 2012; Gaibulloev and Sandler, 2019), a heretofore empirically unexplored subject. Terrorists seek to induce governments to overreact to their brutal attacks, with the aim of recruiting more terrorist sympathizers (Houfman, 2006; Enders and Sandler, 2011), as occurred after the siege of the Red Mosque and the death of Bin Laden. Drone strikes were carried out in Khyber Pakhtunkhwa following 9/11 (Fair, 2010). Rosendorff and Sandler (2004); Bloom (2005) argue that drones are locally unpopular and cause backlashes, thereby facilitating terrorist recruitment, especially in the context of Pakistan. Additionally, Jaeger and Siddique (2018) find evidence of an escalation in the vengeance or backlash effect during the initial week following a successful drone strike targeting Taliban and al-Qaeda assets. Other scholars, as noted by Johnston and Sarbahi (2016), have utilized geocoded data to examine the relationship between drone strikes and terrorist activities within Pakistan, with different results. Employing a spatial panel methodology at the district-week level of analysis, they observed a reduction in terrorist attacks and resulting casualties immediately following a drone strike. However, they found that the elimination of militant leaders did not result in a statistically significant decrease in terrorist attacks or their associated consequences. An intriguing additional finding was the absence of an apparent transference externality; that is, the short-term decrease in terrorism did not lead to an increase in terrorism in neighboring regions. The killings of militant leaders may provoke further violence through a backlash (Gaibulloev and Sandler, 2019). Benmelech et al. (2015) demonstrate that precautionary demolitions of terrorist houses resulted in a backlash in the form of an increase in suicide attacks. This message resonates with findings from Fearon and Laitin (2003), who suggest that countermeasures must be discriminating to be effective (Rosendorff and Sandler, 2004; Zussman and Zussman, 2006; Jacobson and Kaplan, 2007). Fisher and Becker (2021) proposed that the death of Osama bin Laden had varying effects on global terrorism patterns, with some countries experiencing no change

in terrorism levels after his death. Certain proactive policies, such as the targeted killing of militant leaders in order to disrupt terrorist plots or the infiltration of extremist groups, may be effective in practice (Gaibulloev and Sandler, 2019), although corroborating evidence may be scarce in the literature. However, on a broad scale such repression has either had no effect or has led to increased terrorism, consistent with the notion of backlash (Dugan and Chenoweth, 2012). Evaluating the effectiveness of these strategies is difficult due to the lack of a comprehensive global dataset documenting such interventions (Gaibulloev and Sandler, 2019). Consequently, our understanding of these efforts is gleaned from episodic information rather than rigorous empirical investigation, constraining the ability to precisely assess their overall impact (Gaibulloev and Sandler, 2019). In this study, we leverage data from the Global Terrorism Database and implement a rigorous quasi-experimental design to offer evidence on the effect of such incidents on terrorism. The siege of the Red Mosque and the death of Bin Laden serve as a clear treatment in a specific region, prompting us to designate Khyber Pakhtunkhwa as the treatment group.

2.3 Terrorism and Education

Terrorism engenders uncertainty and disrupts both physical and human capital (Abadie and Gardeazabal, 2019), including education. The mechanisms include damage to school infrastructure (Akbulut-Yuksel, 2014), injury to, killing of or recruitment of teachers by terrorists (Javeid et al., 2023), displacement or migration from conflict-prone areas (Javeid et al., 2023), disruption of travel to school (Shemyakina, 2011) and the intimidation of civilians, for increasing fear, via kidnappings (Khan and Seltzer, 2016). Terrorism has been found to have negative effects on education (Khan and Seltzer, 2016; Alfano and Görlach, 2024; Javeid et al., 2023; Shany, 2023). The July 2005 London terrorist attacks exerted a detrimental influence on the educational aspirations of Muslim adolescents, resulting in a diminished likelihood of intending to pursue non-compulsory full-time education among this demographic group (Astorga-Rojas, 2023). In Israel, fatal terror attacks before exams adversely affect students' academic performance, but the effect is temporary and does not impact the quality of the diploma earned (Shany, 2023). However, in highly affected countries such as Kenya, terrorism alters the demand for education by changing its perceived risks and returns, with media access reinforcing the negative effects of terrorism on schooling (Alfano and Görlach, 2024). In addition Alfano and Görlach (2024), exploiting exogenous variation derived from a local terrorist group's revenues and its alignment with al-Qaeda, discern a suppression in school enrollment beyond anticipated levels and identify fears and concerns as the mechanisms underlying the observed impact, thus deviating from conventional explanations centered on educational supply dynamics. Pakistan is another heavily affected region, and the extant research underscores the impact of terrorism within its borders. Ali et al. (2016) collected data from 200 children in District Swat, Khyber Pakhtunkhwa, using a stratified random sampling technique implemented via an interview schedule, and found that militancy and terrorism have multiple diverse impacts on students' academic achievements and learning performance, including schooling years, marks attainment, enrollment, and behavior. Syed et al. (2017), using data from 200 students aged 14–16 years in a school

in Peshawar, found that the terrorist attack on December 16, 2014, had a severe effect on the mental health and academic performance of the students. In a qualitative data analysis of seven in-depth semi-structured interviews from the seven tehsils of Swat, Khattak (2018) found that women's education in Swat Valley was greatly affected during periods of terrorism, with women's educational institutes being the main targets of militants. Rafique and Yasmin (2020) collected data from 48 students and 29 teachers at Government College University, Faisalabad, and through focused group discussions found an effect of terrorism on the emotional and psychological well-being of the university students. Nawab et al. (2021) investigate the impact of militancy on education in Mohmand Agency of FATA, focusing on the factors that cause militancy and its effects on education. Through interviews with 250 respondents from selected villages, it was found that unemployment, poverty, drone attacks, and border issues were key factors contributing to militancy, which significantly disrupted primary and secondary education. Ullah (2022) utilizes the "garrison state" theory and the concept of "fragmented hegemony" to analyze the control of violence and the maintenance of state hegemony. The most relevant study by Javeid et al. (2023) uses data from the GTD and PSLM from 2006–07 to 2014–15 to investigate the effect of terrorist incidents on parents' decisions on whether to continue their children's education. Using the lag values of terrorist attacks as an instrument, they find that an increase in terrorist incidents reduces the number of children who continue their education at the primary school level. Despite these studies, there is still a paucity of research concerning the impact of terrorism on education within the Pakistani context. Specifically, studies employing rigorous econometric methodologies to assess the ramifications of terrorism on educational outcomes have been scant. Consequently, the extent to which terrorism has affected education in Pakistan remains unclear.

3 Data

Terrorist Attack: We collected data on terrorist attacks from the Global Terrorism Database, curated by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) as of 2020. It provides systematic data on terrorist incidents, including over 15,000 events in Pakistan. Leveraging this extensive dataset, we constructed two balanced panels for analysis. First, a sub-district(tehsil)-level panel was developed, which encompasses 573 tehsils and 612 month-year periods from 1970 to 2020. Secondly, a district-level panel was created, comprising 170 districts, tracked over the same range.

In Figure 1, we show the distribution of terrorist incidents across Pakistan over distinct chronological periods. The timeline is divided into three significant intervals: the period preceding the Red Mosque Siege, from September 19, 2003, to July 11, 2007; the period between the Red Mosque Siege and the death of Osama bin Laden, from July 12, 2007 to May 1, 2011; and the post-bin Laden era from May 2, 2011 to February 21, 2015. These intervals allow for a comprehensive comparative analysis of the temporal patterns of terrorist incidents, providing insight into the evolution of terrorism dynamics in Pakistan during these key historical events. Specifically, terrorism began increasing in response to the Red Mosque Siege and saw a significant rise in both frequency and intensity following the death of Osama

bin Laden.

Administrative Unit: Pakistan's administrative structure comprises three primary levels: 4 provinces, 170 districts, and 573 tehsils. In our endeavor to tally the occurrences of attacks and to facilitate mapping preparations, we utilized administrative boundary data from the OCHA Field Information Services Section (FISS).

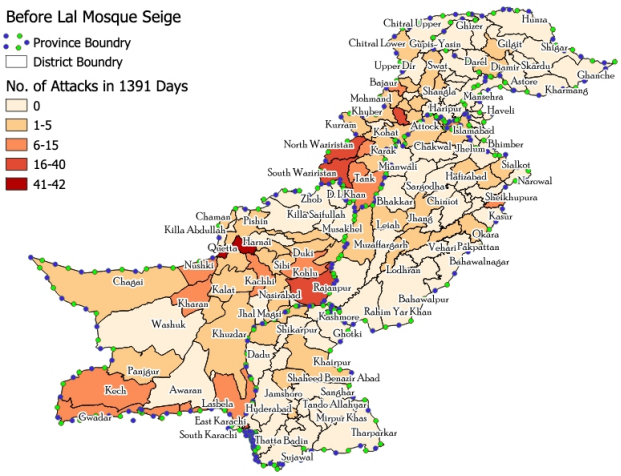
To examine the impact of pivotal events such as the Red Mosque siege and Bin Laden's death on terror-related outcomes, we merged tehsil-month-level data with tehsil-level population data after rectifying and aligning the names of each tehsil. This allowed us to compute the average number of attacks experienced by each tehsil per month and per person across the dataset. Since individual-level data, such as the Pakistan Social and Living Standards Measurement and the Annual Statistics of Education Report, is captured at the district level, we also undertook the task of harmonizing the names of each district across datasets. Subsequently, we calculated the number of attacks per district for each year and divided it by the population of the district. For the year 2020, we merged data by considering the commencement year of schooling for each child. This enabled us to calculate the total number of attacks experienced by individuals during the years they were of school age, from age 5 to 18.

In our difference-in-differences analysis, the treatment region is the province of Khyber Pakhtunkhwa, where retaliation and protests have been observed during the Red Mosque siege and where Osama bin Laden was found and killed. Following the Red Mosque siege in Khyber Pakhtunkhwa, mass public protests erupted, leading to an increase in terrorist attacks in the region. This upward trend in attacks escalated further in response to the death of Osama bin Laden. Alongside the overall rise in terrorist activities, there was a significant increase in attacks on educational facilities in Khyber Pakhtunkhwa, underscoring the retaliatory nature of the violence linked to both the Red Mosque siege and the death of Osama bin Laden. Figure 2 illustrates that these events significantly increased the frequency of terrorist attacks. The patterns and dynamics observed across the affected and unaffected regions provide evidence supporting the validity and relevance of our identification strategy, which relies on the parallel trend assumption. The trends in the affected and unaffected regions did not diverge before the Red Mosque siege and the death of Osama bin Laden, reinforcing the credibility of our methodology.

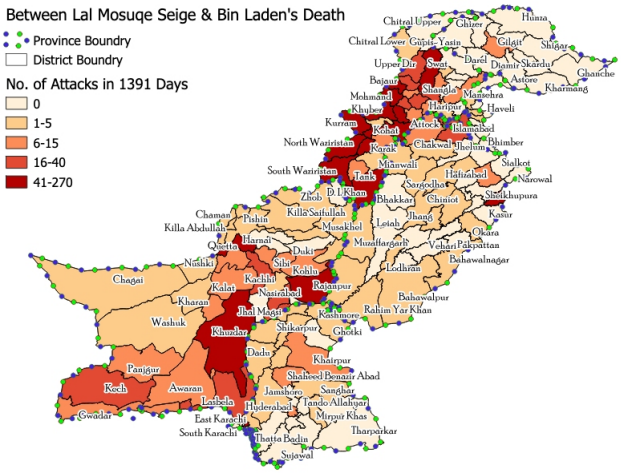
To standardize the event counts, we utilized population data from two censuses within the scope of our analysis, specifically from 1997 and 2017. Integrating this census data with the GTD panel necessitated a meticulous harmonization process, particularly regarding the names of tehsils (sub-district units). Given the potential variations in the recording of tehsil names in different datasets, including multiple spellings due to the transliteration from Urdu to English and the possibility of erroneous entries, we undertook a detailed review and revision process to ensure the consistency and accuracy of the data alignment.

Education: To estimate the impact of terrorism on education, we leverage two nationally representative datasets. First, we utilize individual-level data from the Pakistan Social and

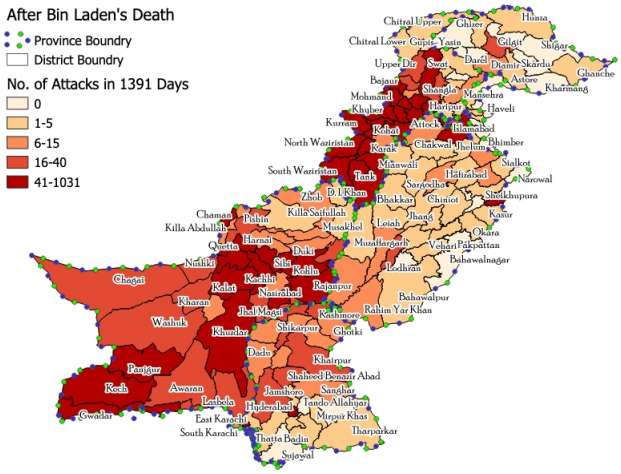
Figure 1: Terrorism in Pakistan



(a) Attacks before Red Mosque Siege



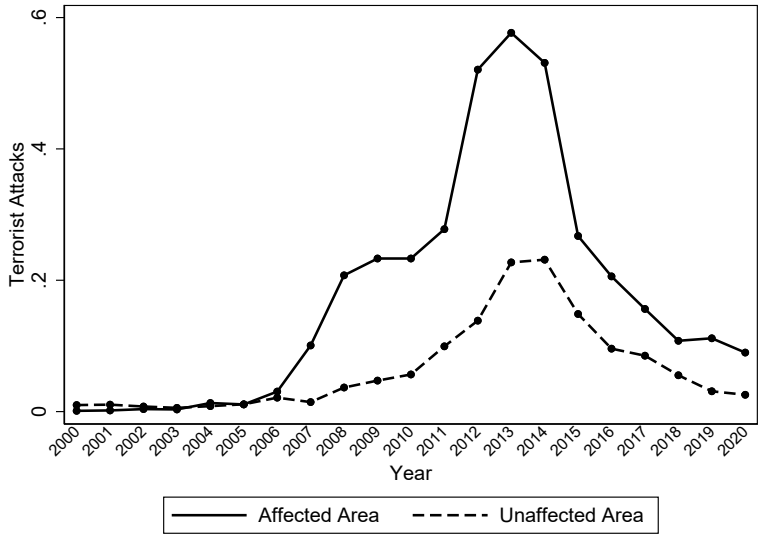
(b) Attacks between Red Mosque Siege and Bin Laden's Death



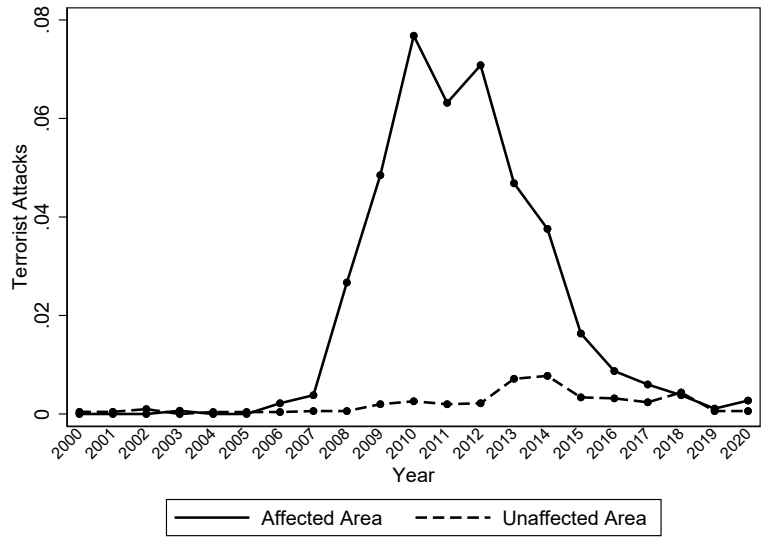
(c) Attacks after Bin Laden's Death

Notes: The presented figures delineate the distribution of terrorist incidents across Pakistan, presented into distinct chronological periods. The prior to the Red Mosque Siege spans from September 19, 2003, to July 11, 2007. Following this, between the Red Mosque Siege and the death of Osama bin Laden consist of the period from July 12, 2007, to May 1, 2011. Lastly, the post-bin Laden era extends from May 2, 2011, to February 21, 2015. All figures covers 1391 days across the before, between and after intervals, providing a comprehensive comparative analysis.

Figure 2: Dynamics of Terrorism in Regions



(a) Total Attacks



(b) Attacks on Education

Notes: The affected area encompasses the Khyber Pakhtunkhwa (KP) province, the region where Osama bin Laden was found and killed in 2011. The unaffected areas comprise Azad Kashmir, Balochistan, Gilgit Baltistan, Punjab, and Sindh provinces.

Table 1: Descriptive Statistics

Variables	Mean (1)	SD (2)	Observations (3)
Panel A. Global Terrorism Database (GTD)			
Total Attacks	0.0607	0.7796	241,806
Attacks on Education	0.0041	0.0895	241,806
Attacks on Government	0.0005	0.0243	241,806
Attacks on Law Enforcement	0.0169	0.2377	241,806
Attacks on Citizen	0.0153	0.3058	241,806
Attacks on Non-State Actors	0.0015	0.0459	241,806
Deaths	0.1038	1.8093	241,806
Injuries	0.1846	3.6506	241,806
Properties Damages	0.0299	0.4294	241,806
Number of Sub-Districts			573
Panel B. Pakistan Social And Living Standards Measurement (PSLM)			
Age	23.3363	18.3623	2,879,130
Female	0.4847	0.4998	2,879,130
Rural	0.7018	0.4575	2,879,130
Single	0.5930	0.4913	2,879,130
Household Assets Index	1.4633	1.3711	2,889,309
Employed	0.3633	0.4809	2,071,209
Enrollment	0.3957	0.4890	1,819,305
Years of Education	6.6226	4.2474	1,243,472
Panel C. Annual Status of Education Report (ASER)			
Age	8.8423	3.7813	2,132,565
Female	0.4396	0.4963	2,131,298
Enrollment	0.7118	0.4529	2,139,788
Years of Education	3.8873	2.8545	1,482,225
Tutoring	0.1742	0.3793	1,161,449
Math	3.2678	1.9231	1,684,468
English	2.9042	1.6908	1,683,816
Reading	2.9780	1.6581	1,671,737

Notes: The table provides an overview of terrorist attacks in Pakistan in panel A, leveraging data sourced from the Global Terrorism Database covering the time period from 1970 to 2020. The dataset, originally structured on an event-based framework, was transformed into a panel format and disaggregated at the monthly and sub-district (tehsil) levels. The unit of observation is specified as the count of attacks per tehsil per month. Panel B represents the key summary statistics of PSLM data from 2006 to 2020. Likewise, panel C represents the summary statistics of the data from ASER covering the years from 2012 to 2021 For each variable, the table presents the mean in column (1), standard deviations (SD) in column (2), and the number of observations in column (3).

Living Standards Measurement survey (PSLM), covering the period from 2006 to 2020. The PSLM, conducted annually, is a comprehensive household survey that provides nationally representative data through five survey rounds within our study window. To account for potential temporal variation and to ensure the robustness of our analysis, we segment the data into ten-year intervals based on the interview year. This segmentation facilitates a true estimation of the impact over time, incorporating variations in parental education, household economic status, industry classification, and exposure to the treatment. Second, we employ data from the Annual Status of Education Report (ASER), which spans from 2012 to 2021 and includes a sample of school-aged children between 3 and 16 years old. This dataset reports the academic performance of school-aged children who took tests in subjects such as math, reading, and English. However, it is important to note that there is no data available before 2012, and the ASER only reports the academic performance of children who took the tests in each survey year.

Table 1 presents the summary statistics for the key variables from each dataset that were utilized in this study. Panel A provides an overview of the number of terrorist attacks, with the unit of observation being tehsil-months from 1970 to 2020. However, there are instances of missing months where no terrorist activity occurred within the administrative boundary. The variable Total Attacks encompasses the aggregate count of attacks targeting various entities, including educational institutions, businesses, government bodies, law enforcement agencies, telecommunication facilities, tourists, citizens' properties, non-state actors, food and water supplies, and maritime entities. The remaining variables in Panel A delineate the individual counts of attacks categorized by target type. In addition, the variables capturing the number of deaths, injuries, and the extent of property damage encompass all incidents resulting from various types of attacks and their respective targets. Panel B provides the summary statistics derived from the PSLM survey dataset from 2006 to 2020. The variables female, rural, single, drop-out, enrollment, and employed are binary variables that take a value of 1 if the named characteristic applies to the individual. The remaining variables are continuous in nature. The household asset index is computed based on the potential assets present within a household, reflecting its wealth status. Years of education signifies the cumulative years of formal schooling completed by individuals. Panel C presents the summary statistics from the ASER data from 2012 to 2021. Tutoring is a binary variable indicating additional educational support outside regular school hours, such as private tutoring or extra classes. Math scores range from 1 to 7, while English & Reading scores range from 1 to 5. Each score represents a learning level, with the first category being the lowest and the last being the highest.

4 Empirical Strategy

To measure the impact of terrorist attacks on educational attainment, we utilize data from the 2020 PSLM survey, leveraging individuals' locations and birth years to determine their exposure to these attacks. Specifically, we identify each individual's birthplace, current residence, birth year, and years of education from the survey. Our analysis is restricted to

individuals who have remained in their birthplace, ensuring that their birthplace matches their current residence. In Pakistan, children typically attend school from ages 5 to 18; thus, those within this age range during the attacks would have been directly affected.

Furthermore, there is variation not only across birth cohorts but also across different regions in the intensity of terrorist activities targeting educational institutions. This variability is largely attributed to key events such as the death of Osama bin Laden. These differences in birth cohorts and geographical regions allow us to examine the impact of terrorist attacks on educational achievements through the following regression analysis.

$$y_{ijt} = \beta_0 + \beta_1 Terror_{jt} + \theta_j + \tau_t + \epsilon_{jt} \tag{1}$$

where y_{ijt} represents the outcome for individual i from district j born in year t. The term $Terror_{jt}$ quantifies the total number of terrorist attacks experienced by individuals in district j during their schooling years, aged 5 to 18. For instance, an individual born in 1985 would have been exposed to terrorist attacks from 1990 (when they were 5 years old) until 2003 (when they were 18) during the schooling years. Therefore, $Terror_{j,1985}$ for an individual born in 1985 in district j is the number of terrorist attacks within district j from 1990 through 2003. District fixed effects, θ_j, account for the time-invariant initial characteristics that may vary across different districts, and year fixed effects, τ_t, capture common shocks affecting all districts in a given year. Standard errors are clustered at the district level. In the specification, the coefficient of interest, β_1, examines the effect of terrorist attacks on educational attainment.

One concern with our empirical strategy is the potential endogeneity of terrorist attacks, as terrorists may specifically target certain regions rather than selecting locations at random. To address this issue, we employ the death of Osama bin Laden as an instrumental variable. The event was unforeseen, particularly the operation that led to Osama bin Laden's death, which was conducted in the utmost secrecy and came as a shock to many, including terrorist groups. Following this event, there was a significant spike in terrorist attacks in the region where he was killed. We leverage this unexpected incident as an instrumental variable to predict the incidence of terrorist attacks. The first-stage regression is as follows.

$$Terror_{jt} = \alpha_0 + \alpha_1 Treatment_j \times Post_t + \theta_j + \tau_t + \epsilon_{jt} \tag{2}$$

where $Treatment_j$ denotes whether district j is located in the province of Khyber Pakhtunkhwa, the location of significant events such as the response to the death of Osama bin Laden. Our main analysis is based on the death of Osama bin Laden, but we also consider the Red Mosque Siege as a robustness check. The variable Post_t indicates if individuals born in year t were of school age at the time of Osama bin Laden's death. For example, individuals born in the year 2000, who were 11 years old in 2011 when Osama bin Laden was killed, have Post_{2000} assigned the value of 1. In contrast, those born in 1990, who were 21 in 2011 and thus not of school age, have Post_{1990} set to 0. Consequently, individuals born in Khyber

Pakhtunkhwa province from 1993 to 2006, who were between the ages of 5 and 18 at the time of the incident in 2011, were directly affected during their schooling years.

In the first-stage regression above, we utilize individual-level data from the PSLM survey, categorized by district and birth year. To refine our analysis of the causal relationship between Osama bin Laden's death and terrorist attacks, the Global Terrorism Database allows us to work with data at the tehsil (sub-district) level and by month-year, aligned with the calendar year. This approach leverages the most granular administrative and temporal details, offering a direct pathway to understanding the impact of bin Laden's demise on terrorist activities. However, this method is not applicable to the first-stage regression in the IV analysis due to the mismatch in geographical and temporal levels.

Following the method used in Duflo (2001), we assess the impact of terrorist attacks on educational outcomes across different age cohorts. For instance, individuals born in 2004, who were 7 years old (the young cohort) at the time of Osama bin Laden's death in 2011, were significantly impacted, as a large portion of their schooling occurred during and after this event. Conversely, individuals born in 1994, who turned 17 in 2011 when the incident occurred, may have been affected, but to a lesser extent since their schooling was nearly complete at that time. Moreover, individuals born in 1984, who were 27 years old at the time of the event in 2011, were not impacted, as their schooling had already been completed by 2011. Therefore, we take into account the age of individuals during the incident in 2011 to explore the varying degrees of effects terrorist attacks have had on their educational outcomes. Specifically, we implement the following event-study regression model.

$$y_{ija} = \alpha + \sum \beta_a Treatment_j \times AgeDummy_{ia} + \theta_j + \tau_a + \epsilon_{jt} \tag{3}$$

where $Treatment_j$ represents the total number of attacks in district j, or an indicator of whether district j falls within Khyber Pakhtunkhwa. We analyze the impact using each variable and present the OLS and reduced-form coefficients, respectively. The variable $AgeDummy_{ia}$ is an indicator for whether individual i was of age a at the time of the incident in 2011, specifically considering ages between 5 and 32 years. Consequently, the coefficient β_a captures the effect of terrorist attacks on educational outcomes for individuals who were age a during the incident in 2011. The model includes district fixed effects, θ_j, and cohort fixed effects, τ_a, to control for unobserved heterogeneity.

We first examine the number of terrorist attacks during the pre-treatment period across different treatment statuses. Table 2 presents whether any differences in terrorist attacks existed during this period. The insignificant coefficients suggest that, prior to the Red Mosque Siege and the death of Osama bin Laden, there were no initial differences in the incidence of terrorist attacks between Khyber Pakhtunkhwa and other provinces. Except for one specific category of attacks targeting Law Enforcement comprising armed forces, police, and other security agencies terrorist activities were similar across regions before these two key events. The joint p-value further supports this baseline similarity.

Table 2: Terrorism during the Pre-Treatment Period

Variable	Treatment (1)	Control (2)	Difference (3)	p-value (4)
Total Attacks	0.0085	0.0062	-0.0023	0.1949
	(0.3176)	(0.2426)	[0.0018]	
Attacks on Education	0.0003	0.0001	-0.0002	0.3400
	(0.0297)	(0.0168)	[0.0002]	
Attacks on Government	0.0001	0.0001	-0.0000	0.6546
	(0.0085)	(0.0041)	[0.0000]	
Attacks on Law Enforcement	0.0026	0.0011	-0.0015	0.0449
	(0.1476)	(0.0620)	[0.0008]	
Attacks on Citizen	0.0023	0.0026	0.0003	0.5816
	(0.0811)	(0.1317)	[0.0006]	
Attacks on Non-State Actors	0.0000	0.0001	0.0001	0.4084
	(0.0034)	(0.0220)	[0.0001]	
Deaths	0.0178	0.0160	-0.0018	0.6592
	(0.6103)	(0.8492)	[0.0040]	
Injuries	0.0274	0.0281	0.0007	0.9073
	(0.9311)	(1.2843)	[0.0061]	
Properties Damages	0.0028	0.0059	0.0031	0.0002
	(0.1150)	(0.1994)	[0.0008]	
Joint p-value				0.1923
Observations	8,874	24,360		

Notes: This table employs a t-test between a treatment and control group. Data consist of years from 1970 to 2006 considering the Red Mosque Siege in 2007 and the death of Osama bin Laden in 2011. Where the unit of observation is per tehil per month. The results, as presented in the table, highlight statistically insignificant differences in terrorism between the treatment and control groups before the treatment. The joint p-value of 0.1923 suggests an overall similarity in means across all categories. The first two columns (1-2) display means and standard deviations in parentheses within the treatment and control groups, respectively. Column (3) indicates mean differences coupled with standard errors in brackets between treatment and control groups, while column (4) shows the p-value from a two-sided t-test assessing the equivalence of means.

5 Results

5.1 Impact on Terrorist Attacks

Table 3 examines the relationship between Osama bin Laden's death and subsequent terrorist attacks, as outlined in equation 2. On average, his death led to an increase in the total number of monthly attacks per hundred thousand population by 0.09 in column (1), doubling the average monthly rate based on the mean of the dependent variable. Specifically, the impact on attacks targeting educational facilities is also significant, with an increase of 0.0032 attacks in column (2), which corresponds to a 50 percent rise. With the exception of attacks on government facilities, the frequency of all types of terrorist attacks escalated following Bin Laden's death.

As a result, the surge in terrorist attacks following Osama bin Laden's death led to significant human and economic losses. Specifically, the average monthly death toll per hundred thousand people rose by 0.14, almost a 7-fold increase, as shown in column (7). Furthermore, there was considerable damage to property in the aftermath. The number of properties damaged per hundred thousand population increased by 0.0426, representing a 70 percent increase, as shown in column (9).

As a robustness check, we use the Red Mosque Siege as an instrumental variable to predict the number of terrorist attacks. Table A1 illustrates a significant positive relationship between the Red Mosque Siege and the incidence of terrorist attacks.[14] When we consider both the Red Mosque Siege and Osama bin Laden's death together, as demonstrated in Table A2, this positive relationship persists. These incidents occurred in Khyber Pakhtunkhwa in 2007 and 2011, respectively, allowing us to explore the dynamic effects of these incidents on terrorist activities within the province. Figure 3 presents the coefficients corresponding to the respective years. This shows a significant increase in terrorist attacks in Khyber Pakhtunkhwa following both the Red Mosque Siege and Osama bin Laden's death, with educational targets notably experiencing an increase in attacks. Furthermore, the presence of insignificant coefficients prior to these events supports the validity of the instrumental variable approach.

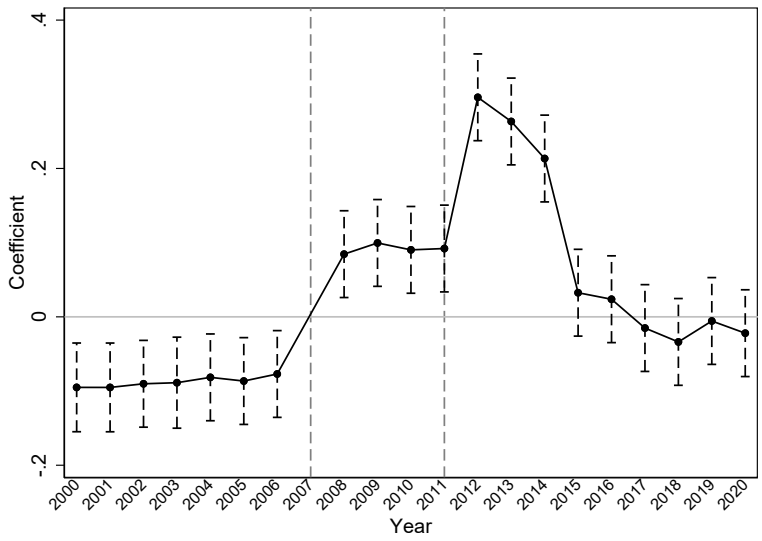
[14] Appendix: https://chungeunyoon.github.io/HussainYoon_Appendix.pdf
Full paper including Appendix: https://chungeunyoon.github.io/HussainYoon_Full.pdf

Table 3: Impact of the Death of Osama bin Laden on Terrorist Attacks

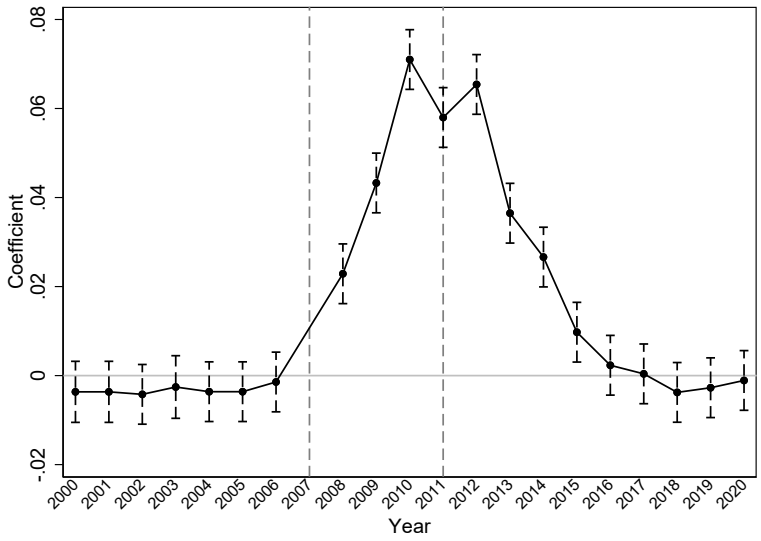
Dependent Variable	Number of Attacks						Human and Economic Damages		
	Total	Education	Government	Law Enforcement	Citizen	Non-State Actors	Deaths	Injuries	Properties Damage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Bin Laden's Death	0.0900	0.0032	0.0002	0.0367	0.0070	0.0067	0.1407	0.1581	0.0139
	(0.0266)	(0.0013)	(0.0002)	(0.0108)	(0.0043)	(0.0017)	(0.0402)	(0.0471)	(0.0088)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.0672	0.0207	0.0136	0.0434	0.0391	0.0098	0.0192	0.0232	0.0626
No. of Tehsils	573	573	573	573	573	573	573	573	573
Observations	236,592	236,592	236,592	236,592	236,592	236,592	236,592	236,592	236,592
Dep. Var. Mean	0.0407	0.0021	0.0001	0.0125	0.0095	0.0009	0.0621	0.0847	0.0201

Notes: Utilizing the DID model, this table presents the effect of death of Bin Laden on terrorist attacks, human and economic losses. The variable 'Bin Laden's Death' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2011 when the US Navy killed Bin Laden; otherwise, it takes the value of 0. Columns (1-6) present the average number of monthly attacks per tehsil per hundred thousand people, while columns (7-9) depict the average number of monthly deaths, injuries, and property damages per tehsil per hundred thousand people. The unit of data is monthly at the tehsil level, which is the lowest administrative boundary in Pakistan. The analysis covers the period from 1970 to the year 2020 covering 573 tehsils and 612 months. The data on terrorism and human & economic losses were sourced from GTD. The census data on population for every tehsil has been taken from the PBS. In the regression model, time-fixed effects consist of month-year fixed effects and area-fixed effects accounting for the province, district, and tehsil-specific fixed effects. Standard errors, shown in parentheses, are clustered at the tehsil level.

Figure 3: Time-Varying Effect on Terrorist Attacks



(a) Total Attacks



(b) Attacks on Education

Notes: This figure presents the coefficients of the event study model specified in equation **??**. The sub-figures illustrate the coefficients of total terrorist attacks in the Khyber Pakhtunkhwa province relative to the other provinces over the period from 2000 to 2020. The upward trend post-2007 and post-2011 indicates a significant impact of the Red Mosque Siege and the death of Bin Laden, respectively The bars around each observation represent the 95% confidence interval. Standard errors are clustered at the sub-district (tehsil) level, and the empirical specification includes area-fixed effects consisting of tehsil, district, and month and time-fixed effects include month-year fixed effects.

5.2 Impact on Educational Attainment

Table 4 explores the impact of terrorist attacks on educational attainment, employing the instrumental variable (IV) method as detailed in equations 1 and 2. On average, terrorist attacks on educational targets led to a decrease of 0.52 in years of education, as indicated in column (1), a 5.8 percent reduction relative to the mean of the dependent variable. The subsequent columns assess gender-specific effects, revealing significant disparities. For girls, terrorist attacks resulted in a significant decrease in years of education by 0.93 years (10.4 percent), whereas boys' years of education were not affected. Based on the average number of terrorist attacks on educational targets following Osama bin Laden's death (0.2), these estimates suggest a decline of 0.13 years (1.4 percent) of education for all children and 0.34 years (3.8 percent) for girls specifically.

Column (4) shows that terrorist attacks significantly reduced the rate of primary school completion by 5.9 percentage points, a 8.6 percent decrease from the mean of the dependent variable. The gender disparity extends to the completion of primary education as well; terrorist attacks decreased the completion rate by 9.45 percentage points (14.2 percent) for girls, with no significant impact on boys. At the average level of terrorist attacks, there was a 1.5 percentage point (3.8 percent) decline in primary school completion overall, and a 3.3 percentage point (4.9 percent) decrease for girls specifically.

Furthermore, Table A7 shows the effects of terrorist attacks on various other educational outcomes. Specifically, terrorist attacks targeting education not only reduced enrollment rates but also led to an increase in both the dropout rate and the likelihood of children engaging in labor.

Figure 4 from equation 3 illustrates the impact of terrorist attacks on educational attainment by age. The results show a decline in both years of education and grade 8 completion rates for children aged 5 to 13. This effect was significant among younger cohorts, whereas older cohorts did not exhibit such an impact. The OLS and reduced form estimates for these older groups were statistically indistinguishable from zero, supporting the validity of our empirical strategy based on the parallel trends assumption. Furthermore, Figures A1 and A2 present coefficients by age and gender. Older cohorts, regardless of gender, did not experience a decline in educational outcomes in response to terrorist attacks on educational institutions. However, younger cohorts, particularly girls, showed a significant decrease in educational attainment, consistent with the findings in Table 4.

Table 5 presents the impact of terrorism on learning levels, enrollment, and years of education for school-aged children. The OLS method is used to estimate the effect on academic performance, drawing on data from the ASER survey, which includes children aged 3 to 16 but does not report their birthplace. The explanatory variable is computed as the total number of attacks on education experienced by children in a given district from their schooling age up to the survey year.

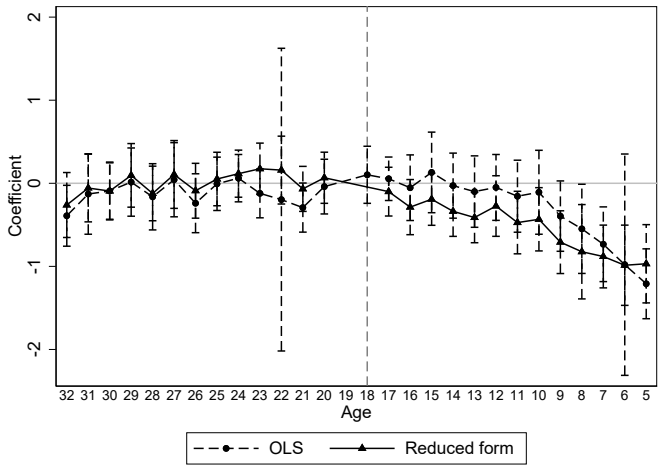
The results show that terrorist attacks on educational institutions have led to average de-

Table 4: Impact of Terrorism on Education

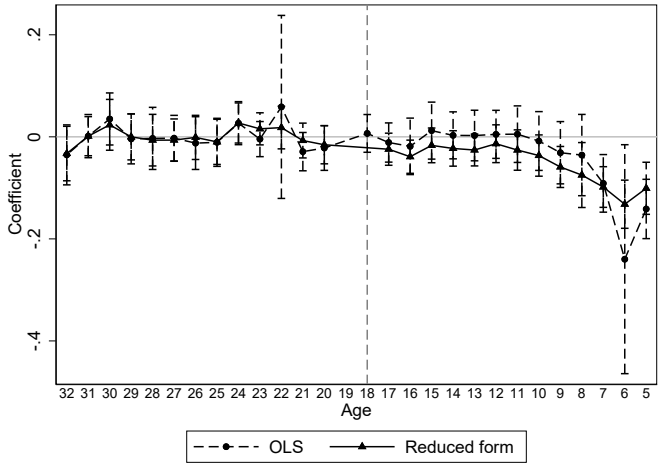
Dependent Variable	Years of Education			Primary Education Completion		
	Full Sample (1)	Girls (2)	Boys (3)	Full Sample (4)	Girls (5)	Boys (6)
	Panel A. Instrumental Variable Estimation					
Attacks on Education	-0.5198	-0.9295	-0.1609	-0.0587	-0.0945	-0.0277
	(0.1364)	(0.1887)	(0.1844)	(0.0169)	(0.0265)	(0.0192)
	Panel B. Dependent Variable: Attacks on Education					
Bin Laden's Death	0.6373	0.6235	0.6542	0.6373	0.6235	0.6542
	(0.1472)	(0.1434)	(0.1521)	(0.1472)	(0.1434)	(0.1521)
F-statistics	15.4481	11.7705	17.8119	15.4481	11.7705	17.8119
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	142,995	59,858	83,137	142,995	59,858	83,137
Dep. Var. Mean	8.9040	8.9099	8.8998	0.6807	0.6636	0.6930

Notes: Utilizing the instrumental variables 'Death of Bin Laden', this table represents the repercussions of attacks on attained years of education and completion of grade 8 during the schooling age between 5-18. The variable 'Bin Laden's Death' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2011 when the US Navy killed Bin Laden; otherwise, it takes the value of 0. The independent variable in this model is the average number of terrorist attacks on education per hundred thousand people per district. The outcome variables are measured for every individual during their schooling age. Column 1-3 represents the attained years of education, while column 4-6 contains the dummy variable if an individual has completed grade 8. Panel A of the table represents the result of instrumental variable estimation and Panel B represents the first stage regression where the outcome variable is the average number of attacks per hundred thousand people per district. The unit of outcome variable is individual and the unit of terrorist is measured at the district level. In this table, we use the 2020 PSLM survey and count the terrorist attacks for every individual that they exposed during their schooling age. This counting enables us to use the data as a panel and we use the fixed effect as the birth-year fixed effect. The data on terrorist attacks on educational institutions was sourced from GTD. The census data on the population for every district has been taken from the PBS. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. In the regression model, time-fixed effects consist of birth-year effects and area-fixed effects accounting for the province and district-specific fixed effects. F-statistic is Kleibergen-Paap rk Wald F statistic. Standard errors, shown in parentheses, are clustered at the district level.

Figure 4: Time-Varying Effect of Terrorist Attacks on Education



(a) Years of Education



(b) Primary Education Completion

Notes: This figure presents the coefficients of the event study model based on the 2020 PSLM datasets. In this model, the treatment group consists of children who belong to KP and are aged between 5 and 18 years during 2011, the year Bin Laden died. On the other hand, the control group comprises individuals aged 19 to 32, as they are no longer of schooling age and hence their years of education are unaffected by the treatment. The primary independent variable tracks the number of terrorist attacks on educational institutions during the schooling age of children. The OLS coefficients explain the impact of terrorist attacks experienced during schooling age on attained years of education. The reduced form analysis represents the effect of the treatment, which is the interaction between post-2011 (for schooling age) and the province of Khyber Pakhtunkhwa. The dataset utilized in this model comprises 142,996 and 178,091 observations for years of education in the OLS and reduced-form models, respectively. The declining trend in schooling years depicted in the results underscores the significant impact of terrorist attacks on education and educational outcomes. The bars surrounding each observation represent the 95% confidence interval. Standard errors are clustered at the district level, and the empirical specification includes area-fixed effects comprising district and province, while time-fixed effects incorporate birth-year-fixed effects.

creases in math, English, and reading scores by 0.12, 0.10, and 0.12 standard deviations, respectively, as shown in Columns 1 through 3. Additionally, Column 4 shows a significant reduction in enrollment rates, while Column 5 reveals a decrease of 0.49 years in children's education, corresponding to a 12.45 percent reduction relative to the mean of the dependent variable. These findings are consistent with previous results in Table 4, which used data from the PSLM survey. Moreover, Table Table A12 presents the results by gender, showing that both boys and girls experienced declines in academic performance.

To summarize, terrorist attacks carried out in retaliation for the death of Osama bin Laden significantly harmed children's educational outcomes, particularly girls. These attacks led to reductions in years of education, primary school completion rates, and enrollment rates, while increasing dropout rates and children's labor participation. Furthermore, academic performance in subjects like math, English, and reading declined in response to the violence.

Table 5: Impact of Terrorism on Academic Performance

Dependent Variable	Math	English	Reading	Enrollment	Years of Education
	(1)	(2)	(3)	(4)	(5)
Attacks on Education	-0.1189	-0.1049	-0.1171	-0.0135	-0.4854
	(0.0394)	(0.0357)	(0.0380)	(0.0034)	(0.1491)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes
R-Squared	0.2384	0.2917	0.3052	0.5328	0.6678
Observations	308,627	309,703	306,813	397,197	272,204

Notes: The variable 'Attacks on Education' measures the total number of attacks experienced by a child. We aggregate the number of attacks for each child aged 3-16 across all ASER surveys collected between 2012 and 2021 from the Khyber Pakhtunkhwa region. To normalize this variable, we divide the number of attacks by the district population. Columns (1-3) display the z-scores of test scores from ASER assessments, while column (4) shows enrollment, and column (5) indicate the current grade of children aged 3 to 16. Interpreting column 1, if a child resides in KP, each additional attack experienced during the schooling age reduces the math score by 0.12 standard deviations. Control variables include gender, household financial capacity, school type, child tuition, and parental education levels. The regression model includes time-fixed effects, represented by birth year fixed effects, and area-fixed effects, accounting for provincial and district fixed effects. Standard errors, shown in parentheses, are clustered at the district level.

5.3 Robustness Checks

5.3.1 Placebo Test

One concern with our empirical strategy is that the instrumental variable based on the death of Osama bin Laden may be correlated with other confounding factors. The Khyber Pakhtunkhwa (KP) region, where bin Laden was killed, might have had different initial

characteristics compared to other regions. For example, KP is located in the northwestern part of the country and shares a border with Afghanistan, which could raise concerns that terrorist attacks were more likely to occur there compared to other regions. In Table 2, we show that there were no differences in terrorist attacks before the Red Mosque siege and the death of Osama bin Laden. However, the instrumental variable associated with the Khyber Pakhtunkhwa region could still be endogenous, despite the unexpected timing and location of bin Laden's death. The exclusion restriction of our IV method assumes that the death of Osama bin Laden did not affect educational outcomes in the absence of terrorist attacks.

To provide evidence supporting this assumption, we explore the effect of bin Laden's death across different levels of terrorist attack intensity. If terrorist attacks were infrequent, the death of bin Laden should not have impacted educational outcomes. Conversely, if terrorist attacks were frequent, the death of bin Laden should have had an impact on education. Table 6 presents the reduced form estimates measuring the impact of bin Laden's death on educational outcomes. Panel A includes individuals in regions where terrorist attacks were below the mean (columns 1 and 2) and below the median (columns 3 and 4), while Panel B includes individuals in regions where terrorist attacks were above the mean or median, respectively. All coefficients in Panel A are statistically insignificant, while those in Panel B are statistically significant. These findings suggest that bin Laden's death affected educational outcomes only through terrorist attacks, thus supporting the validity of our instrumental variable.

We also conducted a placebo test using the ASER survey. In this survey, the IV method is not feasible due to data limitations, so we use OLS estimates instead. We examine the effect of terrorist attacks in regions other than Khyber Pakhtunkhwa (KP), where bin Laden was killed. We did not find any significant effects in these regions. As shown in Table A13, excluding the KP region, terrorist attacks did not impact educational outcomes in the ASER survey.

5.3.2 OLS, Reduced Form, and IV

To support the robustness and validity of our findings and empirical approach, we extend our analysis across different model specifications. OLS and reduced form estimates are examined in Table A4 and Table A5, respectively. Additional outcomes such as enrollment, dropout rates, and child labor participation are detailed in the OLS estimates in Table A9 and the reduced form estimate in Table A10. Our findings in OLS and reduced form estimates align consistently with our results from the IV estimates.

Furthermore, we exploit an alternative instrumental variable, the Red Mosque Siege, to predict terrorist attacks. The IV estimates in Table A3 and Table A8 corroborate our main results. Likewise, the reduced form estimates in Table A6 and Table A11 further substantiate the consistency of our findings.

Table 6: Placebo Test: Impact of Terrorism on Education

Dependent Variable	Years of Education (1)	Primary Education Completion (2)	Years of Education (3)	Primary Education Completion (4)
	Panel A. Placebo test: Few terrorist attacks			
	Attacks below Mean		*Attacks below Median*	
Bin Laden's Death	-0.1592	-0.0259	-0.1212	-0.0153
	(0.1318)	(0.0168)	(0.2453)	(0.0304)
Observations	163,136	163,136	152,467	152,467
Dep. Var. Mean	8.9627	0.6872	8.9472	0.6866
	Panel B. Many terrorist attacks			
	Attacks above Mean		*Attacks above Median*	
Bin Laden's Death	-0.4320	-0.0474	-0.3233	-0.0402
	(0.1313)	(0.0151)	(0.1170)	(0.0130)
Observations	162,966	162,966	173,635	173,635
Dep. Var. Mean	8.9581	0.6858	8.9720	0.6864
Controls	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes

Notes: Utilizing the variables 'Death of Bin Laden', this table represents the repercussions of attacks on attained years of education and completion of grade 8 during the schooling age between 5-18. In classifying attack groups, we delineate two categories: the below-mean, comprising the districts where the number of average attacks are below the mean value and the below-median, comprising the districts where the number of average attacks are below the median value. In this table we use the 2020 PSLM survey and count the terrorist attacks for every individual that they exposed during their schooling age. This counting enables us to use the data as panel and we use time fixed effect as birth-year fixed effect. We also use the province and district fixed effects. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. Standard errors, enclosed in parentheses, are clustered at the district level.

5.3.3 Effect by Exposed Years

In the previous sections, we have presented our results based on children aged 5–18, with the number of terrorist attacks calculated according to their schooling years and their location. However, the effects could be more significant for younger children who were more exposed to Osama bin Laden's death and the subsequent terrorist attacks. By analyzing subgroups based on children's ages, we examine how terrorist attacks impacted educational outcomes depending on their level of exposure.

Table 7 provides a comprehensive analysis of educational outcomes relative to the exposed years of schooling. Columns (1) and (6) indicate a significant decrease of 0.52 years (5.8 percent) in education and a reduction of 5.9 percentage points (8.6 percent) in the completion rate of primary school education for the overall sample. Column (2) shows a more pronounced decrease of 1.05 years (12 percent) in education for the highly affected group, those exposed to 10 schooling years following Osama bin Laden's death (ages 5-8 in 2011). Similarly, significant reductions are observed for their completion of primary school education. The moderately affected group (columns 3 and 8) also shows significant decrease in educational attainments.

In contrast, the weakly affected group, which completed their schooling shortly after Osama bin Laden's death (even during times of heightened terrorism), shows insignificant effects on education (column 4), but their completion rate is affected, reflecting higher dropout rates during periods of intense terrorism (column 9) with a decrease of 3.8 percentage points. As a robustness check and a placebo test, we examine the group aged 33-40 years at the time of Osama bin Laden's death, finding insignificant effects. Furthermore, Figure A3 presents an event study analysis of the exposed years to terrorism after Osama bin Laden's death and years of education. These results provide evidence supporting the validity of our empirical strategy based on children's ages and years of schooling.

Table 7: Impact of Terrorism on Education by Exposure

Dependent Variable	Years of Education					Primary Education Completion				
	Age Groups									
	5-18	5-9	10-14	15-18	33-40	5-18	5-9	10-14	15-18	33-40
	Full Sample	Highly Affected	Moderately Affected	Weakly Affected	Placebo Unaffected	Full Sample	Highly Affected	Moderately Affected	Weakly Affected	Placebo Unaffected
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Panel A. Instrumental Variable Estimation									
Attacks on Education	-0.5198	-1.0453	-0.4263	-0.1087	-0.1255	-0.0587	-0.1111	-0.0381	-0.0457	-0.0193
	(0.1364)	(0.1744)	(0.1471)	(0.1893)	(0.1858)	(0.0169)	(0.0241)	(0.0159)	(0.0221)	(0.0217)
	Panel B. Reduced Form Estimation									
Bin Laden's Death	-0.2910	-0.6529	-0.2511	-0.0508	-0.0395	-0.0362	-0.0756	-0.0225	-0.0231	-0.0084
	(0.1123)	(0.1606)	(0.1202)	(0.0834)	(0.0920)	(0.0126)	(0.0191)	(0.0124)	(0.0103)	(0.0099)
	Panel C. Dependent Variable: Attacks on Education									
Bin Laden's Death	0.6373	0.6575	0.7548	0.4722	0.6134	0.6373	0.6575	0.7548	0.4722	0.6134
	(0.1472)	(0.1517)	(0.1717)	(0.1131)	(0.1474)	(0.1472)	(0.1517)	(0.1717)	(0.1131)	(0.1474)
F-statistics	15.4481	17.3469	16.4948	13.9960	12.6043	15.4481	17.3469	16.4948	13.9960	12.6043
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	142,995	83,041	98,075	91,643	63,969	142,995	83,041	98,075	91,643	63,969
Dep. Var. Mean	8.9040	8.6875	9.0752	9.2635	9.0199	0.6807	0.6514	0.7043	0.7117	0.6940

Notes: Utilizing the instrumental variables 'Death of Bin Laden', this table represents the repercussions of attacks on attained years of education and completion of grade 8 during the schooling age between 5-18. In this table we use the 2020 PSLM survey and count the terrorist attacks for every individual that they exposed during their schooling age. This counting enables us to use the data as panel and we use time fixed effect as birth-year fixed effect. We also use the province and district fixed effects. Panel A of the table represents the result of instrumental variable estimation and Panel B represents the first stage regression where the outcome variable is the average number of attacks per hundred thousand people. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. F-statistic is Kleibergen-Paap rk Wald F statistic. Standard errors, enclosed in parentheses, are clustered at the district level.

6 Mechanisms

6.1 Hitting Where It Hurts

We investigate the mechanisms through which terrorist attacks affected educational outcomes and identify the groups most significantly impacted. As shown, girls were particularly affected in our context. Understanding why and how terrorists choose their targets is a crucial issue to address. Terrorist attack comes with a two-fold price: the terrorist group pays one cost, while society bears the human and economic loss. Therefore, terrorists strategically choose their targets, aiming to achieve their objective (Alfano and Görlach, 2024). The main goal is to sway the government by attacking soft targets. One way to influence the government is by capturing media attention and spreading fear (Gadarian, 2010). Rohner and Frey (2007) explained the relationship between blood and ink as a classic "win-win" game where terrorists use media coverage to spread their message, while the media thrive on the heightened attention and sales generated by reporting on these attacks. These findings are seconded by Jetter (2014), which explains that suicide missions receive much more media coverage, helping to explain their growing appeal among terrorist groups. Jetter (2017) find a causal relationship between media coverage and subsequent attacks, analyzing 61,132 attack days across 201 countries. Their findings show that more coverage in the New York Times leads to more attacks in the same country, with each additional article correlating with an average of 1.4 more attacks and three additional casualties over the following week. This suggests that without media attention, terrorists might carry out fewer attacks. As a result, terrorists strategically select targets such as girls (Bloom, 2011) and higher-income areas over lower-income ones (Krueger and Laitin, 2008) which also correspond with high-education areas.

Table A17 presents the results comparing high socioeconomic areas with low socioeconomic areas. Our findings show that high-income and highly educated areas were significantly affected, aligning with existing literature on terrorist target selection. Specifically, Panel A shows a significant effect in high-income and high-education areas, both in terms of total attacks and attacks targeting education. Panel B shows an insignificant effect on low-income areas but a significant, though smaller, impact on low-education areas. Tables A18 and A19 provide more detailed results. These findings suggest that by inflicting greater human and economic damage—particularly in high-income and highly educated areas—terrorists aim to attract media attention, influence government responses, and spread fear.

6.2 Parental Education and Income

Since both parental education, whether fathers' or mothers', is a key determinant of children's educational attainment, we extend our analysis by providing sub-group analysis based on parents' education. Table A14 presents the estimates of the effect of terrorist attacks on educational outcomes by different parental education groups employing the IV method as

detailed in equations 1 and 2. Panel A categorizes parents based on the higher level of education attained by either the mother or the father. Panel B focuses on fathers' education, while Panel C focuses on mothers' education. Column (1) shows that the higher parental education group is more severely affected by terrorism, with a 0.47-year (4.4 percent) decrease in the education of school-going children. In contrast, column (2) shows no significant effect on the years of education for children of low-educated parents. This disparity extends to the completion of primary school education, with a significant decrease of 3.8 percentage points (4.3 percent relative to the mean) in primary school completion for children of highly educated parents, while there is no such effect on children of low-educated parents. This analysis provides insights on how terrorist groups maximize their impact of attacks by attacking highly educated groups.

Table A15 presents the effects of terrorist attacks on educational outcomes across different income groups. Consistent with parental education findings, our estimates indicate that high-income groups were more affected by terrorism. Column (1) illustrates that terrorist attacks following the death of Osama bin Laden reduced educational attainment by 0.58 years (6 percent) among the high-income group; however, there was no significant effect observed among the low-income group. Regarding primary school completion, we observe a similar significant impact across both income groups in columns (3) and (4), indicating a consistent effect of terrorist attacks on enrollment rates for high-income households, whereas attacks on low-income households showed more variability over the years.

Using data on parents employed in various industries, we explore another critical mechanism through which terrorism affects education. Specifically, we categorize children into three groups based on their parents' professional engagement: agricultural, manufacturing, and services sectors. Table A16 shows that children of parents in the manufacturing and services sectors experience more severe educational impacts compared to those in the agricultural sector. Column (1) indicates an insignificant impact of terrorism on children whose parents work in the agricultural sector. In contrast, columns (2) and (3) show significant decreases of 0.54 years (6.5 percent) and 0.4 years (4.3 percent), respectively, in educational attainment for children whose parents are employed in the manufacturing and services sectors. These findings are consistent with primary school completion rates: column (4) shows no significant impact on children of agricultural sector parents, while column (5) demonstrates a significant decrease of 9.4 percentage points (15 percent relative to the mean) in primary school completion for children of manufacturing sector parents. However, there is no statistically significant effect on primary school completion for children of services sector parents. This mechanism has significant implications in Pakistan, particularly in rural and urban areas and across different industries. The manufacturing and services sectors necessitate civilians to relocate from rural to urban centers for economic activities, such as markets and industries, exposing them to greater risks of terrorism that ultimately affect their educational outcomes.

7 Conclusion

The killing of Osama bin Laden is regarded as a pivotal and unexpected event in the War on Terror. We estimated its causal impact on terrorism and the subsequent effects on education. In light of the prevailing Kalashnikov culture and Talibanization in Pakistan, his death had the potential to either deter terrorism or exacerbate it through backlash and retaliation. We find that terrorist attacks nearly doubled, and those specifically targeting education increased by 1.5 times. Consequently, this surge in attacks on education resulted in a decrease in average educational attainment by 0.52 years, and the primary education completion rate dropped by 5.9 percentage points.

The effects of Osama bin Laden's death were more pronounced for girls and high-income areas. Girls' education was reduced by 0.93 years, while boys' education remained unaffected. Similarly, children's education dropped by 0.47 years in high-income areas, whereas there was no significant impact in low-income areas. Sensitive targets, such as girls and high-income areas, proved to be more vulnerable due to terrorists' strategic selection of targets aimed at maximizing media attention. Moreover, we find a decline in academic performance, with math, English, and reading scores decreasing by approximately 0.1 standard deviations. In addition, there was a reduction in enrollment rates and a rise in school dropouts, contributing to an increase in child labor.

These findings suggest the importance of considering potential for backlash as a crucial factor in shaping counter-terrorism strategies, especially when targeting symbolic leaders of terrorist groups. While high-profile eliminations like that of Osama bin Laden may seem effective, they can provoke retaliation, intensifying violence in the short term. Instead, sustained ground operations, such as Pakistan's 'Zarb-e-Azb' and 'Radd-ul-Fasaad,' offer alternatives. These military campaigns, launched in 2015 in the KP region, have been associated with a reduction in terrorism, as evidenced by a decrease in attacks following their implementation. Another critical factor is the strategic approach employed by terrorists. They frequently exploit media sensitivity by targeting high-profile, vulnerable groups—such as girls' schools and affluent areas—knowing these attacks will receive widespread media coverage and provoke public outrage. This strategy allows terrorists to manipulate government responses and public sentiment, thereby intensifying the psychological impact of their actions. Consequently, counter-terrorism strategies should extend beyond operational measures to address the role of media and public perception in curbing the exploitation of these vulnerabilities.

This paper provides a comprehensive analysis of educational outcomes by utilizing available nationally representative surveys and terrorism incident-level data. However, labor market outcomes are beyond the scope of this study. Furthermore, the terrorist attacks in response to Osama bin Laden's death may have significantly impacted political outcomes. Future research could explore the effects of his death and subsequent violence on trust in democracy and the potential risks posed to democratic institutions.

References

Abadie, A. (2006). Poverty, political freedom, and the roots of terrorism. *American Economic Review 96*(2), 50–56.

Abadie, A. and J. Gardeazabal (2019). Terrorism and the world economy. In *Transnational Terrorism*, pp. 283–310. Routledge.

Akbulut-Yuksel, M. (2014). Children of war: The long-run effects of large-scale physical destruction and warfare on children. *Journal of Human resources 49*(3), 634–662.

Alfano, M. and J. S. Görlach (2024). Terrorism and education: Evidence from instrumental variables estimators. *Journal of Applied Econometrics*.

Ali, G. and Z. Li (2016). Role of economic factors in terrorism in pakistan. *Quality & Quantity 50*, 2237–2250.

Ali, M. A., N. K. Mahsud, W. Khan, and A. Naz (2016). War against terrorism and its impact on children's academic performance in district swat khyber pakhtunkhwa pakistan. *Journal of Management Info 9*(1), 12–20.

Arce, D. G. and T. Sandler (2010). Terrorist spectaculars: Backlash attacks and the focus of intelligence. *Journal of Conflict Resolution 54*(2), 354–373.

Aslam, M. (2010). 'new vulnerabilities' of muslim women in the age of terror: The case of the red mosque siege in islamabad, pakistan. *Totalitarian Movements and Political Religions 11*(3-4), 417–434.

Astorga-Rojas, D. (2023). Should i stay or should i go? the effect of london's terrorist attack on the educational choices of muslims. *SERIEs 14*(3), 463–501.

Ayres, R. W. (2000). A world flying apart? violent nationalist conflict and the end of the cold war. *Journal of Peace Research 37*(1), 105–117.

Bandyopadhyay, S., T. Sandler, and J. Younas (2011). Foreign aid as counterterrorism policy. *Oxford Economic Papers 63*(3), 423–447.

Benmelech, E., C. Berrebi, and E. F. Klor (2015). Counter-suicide-terrorism: Evidence from house demolitions. *The Journal of Politics 77*(1), 27–43.

Berman, E., M. Callen, J. H. Felter, and J. N. Shapiro (2009). Do working men rebel? insurgency and unemployment in iraq and the philippines. Technical report, National Bureau of Economic Research.

Bertoni, E., M. Di Maio, V. Molini, and R. Nistico (2019). Education is forbidden: The effect of the boko haram conflict on education in north-east nigeria. *Journal of Development Economics 141*, 102249.

Bloom, M. (2005). *Dying to Kill: The Allure of Suicide Terror*. Columbia University Press.

Bloom, M. (2011). Bombshells: Women and terror. *Gender Issues 28*, 1–21.

Brandt, P. T. and T. Sandler (2010). What do transnational terrorists target? has it changed? are we safer? *Journal of Conflict Resolution 54*(2), 214–236.

Brodeur, A. (2018). The effect of terrorism on employment and consumer sentiment: Evidence from successful and failed terror attacks. *American Economic Journal: Applied Economics 10*(4), 246–282.

Brown, R. and A. Velásquez (2017). The effect of violent crime on the human capital accumulation of young adults. *Journal of Development Economics 127*, 1–12.

Bruckberger, R. (2018). *Images of terror: What we can and can't know about terrorism*. Routledge.

Brück, T. and M. d'Errico (2019). Reprint of: Food security and violent conflict: Introduction to the special issue. *World Development 119*, 145–149.

Caruso, R. and F. Schneider (2011). The socio-economic determinants of terrorism and political violence in western europe (1994–2007). *European Journal of Political Economy 27*, S37–S49.

Collier, P. (1999). On the economic consequences of civil war. *Oxford economic papers 51*(1), 168–183.

Collier, P. and A. Hoeffler (2004). Greed and grievance in civil war. *Oxford economic papers 56*(4), 563–595.

Coomer, N. (2003). America's underclass and crime: The influence of macroeconomic factors. *Issues in Political Economy 12*(1).

De Mesquita, E. B. (2005). The quality of terror. *American journal of political science 49*(3), 515–530.

Di Maio, M. and R. Nisticò (2019). The effect of parental job loss on child school dropout: Evidence from the occupied palestinian territories. *Journal of Development Economics 141*, 102375.

Duflo, E. (2001). Schooling and labor market consequences of school construction in indonesia: Evidence from an unusual policy experiment. *American economic review 91*(4), 795–813.

Dugan, L. and E. Chenoweth (2012). Moving beyond deterrence: The effectiveness of raising the expected utility of abstaining from terrorism in israel. *American Sociological Review 77*(4), 597–624.

Enders, W. and T. Sandler (2011). *The political economy of terrorism*. Cambridge University Press.

Europol (2013). *TE-SAT 2013: EU Terrorism Situation and Trend Report*. Publications Office of the European Union.

Europol, T. (2007). Eu terrorism situation and trend report 2007. *The Hague: Corporate Communications 4*(13), 27–31.

Europol, T. (2010). Eu terrorism situation and trend report.

Fair, C. C. (2010, May). Drone wars. *Foreign Policy*.

Fearon, J. D. and D. D. Laitin (2003). Ethnicity, insurgency, and civil war. *American Political Science Review 97*(1), 75–90.

Fisher, D. and M. H. Becker (2021). The heterogeneous repercussions of killing osama bin laden on global terrorism patterns. *European journal of criminology 18*(3), 301–324.

Frey, B. S., S. Luechinger, and A. Stutzer (2007). Calculating tragedy: Assessing the costs of terrorism. *Journal of Economic surveys 21*(1), 1–24.

Freytag, A., J. J. Krüger, D. Meierrieks, and F. Schneider (2011). The origins of terrorism: Cross-country estimates of socio-economic determinants of terrorism. *European Journal of Political Economy 27*, S5–S16.

Friedman, T. L. (2002). The core of muslim rage. *New York Times 6*.

Gadarian, S. K. (2010). The politics of threat: How terrorism news shapes foreign policy attitudes. *The Journal of Politics 72*(2), 469–483.

Gaibulloev, K. and T. Sandler (2019). What we have learned about terrorism since 9/11. *Journal of Economic Literature 57*(2), 275–328.

Gurr, T. R. (1970). Why men rebel princeton university press. *New Jersey*.

Harrison, M. (2006). An economist looks at suicide terrorism. *WORLD ECONOMICS-HENLEY ON THAMES- 7*(3), 1.

Houfman, B. (2006). Inside terrorism: Revised and expanded edition.

Hussain, Z. (2017, Jul). The legacy of lal masjid.

Ismail, A. and S. Amjad (2014). Determinants of terrorism in pakistan: An empirical investigation. *Economic Modelling 37*, 320–331.

Jacobson, D. and E. H. Kaplan (2007). Suicide bombings and targeted killings in (counter-) terror games. *Journal of Conflict Resolution 51*(5), 772–792.

Jaeger, D. A. and Z. Siddique (2018). Are drone strikes effective in afghanistan and pakistan? on the dynamics of violence between the united states and the taliban. *CESifo Economic Studies 64*(4), 667–697.

Javeid, U., S. Pratt, H. Li, and G. Zhao (2023). The effect of terrorism on continuing education: evidence from pakistan. *Education Economics 31*(3), 376–396.

Jetter, M. (2014). Terrorism and the media.

Jetter, M. (2017). The effect of media attention on terrorism. *Journal of Public Economics 153*, 32–48.

Jetter, M., R. Mahmood, and D. Stadelmann (2024). Income and terrorism: Insights from subnational data. *Journal of Conflict Resolution 68*(2-3), 509–533.

Johnston, P. B. and A. K. Sarbahi (2016). The impact of us drone strikes on terrorism in pakistan. *International Studies Quarterly 60*(2), 203–219.

Kalyvas, S. N. (2006). *The logic of violence in civil war*. Cambridge University Press.

Kanniainen, V. and P. Poutvaara (2018). The economics of peace and war: An overview. *CESifo Economic Studies 64*(4), 545–554.

Khan, S. and A. Seltzer (2016). The impact of fundamentalist terrorism on school enrolment: Evidence from north-western pakistan. Technical report, 2004.

Khattak, S. S. G. (2018). The war on terror is a war on women: The impact of terrorism and counter-terrorism on women's education in swat, khyber pukhtunkhwah (pakistan). *Journal of International Women's Studies 19*(6), 157–177.

Kis-Katos, K., H. Liebert, and G. G. Schulze (2011). On the origin of domestic and international terrorism. *European Journal of Political Economy 27*, S17–S36.

Koppensteiner, M. F. and L. Menezes (2021). Violence and human capital investments. *Journal of Labor Economics 39*(3), 787–823.

Krieger, T. and D. Meierrieks (2011). What causes terrorism? *Public Choice 147*, 3–27.

Krueger, A. B. (2008). What makes a homegrown terrorist? human capital and participation in domestic islamic terrorist groups in the usa. *Economics Letters 101*(3), 293–296.

Krueger, A. B. and D. D. Laitin (2008). Kto kogo?: A cross-country study of the origins and targets of terrorism. *Terrorism, economic development, and political openness 5*, 148–173.

Krueger, A. B. and J. Malečková (2002). Education, poverty and terrorism: Is there a causal connection? *Journal of Economic perspectives 17*(4), 119–144.

Kurrild-Klitgaard, P., M. K. Justesen, and R. Klemmensen (2006). The political economy of freedom, democracy and transnational terrorism. *Public Choice 128*, 289–315.

Limodio, N. (2022). Terrorism financing, recruitment, and attacks. *Econometrica 90*(4), 1711–1742.

Midlarsky, M. I. (1988). Rulers and the ruled: Patterned inequality and the onset of mass political violence. *American political science Review 82*(2), 491–509.

Moghaddam, F. M. (2005). The staircase to terrorism: a psychological exploration. *American psychologist 60*(2), 161.

Nawab, S., S. Ullah, U. Farooq, M. S. Malik, and I. Ghafoor (2021). The effect of militancy on education and its socio-economic consequencies. *Journal of Education Culture and Society 12*(2), 613–630.

Nizami, A. T., T. M. Hassan, S. Yasir, M. H. Rana, and F. A. Minhas (2018). Terrorism in pakistan: the psychosocial context and why it matters. *BJPsych international 15*(1), 20–22.

Piazza, J. A. (2011). Poverty, minority economic discrimination, and domestic terrorism. *Journal of Peace Research 48*(3), 339–353.

Rafique, M. and A. Yasmin (2020). Exploring the impact of terrorism on emotional and psychological wellbeing of university students and teachers in pakistan: A qualitative study. *Pakistan Social Science Review 4*(3), 66–80.

Rohner, D. and B. S. Frey (2007). Blood and ink! the common-interest-game between terrorists and the media. *Public Choice 133*, 129–145.

Rosendorff, B. P. and T. Sandler (2004). Too much of a good thing? the proactive response dilemma. *Journal of Conflict Resolution 48*(5), 657–671.

Rosendorff, B. P. and T. Sandler (2010). Suicide terrorism and the backlash effect. *Defence and Peace Economics 21*(5-6), 443–457.

Salvatore, D. (2007). Growth, international inequalities, and poverty in a globalizing world. *Journal of Policy Modeling 29*(4), 635–641.

Sambanis, N. (2008). Terrorism and civil war. *Terrorism, economic development, and political openness*, 174–206.

Santifort, C., T. Sandler, and P. T. Brandt (2013). Terrorist attack and target diversity: Changepoints and their drivers. *Journal of peace research 50*(1), 75–90.

Shany, A. (2023). Too scared for school? effects of terrorism on students' achievement. *Journal of Human Resources*.

Shemyakina, O. (2011). The effect of armed conflict on accumulation of schooling: Results from tajikistan. *Journal of Development Economics 95*(2), 186–200.

Sick, G. G. (1990). The political underpinnings of terrorism. *International Terrorism: Characteristics, Causes, Controls*, 51–54.

Siqueira, K. and T. Sandler (2007). Terrorist backlash, terrorism mitigation, and policy delegation. *Journal of Public Economics 91*(9), 1800–1815.

Soherwordi, S. H. S. and S. A. Khattak (2011). Operation geronimo: Assassination of osama bin ladin and its implications on the us-pakistan relations, war on terror, pakistan and al-qaeda. *South Asian Studies 26*(02), 349–365.

Syed, F., M. Asghar, and G. Tara (2017). Effect of terrorist attack of december 16, 2014 on academic performance of school children of peshawar. *Peshawar Journal of Psychology and Behavioral Sciences (PJPBS) 3*(2), 223–233.

Thompson, J. L. (1989). Deprivation and political violence in northern ireland, 1922-1985: A time-series analysis. *Journal of Conflict Resolution 33*(4), 676–699.

Turk, A. T. (1982). Social dynamics of terrorism. *The Annals of the American Academy of Political and Social Science 463*(1), 119–128.

Ullah, Z. (2022). Violent extremism and the politics of education in pakistan: An analysis of the links between anti-terror laws, the curriculum, and the islamised public sphere. In *Public Affairs Education and Training in the 21st Century*, pp. 256–275. IGI Global.

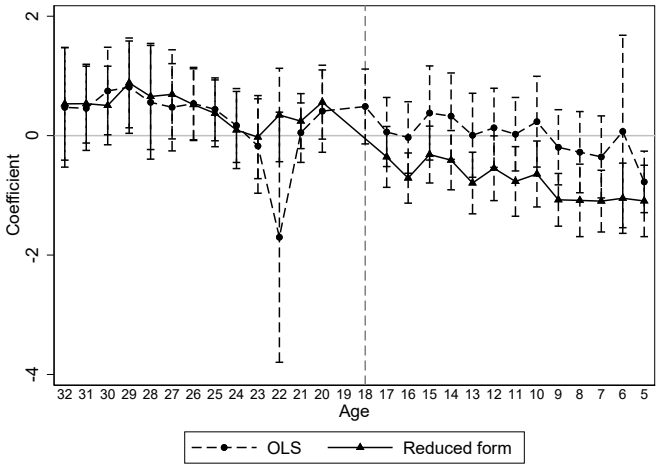
Wade, S. J. and D. Reiter (2007). Does democracy matter? regime type and suicide terrorism. *Journal of Conflict Resolution 51*(2), 329–348.

Wadhwani, R. (2011, September). Essay on terrorism in pakistan: Its causes, impacts and remedies. Civil Service Pakistan Forum.

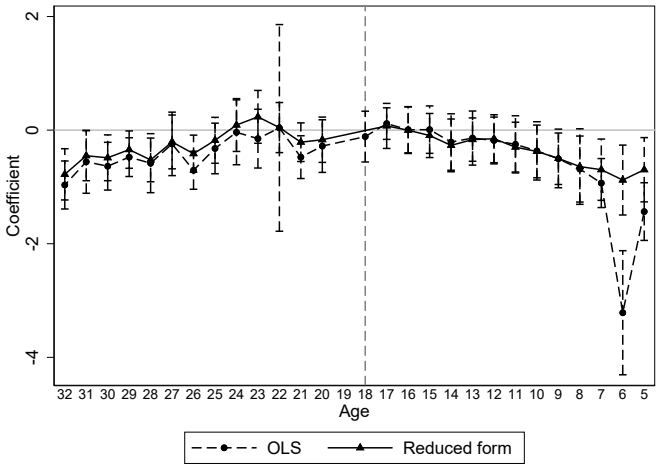
Zussman, A. and N. Zussman (2006). Assassinations: Evaluating the effectiveness of an israeli counterterrorism policy using stock market data. *Journal of Economic Perspectives 20*(2), 193–206.

A Appendix

Figure A1: Time-varying Effect of Terrorist Attacks on Years of Education by Gender



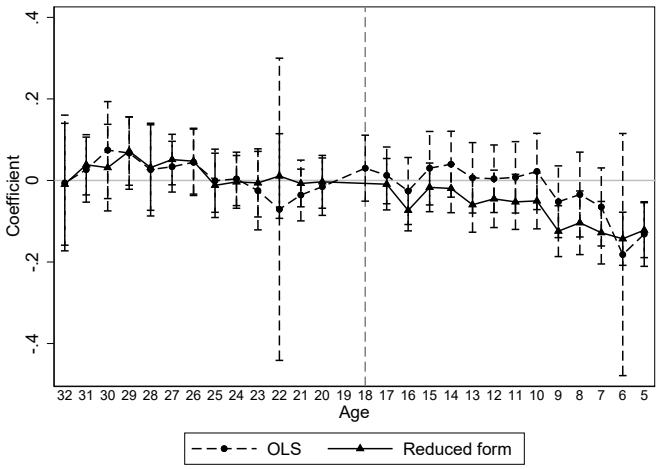
(a) Girls



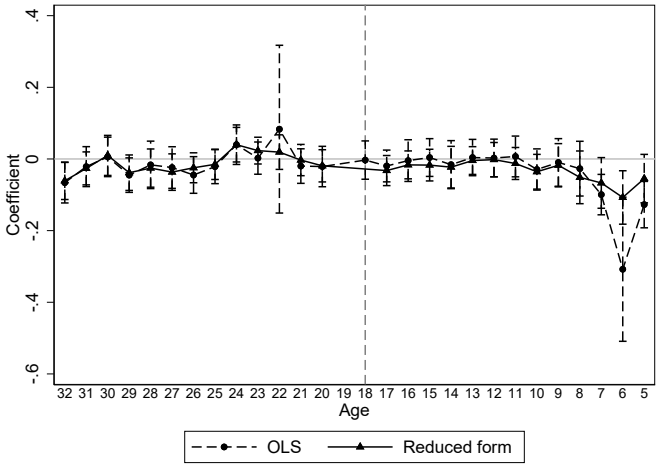
(b) Boys

Notes: This figure presents the coefficients of the event study model based on the 2020 PSLM datasets. In this model, the treatment group consists of children who belong to KP and are aged between 5 and 18 years during 2011, the year Bin Laden died. On the other hand, the control group comprises individuals aged 19 to 32, as they are no longer of schooling age and hence their years of education are unaffected by the treatment. The primary independent variable tracks the number of terrorist attacks on educational institutions during the schooling age of children. The OLS coefficients explain the impact of terrorist attacks experienced during schooling age on attained years of education. The reduced form analysis represents the effect of the treatment, which is the interaction between post-2011 (for schooling age) and the province of Khyber Pakhtunkhwa. The dataset utilized in this model comprises 142,996 and 178,091 observations for years of education in the OLS and reduced-form models, respectively. The declining trend in schooling years depicted in the results underscores the impact of terrorist attacks on education. The bars surrounding each observation represent the 95% confidence interval. Standard errors are clustered at the district level, and the empirical specification includes area-fixed effects comprising district and province, while time-fixed effects incorporate birth-year-fixed effects.

Figure A2: Time-varying Effect of Terrorist Attacks on Primary Education Completion by Gender



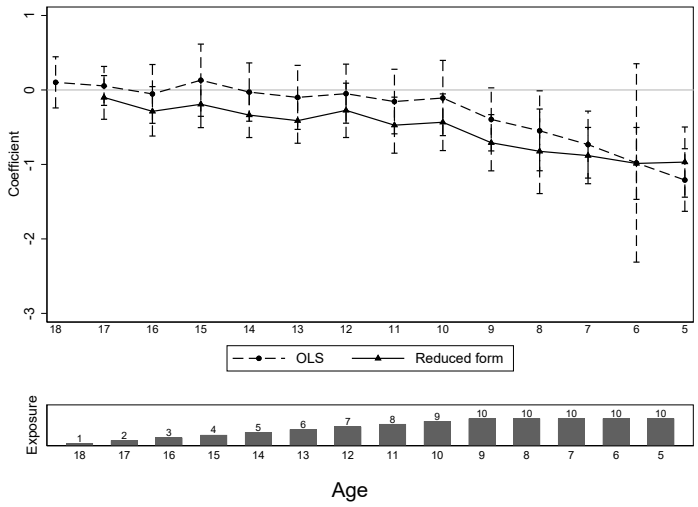
(a) Girls



(b) Boys

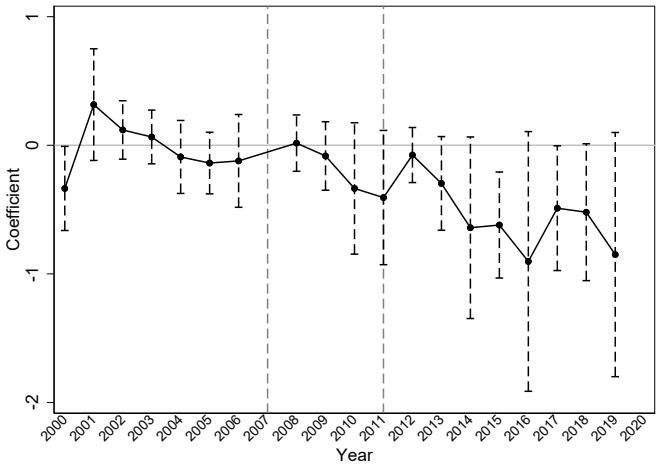
Notes: This figure presents the coefficients of the event study model based on the 2020 PSLM datasets. In this model, the treatment group consists of children who belong to KP and are aged between 5 and 18 years during 2011, the year Bin Laden died. On the other hand, the control group comprises individuals aged 19 to 32, as they are no longer of schooling age and hence their years of education are unaffected by the treatment. The primary independent variable tracks the number of terrorist attacks on educational institutions during the schooling age of children. The OLS coefficients explain the impact of terrorist attacks experienced during schooling age on completion of grade 8 within the stipulated time. The reduced form analysis represents the effect of the treatment, which is the interaction between post-2011 (for schooling age) and the province of Khyber Pakhtunkhwa. The dataset utilized in this model comprises 142,996 and 178,091 observations for years of education in the OLS and reduced-form models, respectively. The declining trend in schooling years depicted in the results underscores the impact of terrorist attacks on education. The bars surrounding each observation represent the 95% confidence interval. Standard errors are clustered at the district level, and the empirical specification includes area-fixed effects comprising district and province, while time-fixed effects incorporate birth-year-fixed effects.

Figure A3: Time-varying Effect of Terrorist Attacks on Years of Education by Exposure

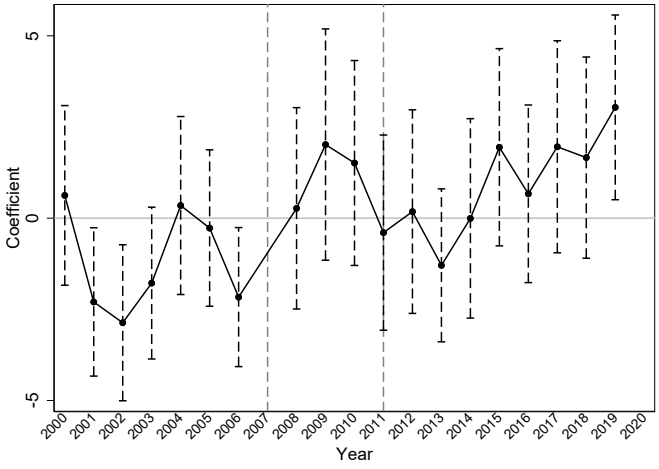


Notes: This figure presents the coefficients of the event study model based on the 2020 PSLM datasets. In this model, the treatment group consists of children who belong to KP and are aged between 5 and 18 years during 2011, the year Bin Laden died. On the other hand, the control group comprises individuals aged 19 to 32, as they are no longer of schooling age and hence their years of education are unaffected by the treatment. Since the different ages are exposed differently to the treatment. For instance, those whose age is 18 years in 2011 are exposed only one year. Similarly, those who were 5 years old in 2011, they exposed to 10 years from 2011 to 2020. Therefore, the x-axis of this figure represents the years of exposure and the y-axis represents the years of education. The primary independent variable tracks the number of terrorist attacks on educational institutions during the schooling age of children. The OLS coefficients explain the impact of terrorist attacks experienced during schooling age on attained years of education. The reduced form analysis represents the effect of the treatment, which is the interaction between post-2011 (for schooling age) and the province of Khyber Pakhtunkhwa. The dataset utilized in this model comprises 142,996 and 178,091 observations for years of education in the OLS and reduced-form models, respectively. The declining trend in schooling years depicted in the results underscores the significant impact of terrorist attacks on education and educational outcomes. The bars surrounding each observation represent the 95% confidence interval. Standard errors are clustered at the district level, and the empirical specification includes area-fixed effects comprising district and province, while time-fixed effects incorporate birth-year-fixed effects.

Figure A4: Migration of Treatment Region



(a) From Other Districts to Treatment Districts



(b) From Treatment Districts to Other Districts

Notes: This figure presents the coefficients of the event study model based on the 2020 PSLM datasets. In this model, the treatment group referred to the KP region while the other districts referred to the other regions of Pakistan such as Punjab, Sindh, and Balochistan.

Table A1: Impact of Red Mosque Siege on Terrorist Attacks

Dependent Variable	Number of Attacks						Human and Economic Damages		
	Total	Education	Government	Law Enforcement	Citizen	Non-State Actors	Deaths	Injuries	Properties Damage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Red Mosque Siege	0.0859	0.0243	0.0003	0.0045	0.0435	0.0023	0.2464	0.1728	0.0363
	(0.0314)	(0.0098)	(0.0002)	(0.0046)	(0.0141)	(0.0012)	(0.0944)	(0.0790)	(0.0180)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.0666	0.0224	0.0136	0.0422	0.0402	0.0092	0.0194	0.0231	0.0628
No. of Tehsils	573	573	573	573	573	573	573	573	573
Observations	236,592	236,592	236,592	236,592	236,592	236,592	236,592	236,592	236,592
Dep. Var. Mean	0.0407	0.0021	0.0001	0.0125	0.0095	0.0009	0.0621	0.0847	0.0201

Notes: Utilizing the DID model, this table presents the effect of Red Mosque siege on terrorist attacks, human and economic losses. The variable 'Red Mosque Siege' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2007 to past-May 2011, between the Red Mosque Siege and Bin Laden's Death; otherwise, it takes the value of 0. Columns (1-6) present the average number of monthly attacks per tehsil per hundred thousand people, while columns (7-9) depict the average number of monthly deaths, injuries, and property damages per tehsil per hundred thousand people. The unit of data is monthly at the tehsil level, which is the lowest administrative boundary in Pakistan. The analysis covers the period from 1970 to the year 2020 covering 573 tehsils and 612 months. The data on terrorism and human & economic losses were sourced from GTD. The census data on population for every tehsil has been taken from the PBS. In the regression model, time-fixed effects consist of month-year fixed effects and area-fixed effects accounting for the province, district, and tehsil-specific fixed effects. Standard errors, shown in parentheses, are clustered at the tehsil level.

Table A2: Impact of Red Mosque Siege & Bin Laden on Terrorist Attacks

Dependent Variable	Number of Attacks						Human and Economic Damages		
	Total	Education	Government	Law Enforcement	Citizen	Non-State Actors	Deaths	Injuries	Properties Damage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Red Mosque Siege	0.1196	0.0266	0.0003	0.0168	0.0480	0.0046	0.3046	0.2330	0.0426
	(0.0359)	(0.0102)	(0.0002)	(0.0054)	(0.0149)	(0.0015)	(0.0989)	(0.0844)	(0.0200)
Bin Laden's Death	0.1081	0.0072	0.0003	0.0393	0.0143	0.0074	0.1870	0.1935	0.0203
	(0.0293)	(0.0019)	(0.0002)	(0.0112)	(0.0050)	(0.0018)	(0.0436)	(0.0511)	(0.0105)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.0682	0.0227	0.0136	0.0435	0.0404	0.0099	0.0199	0.0235	0.0629
No. of Tehsils	573	573	573	573	573	573	573	573	573
Observations	236,592	236,592	236,592	236,592	236,592	236,592	236,592	236,592	236,592
Dep. Var. Mean	0.0407	0.0021	0.0001	0.0125	0.0095	0.0009	0.0621	0.0847	0.0201

Notes: Utilizing the DID model, this table presents the effect of Red Mosque siege and Bin Laden's death on terrorist attacks, human and economic losses. The variable 'Red Mosque Siege' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2007 to past-May 2011, between the Red Mosque Siege and Bin Laden's Death; otherwise, it takes the value of 0. Similarly, the variable 'Bin Laden's Death' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2011 when the US Navy killed Bin Laden; otherwise, it takes the value of 0. Columns (1-6) present the average number of monthly attacks per tehsil per hundred thousand people, while columns (7-9) depict the average number of monthly deaths, injuries, and property damages per tehsil per hundred thousand people. The unit of data is monthly at the tehsil level, which is the lowest administrative boundary in Pakistan. The analysis covers the period from 1970 to the year 2020 covering 573 tehsils and 612 months. The data on terrorism and human & economic losses were sourced from GTD. The census data on the population for every tehsil has been taken from the PBS. In the regression model, time-fixed effects consist of month-year fixed effects and area-fixed effects accounting for the province, district, and tehsil-specific fixed effects. Standard errors, shown in parentheses, are clustered at the tehsil level.

-

Table A3: Impact of Terrorism on Education, Red Mosque Siege

Dependent Variable	Years of Education			Primary Education Completion		
	Full Sample (1)	Girls (2)	Boys (3)	Full Sample (4)	Girls (5)	Boys (6)
	Panel A. Instrumental Variable Estimation					
Attacks on Education	-0.4120	-1.0290	0.1815	-0.0568	-0.1071	-0.0048
	(0.1689)	(0.2301)	(0.2227)	(0.0203)	(0.0284)	(0.0232)
	Panel B. Dependent Variable: Attacks on Education					
Red Mosque Siege	0.5370	0.5185	0.5579	0.5370	0.5185	0.5579
	(0.1228)	(0.1181)	(0.1282)	(0.1228)	(0.1181)	(0.1282)
F-statistics	15.0753	10.5451	17.6469	15.0753	10.5451	17.6469
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	145,486	59,214	86,272	145,486	59,214	86,272
Dep. Var. Mean	9.0892	9.0919	9.0873	0.7035	0.6856	0.7158

Notes: Utilizing the instrumental variables 'Red Mosque Siege', this table represents the effect of terrorism on attained years of education and completion of grade 8 during the schooling age between 5-18. The variable 'Red Mosque Siege' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2007; otherwise, it takes the value of 0. The independent variable in this model is the average number of terrorist attacks on education per hundred thousand people per district. The outcome variables are measured for every individual during their schooling age. Column 1-3 represents the attained years of education, while column 4-6 contains the dummy variable if an individual has completed grade 8. Panel A of the table represents the result of instrumental variable estimation and Panel B represents the first stage regression where the outcome variable is the average number of attacks per hundred thousand people per district. The unit of outcome variable is individual and the unit of terrorist is measured at the district level. In this table, we use the 2020 PSLM survey and count the terrorist attacks for every individual that they exposed during their schooling age. This counting enables us to use the data as a panel and we use the fixed effect as the birth-year fixed effect. The data on terrorist attacks on educational institutions was sourced from GTD. The census data on the population for every district has been taken from the PBS. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. In the regression model, time-fixed effects consist of birth-year effects and area-fixed effects accounting for the province and district-specific fixed effects. F-statistic is Kleibergen-Paap rk Wald F statistic. Standard errors, shown in parentheses, are clustered at the district level.

Table A4: Impact of Terrorism on Education, OLS

Dependent Variable	Years of Education			Primary Education Completion		
	Full Sample (1)	Girls (2)	Boys (3)	Full Sample (4)	Girls (5)	Boys (6)
Attacks on Education	-0.5370	-0.6685	-0.3818	-0.0561	-0.0779	-0.0365
	(0.0815)	(0.0757)	(0.1157)	(0.0091)	(0.0114)	(0.0128)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	142,995	59,858	83,137	142,995	59,858	83,137
Dep. Var. Mean	8.9040	8.9099	8.8998	0.6807	0.6636	0.6930

Notes: Utilizing the OLS model, this table presents the effect of terrorism on educational outcomes. In the model, only the terrorist attacks on educational institutions are considered independent variables. Terrorist attacks are used after taking an average of a hundred thousand people at the district level. The outcome variables are measured for every individual during their schooling age. Column 1-3 represents the attained years of education, while column 4-6 contains the dummy variable if an individual has completed grade 8. The unit of outcome variable is individual and the terrorist attacks were measured at the district level. In this table, we use the 2020 PSLM survey and count the terrorist attacks for every individual that they exposed during their schooling age. This counting enables us to use the data as a panel and we use the fixed effect as the birth-year fixed effect. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. In the regression model, time-fixed effects consist of year-fixed effects and area-fixed effects accounting for the province and district-specific fixed effects. Standard errors, shown in parentheses, are clustered at the district level.

Table A5: Impact of Bin Laden's Death on Education, Reduced Form

Dependent Variable	Years of Education			Primary Education Completion		
	Full Sample (1)	Girls (2)	Boys (3)	Full Sample (4)	Girls (5)	Boys (6)
Bin Laden's Death	-0.2910	-0.5021	-0.0561	-0.0362	-0.0553	-0.0138
	(0.1123)	(0.1381)	(0.1169)	(0.0126)	(0.0187)	(0.0122)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	178,089	74,154	103,935	178,089	74,154	103,935
Dep. Var. Mean	8.9697	8.9789	8.9631	0.6857	0.6707	0.6964

Notes: Utilizing the reduced form for 'Bin Laden's Death', this table represents the direct effect of his death on educational outcomes. The variable 'Bin Laden's Death' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2011 when the US Navy killed Bin Laden; otherwise, it takes the value of 0. The outcome variables are measured for every individual during their schooling age. Column 1-3 represents the attained years of education, while column 4-6 contains the dummy variable if an individual has completed grade 8. The unit of outcome variable is individual and the unit of independent variable is measured at the province level. In this table, we use the 2020 PSLM survey. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. In the regression model, time-fixed effects consist of birth-year effects and area-fixed effects accounting for the province and district-specific fixed effects. Standard errors, shown in parentheses, are clustered at the district level.

Table A6: Impact of Red Mosque Siege on Education, Reduced Form

Dependent Variable	Years of Education			Primary Education Completion		
	Full Sample (1)	Girls (2)	Boys (3)	Full Sample (4)	Girls (5)	Boys (6)
Red Mosque Siege	-0.1557	-0.3999	0.1282	-0.0213	-0.0414	0.0048
	(0.0943)	(0.1462)	(0.0863)	(0.0113)	(0.0190)	(0.0105)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	178,618	72,213	106,405	178,618	72,213	106,405
Dep. Var. Mean	9.2188	9.2372	9.2063	0.7169	0.7028	0.7264

Notes: Utilizing the reduced form for 'Red Mosque Siege', this table represents the direct effect of the siege on educational outcomes. The variable 'Red Mosque Siege' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2007; otherwise, it takes the value of 0. The outcome variables are measured for every individual during their schooling age. Column 1 represents the attained years of education, while column 2 contains the dummy variable if an individual has completed grade 8. The unit of outcome variable is individual and the unit of independent variable is measured at the province level. In this table, we use the 2020 PSLM survey. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. In the regression model, time-fixed effects consist of birth-year effects and area-fixed effects accounting for the province and district-specific fixed effects. Standard errors, shown in parentheses, are clustered at the district level.

Table A7: Impact of Terrorism on Schooling

Dependent Variable	Enrollment			Drop-out			Child Labor		
	Full Sample (1)	Girls (2)	Boys (3)	Full Sample (4)	Girls (5)	Boys (6)	Full Sample (7)	Girls (8)	Boys (9)
	Panel A. Instrumental Variable Estimation								
Attacks on Education	-6.6529	-8.3651	-5.3646	5.3187	5.0145	5.4885	1.5488	0.3971	2.5464
	(1.3329)	(1.6393)	(1.1287)	(1.0685)	(1.0391)	(1.0984)	(0.4090)	(0.2415)	(0.6222)
	Panel B. Dependent Variable: Attacks on Education								
Bin Laden's Death	0.0194	0.0198	0.0191	0.0194	0.0198	0.0191	0.0194	0.0198	0.0191
	(0.0042)	(0.0043)	(0.0042)	(0.0042)	(0.0043)	(0.0042)	(0.0042)	(0.0043)	(0.0042)
F-statistics	22.3580	21.3761	22.8618	20.9777	21.2362	20.6421	20.0243	20.1991	19.8186
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	703,366	299,535	403,831	908,585	422,080	486,505	524,758	241,719	283,039
Dep. Var. Mean	0.7764	0.7368	0.8057	0.0988	0.0985	0.0991	0.1256	0.0538	0.1868

Notes: Utilizing the instrumental variable 'Bin Laden's Death', this table represents the effect of terrorist attacks on educational outcomes. The variable 'Bin Laden's Death' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2011 when the US Navy killed Bin Laden; otherwise, it takes the value of 0. The independent variable in this model is the average number of terrorist attacks on education per hundred thousand people per district. The outcome variables are measured for every individual during their schooling age. Columns 1-3 delineate the status of current enrollment in school, while columns 4-6 represent the drop-out of children from schools during their schooling age, and columns 7-9 represent the child labor between the ages of 5 and 18. Panel A of the table represents the result of instrumental variable estimation and Panel B represents the first stage regression where the outcome variable is the average number of attacks per hundred thousand people per district. The unit of outcome variable is individual and the unit of terrorist is measured at the district level. The data on outcome variables is taken from 5 nationally representative surveys of PSLM that consist of ten years from 2006 to 2020, with some missing years. The data on terrorist attacks on educational institutions was sourced from GTD. The census data on the population for every district has been taken from the PBS. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. In the regression model, time-fixed effects consist of year-fixed effects and area-fixed effects accounting for the province and district-specific fixed effects. F-statistic is Kleibergen-Paap rk Wald F statistic. Standard errors, shown in parentheses, are clustered at the district level.

Table A8: Impact of Terrorism on Schooling, Red Mosque Siege

Dependent Variable	Enrollment			Drop-out			Child Labor		
	Full Sample (1)	Girls (2)	Boys (3)	Full Sample (4)	Girls (5)	Boys (6)	Full Sample (7)	Girls (8)	Boys (9)
	Panel A. Instrumental Variable Estimation								
Attacks on Education	-8.9074	-10.1371	-8.0334	6.7244	6.1394	7.0545	2.1422	-0.1181	4.0768
	(2.0940)	(2.4118)	(1.9350)	(1.4873)	(1.3727)	(1.6108)	(0.9326)	(0.7021)	(1.3604)
	Panel B. Dependent Variable: Attacks on Education								
Red Mosque Siege	0.0140	0.0141	0.0139	0.0140	0.0141	0.0139	0.0140	0.0141	0.0139
	(0.0032)	(0.0033)	(0.0032)	(0.0032)	(0.0033)	(0.0032)	(0.0032)	(0.0033)	(0.0032)
F-statistics	18.3670	16.5472	19.3706	18.7719	18.4303	19.0393	16.1232	16.0206	16.0544
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	703,366	299,535	403,831	908,585	422,080	486,505	524,758	241,719	283,039
Dep. Var. Mean	0.7764	0.7368	0.8057	0.0988	0.0985	0.0991	0.1256	0.0538	0.1868

Notes: Utilizing the instrumental variable 'Red Mosque Siege', this table represents the effect of terrorist attacks on educational outcomes. The variable 'Red Mosque Siege' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2007; otherwise, it takes the value of 0. The independent variable in this model is the average number of terrorist attacks on education per hundred thousand people per district. The outcome variables are measured for every individual during their schooling age. Columns 1-3 delineate the status of current enrollment in school, while columns 4-6 represent the drop-out of children from schools during their schooling age, and columns 7-9 represent the child labor between the ages of 5 and 18. Panel A of the table represents the result of instrumental variable estimation and Panel B represents the first stage regression where the outcome variable is the average number of attacks per hundred thousand people per district. The unit of outcome variable is individual and the unit of terrorist is measured at the district level. The data on outcome variables is taken from 5 nationally representative surveys of PSLM that consist of ten years from 2006 to 2020, with some missing years. The data on terrorist attacks on educational institutions was sourced from GTD. The census data on the population for every district has been taken from the PBS. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. In the regression model, time-fixed effects consist of year-fixed effects and area-fixed effects accounting for the province and district-specific fixed effects. F-statistic is Kleibergen-Paap rk Wald F statistic. Standard errors, shown in parentheses, are clustered at the district level.

Table A9: Impact of Terrorism on Schooling, OLS

Dependent Variable	Enrollment			Drop-out			Child Labor		
	Full Sample (1)	Girls (2)	Boys (3)	Full Sample (4)	Girls (5)	Boys (6)	Full Sample (7)	Girls (8)	Boys (9)
Attaks on Education	-0.0835	-0.1997	0.0285	0.0981	0.1594	0.0472	-0.0141	0.0359	-0.0557
	(0.0583)	(0.0968)	(0.0383)	(0.0340)	(0.0425)	(0.0290)	(0.0419)	(0.0390)	(0.0509)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	703,366	299,535	403,831	908,585	422,080	486,505	524,758	241,719	283,039
Dep. Var. Mean	0.7764	0.7368	0.8057	0.0988	0.0985	0.0991	0.1256	0.0538	0.1868

Notes: Utilizing the OLS model, this table presents the effect of terrorism on educational outcomes. In the model, only the terrorist attacks on educational institutions are considered independent variables. Terrorist attacks are used after taking an average of a hundred thousand people at the district level. The outcome variables are measured for every individual during their schooling age. Columns 1-3 delineate the status of current enrollment in school, while columns 4-6 represent the drop-out of children from schools during their schooling age, and columns 7-9 represent the child labor between the ages of 5 and 18. The unit of outcome variable is individual and the terrorist attacks were measured at the district level. The data on outcome variables is taken from 5 nationally representative surveys of PSLM that consist of ten years from 2006 to 2020, with some missing years. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. In the regression model, time-fixed effects consist of year-fixed effects and area-fixed effects accounting for the province and district-specific fixed effects. Standard errors, shown in parentheses, are clustered at the district level.

Table A10: Impact of Bin Laden's Death on Schooling, Reduced Form

Dependent Variable	Enrollment			Drop-out			Child Labor		
	Full Sample (1)	Girls (2)	Boys (3)	Full Sample (4)	Girls (5)	Boys (6)	Full Sample (7)	Girls (8)	Boys (9)
Bin Laden's Death	-0.1494	-0.1902	-0.1173	0.1019	0.0994	0.1040	0.0401	0.0121	0.0627
	(0.0104)	(0.0151)	(0.0073)	(0.0042)	(0.0055)	(0.0041)	(0.0071)	(0.0064)	(0.0096)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	857,725	366,146	491,577	1,100,452	510,770	589,680	648,986	298,845	350,141
Dep. Var. Mean	0.7704	0.7280	0.8021	0.0995	0.0986	0.1002	0.1238	0.0515	0.1855

Notes: Utilizing the reduced form for 'Bin Laden's Death', this table represents the direct effect of his death on educational outcomes. The variable 'Bin Laden's Death' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2011 when the US Navy killed Bin Laden; otherwise, it takes the value of 0. The outcome variables are measured for every individual during their schooling age. Columns 1-3 delineate the status of current enrollment in school, while columns 4-6 represent the drop-out of children from schools during their schooling age, and columns 7-9 represent the child labor between the ages of 5 and 18. The unit of outcome variable is individual and the death of Bin Laden is measured at the province level considering the treatment region. The data on outcome variables is taken from 5 nationally representative surveys of PSLM that consist of ten years from 2006 to 2020, with some missing years. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. In the regression model, time-fixed effects consist of year-fixed effects and area-fixed effects accounting for the province and district-specific fixed effects. Standard errors, shown in parentheses, are clustered at the district level.

Table A11: Impact of Red Mosque Siege on Schooling, Reduced Form

Dependent Variable	Enrollment			Drop-out			Child Labor		
	Full Sample (1)	Girls (2)	Boys (3)	Full Sample (4)	Girls (5)	Boys (6)	Full Sample (7)	Girls (8)	Boys (9)
Red Mosque Siege	-0.1298	-0.1573	-0.1118	0.0910	0.0847	0.0957	0.0316	-0.0001	0.0574
	(0.0087)	(0.0148)	(0.0068)	(0.0039)	(0.0048)	(0.0044)	(0.0100)	(0.0084)	(0.0138)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	857,725	366,146	491,577	1100452	510,770	589,680	648,986	298,845	350,141
Dep. Var. Mean	0.7704	0.7280	0.8021	0.0995	0.0986	0.1002	0.1238	0.0515	0.1855

Notes: Utilizing the reduced form for 'Red Mosque Siege', this table represents the direct effect of the siege on educational outcomes. The variable 'Red Mosque Siege' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2007; otherwise, it takes the value of 0. The outcome variables are measured for every individual during their schooling age. Columns 1-3 delineate the status of current enrollment in school, while columns 4-6 represent the drop-out of children from schools during their schooling age, and columns 7-9 represent the child labor between the ages of 5 and 18. The unit of outcome variable is individual and the siege of the mosque is measured at the province level considering the treatment region. The data on outcome variables is taken from 5 nationally representative surveys of PSLM that consist of ten years from 2006 to 2020, with some missing years. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. In the regression model, time-fixed effects consist of year-fixed effects and area-fixed effects accounting for the province and district-specific fixed effects. Standard errors, shown in parentheses, are clustered at the district level.

Table A12: Impact of Terrorism on Academic Performance by Gender

Dependent Variable	Math	English	Reading	Enrollment	Years of Education
	(1)	(2)	(3)	(4)	(5)
			Panel A. Girls		
Attacks on Education	-0.1003	-0.0877	-0.0991	-0.0101	-0.5150
	(0.0310)	(0.0268)	(0.0285)	(0.0030)	(0.1316)
R-Squared	0.2436	0.3059	0.3138	0.5921	0.6631
Observations	112,125	112,946	110,402	157,369	90,222
			Panel B. Boys		
Attacks on Education	-0.1328	-0.1176	-0.1298	-0.0160	-0.4739
	(0.0459)	(0.0424)	(0.0447)	(0.0040)	(0.1554)
R-Squared	0.2214	0.2664	0.2856	0.4716	0.6672
Observations	196,502	196,757	196,411	239,828	181,982
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: The variable 'Attacks on Education' measures the total number of attacks experienced by a child. We aggregate the number of attacks for each child aged 3-16 across all ASER surveys collected between 2012 and 2021 from the Khyber Pakhtunkhwa region. To normalize this variable, we divide the number of attacks by the district population. Due to data unavailability prior to the event 'Death of Osama bin Laden,' we provide separate estimates for affected and unaffected areas. Columns (1-3) display the z-scores of test scores from ASER assessments, while column (4) show enrollment, and column (5) indicate the current grade of children aged 3 to 16. Interpreting column 1, if a child resides in KP, each additional attack experienced during the schooling age reduces the math score by 0.12 standard deviations. Control variables include gender, household financial capacity, school type, child tuition, and parental education levels. The regression model includes time-fixed effects, represented by birth year fixed effects, and area-fixed effects, accounting for provincial and district fixed effects. Standard errors, shown in parentheses, are clustered at the district level.

Table A13: Placebo Test: Impact of Terrorism on Academic Performance

Dependent Variable	Math	English	Reading	Enrollment	Years of Education
	(1)	(2)	(3)	(4)	(5)
Attacks on Education	-0.0159	-0.0092	-0.0129	-0.0027	-0.1472
	(0.0204)	(0.0133)	(0.0171)	(0.0007)	(0.1054)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes
R-Squared	0.2387	0.3157	0.3037	0.5190	0.5979
Observations	960,204	958,234	949,616	1226343	855,024

Notes: The variable 'Attacks on Education' measures the total number of attacks experienced by a child. We aggregate the number of attacks for each child aged 3-16 across all ASER surveys collected between 2012 and 2021 from the comparison region. To normalize this variable, we divide the number of attacks by the district population. Due to data unavailability prior to the event 'Death of Osama bin Laden,' we provide separate estimates for affected and unaffected areas. Columns (1-3) display the z-scores of test scores from ASER assessments, while column 4 shows enrollment, and columns 5 indicate the current grade of children aged 3 to 16. Interpreting column 1, if a child resides in a region other than KP, the control regions, each additional attack experienced during the schooling age reduces the scores but the effect is insignificant. Control variables include gender, household financial capacity, school type, child tuition, and parental education levels. The regression model includes time-fixed effects, represented by birth year fixed effects, and area-fixed effects, accounting for provincial and district fixed effects. Standard errors, shown in parentheses, are clustered at the district level.

Table A14: Impact of Terrorism on Education by Parents' Education

Dependent Variable	Years of Education		Primary Education Completion	
	High Education	Low Education	High Education	Low Education
	(1)	(2)	(3)	(4)
	Panel A. Instrumental Variable Estimation (Parent's Education)			
Attacks on Education	-0.4746	-0.0575	-0.0383	-0.0318
	(0.1438)	(0.1797)	(0.0185)	(0.0280)
Observations	57,376	47,614	57,376	47,614
	Panel B. Instrumental Variable Estimation (Father's Education)			
Attacks on Education	-0.3490	-0.0183	-0.0285	-0.0184
	(0.1502)	(0.1603)	(0.0199)	(0.0243)
Observations	54,450	50,540	54,450	50,540
	Panel C. Instrumental Variable Estimation (Mother's Education)			
Attacks on Education	-0.3711	-0.2700	-0.0261	-0.0580
	(0.1675)	(0.5213)	(0.0142)	(0.0649)
Observations	35,376	22,097	35,376	22,097
	Panel D. Dependent Variable: Attacks on Education			
Bin Laden's Death	0.5938	0.6072	0.5938	0.6072
	(0.1557)	(0.1638)	(0.1557)	(0.1638)
Controls	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	57,376	47,614	57,376	47,614
Dep. Var. Mean	10.7988	7.3938	0.8816	0.5215
F-statistics	14.5439	13.7359	14.5439	13.7359

Notes: Utilizing the instrumental variables 'Death of Bin Laden', this table represents the repercussions of attacks on attained years of education and completion of grade 8 during the schooling age between 5-18. In the delineation of education cohorts, our classification scheme identifies two categories. Firstly, the below median parental education group comprises individuals whose parental educational attainment falls below the matriculation threshold. Second, the above median education group encompasses individuals whose parental education surpasses the matriculation. In this table we use the 2020 PSLM survey and count the terrorist attacks for every individual that they exposed during their schooling age. This counting enables us to use the data as panel and we use time fixed effect as birth-year fixed effect. We also use the province and district fixed effects. Panel A of the table represents the result of instrumental variable estimation using the median cutoff on parent's educatin, Panel B uses the median cutoff for father's education, Panel C uses the median cutoff of mother's education and Panel D represents the first stage regression where the outcome variable is the average number of attacks per hundred thousand people. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. F-statistic is Kleibergen-Paap rk Wald F statistic. Standard errors, enclosed in parentheses, are clustered at the district level.

Table A15: Impact of Terrorism on Education by Household Income

Dependent Variable	Years of Education		Primary Education Completion	
	High Income	Low Income	High Income	Low Income
	(1)	(2)	(3)	(4)
	Panel A. Instrumental Variable Estimation			
Attacks on Education	-0.5811	-0.1633	-0.0456	-0.0600
	(0.1744)	(0.1698)	(0.0212)	(0.0179)
	Panel B. Dependent Variable: Attacks on Education			
Bin Laden's Death	0.6630	0.5705	0.6630	0.5705
	(0.1767)	(0.1364)	(0.1767)	(0.1364)
Controls	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	71,580	71,512	71,580	71,512
Dep. Var. Mean	9.6431	8.1639	0.7498	0.6115
F-statistics	14.0706	17.4851	14.0706	17.4851

Notes: Utilizing the instrumental variables 'Death of Bin Laden', this table represents the repercussions of attacks on attained years of education and completion of grade 8 during the schooling age between 5-18. In classifying income groups, we delineate two categories: the below-median, comprising households with a monthly income upto PKR 24500 and the above-median group, which includes those with monthly earnings exceeding PKR 24500. In this table we use the 2020 PSLM survey and count the terrorist attacks for every individual that they exposed during their schooling age. This counting enables us to use the data as panel and we use time fixed effect as birth-year fixed effect. We also use the province and district fixed effects. Panel A of the table represents the result of instrumental variable estimation and Panel B represents the first stage regression where the outcome variable is the average number of attacks per hundred thousand people. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. F-statistic is Kleibergen-Paap rk Wald F statistic. Standard errors, enclosed in parentheses, are clustered at the district level.

Table A16: Impact of Terrorism on Education by Industry Classification

Dependent Variable	Years of Education			Primary Education Completion		
	Industry Classification					
	Agri cultural	Manufactur ing	Services	Agri cultural	Manufactur ing	Services
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A. Instrumental Variable Estimation					
Attacks on Education	-0.5578	-0.5399	-0.4003	-0.0618	-0.0944	-0.0355
	(0.3584)	(0.2252)	(0.1871)	(0.0536)	(0.0297)	(0.0216)
	Panel B. Dependent Variable: Attacks on Education					
Bin Laden's Death	0.5255	0.6129	0.6841	0.5255	0.6129	0.6841
	(0.1122)	(0.1451)	(0.1668)	(0.1122)	(0.1451)	(0.1668)
F-statistics	17.0414	13.2466	14.6008	17.0414	13.2466	14.6008
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Birth Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,367	28,771	54,502	30,367	28,771	54,502
Dep. Var. Mean	8.1424	8.2433	9.3804	0.6020	0.6273	0.7247

Notes: Utilizing the instrumental variables 'Death of Bin Laden', this table represents the repercussions of attacks on attained years of education and completion of grade 8 during the schooling age between 5-18. In this table we use the 2020 PSLM survey and count the terrorist attacks for every individual that they exposed during their schooling age. This counting enables us to use the data as panel and we use time fixed effect as birth-year fixed effect. We also use the province and district fixed effects. Panel A of the table represents the result of instrumental variable estimation and Panel B represents the first stage regression where the outcome variable is the average number of attacks per hundred thousand people. The control variables include all potential covariates including age, gender, area (urban/rural), financial capacity of households, and index of household assets. F-statistic is Kleibergen-Paap rk Wald F statistic. Standard errors, enclosed in parentheses, are clustered at the district level.

Table A17: Impact of the Death of Osama bin Laden on Terrorist Attack

Dependent Variable	Total Attacks (1)	Attacks on Education (2)	Total Attacks (3)	Attacks on Education (4)
	Panel A. High Socioeconomic Areas			
	High Income Areas		*High Education Areas*	
Bin Laden's Death	0.3132	0.0309	0.2157	0.0200
	(0.1545)	(0.0093)	(0.1094)	(0.0068)
R-Squared	0.1599	0.0583	0.1573	0.0518
Observations	198,291	198,291	207,974	207,974
	Panel B. Low Socioeconomic Areas			
	Low Income Areas		*Low Education Areas*	
Bin Laden's Death	0.0005	0.0026	0.1924	0.0081
	(0.0316)	(0.0027)	(0.0491)	(0.0025)
R-Squared	0.1490	0.0278	0.1492	0.0336
Observations	202,501	202,501	211,342	211,342
Time Fixed Effects	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes
Dep. Var. Mean	0.0414	0.0018	0.0517	0.0025

Notes: The variable 'Bin Laden's Death' is a treatment dummy that takes the value of 1 if the province is KP and the period is post-July 2011 when the US Navy killed Bin Laden; otherwise, it takes the value of 0. High-income areas are identified by the index of socioeconomic characteristics and nighttime light data provided by the KP Board of Statistics. Similarly, the high education areas are identified by the number of children in schools. The unit of data is monthly at the tehsil level, which is the lowest administrative boundary in Pakistan. In the regression model, time-fixed effects consist of both month & year-fixed effects, and area-fixed effects account for province, district, and tehsil-specific fixed effects. Standard errors, shown in parentheses, are clustered at the tehsil level.

Table A18: Impact of the Death of Osama bin Laden on Terrorist Attack

Dependent Variable	Number of Attacks						Human and Economic Damages		
	Total	Education	Government	Law Enforcement	Citizen	Non-State Actors	Deaths	Injuries	Properties Damage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				Panel A. High Income Areas					
Bin Laden's Death	0.3132	0.0309	0.0020	0.1024	0.0533	0.0087	0.3095	0.5120	0.1291
	(0.1545)	(0.0093)	(0.0010)	(0.0530)	(0.0274)	(0.0052)	(0.2030)	(0.3490)	(0.0580)
R-Squared	0.1599	0.0583	0.0327	0.1308	0.0997	0.0364	0.1044	0.0877	0.1319
Observations	198,291	198,291	198,291	198,291	198,291	198,291	198,291	198,291	198,291
				Panel B. Low Income Areas					
Bin Laden's Death	0.0005	0.0026	0.0001	-0.0043	0.0015	0.0082	0.0056	-0.0395	0.0010
	(0.0316)	(0.0027)	(0.0003)	(0.0099)	(0.0065)	(0.0031)	(0.0440)	(0.0767)	(0.0120)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.1490	0.0278	0.0291	0.1241	0.0944	0.0204	0.1065	0.0789	0.1192
Observations	202,501	202,501	202,501	202,501	202,501	202,501	202,501	202,501	202,501
Dep. Var. Mean	0.0414	0.0018	0.0003	0.0113	0.0114	0.0006	0.0740	0.1406	0.0226

Notes: The variable 'Bin Laden's Death' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2011 when the US Navy killed Bin Laden; otherwise, it takes the value of 0. Panel A consist of the districts that have high per capita GDP and Panel B consist of the low GDP districts. The Columns (1-6) present the average number of monthly attacks per tehsil per hundred thousand people, while columns (7-9) depict the average number of monthly deaths, injuries, and property damages per tehsil per hundred thousand people, following the death of Bin Laden. The analysis covers the period from 1970 to the year 2020. The unit of data is monthly at the tehsil level, which is the lowest administrative boundary in Pakistan. In the regression model, time-fixed effects consist of both month & year-fixed effects, and area-fixed effects account for province, district, and tehsil-specific fixed effects. Standard errors, shown in parentheses, are clustered at the tehsil level.

Table A19: Impact of the Death of Osama bin Laden on Terrorist Attack

Dependent Variable	Number of Attacks						Human and Economic Damages		
	Total	Education	Government	Law Enforcement	Citizen	Non-State Actors	Deaths	Injuries	Properties Damage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				Panel A. High Education Areas					
Bin Laden's Death	0.2157	0.0200	0.0012	0.0706	0.0355	0.0102	0.2176	0.3231	0.0848
	(0.1094)	(0.0068)	(0.0007)	(0.0375)	(0.0194)	(0.0037)	(0.1439)	(0.2479)	(0.0412)
R-Squared	0.1573	0.0518	0.0323	0.1277	0.0983	0.0329	0.0995	0.0861	0.1299
Observations	207,974	207,974	207,974	207,974	207,974	207,974	207,974	207,974	207,974
				Panel B. Low Education Areas					
Bin Laden's Death	0.1924	0.0081	0.0007	0.0664	0.0329	0.0164	0.2556	0.3272	0.0559
	(0.0491)	(0.0025)	(0.0004)	(0.0175)	(0.0092)	(0.0044)	(0.0687)	(0.1250)	(0.0155)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.1492	0.0336	0.0270	0.1198	0.0939	0.0304	0.0955	0.0743	0.1189
Observations	211,342	211,342	211,342	211,342	211,342	211,342	211,342	211,342	211,342
Dep. Var. Mean	0.0517	0.0025	0.0004	0.0146	0.0137	0.0011	0.0897	0.1597	0.0256

Notes: The variable 'Bin Laden's Death' is a treatment dummy that takes the value of 1 if the province is KP and the time period is post-July 2011 when the US Navy killed Bin Laden; otherwise, it takes the value of 0. Panel A consist of the districts that have high education and Panel B consist of the low education districts. The Columns (1-6) present the average number of monthly attacks per tehsil per hundred thousand people, while columns (7-9) depict the average number of monthly deaths, injuries, and property damages per tehsil per hundred thousand people, following the death of Bin Laden. The analysis covers the period from 1970 to the year 2020. The unit of data is monthly at the tehsil level, which is the lowest administrative boundary in Pakistan. In the regression model, time-fixed effects consist of both month & year-fixed effects, and area-fixed effects account for province, district, and tehsil-specific fixed effects. Standard errors, shown in parentheses, are clustered at the tehsil level.