Silver Lining? The Effects of Epidemics on Terrorist Groups

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Abstract:

In this study we examine the effects of epidemics on terrorist groups’ attack capacities. We consider two theoretical relationships between epidemics and terrorist groups. By weakening government counterterrorism defenses and increasing popular grievances, epidemics can provide a strategic environment that is conducive to terrorist groups, enhancing their capacity to commit more attacks, yield higher casualties and launch more logistically complex attacks. Conversely, epidemics can adversely affect terrorist groups’ ability to launch attacks by eroding group capacity and access to resources while incentivizing the state to increase its surveillance and policing capabilities. We test these two competing arguments using a database of over 620 terrorist groups for the period 1970 to 2016. Our findings support the second argument. Terrorist groups based or operating in countries experiencing epidemics commit fewer attacks, produce fewer casualties, commit a lower ratio of transnational to domestic attacks and less frequently use multi-mode attacks. We conclude with a discussion of the implications of these findings.
The COVID-19 pandemic has become one of the worst global health crises in modern history. Hundreds of thousands of people have died through the first half of 2020, and the global economy has been significantly damaged, threatening the well-being and health of many people across the world. To add to these anxiety-inducing conditions, many observers, journalists, policy commentators, academics, and even some world leaders have warned that terrorist groups are seeking to exploit the chaos and instability brought about by the pandemic. United Nations Secretary-General António Guterres cautioned that while we cannot yet fully assess the situation, “we know that Islamic State in Iraq and the Levant (ISIL/Da’esh), Al-Qaida and their regional affiliates — as well as neo-Nazis, white supremacists and other hate groups — seek to exploit divisions, local conflicts, governance failures and grievances to advance their objectives” (United Nations 2020).

A significant concern among many observers is that because the pandemic has commanded the attention of government authorities, shrunken national economies, and forced governments to divert dwindling funds to COVID-19 relief efforts, counterterrorism efforts will be compromised, enabling terrorist groups to increase their activity and influence (Byman and Amunson 2020). An increase in the number of attacks by ISIS in 2020 highlights these concerns (Cruickshank 2020), as ISIS has been able to move more freely in and between Iraq and Syria, and strengthen its presence west African and the Sahel because states have had to shift their focus and resources to battling the pandemic (Luck 2020).

Commentators also express the fear that many individuals have become susceptible to radicalization because the COVID-19 pandemic has increased safety concerns, economic vulnerability, and anti-government attitudes for large segments of the world’s population
(Ackerman and Peterson 2020). Relatedly, multiple terrorist groups have sought to increase their online presence during the pandemic as people are spending more time online (Ackerman and Peterson 2020), and ISIS propaganda and recruitment efforts have sought to exploit the pandemic specifically (Berman 2020). Additionally, militant groups could also gain popularity by stepping in and providing relief aid in areas in which governments have failed to do so, increasing the popularity of these groups and undermining public support and opinion of these governments (Ackerman and Peterson 2020).

Thus, some have speculated that the COVID-19 pandemic could lead to an increase in terrorism across the globe through diverting resources from counterterrorism initiatives, fomenting grievances that lead to increased recruitment by terrorist groups, and providing terrorists with the opportunity to increase their popular support by stepping into to provide relief aid that governments in certain areas have failed to. Such concerns are not without merit as a variety of types of natural disasters have been linked to increased rates of terrorism (Berrebi and Ostwald 2011, 2013) and civil war onset (e.g., Ember and Ember 1992; Brancati 2007; Nel and Righarts 2008).

However, others have postulated that the pandemic will actually decrease terrorism. Byman and Amunson (2020) note that many governments have imposed travel restrictions, which as an indirect consequence makes it difficult for terrorist groups to move across countries and operate. Relatedly, the authors also expect that such restrictions will lead to a decrease in the flow of foreign fighters. Byman and Amunson also posit that because people have turned their attention to the pandemic, groups will be impeded in their ability to attract recruits. Moreover, the salience of terrorist attacks will decrease as media coverage will focus more on COVID-19, robbing terrorist groups of the ability to use attacks to influence a wider audience. Finally, there
is some evidence that in some cases natural disasters like COVID-19 decrease the activity of militant organizations, as these cataclysmic events decrease the resources available to these groups (Meier, Bond, and Bond 2007; Witsenburg and Adano 2009; Slettebak 2012; Theisen et al. 2012; Salehyan and Hendrix 2014).

Thus, there is not a clear consensus on how the COVID-19 crisis will affect the prevalence of terrorism. Given the debate over the distribution of resources between relief aid and other types of natural security measures caused by the current pandemic, and the likelihood that this issue will likely remain relevant for future outbreaks, it is imperative to understand the relationship between epidemics and terrorism.

Using data on epidemics from 1970 to 2016, we evaluate these competing claims and find that such outbreaks are associated with a reduction in terrorist group capacity to commit attacks. We find that terrorist organizations based in countries experiencing epidemics suffer a decline in overall attacks, reduced ability to produce casualties from attacks, an impaired ability to launch a high ratio of transnational attacks and a reduced capacity to commit more complex attacks that feature multiple attack modes. We therefore find that rather than provide an environment that enhances group capacity, epidemics make it more difficult for groups to cause harm and pose a security threat.

This study makes several contributions. First, to our knowledge, we provide the first systematic analysis of the relationship between epidemics and terrorism. Though previous work by Berrebi and Ostwald (2011, 2013) did find a positive relationship between natural disasters and terrorism, it focused only on climatological, geophysical, meteorological, and hydrological disasters. Our results highlight the importance of also considering the relationship between
biological disasters like epidemics and terrorism. Second, our study underscores the importance of examining the effects of epidemics on terrorism as a specific form of political violence.

Previous research by Nel and Righarts (2008, footnote 28) failed to find a statistically significant association at all between epidemics and civil war onset. Our findings show that the relationship works differently for terrorism, underscoring the importance for considering how natural disasters might affect civil war and terrorism differently. Third and relatedly, our findings highlight the importance of considering why some types of natural disasters increase terrorism, while others lead to fewer terrorist attacks. Just as some other types natural disasters reduce political violence by decreasing militant group capacity (Meier, Bond, and Bond 2007; Witsenburg and Adano 2009; Slettebak 2012; Theisen et al. 2012; Salehyan and Hendrix 2014), we explore the ways in which epidemics reduce terrorism. Finally, unlike previous studies, we examine the impact of epidemics on terrorist actors and their behavior. Previous work on natural disasters and terrorism has limited itself to the effects of disasters on counts of terrorist events within countries without a consideration on the behavior of terrorist groups.

Our paper is laid out as follows: We begin by discussing the literature on natural disasters and terrorism and political violence. We then layout two competing theoretical explanations linking epidemics to terrorism. This is followed with the development of the research design and the presentation of the results. We conclude with a discussion of the results and their implications.

Natural Disasters and Political Violence

Epidemics are a type of natural disaster. An extensive body of literature examines how natural disasters affect the onset, conduct, and resolution of violent conflict, including terrorist
campaigns. Nel and Righarts (2008) argue that natural disasters can precipitate violent conflict by altering the motives, incentives, and opportunities for violence. They frame motives for violence as the grievances that form within individuals or groups when they believe they have not rightly received what they are due. Nel and Righarts posit that disasters cause resource scarcities that fuel competition, and that elites attempt to perpetuate inequalities during redistributive processes, further fomenting grievances among the general population. Competition over scarce resources can be particularly violent between groups, especially if they have preexisting tensions (Brancati 2007; Pelling and Dill 2010).

Scholars have also argued that natural disasters can generate grievances through reducing economic development and opportunities in the legitimate economy (Miguel, Satyanath, and Sergenti 2004; Raleigh and Kniveton 2012; Eastin 2016), highlighting and exacerbating inequalities in economic well-being and distribution of resources by governments (Brancati 2007), and producing a large number of orphans who are vulnerable to rebel recruitment because they need food, shelter, and protection (Brancati 2007). Rapid-onset natural disasters, such as earthquakes, produce changes in an individual’s status much more quickly, making them easier to notice, which particularly sharpens grievances (Brancati 2007). Furthermore, governments often engage in repression following natural disasters in order to prevent dissident groups from taking advantage of the chaos and weakness of the state (Pelling and Dill 2006; Wood and Wright 2016), and increased government repression can lead to more terrorism following natural disasters (Berrebi and Ostwald 2011).

Nel and Righarts (2008) note, however, that grievances alone are not sufficient in explaining post-disaster violence. They posit that the opportunity – i.e., a favorable environment for collective action – for rebellion often increases following natural disasters because state
capacity has been greatly weakened due to the scarcity of resources and the need for governments to redirect resources from the security sector to disaster relief. Relatedly, Nel and Righarts argue that the incentives for violence increase following natural disasters as the gains from fighting increase because of the need for resources while the costs of fighting are reduced because of lower state capacity. Reduced state capacity lowers the costs of launching terrorist attacks, resulting in increases in such incidents following natural disasters (Berrebi and Ostwald 2011). Transnational terrorists in particularly are quick to take advantage of the chaos following natural disasters (Berrebi and Ostwald 2013). Indeed, natural disasters present a particular risk for conflict onset by reducing the opportunity costs for rebelling and increasing grievances for a variety of reasons (Wischnath and Buhaug 2014).

Scholars have also examined the effects of natural disasters on the conduct and outcomes of conflicts. Existing rebel groups can exploit the negative consequences from natural disasters in order to draw in recruits, win popular support, and bring in financial resources (Brancati 2007). Walch (2018), however, argues that natural disasters can actually dampen rebel recruitment efforts by inducing resource scarcities that make it more difficult for groups to offer incentives to recruits and screen potential joiners, as well as increasing government and international presence in affected areas, weakening rebel territorial control. Eastin (2016) finds that natural disasters increase the length of armed conflicts. Other works suggests that the effects of natural disasters are conditioned by the characteristics of rebel groups. Specifically, the nature of the relationships that insurgent movements have with local populations, and how much they depend on civilians for material support, is expected to condition how rebel groups respond to natural disasters (Beardsley and McQuinn 2009; Walch 2014).
Natural disasters can also influence the outcome of conflicts. Kreutz (2012) argues that natural disasters should produce ideal conditions for violent conflicts to be resolved because governments will be more likely to make concessions, namely because they are suffering from reduced capacity and are under pressure to help victims and cooperate for the efficient distribution of relief aid in order to maintain the support of its population. However, Kreutz finds that while natural disasters increase the chances that talks are initiated and ceasefires are agreed to, they have no discernable effect on the signing of peace agreements.

Overall, however, the empirical record for the effect of natural disasters on conflict is mixed. While multiple studies find a positive association between the occurrence of natural disasters and political violence, including terrorism (e.g., Brancati 2007; Nel and Righarts 2008; Berrebi and Ostwald 2011, 2013), the magnitude of the effects are conditional on factors such as the type of natural disaster, economic development, state capacity, and regime type (e.g., Brancati 2007; Nel and Righarts 2008). Other work challenges the causal explanations and empirical findings of such studies. Kikuta (2019), for instance, finds evidence that violence in Sri Lanka following the 2004 tsunami was not driven by any direct consequences of the disaster, but rather, by competition between the rebels and government over control of resources intended for reconstruction projects, which exacerbated commitment problems in the bargaining process.

Other studies suggest that in certain cases, climate disasters can actually reduce conflict by weakening rebel group capacity and diminishing the resources available to groups; for example, abundant food resources (Meier, Bond, and Bond 2007; Witsenburg and Adano 2009; Slettebak 2012; Theisen et al. 2012; Salehyan and Hendrix 2014). Some scholars have not found evidence of a robust, direct link at all (Bergholt and Lujala 2012; Koubi et al. 2012). Empirical analyses that link disasters to increases in violent conflict have also been critiqued for producing
unstable results that are sensitive to changes in model specification (Ciccone 2011; Gleditsch 2012), and there are theoretical shortcomings to many of the proposed mechanisms (Meierding 2013).

Within this body of literature on disasters and political violence, there are some important gaps. First, as previously noted, most empirical studies have been conducted at the country or conflict-levels (for example Eastin 2016 and Kreutz 2012), obscuring important militant group-level dynamics. Those that do adopt a group-level focus typically examine individual groups or smaller sets of groups (for example Beardsley and McQuinn 2009; Walch 2014, 2018). Our study fills this gap by adopting a systematic cross-sectional time series analysis of the impact of epidemics on a sample of over 600 terrorist organizations world-wide.

Second and more importantly, the role of epidemics has been largely ignored in the literature on political violence. As noted above, none of studies examine the relationship between epidemics and terrorism at all while the scant research on epidemics and civil wars fails to find a significant association.

Third, we note that it is crucial to study epidemics because they differ from other types of natural disasters more commonly examined by scholars in several important ways that have consequences for understanding the impact on political violence and terrorism. Epidemics are not usually rapid-onset disasters. They do not usually destroy infrastructure. Importantly, government relief efforts deployed by governments to combat epidemics are structured very differently for epidemics than for other kinds of natural disasters. As we explain in more detail below, governments typically address epidemics by constructing often pervasive monitoring and tracing regimes to identify affected areas and people, isolate them and provide treatment. A focus on the impact of epidemics on terrorism is therefore needed.
Epidemics and Terrorism

We now delve into the debate about the effects of epidemics on terrorism, presenting countervailing hypotheses. Drawing on the literature discussed in the previous section, we discuss how epidemics could facilitate or hinder the incentives and capacity of militant groups to launch terrorist attacks.

Do Epidemics Increase Terrorism?

As noted earlier, there is a growing concern among many observers that COVID-19 is providing fertile ground for terrorism. Are such concerns generalizable to epidemics as a whole? Drawing on the aforementioned argument by Nel and Righarts (2008), we consider how epidemics might increase the motives, incentives, and opportunities for terrorism.

Epidemics and Grievances

Epidemics may increase terrorism by producing grievances that may motivate more terrorist activity. There are several potential components to the grievance argument. On the personal level, epidemics produce personal losses and sharpen individual frustrations, fears, anxieties. In discussing the case of COVID-19, Ackerman and Peterson (2020) argue that the pandemic has exacerbated these feelings and that this has aided the radicalization process by which individuals lose faith in the status quo and become more receptive to extremist viewpoints and actors. The authors observe that anti-government attitudes have soared during the pandemic. According to Ackerman and Peterson, many individuals perceive their governments to be inadequately and incompetently handling the crisis, while others view mandates like social distancing and masking as severe government overreach. The attitudes of the latter group have
led to an increase in COVID-related conspiracy theories, some of which are being disseminated and exploited by violent extremist groups (Ackerman and Peterson 2020).

Second, epidemics can also exacerbate social inequalities which further fuels grievances that can be exploited by violent extremists. Nel and Righarts (2008) argue that during natural disasters, preexisting social inequalities are made more salient to the public, particularly if access to life-sustaining resources becomes strained and government authorities fail to equally and efficiently distribute relief aid among social groups (Nel and Righarts 2008). Furthermore, Brancati (2007) argues that militant group recruitment will be more successful following natural disasters because an increasing number of vulnerable individuals will be looking for resources and protection. If epidemics and the government responses to epidemics worsen inequality or enhance social group discrimination and frustration, this may improve the environment for terrorist activity. An established body of research finds that social inequality and social group discrimination is associated with higher levels of terrorism (see Piazza 2011, 2012; Choi and Piazza 2016; Ghatak, Gold, and Prins 2017). In the context of epidemics, research by Luck (2020) suggests that terrorist groups like ISIS are liable to exploit the inequalities highlighted by, and stemming from, the COVID-19 pandemic to mobilize recruits.

Third, governments often increase repression following natural disasters in order to preempt dissident (Wood and Wright 2016), which can lead to more terrorism in response (Berrebi and Ostwald 2011). If during epidemics, governments tend to crack down and human rights violations increase, terrorism will become more likely. A fairly large body of research indicates that human rights violations help to drive terrorist activity (see, for example, Daxecker 2017; Daxecker and Hess 2013; Walsh and Piazza 2010)
Epidemics, Opportunities, and Incentives

Grievances caused by epidemics are not likely in themselves to be sufficient to increase terrorism. According to Nel and Righarts (2008), the opportunities and incentives that arise from natural disasters are also crucial for providing an environment in which political violence can occur. Natural disasters frequently weaken the capacity of states to crackdown on insurgent movements as governments are often forced to reallocate dwindling resources to relief efforts (e.g., Brancati 2007; Nel and Righarts 2008). Facing similar resource scarcities due to COVID-19, governments have reallocated counterterrorism funds and security forces to address pandemic relief needs (Byman and Amunson 2020; Ackerman and Peterson 2020). This suggests that during pandemics, state capacity to project force against terrorists may be diminished, thereby lowering the costs of committing acts of terrorism and incentivizing groups to attack hard targets that have been temporarily weakened (Berrebi and Ostwald 2011, 2013). Because other research shows that diminished state capacity creates an environment in which terrorist groups can conduct more attacks (see Piazza 2007, 2008; Coggins 2015; Avdan and Uzonyi 2017), we expect that epidemic-driven impairment of state capacity will similarly provide opportunities for terrorist groups to become more active.

Relatedly, the incentives to commit acts of terror are higher following natural disasters as the benefits are higher (access to scarce resources) and the costs are lower because of decreased state capacity (Nel and Righarts 2008). Resources that are fought over because of natural disasters can include food, land, and government aid (Ember 1992; Nel and Righarts 2008). Ackerman and Peterson (2020) similarly detail a variety of ways in which the COVID-19 pandemic has increased the incentives and opportunities for terrorism. According to the authors, this includes some radical groups intentionally trying to spread the virus and the softening of
targets allowing for a greater number of conventional attacks. Thus, during epidemics, groups potentially face fewer costs for launching terrorist attacks, the attacks themselves might be more effective, and resulting resource scarcities produce greater need for fighting.

Aside from the strategic opportunities epidemics may afford groups, public health disasters also allow armed extremist actors to build public support by providing social services. Of course, not all groups have the capacity to provide such services. However, Ackerman and Peterson (2020) explain that during the COVID-19 pandemic, multiple armed groups, including Lashkar-e-Taiba, Jaish-e-Muhammed, the Afghan Taliban, Hayat Tahrir al-Sham, and Hezbollah, have stepped in to provide COVID relief to local populations when governments have failed to do so. Ackerman and Peterson contend that such groups will grow in popularity and receive increased support. Employing experimental evidence, Flynn and Stewart (2018) show that providing social services not only increases the perceived legitimacy of insurgent movements, but it also offsets some of the reputational costs of killing civilians. Thus, natural disasters can provide groups with the opportunity to increase their popularity by providing public services, which in turns provides them with the resources to commit more attacks with fewer reputational costs.

Finally, foreign aid to help combat epidemics might actually incentivize political violence. Beardsley and McQuinn (2009) argue that groups will increase their violence following natural disasters if they perceive their authority over an area to be threatened by an increase in domestic and international authorities. Kikuta (2019) posits that after natural disasters, violent conflict can increase between governments and rebels fighting over resources used for reconstruction efforts. For instance, during an outbreak of Ebola in the Democratic Republic of the Congo (DRC) in 2019, Ebola treatment centers came under almost daily attacks by militants,
significantly undermining the efforts of domestic and international actors to try to contain the spread of the disease (Branswell 2019). Maxmen (2019) explains that these attacks on aid workers and facilities have deterred many organizations from going to the DRC to help fight Ebola in the first place, and that cases spiked following attacks against Ebola treatment centers. She further notes that effective public health tools, including contact tracing, were very difficult to implement in the DRC due to high levels of violence.

If the above arguments about the COVID-19 pandemic and other types of natural disasters are applicable to epidemics as a whole, then we should expect to see a positive association between these types of biological disasters and terrorism. Epidemics could increase grievances by increasing the health and economic vulnerabilities of individuals, anti-government sentiments, and existing inequalities. Reduced state capacity and the diversion of government funds to epidemic relief efforts lowers the costs of perpetrating terrorism and enables groups to increase their popularity by providing services that governments are unable to. The increased presence of domestic and international authorities might also further incentivize violence. These conditions should increase terrorism in countries as a whole as well as increase the activities and capabilities of individual terrorist groups. This leads us to our first hypothesis that:

*H1: Epidemics increase the capacity of terrorist groups to commit more, higher casualty and more logistically complex attacks.*

**Do Epidemics Limit Terrorism?**

Conversely, epidemics might also have deleterious effects on violent extremist actors. Ackerman and Peterson (2020) note that the COVID-19 pandemic has also endangered and disrupted terrorist organizations and individual militants. We therefore also consider how...
epidemics might change the strategic environment in adverse ways for terrorist organizations, negatively affecting their ability to conduct attacks and to conduct more complex or longer-ranged activities. We consider the negative impact public health disasters might have on terrorist group capacities. Finally, we argue that epidemics dramatically alter the security environment within countries because they prompt governments to more closely monitor and control domestic populations and territory.

_Terrorist Group Capacity_

Epidemics might actually make it more difficult for terrorist groups to operate. Terrorist groups in many countries have had difficulty moving around and operating during the COVID-19 pandemic because of travel restrictions put in place by governments (Byman and Amunson 2020). As previously noted, the ability of foreign fighters to travel has been reduced as well (Byman and 2020). In addition to travel restrictions, extensive movement in areas suffering from epidemics can be unsafe. While other types of natural disasters can destroy infrastructure in a way that can make travel difficult, epidemics make all movement risky. Terrorist groups can adapt to challenges like destroyed roads or bridges by finding alternative routes. Epidemics, however, can really only be avoided through demobilization and sheltering in place. While terrorists with apocalyptic or millenarian ideologies may not care about these risks (Byman and Amunson 2020), most militants organizations are likely to be sensitive to the risks and associated costs to group capacity posed by operating during a pandemic. Furthermore, pandemics might impoverish the target environment for terrorist organizations. Public health measures enacted during pandemics often require that people self-isolate and avoid public gatherings. This reduces target availability and particularly impedes indiscriminate high-casualty events that would hit public venues where people typically congregate.
These constraints, coupled with economic downturns from epidemics, might also deplete the resources available to terrorist organizations. As noted above, scholars have argued natural disasters can dampen rebel recruitment efforts by depleting the resources these groups need to attract and filter out recruits (Salehyan and Hendrix 2014; Walch 2018). Similarly, epidemics can deplete terrorist group resources, making it more difficult to recruit combatants and support existing ones. Epidemics also tax the attention and focus terrorist groups rely upon from members and constituents. Byman and Amunson (2020) anticipate that terrorist movements will have difficulty attracting recruits and motivating their cadres during the COVID-19 pandemic because people have their attention focused on the pandemic. These factors combined together could result in a reduction in terrorist violence.

State Capacity

Epidemics may also change the security environment in ways that empower the monitoring and control capabilities of the state to the detriment of terrorist actors. This is due, in part, to features of epidemics that are distinct from other types of natural disasters. While all types of natural disasters can place strain of governments – possibly forcing them to divert counterterrorism and counterinsurgency funds to relief efforts (Nel and Righarts 2008) – epidemics are distinct because they typically do not destroy infrastructure within countries, leaving government control capacity more intact. This has important implications for armed non-state actors. Countries, or regions within countries, that have suffered from natural disasters that destroy infrastructure find their ability to monitor and crackdown on dissidents and militants severely limited. Liu and Sullivan (2020) illustrate this in the case of the 1976 earthquake during Guatemalan civil war which impaired the government’s ability to counter rebel forces in areas of
the country where the earthquake had devastated infrastructure and, by extension, government authority and ability to project power.

Epidemics, like other slow onset natural disasters, typically do not produce physical damage to all or parts of countries in ways that reduce the government’s ability to exert authority and project force. Indeed, we argue that epidemics are likely to have the opposite effect. To combat epidemics and to project public health, governments frequently mobilize resources, including foreign assistance, to track the progress of public health threats, monitor the population for disease, identify and treat and quarantine infected persons and the people they have come into contact with. During epidemics, governments construct intrusive surveillance regimes, close borders and control the domestic and international movement of people. They mobilize reserve police and military forces, force the closure of businesses and other private sector spaces and sometimes impose public curfews. Governments may also impose lockdowns on subnational regions affected by epidemics, exerting greater control over their domestic territory. All of these efforts have been strategies employed by governments fighting COVID-19 and in previous pandemics, such as the Ebola outbreak in 2014 (Saurabh and Prateek 2017).

These efforts produce, as a byproduct, a disadvantageous and perilous strategic environment for terrorist actors. Some experts have noted the similarities between government contact tracing during epidemics and certain counterterrorism tools (Indig 2020). The case of Israel during the COVID-19 pandemic provides a useful example. During COVID-19 pandemic, the Israel Security Agency (ISA) was employed to oversee a national movement and contact tracing regime using citizen’s cell phones. This gave the Israeli government enhanced ability to monitor the movements of citizens and residents. When infections declined in Israel, the ISA continued to monitor the population through their cell phones (Altshuler and Hershkovitz 2020).
Israel continues to utilize counterterrorism assets to aid its contact tracing efforts during COVID (Bateman 2020). The net impact of ramped-up efforts to preserve public health during pandemics is a reduced opportunity for militant groups to engage in terrorist activities.

The Silver Lining

Contrary to the fears of many observers, the above discussion highlights how epidemics might actually serve to reduce terrorism. Thus, we should expect to both observe fewer terrorist attacks in countries suffering from epidemics as well as the reduction in the capacity of terrorist groups operating in these places. Therefore we propose the hypothesis that:

\[ H2: \text{Epidemics increase the capacity of terrorist groups to commit more, higher casualty and more logistically complex attacks.} \]

Research Design

To test these competing hypotheses, we conduct a series of regression analyses on a sample of 623 to 634 terrorist groups for the period 1970 to 2016. Our unit of analysis is the terrorist group-year and our estimations include around 7,700 observations each. Our primary data source for the analyses is a new cross-sectional time series terrorist group database titled the Extended Data on Terrorist Groups or “EDTG” (Hou, Gaibulloev and Sandler 2020). Our research design assesses the impact of epidemics on four measures of terrorist group capacity: annual attacks by terrorist groups; annual casualties produced by attacks by terrorist groups; and group ability to commit a high ratio of transnational attacks to domestic attacks; and ability to commit multi-mode attacks. These four indicators represent a variety of measures of terrorist
group capacity, from the amount and intensity of violence they are able to project to the complexity and logistic difficulty of the attacks they can deploy.

**Dependent Variables**

The first dependent variable captures terrorist group ability to launch attacks, the most basic indicator of group capacity. It is a group-year annual count of all attacks perpetrated by the group derived from the “total_atks” variable in EDTG. This variable ranges from zero – in around 66 percent of the observations terrorist groups do not commit a single attack for the year – to 1,132, the number of attacks launched by the Islamic State of Iraq and the Levant in 2016. Because the total attacks variable is a count, we use a negative binomial estimation technique to analyze it (see Hilbe 2011).

The second dependent variable is a group-year annual count of the number of casualties yielded by terrorist attacks by the group. This allows us to measure the effects of epidemics on groups’ abilities to launch higher intensity attacks. Casualties include persons who are killed or wounded by an attack. This variable is derived from the “total_casualties” indicator in the EDTG. Total annual casualties varies widely in the sample and exhibits a skewed distribution. In around 75 percent of the group-year observations in the data terrorist groups killed or wounded zero people for the year. In around 86 percent of the observations, groups produced 10 or fewer casualties for the year. High-casualty group-years are very rare. In only around seven percent of observations did groups kill or wound more than 50 people in a year. In a little over 1 percent of group-year observations, attacks by groups produced 500 or more casualties annual. Because the distribution of total casualties is skewed we conducted a robustness check using a
dichotomous variable coded 1 for all group-year observations featuring at least one terrorism casualty. This test reproduces the main findings of the study.  

The third dependent variable, terrorist group share of transnational attacks per year vis-à-vis its domestic attacks, helps us to capture the impact of epidemics on terrorist group capacity to attack more difficult targets using more complex and challenging logistics. This variable, derived from the “sh_trans” variable in EDTG, is the percentage of terrorist attacks either perpetrated outside of the group’s main country of operation or perpetrated against foreign nationals within the groups’ main country of operation. Because transnational attacks tend to be more complex and difficult to carry out relative to domestic attacks, they require increased group capacity. The transnational attacks share variable is a ratio of transnational attacks to domestic attacks. It ranges from zero, indicating a group that committed only domestic attacks during that year, to 1, indicating a group that committed only transnational attacks during that year. In most years in the sample, groups committed only domestic attacks. Around 85 percent of the observations in the data are coded zero for share transnational attacks. However, in around 5 percent of observations, groups committed exclusively transnational attacks for the year. Because the terrorist group share of transnational attacks per year variable is a ratio measure with upper and lower bounds of one and zero, we analyze it using a Tobit estimation technique (see McDonald and Moffitt 1980).

The fourth and final dependent variable we use, group attack diversity, helps to capture terrorist group capacity to launch a range of types of attacks using different tactics and modes. Our assumption is that groups that launch attacks using a variety of tactics over the course of a year possess more equipment and personnel with a wider range of skill sets than groups capable

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1 See appendix table 2.
of only launching one type of attack. Groups exhibiting a wide diversity of attack tactics and modes likely have higher capacity. We derive this variable from the EDTG using the “diversity” indicator. The diversity indicator measures the diversity of tactics used by terrorist groups over the course of the year. In building this variable, Hou, Gaibulloev and Sandler (2020) considered nine different possible attack modes and calculated measure ranging from zero, indicating that a group used only one mode of attack during the year, to .825, indicating that the group used a wide diversity of attack modes during the year. High levels of attack diversity is uncommon in the sample and most groups stick to only one mode of attack in a year: around 84 percent of the observations in the data feature the use of only one attack mode by groups. Like the terrorist group share of transnational attacks measure, the group attack diversity measure is bounded at zero and .825. We therefore use a Tobit estimation technique when analyzing it.

**Independent Variable**

Our independent variable is an annual count of epidemics occurring within the country where the terrorist group is primarily based or active. The EDTG database codes a base country for each terrorist movement (“base”). Around 76 percent of terrorist groups in the EDTG are coded as having only one country as a base while the remaining 23 percent are coded as having more than one country as a base. For the 23 percent of multi-country-base groups in EDTG, we conducted an investigation to identify one country that could be considered the primary base or the country where the group was primarily active for each year. To do this, we consulted a variety of

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2 The nine terrorist attack modes are assassinations, hijackings, kidnappings, barricade incidents, bombings, armed assaults, unarmed assaults, attacks on facilities or infrastructure and unknown. In calculating their measure of diversity, they exclude the unknown category.

3 Epidemics are defined as: “Either an unusual increase in the number of cases of an infectious disease, which already exists in the region or population concerned; or the appearance of an infection previously absent from a region.” Epidemics therefore exclude non-infectious diseases, those that are endemic to a given country (e.g., seasonal influenza) and, further, are not classed as pandemics. To be included in the data, a disaster must meet at least one of the following criteria: (1) 10 or more people dead; (2) 100 or more people affected; (3) Declaration of a state of emergency; or (4), A call for international assistance.
sources\(^4\) to determine where the leadership of the group was located or the country where the majority of the group’s attacks or activities occurred. Using data from Emergency Events (EM-DAT) International Disaster Database published by the Centre for Research on the Epidemiology of Disasters (CRED)\(^5\) we separated into counts incidents of epidemics, a subset of natural disasters classified as “biological disasters” and assigned them to the base country of each terrorist group.

Epidemics are relatively rare in the sample. For around 78 percent of the terrorist group-year observations no epidemics occurred. For around 12 percent of observations, only one epidemic occurred. For nearly five percent of the observations, two epidemics occurred. The remaining five percent of observations exhibited three of more epidemics. In one country, the Democratic Republic of the Congo in 2002, there were 11 epidemics. The count of epidemics occurring in the base country of a terrorist movement is the primary independent variable of our study. However, as a robustness check, we also examined the impact of the logged count of deaths due to epidemics on terrorist group attacks and capacity. These checks mostly produce the same findings as those in the main models.\(^6\)

**Controls**

In all of our tests we also include a set of terrorist group and base country control variables. These include a measure of the size of the terrorist group. Larger groups are better able to commit more attacks, yield more casualties and commit a higher share of transnational attacks and attacks utilizing a diversity of modes. Groups with larger memberships might also be

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\(^4\) In addition to consulting secondary sources – such as academic books or articles, encyclopedias of terrorism and media reports about the groups – we also used the Terrorist Organizational Profiles (TOPs) database to help us determine the main base country for all groups listed in EDTG as having more than one base.

\(^5\) Data and codebook can be found at: https://www.emdat.be/database.

\(^6\) See appendix table 3. We do find that the coefficient for the relationship between logged epidemic deaths and terrorist group annual casualties is negatively signed. However, the significance tests are borderline. (p = .148) The results hold for all other estimations in the table.
more durable and therefore better able to continue their operations in the faces of exogenous challenges like epidemics. Larger groups might also find it easier to replace lost members and cadres who have succumbed to illness during epidemics. Because the EDTG database “size” measure is not available for all groups, we created a dichotomous measure we titled “Group Size: Large” that is coded 1 for groups that are in highest ordinal category for group peak size – 10,000 members or more – and coded all other groups with a zero. In checking all groups we noted that the majority that were not assigned a group “size” in EDTG were smaller, less institutionalized and generally shorter lived groups. That gave us confidence that the terrorist groups coded with a 1 in our “Group Size: Large” variable represent the largest groups in our sample with the highest group capacity. As a check, however, we reran all models without our “Group Size: Large” variable and found that these reproduce the main findings of the study.7

We control for the ideological orientation or motivation of the terrorist group. To do this we use three dichotomous variables from EDTG to indicate whether the group has a leftist ideology (“left”), a nationalist-separatist (“nat”) ideology or a right-wing ideology (“right”). We exclude the religious ideological category (“rel”) to serve as a reference category. In our main models, we do not include variables available in the EDTG measuring the goal of the group.8 However, we do include them in robustness checks and do not find them to change the main results.9

We include a dichotomous control variable coded 1 for terrorist groups that have bases in more than one country. We derived this variable from the EDTG database base country (“base”) indicator by simply coding a 1 for every group that has multiple countries listed as bases.

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7 Results available from authors.
8 “ERCSR” empire, regime change or social revolution; “PCH” policy-change; “SQ” status quo; “TCH” territorial change.
9 See appendix table 4.
Around 24 percent of groups-year observations in our sample are coded 1 for multi-base terrorist groups. It is crucial to control for whether or not a group has multiple bases. This allows us to hold constant a baseline measure of terrorist group strength when evaluating the impact of epidemics on group behavior and capacity to commit attacks abroad or diverse attacks.

Scholars have argued that the presence of multiple, competing terrorist movements within a conflict frequently prompts terrorist groups to step up the amount and intensity of their attack behavior (Kydd and Walter 2006). Because of this, we also control for the logged number of other groups in the same base country. This variable is taken from Hou, Gaibulloev, and Sandler (2020).[^10]

We hold constant the wider environment in which these groups operate. Because the level of economic development in the base country where terrorist groups operate can affect group attack behavior by producing, or ameliorating grievances, or providing the state resources to deploy for counterterrorism, we control for the natural log of the base country gross domestic product. Our source for this variable is derived from the United Nations National Accounts database and we measure it using a base-10 natural log.[^11] More populous countries might provide advantages to terrorist movements, as countries with larger populations present more challenging surveillance and policing challenges for state officials. We therefore include a natural logged measure of the national population of the base country. The political regime type of the base country can also affect terrorist group behaviors. Democratic countries may provide a more hospitable environment for terrorist organizations by restricting the executive. Nondemocratic countries, on the other hand, might fuel terrorist groups by increasing popular grievances and closing nonviolent means to redress those grievances. We therefore also control

[^10]: Specifically, this variable is available in the replication data for Hou, Gaibulloev, and Sandler (2020).
for regime type by including the Polity 2 measure derived from the Polity IV database. This index ranges from -10, indicating a complete dictatorship, to +10, indicating a complete democracy. A wide range of political regime types are present in our sample. However, the median country registers between a 5 and 6 on the Polity 2 scale, indicating that it is on the borderline between a democratic regime and a hybrid democracy or anocracy. Finally, we control for whether or not the base country is experiencing an intrastate or civil war using data from the UCDP/PRIO Armed Conflict dataset (Pettersson and Wallensteen 2015). This is important because terrorist activity has been found to flourish in countries experiencing civil wars (see Findley and Young 2012). The intrastate war variable ranges from zero, indicating the absence of an intrastate war, to 10, indicating a very high intensity civil war is occurring. In our sample, 47.7 percent of the group-year observations—a plurality—featured no detectable intrastate or civil wars while around 39 percent featured an intrastate war with a relatively low level of intensity, measured as a 1 to 3 on the UCDP/PRIO intensity scale for intrastate conflicts.

Finally, as previously noted, many terrorist movements provide social services to their communities. These social services, which frequently include health services, are used by terrorist organizations to recruit and retain supporters and members and to boost their reputations among constituents. In theory, they may also affect how well a terrorist movement weathers during public health crises. The EDTG does include a dichotomous variable, “public_service,” that is coded 1 for terrorist groups that provide social services. However, it is available for slightly more than half of the observations in the database. Including it in the main models dramatically reduces, and potentially alters, the sample in our analyses. In our main results, we do not include the social services provision indicator in the estimations. However, as a

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12 Data and codebook available at: [https://www.systemicpeace.org/inscrdata.html](https://www.systemicpeace.org/inscrdata.html).
13 Data and codebook available at: [https://ucdp.uu.se/downloads/index.html#armedconflict](https://ucdp.uu.se/downloads/index.html#armedconflict).
robustness check we reevaluated all of our estimations with social/public services as a control, using the “public_service” indicator in EDTG, and these models produced the same result as those found in the main analyses.\textsuperscript{14}

Descriptive statistics for all variables used in the analysis can be found in Appendix Table 1.

Results

The results of our analyses are summarized in Table 1. They provide support our second hypothesis. Terrorist groups in countries experiencing epidemics do commit fewer attacks, produce fewer casualties from attacks and experience degradation of their ability to commit a larger relative share of transnational attacks and more complex multi-mode attacks.

Table 1 here

In model 1 in Table 1, terrorist groups based in countries experiencing epidemics are found to commit fewer total attacks. Post-estimation marginal effects simulations predict that each epidemic reduces group attacks by around .895 fewer attacks per year.\textsuperscript{15} We find in model 2 that epidemics prompt terrorist groups in affected countries to commit attacks that yield fewer casualties. Marginal effects simulations project that for each epidemic experienced by a country, terrorist groups based in that country produce 3.164 fewer persons killed or wounded per year. In model 3 we found that epidemics also significantly reduce the share of transnational attacks committed per year by terrorist groups. The coefficient\textsuperscript{16} in model 3 indicates that for each epidemic affecting the base country of a terrorist group, the group reduces its share of transnational attacks by around 8.04 percent for the year. Likewise, we find in model 4 that

\textsuperscript{14} See appendix table 5.
\textsuperscript{15} Note that marginal effects graphs for all models are presented in appendix figures 1-4.
\textsuperscript{16} Tobit coefficients are interpreted in the same manner as ordinary least squares (OLS) coefficients.
epidemics significantly reduce the diversity of modes of attacks by groups. Each epidemic prompts terrorist groups in affected countries to reduce their attack diversity index by around 7.66 percent.

In Table 1 only one of the control variables is found to be consistently significant across the estimations. Large terrorist groups are found to commit more total attacks,\textsuperscript{17} yield more casualties,\textsuperscript{18} to have a higher share of transnational attacks,\textsuperscript{19} and to undertake attacks using a higher diversity of modes of attack.\textsuperscript{20} The remaining controls are not consistently significant across the models.

**Conclusion**

Despite growing concern that the COVID-19 pandemic will lead to a surge in terrorism, we do not find evidence that epidemics in general increase the prevalence of terrorism. In fact, our results indicate that epidemics reduce the number of attacks terrorist groups launch, reduce terrorist casualties by groups, reduce the ratio of transnational to domestic attacks by groups and prompt groups to launch lower complexity attacks. In sum, we find that epidemics adversely affect the terrorist group capacity to engage in violence.

Our study is a first cut that leaves open several promising avenues for future investigation into the impact of epidemics on terrorist groups. An obvious future direction would be to tease out how the mechanisms discussed in our theory section undercut terrorist tactics and lethality. We surmise that epidemics strengthen state policing, surveillance, and monitoring capacities, by prompting governments to beef up existing frameworks for conducting reconnaissance and

\textsuperscript{17} Around 11.5 more attacks according to marginal effects simulations.
\textsuperscript{18} Around 85.8 more casualties according to marginal effects simulations.
\textsuperscript{19} Around 30.1 percent higher share according to marginal effects simulations.
\textsuperscript{20} Around 40.4 percent higher diversity index according to marginal effects simulations.
governance. By doing so, epidemics reinforce states’ control over their territories and population, shrinking opportunities for terrorist recruitment and planning. An alternative mechanism is that biological disasters hamper internal and trans-border mobility for militant actors. Plausibly, either or both of these mechanisms may be present, given epidemics, but may relate to the capabilities of groups in different ways. We may imagine, for instance, that increased state capacity disrupts logistical operations, preventing domestic recruitment, and impeding complex operations necessary to mount diverse attacks. Barriers to mobility more directly block international recruitment and dampen transnational attacks. These mechanisms may also have variegated effects on different types of groups. Those with ambitions to go transnational and rely on foreign militants are directly hurt by restrictions on mobility. Future research could investigate this.

A second line of inquiry would differentiate between the short-term and long-term effects of epidemics. In our sample, only a small portion of countries suffered multiple epidemics in a given year; and, most epidemics were annual events. However, epidemics may have enduring ramifications that extend beyond the calendar year, even if the biological event lasts one year. The effects of the COVID-19 pandemic on terrorism, for example, can be disaggregated into waves, with short-term impacts likely to be felt during the current initial outbreak, medium-term impacts felt between the conclusion of the first wave and the attainment of widespread immunity, and long-term impacts manifesting for several years after COVID-19 has been vanquished (Ackerman and Peterson 2020).

Our paper sheds light on the short-term effects and presents the silver lining of the pandemic. Unfortunately, however, the medium to longer term news may not be as sanguine, especially if we consider the economic fallout resulting from the pandemic. As COVID
continues, analysts warn that, similar to climate change, the pandemic can function as an “adverse force-multiplier,” compounding existing challenges with acute debilitating effects, especially on states such as Libya and Yemen that are already at the brink of state failure (Warrick 2020). Skyrocketing unemployment and diminishing purchasing power of citizens could produce strong grievances that fuel further radicalization. Coupled with a bulge of disaffected youth, these conditions are ripe for exploitation by extremist groups. Counter-terrorism expert William Braniff drives this point home, saying “Add the fallout from high unemployment and the re-closing of states and businesses that had been reopening — all within this political pressure-cooker”, creating a tinderbox for violent expressions of grievances (Warrick 2020). In addition, in the longer-term, terrorists’ diligent efforts to radicalize and recruit may bear fruit. Likewise, pro-social efforts such as public goods provision may pay dividends down the line, particularly given mounting public disillusionment with their governments’ handling of the disaster.

Finally, our focus has been on conventional attacks. While a portion of our findings demonstrate that epidemics do not promote more complex or diverse attack modalities, this does not necessarily entail that epidemics may not precipitate innovation on the part of terrorist groups. Indeed, other scholars present an alarming prospect that given the severe disruption caused so far by COVID-19, more entrepreneurial terrorist groups might become more interested in using biological attacks (Ackerman and Peterson 2020). Seeing that a viral event can bring even advanced democracies to heel, groups may be drawn to the idea of weaponizing a biological agent. It would be useful for scholars to investigate whether epidemics catalyze violent groups to add unconventional weapons to their arsenal.
References


### Table 1. The Effects of Epidemics on Terrorist Groups

<table>
<thead>
<tr>
<th></th>
<th>[1]</th>
<th>[2]</th>
<th>[3]</th>
<th>[4]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Attacks by Groups</td>
<td>Number of Casualties from attacks by Groups</td>
<td>Group Transnational Attacks Share</td>
<td>Group Attack Mode Diversity</td>
</tr>
<tr>
<td>Base Country: Number of Epidemics</td>
<td>-0.242*** (0.059)</td>
<td>-0.177** (0.063)</td>
<td>-0.080* (0.033)</td>
<td>-0.077*** (0.020)</td>
</tr>
<tr>
<td>Group Size: Large</td>
<td>1.521*** (0.356)</td>
<td>1.899*** (0.340)</td>
<td>0.301* (0.154)</td>
<td>0.404*** (0.124)</td>
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<tr>
<td>Group Ideology: Left</td>
<td>-0.267 (0.406)</td>
<td>-1.555** (0.499)</td>
<td>0.076 (0.163)</td>
<td>0.009 (0.111)</td>
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<tr>
<td>Group Ideology: Nationalist-Separatist</td>
<td>-0.777** (0.296)</td>
<td>-1.732*** (0.342)</td>
<td>-0.020 (0.146)</td>
<td>-0.114 (0.095)</td>
</tr>
<tr>
<td>Group Ideology: Right</td>
<td>-1.348* (0.803)</td>
<td>-2.122*** (0.787)</td>
<td>-0.050 (0.307)</td>
<td>-0.255 (0.230)</td>
</tr>
<tr>
<td>Group has Multiple Bases</td>
<td>-0.199 (0.276)</td>
<td>0.271 (0.313)</td>
<td>0.068 (0.131)</td>
<td>0.006 (0.094)</td>
</tr>
<tr>
<td>Log Number of Competitors</td>
<td>-0.189 (0.157)</td>
<td>-0.325* (0.174)</td>
<td>-0.241*** (0.052)</td>
<td>-0.071* (0.040)</td>
</tr>
<tr>
<td>Base Country: Log GDP per capita</td>
<td>0.104 (0.095)</td>
<td>-0.118 (0.119)</td>
<td>0.113* (0.045)</td>
<td>0.012 (0.029)</td>
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<tr>
<td>Base Country: Log Population</td>
<td>-0.147 (0.112)</td>
<td>-0.230* (0.112)</td>
<td>-0.082* (0.040)</td>
<td>-0.033 (0.027)</td>
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<td>Base Country: Polity 2 Score</td>
<td>0.046* (0.020)</td>
<td>0.018 (0.022)</td>
<td>0.006 (0.010)</td>
<td>0.006 (0.007)</td>
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<tr>
<td>Base Country: Intrastate Conflict</td>
<td>0.079 (0.055)</td>
<td>0.238*** (0.067)</td>
<td>0.046 (0.029)</td>
<td>0.056*** (0.018)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.693* (2.189)</td>
<td>9.323*** (2.462)</td>
<td>-0.486 (0.871)</td>
<td>-0.170 (0.547)</td>
</tr>
<tr>
<td>Obs.</td>
<td>7,764 (2.189)</td>
<td>7,672 (2.462)</td>
<td>7,717 (0.871)</td>
<td>7,764 (0.547)</td>
</tr>
<tr>
<td>Wald $\chi^2$</td>
<td>85.49***</td>
<td>96.20***</td>
<td>9.42 ***</td>
<td>3.94***</td>
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<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.0229 (0.055)</td>
<td>0.0167 (0.067)</td>
<td>0.0472 (0.029)</td>
<td>0.0357 (0.018)</td>
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<tr>
<td>Number of Groups (clusters)</td>
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<td>631 (631)</td>
<td>623 (623)</td>
<td>634 (634)</td>
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<td>Model</td>
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<td>Negative Binomial</td>
<td>Tobit</td>
<td>Tobit</td>
</tr>
</tbody>
</table>

*** p ≤ .000     ** p ≤ .01     * p ≤ .1