The Global Terrorism Database (GTD): Accomplishments and Challenges

by Gary LaFree

Abstract

The paper provides an update on the Global Terrorism Database (GTD), an open source event database that now includes information on over 82,000 domestic and international terrorist attacks since 1970. [1] GTD was launched by computerizing data originally collected by the Pinkerton Global Intelligence Service (PGIS).[2] Following computerization, the research team has continued working to update and validate the data. This paper describes original data collection efforts and the strategies employed to improve the quality and comprehensiveness of the data, addressing also the strengths and weaknesses of Open Source data in general and the GTD in particular. The paper also provides descriptive statistics on the contents of the most recently available version of the GTD and offer observations about the future of event databases.*

Terrorism Event Databases

Because of the challenges of collecting traditional crime data on terrorism, open source event databases have received increasing attention over the past four decades. While collection strategies have varied greatly, all of these databases rely on reports about terrorism from the print or electronic media. Open source databases began to appear in the early 1970s, and there were more than a dozen of them by the late 1990s.

Event databases have serious limitations. The media may report inaccuracies and lies; there may be conflicting information or false, multiple or no claims of responsibility. Government censorship and disinformation may also affect results. But despite these limitations, compared to more traditional criminology data, they also have important advantages. In particular, because of the compelling interest that non-state terrorist groups have in media attention, open source information may be uniquely useful in the study of terrorism.

Thus, while no serious researcher would suggest that we track burglary or car theft rates by relying solely on media sources such a strategy is much more defensible in the case of terrorist attacks. And compared to most crime data, terrorism event data are not limited to highly industrialized countries. For example, with currently available data the study of common crimes like homicide is mostly limited to highly industrialized western-style democracies. By contrast, open source terrorism databases offer at least some coverage for all countries. While it is the case that traditional media under-report news stemming from developing countries or in highly autocratic states, the salience of terrorism as a phenomenon today makes it more likely than ever that media will report such incidents as information becomes available.

The evolving open source terrorist event databases have allowed for more rigorous analysis of terrorism and terrorist activity. However, a major limitation of most of these databases is that they have traditionally excluded domestic terrorist attacks. In general, international terrorist attacks are those involving a national or a group of nationals from one country crossing international borders and attacking targets in another country. Domestic attacks are those involving a national or a group of nationals attacking targets in their home country. In the past, part of the reason for excluding domestic attacks from these databases was bureaucratic. Many governmental agencies, including the US State Department, have had a long history of concentrating on international terrorism. But beyond the tradition of dividing bureaucratic responsibility for terrorism according to international-domestic distinctions was the practical challenge of collecting global data on a very large number of incidents: Sources that have compared domestic and international terrorist attacks have concluded that the former outnumber the latter by as much as seven to one.[3]

This was the main feature that attracted me to the PGIS terrorism data. It was the only of the early open source databases on terrorism that attempted to track domestic as well as international attacks.

The PGIS database was the original platform for the GTD. From 1970 to 1997, PGIS trained researchers to identify and record terrorism incidents from wire services (including *Reuters* and the *Foreign Broadcast Information Service* [FBIS]), US State Department reports, other US and foreign government reporting, US and foreign newspapers (including the *New York Times*, the *British Financial Times*, the *Christian Science Monitor*, the *Washington Post*, the *Washington Times*, and the *Wall Street Journal*), and information provided by PGIS offices around the world. In the early days, PGIS relied especially on wire services and newspapers. By the 1990s, PGIS researchers were relying increasingly on the Internet. Although the coding form used by PGIS went through three major iterations, most of the items included were similar during the entire 28 years of data collection. About two dozen persons were responsible for coding information over the years spanned by the data collection, but only two individuals were in-charge of supervising data collection during the entire period.[4]

PGIS defined 'terrorism' as events involving "*the threatened or actual use of illegal force and violence to attain a political, economic, religious or social goal through fear, coercion or intimidation*." Based on coding rules originally developed in the early 1970s, the employees responsible for collecting the PGIS data excluded criminal acts that appeared to be devoid of any political or ideological motivation as well as acts arising from open combat between opposing armed forces, both regular and irregular. Data collectors also excluded actions taken by governments in the legitimate exercise of their authority, even when such actions were denounced by domestic and/or foreign critics as acts of "state terrorism." However, they included violent acts that were not officially sanctioned by government, even in cases where many observers believed that the government was openly tolerating the violent actions.

Through the generosity of PGIS and aided by long-time PGIS employee Hugh Barber, in 2001 I arranged to move the original hard copies of the PGIS terrorism database to the University of Maryland. During this transfer process, we discovered that one year of the PGIS data – 1993 – had been lost in an earlier office move. These data were never recovered. [5]

Once we transferred the remaining PGIS records, my colleague Laura Dugan and I applied for, and secured, funds from the National Institute of Justice [6] to computerize the data. We conducted training sessions for an original group of approximately 70 undergraduate coders. Over time, training sessions were added as new students joined the project. Once the data computerization began, we implemented an ongoing process of data verification. The computerization of the original PGIS data was completed in December 2005.

Collection of the Post-1997 Data

In April 2006 we received funding from the Human Factors-Behavioral Science Division of the US Department of Homeland Security to extend the GTD beyond 1997. Data collection for 1998 to 2007 was conducted by a team led by Gary Ackerman and Charles Blair on behalf of the START Consortium. We began by creating a GTD Criteria Committee, composed of a group of international terrorism experts.[7]

This committee reviewed the original PGIS criteria and made suggestions for producing a final set of data collection guidelines. This process was guided by two principles; preserving the value of the PGIS heritage data, while also making improvements in the rigor of the data collection process and the quality of the data collected. Following extensive discussions, the GTD Criteria Committee developed a revised codebook for extending the data beyond 1997. The new procedures captured more than 120 variables and unlike the original PGIS data, the new data also included the Open Source texts upon which each event was based.

Ackerman and Blair's team of 25 to 35 data collectors included researchers who were fluent in six language groups (English, French, Spanish, Russian, Arabic and Mandarin). Their data collection process began by monitoring general data bases such as Lexis-Nexis (Professional) and Opensource.gov (previously FBIS). A typical day produced as many as 10,000 potential events. Data collectors were asked to review all of these events to determine which qualified as terrorist events according to the target definition, and then to corroborate each case with at least two additional source articles. Data collectors submitted their expected cases to supervisors for review. Problematic cases were referred back to the GTD Criteria Committee for final decisions. Based on these procedures, in March 2009 we released the extended version of the GTD through 2007 that forms the basis for this chapter.

With funding from the Department of Homeland Security, in 2008 the START Consortium began work with Richard Ward and Daniel Mabrey at the Institute for the Study of Violent Groups (ISVG), headquartered at New Haven University, to carry out new GTD data collection. ISVG operates a data collection laboratory with student data coders who have expertise in a wide

variety of major languages. At the time this article was being prepared, we were working with ISVG to finalize the GTD through 2008. We plan to release annual updates to the GTD as these become available.

In the next section, I consider some of the highlights from the most recent version of the GTD. I begin by looking at the total extent of terrorism as reflected in our database, then consider major sources of terrorism, the lethality of terrorism and the resilience of terrorist groups and finally, I will provide a few insights from the data regarding the impact of counter measures taken by governments.

The Extent of Terrorism

Our recent analysis of the GTD indicates that terrorist attacks are highly concentrated in geographic space. This concentration can be demonstrated at the national level by examining the proportion of all terrorist attacks that take place in those countries with the most terrorist activity. In Table 1, I present the top 20 countries in terms of terrorist attacks and compare the cumulative percentage of total attacks against these countries to their share of all countries in the world.

Table 1. Percentage of Total Attacks for the Twenty Most Frequently Attacked Countries, 1970-2007

Country	Cumulative % of All Attacks	Cumulative % of All Countries
Colombia	8.16	0.48
Peru	15.44	0.96
El Salvador	21.87	1.44
India	27.08	1.92
Northern Ireland	31.62	2.40
Spain	35.44	2.88
Iraq	39.25	3.37
Turkey	42.49	3.85
Sri Lanka	45.64	4.33
Pakistan	48.70	4.81
Philippines	51.71	5.29
Chile	54.46	5.77
Israel	57.05	6.25
Guatemala	59.49	6.73
Nicaragua	61.88	7.21
South Africa	64.20	7.69
Lebanon	66.51	8.17
Algeria	68.50	8.65
Italy	70.29	9.13

United States	71.93	9.62

Source: Global Terrorism Database

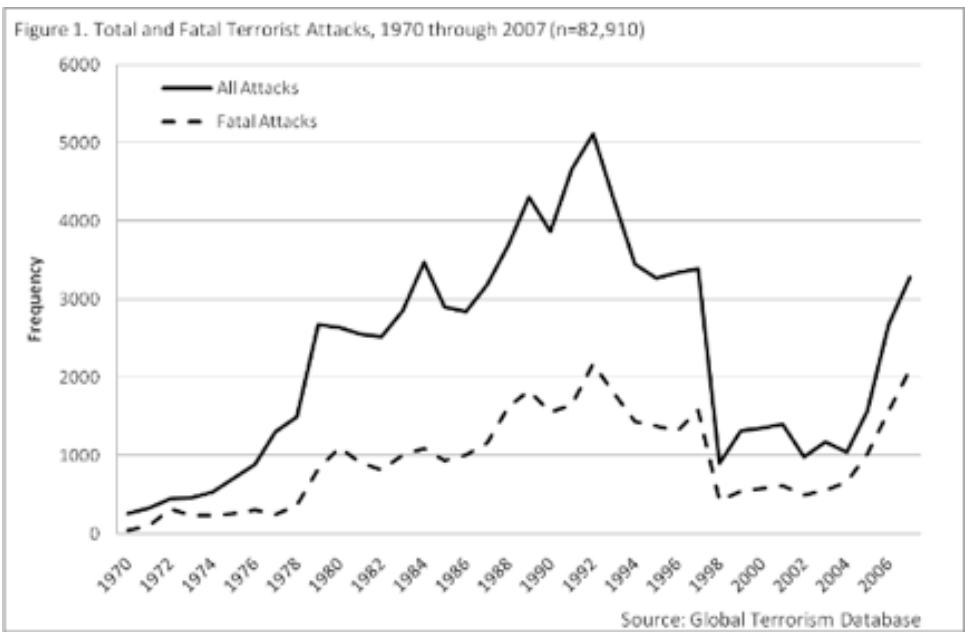
According to Table 1, the top 20 countries and territories in terms of terrorist attacks account for nearly 72 per cent of all terrorist activities while constituting less than 10 per cent of all countries of the world. Two per cent of the world's countries account for more than 27 per cent of the world's terrorist attacks. Five per cent of the world's countries account for half of the world's terrorist attacks.

Considerable concentration is also apparent if we examine terrorist attacks with smaller geospatial units. For example, in an analysis of known terrorist attacks in India from the GTD, START associate Susan Cutter found that the vast majority of all attacks were concentrated in just two regions – Punjab and Kashmir, on the border with Pakistan, and the area around Bangaladesh.[8] The vast majority of Indian territory suffered few terrorist attacks from 1970 until quite recently which is one of the reasons why the 2008 attacks on Mumbai were so shocking. Similarly, in an analysis of the GTD for Germany, GTD researcher Brandon Behlendorf found considerable geospatial concentration of terrorist attacks at the *Länder* level.[9] In short, terrorism, like more common crimes, is highly concentrated across geographical units.

The GTD also shows that the patterns of terrorist attacks and fatal attacks since 1970 are more complex than is commonly recognized. According to Figure 1, terrorist attacks reached their twentieth century zenith in 1992 (with over 5,100 attacks worldwide), but had substantially declined in the years leading up to the 9/11 attacks.[10] In fact, total attacks in 2000 (1,351) were at about the same level as total attacks in 1977 (1,307). Looking more broadly at overall trends, Figure 1 shows that worldwide terrorist attacks through the mid-1970s were relatively infrequent, with fewer than 1,000 incidents each year.[11]

But from 1976 to 1979 the frequency of events nearly tripled. The number of terrorist attacks continued to increase until the 1992 peak, with smaller peaks in 1984, at almost 3,500 incidents, and 1989, with over 4,300 events. After the first major peak in 1992, the number of terrorist attacks declined until the end of the twentieth century, before rising steeply to a 10-year high of nearly 3,300 in 2007 – four years after the start of the Iraq war. Still, total attacks in 2007 were 36 per cent lower than total attacks for the 1992 peak.

Figure 1: Number of Attacks



Fatal attacks also declined in the years prior to the 9/11 attacks. In fact, fatal attacks in 2000 (580) were considerably lower than they had been more than two decades earlier, in 1979 (832). In general, the number of fatal attacks clearly followed the pattern of total attacks (r = .93), but at a substantially lower magnitude (averaging 947 fatal attacks per year compared to 2294 total attacks per year worldwide). Fatal attacks rose above 1,000 per year for the first time in 1980. After hovering close to 1,000 attacks annually for most of the 1980s, they more than doubled between 1985 and 1992. Like total attacks, fatal attacks declined somewhat after 1992, bottoming out in 1998 with 426 attacks and then rising again to a global peak of more than 2,100 fatal attacks in 2007. The peak in 2007 (2,111) was similar to the peak in 1992 (2,178).

In short, in the four years prior to 9/11 worldwide terrorist attacks and fatal attacks were at their lowest level in 20 years. However, both total and fatal attacks have increased considerably since then so that in 2007 total attacks were back to levels they had been at in the mid-1990s and fatal attacks were approaching the peak year of 1992.

The US has long been perceived as being the target of an inordinate number of terrorist attacks. Thus, Neumayer and Plumper [12] argue that most foreign victims of terrorist attacks are American citizens and the US State Department recently claimed that one-third of all terrorist attacks worldwide are directed at the US. [13] However, because previous estimates of attacks against the US have been based only on transnational terrorist attacks, they do not take into

account the possibility that the groups that target the USA may be even more active in targeting their own countries.

In Table 2, I present data from the GTD showing the 20 most frequently attacked countries in the world, from 1970 to 2007. I also present a rank ordering of the 20 countries with the most terrorist fatalities for the same years. According to Table 2, the US ranks 20th in terms of total attacks. The most frequently attacked country in the data set is Colombia with over 6,700 attacks. Note that the top three most frequently attacked countries are all Latin American while three more Latin American countries are in the top 20 (Chile, Guatemala and Nicaragua). Latin America had the largest number of terrorist attacks of any region of the world throughout the 1980s and the first half of the 1990s. Four Middle Eastern or Persian Gulf countries are in the top 20 (Iraq, Turkey, Israel and Lebanon) and four are in South Asia or Southeast Asia (India, Pakistan, Sri Lanka, Philippines). Western Europe contains three countries in the top 20 (Northern Ireland [treated here as a country], Spain and Italy). South Africa and Algeria are the sole countries from Africa in the top 20 most frequently targeted countries.

Table 2. Twenty Top Ranking Countries in terms of Total Terrorist Attacks and Fatalities, 1970 to 2007

Most Frequently Attacked		Most Fatalities	
Country	Frequency	Country	Fatality Count
Colombia	6767	Iraq	17754
Peru	6038	Sri Lanka	14272
El Salvador	5330	India	13434
India	4318	Colombia	13009
Northern Ireland	3762	Peru	12822
Spain	3165	El Salvador	12496
Iraq	3161	Nicaragua	11324
Turkey	2691	Algeria	8545
Sri Lanka	2611	Philippines	6304
Pakistan	2536	Pakistan	5540
Philippines	2490	Guatemala	5135
Chile	2287	Turkey	4674
Israel	2140	Burundi	4084
Guatemala	2023	Afghanistan	3764
Nicaragua	1986	United States	3339
South Africa	1921	Rwanda	3200
Lebanon	1913	Lebanon	3093

Algeria	1650	Russia	3057
Italy	1487	Angola	2861
United States	1362	Northern Ireland	2842

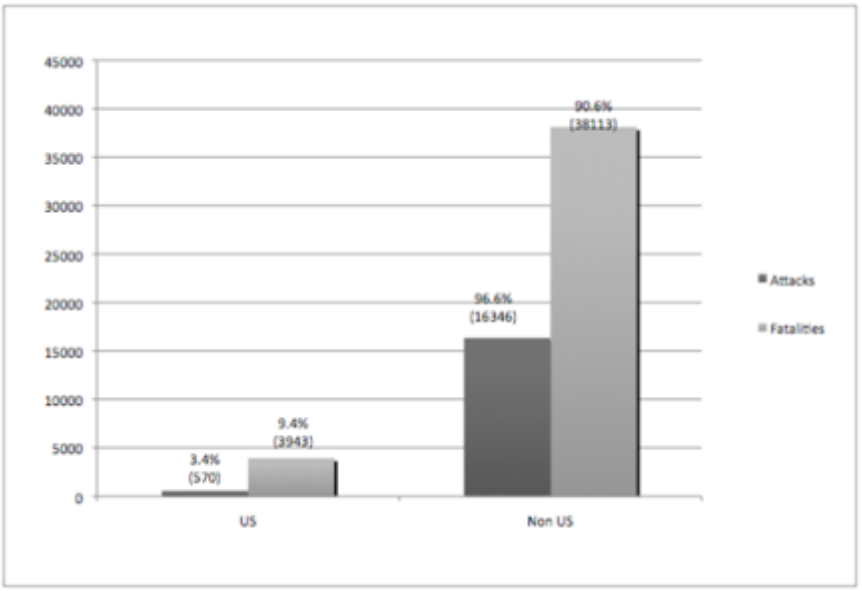
Source: Global Terrorism Database

Table 2 shows that at number 15, the United States ranks higher in terms of total fatalities than attacks. However, 90 per cent (N=3,007) of total US terrorism fatalities from 1970 to 2007 are accounted for by a single event – the four coordinated attacks on September 11, 2001. If these attacks are removed from the estimates, US fatalities during the period spanned by the data would be similar to fatalities for Canada or Greece.

In a recent study, my colleagues and I examined the attack patterns of 53 foreign terrorist organizations that were identified by the US Department of State and subsequently the National Counterterrorism Center as especially dangerous for the United States.[14] In Figure 2, I show the proportion of attacks by these 53 groups against the US homeland and US targets in other countries compared to attacks on targets not connected to America. The results are striking. According to Figure 2, between 1970 and 2004 nearly 97 per cent of the more than 16,000 terrorist attacks from these groups were directed at non-US targets. Moreover, of the 3.4 per cent of all attacks directed at the United States, only five attacks (0.9%) were on the US homeland. These include one attack by Farabundo Marti National Liberation Front (FMLN) on August 18, 1983, against the Washington, D.C. Navy Yard (Navy Regional Data Automation Center) with small explosives as well as the four attacks that occurred on September 11, 2001.[15]

Major targets for anti-US attacks in other countries from these 53 groups included US businesses (233), US diplomats and embassies (106), and the US military (96).[16] The rest of the attacks are widely scattered in terms of target selection and include US educational institutions, journalists, non-governmental organizations, and tourists. The US suffered proportionally more fatalities from attacks at the hands of these 53 groups than their non-US targets, with US-directed attacks accounting for over nine per cent of total fatalities. But again, a very large proportion of these fatalities (76.3%) are accounted for by the 9/11 attacks.

Figure 2: US and Non-US Attacks by 53 Foreign Terrorist Groups Identified as Threats to the United States



Source: LaFree, Yang and Crenshaw (2009)

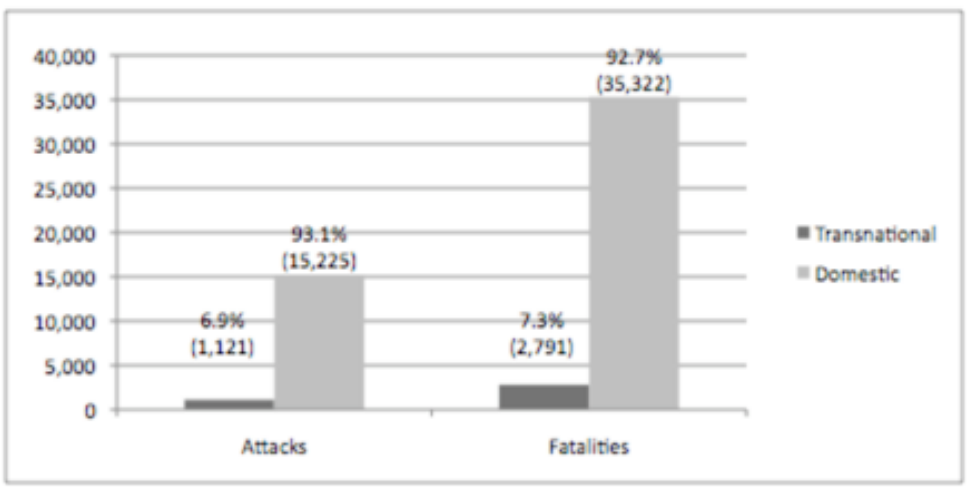
The fact that total attacks and fatalities by this set of designated anti-US organizations is so lopsidedly against non-US targets is consistent with the proposition that the decision of anti-US terrorist groups to attack the US is often strategic. Attacks on the US may be useful for pragmatic as well as ideological reasons as terror strikes on Americans are highly visible and both acts of terrorism and the American response may well arouse popular emotions in an audience of importance to the terrorist organization. Also, as Martha Crenshaw suggests, the United States may become a preferred target if domestic challengers cannot succeed at home unless the scope of the conflict is expanded beyond local boundaries.[17] Beyond these considerations, attacks on US targets can be useful for directly influencing American policies such as compelling the US to withdraw from a military commitment that supports a local government. The bombing of the Marine Barracks in Lebanon in 1983 is a prominent example. Terrorism directed at the US may also be a mechanism for drawing the US into a local conflict, perhaps to pressure the government to make reforms or to undermine its legitimacy.

Regardless of the strategic intent behind attacks on the United States, or the virulence of anti-American ideology, our results show that the vast majority of terrorist attacks by foreign groups deemed dangerous to national security by the American government are in fact directed at non-US targets. Local governments suffer the most. US decision makers might be well-advised to avoid parochialism and keep in mind the fact that even the most seriously threatening groups direct most of their activities elsewhere.

The Sources of Terrorism

As noted above, because none of the Open Source terrorist event databases before the GTD included domestic terrorist attacks over a long time period, we have lacked baseline information about how common domestic attacks were compared to transnational attacks. In the recent study by LaFree, Yang and Crenshaw,[18]we were able to use the GTD to examine the domestic and transnational attack patterns of the 53 foreign organizations that were identified by the US government as especially dangerous for America. Figure 3 shows that between 1970 and 2004, more than 93 per cent of the non-US attacks of these groups were domestic attacks. That is, more than nine times out of 10, these groups operated at home against local targets.

Figure 3: Total Domestic and Transnational Attacks by 53 Foreign Terrorist Groups Identified as Threats to the United States



Source: LaFree, Yang and Crenshaw (2009)

Because these 53 foreign groups have been identified by the US government as especially dangerous to America, we might assume that compared to a random sample, they would be especially likely to carry out transnational attacks. The fact is that they do not has at least two important policy implications. First, it underscores the importance of proximity to terrorist targeting. Even though these groups have ample interest in striking the United States, actually doing so is not an easy task. Anti-American objectives are not sufficient. Mounting an attack against the United States from primary bases outside America is extremely challenging. Clarke and Newman conclude that "Terrorists are constrained by geography. Like criminals, they will choose targets that are close to their operational base." [19]

And second, the ratio of transnational to domestic attacks likely reflects challenges faced by attackers due to cultural and linguistic barriers. Foreign attackers typically encounter an environment in which they have an imperfect understanding of local language, culture, and daily life. This impediment may explain why recent research by Smith and Damphousse [20] shows that international terrorist attacks against the United States have a much longer planning time horizon than attacks by domestic groups. To overcome cultural and linguistic obstacles, foreign attackers will probably be more likely than domestic attackers to rely on immigrant communities or diasporas within the target country. Similar reasoning leads Clarke and Newman to conclude that "externally based terrorists will mount their attacks from locations that are as close as possible to the target." [21] Put in another way, foreign terrorist groups need locals. Thus a recent report by the US State Department [22] stresses the importance to al Qaeda of local recruits, especially in the West. More generally, the results underscore both the atypicality and the lethal ingenuity of the 9/11 attacks. Al Qaeda was able to engineer 9/11 attacks without using locals, but instead relied on specially trained and highly qualified foreign operatives. Thus far the ability to commandeer such assets has been exceedingly rare.

Because of the seeming irrationality of high profile Al Qaeda attacks in recent years, it is easy to lose sight of the fact that a large number of terrorist attacks involve political disputes over territory. In Table 3, we list the 20 most active terrorist groups in terms of attack frequencies and fatalities.[23] Notice how many of these groups are organized around disputes having to do with political control over territory. Although there are major differences in terms of their orientation, this explain in large part virtually all of the top 20 groups, including Shining Path, ETA, the IRA, FARC, Hamas, and the LTTE.

Table 3. Twenty Most Active Terrorist Organizations in terms of Attack Frequency and Fatalities, 1970 to 2006.

	Most Frequent Perpetrators		Most Fatalities	
Rank	Organization	Frequency	Organization	Fatality Count
1	Shining Path (SL)	2817	Shining Path (SL)	6057
2	Basque Fatherland and Freedom (ETA)	1378	Liberation Tigers of Tamil Eelam (LTTE)	4038
3	Farabundo Marti National Liberation Front (FMLN)	1249	Al Qaeda	3460

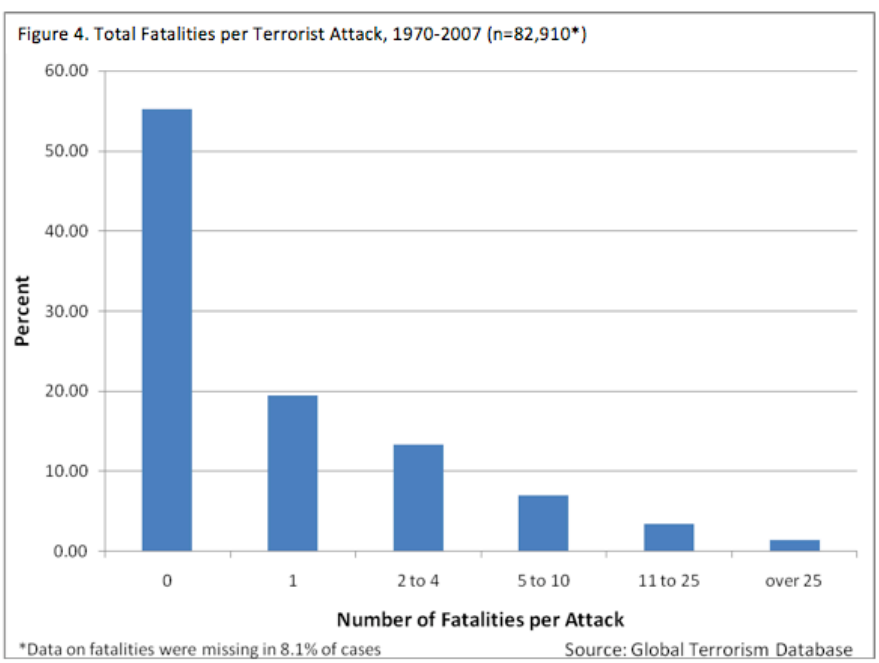
4	Irish Republican Army (IRA)	1165	Hutus	3222
5	Revolutionary Armed Forces of Colombia (FARC)	1066	Mozambique National Resistance Movement (MNR)	2247
6	National Liberation Army of Colombia (ELN)	784	Farabundo Marti National Liberation Front (FMLN)	1856
7	Hamas (Islamic Resistance Movement)	608	Revolutionary Armed Forces of Colombia (FARC)	1791
8	Liberation Tigers of Tamil Eelam (LTTE)	569	Tanzim Qa'idat al-Jihad fi Bilad al-Rafidayn	1646
9	Manuel Rodriguez Patriotic Front (FPMR)	568	Nicaraguan Democratic Force (FDN)	1342
10	Kurdish Workers Party (PKK)	535	National Union for the Total Independence of Angola (UNITA)	1151
11	New People's Army (NPA)	472	New People's Army (NPA)	1084
12	Corsican National Liberation Front (FLNC)	455	Kurdistan Workers' Party (PKK)	1071
13	Taliban	438	Lord's Resistance Army (LRA)	1060
14	Tupac Amaru Revolutionary Movement (MRTA)	412	Hizballah	899
15	Communist Party of Nepal-Maoists (CPN-M)	403	Taliban	876
16	M-19 (Movement of April 19)	321	Tutsi	858

17	Nicaraguan Democratic Force (FDN)	287	Armed Islamic Group (GIA)	807
18	People's Liberation Front (JVP)	274	Irish Republican Army (IRA)	728
19	Movement of the Revolutionary Left (MIR) (Chile)	257	National Liberation Army of Colombia (ELN)	646
20	al-Fatah	243	Hamas (Islamic Resistance Movement)	630

The Lethality of Terrorism and the Resilience of Terrorist Groups

Again, because highly lethal terrorist strikes are the ones that grab the headlines, it is easy to suppose that most terrorist attacks are incredibly lethal. In Figure 4, we examine total fatalities attributed to the 82,910 attacks in the GTD.

Figure 4: Total Fatalities per Terrorist Attack, 1970-2007 (n=82,910*)



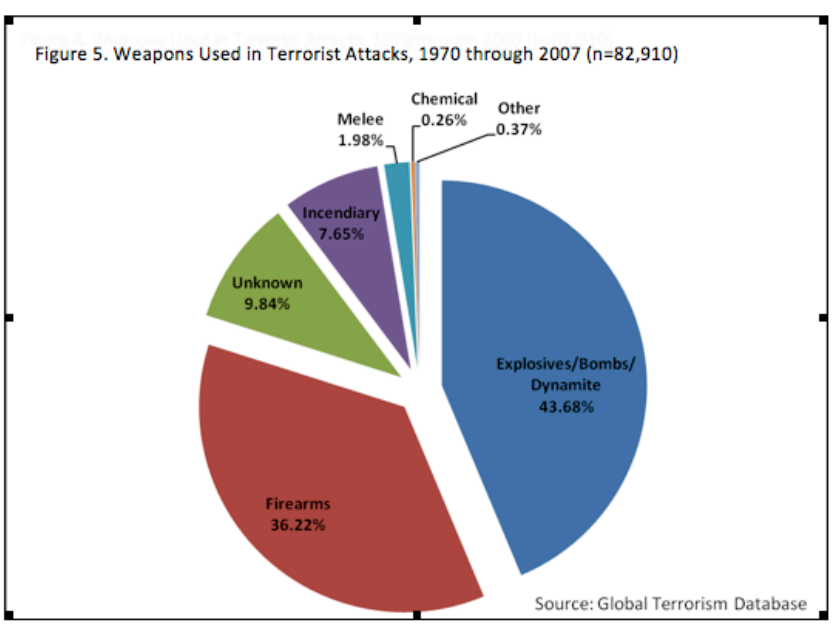
According to Figure 4, more than half of all terrorist attacks since 1970 involved no fatalities. Many incidents are directed at property. Others attacks are aimed at civilians, but they fail. And in many other cases terrorist groups provide a warning to civilians before striking. This has been

a common practice for ETA and the IRA and used to be a common practice for the Weather Underground. Thirty years ago these considerations led terrorism researcher Brian Jenkins to suggest that "terrorists want a lot of people watching, not a lot of people dead." [24]

Of course, it is still the case that 45 per cent of the attacks in the GTD (or more than 34,000 attacks) involved at least one fatality. Incidents that are especially worrisome are the 1.5 per cent (or 1,138) that produced more than 25 fatalities. And in fact, Jenkins (2007) has recently revisited his earlier statement and after reviewing the stated plans of terrorist groups operating in the early twenty-first century, he concluded that indeed "many of today's terrorists want a lot of people watching and a lot of people dead." But nevertheless, the majority of terrorist attacks since 1970 produced no fatalities.

Terrorism-related plots covered in the electronic and print media are often portrayed as incredibly complex operations relying on split second timing and intricate weaponry. These images no doubt encourage us to think that most terrorist strikes depend on sophisticated weaponry. In Figure 5 we show the weapons used in terrorism attacks from the GTD from 1970 to 2007.

Figure 5: Weapons Used in Terrorist Attacks, 1970 through 2007 (n=82,910)



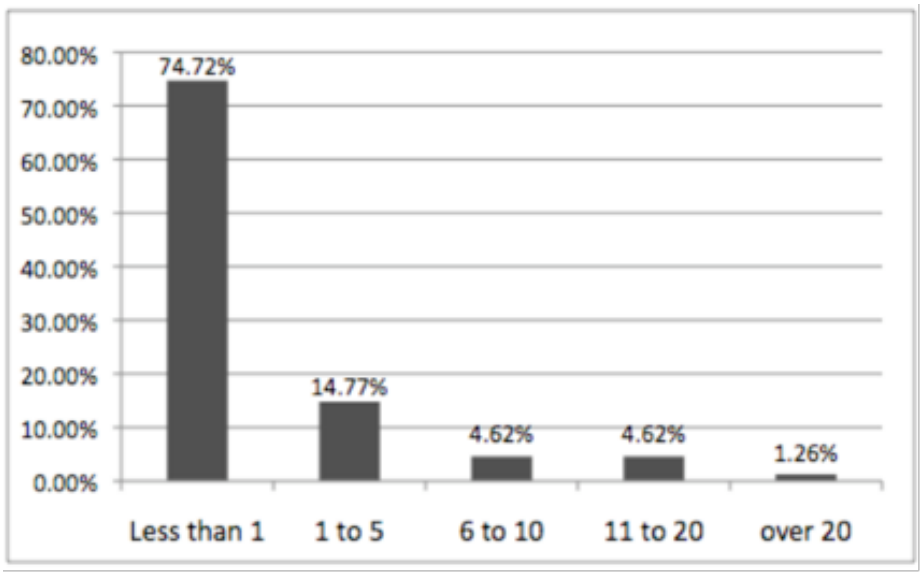
Contrary to the view of terrorism that we commonly get from the media, the vast majority of terrorist attacks rely on readily accessible weapons. According to Figure 4, the most common weapons in the GTD database were explosives and firearms. These two categories account for nearly 80 per cent of all attacks. For the most part, the explosives used were readily available, especially dynamite, grenades, mortars and improvised devices placed inside vehicles ("car bombs"). Similarly, the most common firearms were also widely available, especially automatic

weapons, shot guns, and pistols. After explosives and firearms, incendiaries (fire or firebombs) account for nearly eight per cent of the incidents. Melee attacks, which include assaults with weapons such as blunt objects, knives, and ropes, account for fewer than two per cent of all attacks. Weapons included in the "other" category were diverse, including items such as sabotage equipment, vehicles (not vehicle-borne explosives), biological, radiological, and fake weapons. Among the more sophisticated weapon types were 523 attacks using remote-detonated devices, 213 attacks using chemical agents, 26 attacks involving biological agents, and 15 attacks involving radiological materials. Note that chemical agents were responsible for about one-quarter of one per cent of all incidents and biological and radiological agents were each present in less than three-one hundredths of one per cent of all attacks. The remote-detonated explosive devices were usually left on the roadside or attached to vehicles. Chemical agents range from letters containing rat poison to tainted water supplies. Ten of the 26 biological weapons cases were the US anthrax attacks of 2001 in which seven people died. Likewise, 10 of the 15 cases involving radiological materials were related to attacks in which an individual sent envelopes containing monazite to Japanese government officials, causing no injuries.

Terrorism is the tool of the politically weak. It is used precisely because the groups involved do not have a lot of sophisticated weaponry. If they did, they would probably use it in more conventional military ways. Typical terrorist attacks use readily available weapons. In contrast to high profile media reports, sophisticated weapons, including chemical, biological or radiological materials, are the rare exception.

Given the persistence of high profile, long lasting groups like Al Qaeda, the Tamil Tigers or the IRA, there is also a common perception that most terrorist groups have long life spans. The GTD identifies more than 1,500 separate terrorist groups. We gauged their longevity by the amount of time from their first strike to their last. In Figure 6, I show the average length of time during which these organizations have mounted attacks, based on a recently completed analysis of an earlier version of the GTD.[25]

Figure 6: Years of Operation for Terrorist Groups, 1970-1997



Source: Global Terrorism Database

According to Figure 6, nearly 75 per cent of the terrorist organizations identified in the GTD from 1970 to 1997 lasted for less than a year. These results suggest that most terrorist groups are like most business start ups, very likely to disappear during their first year of operation. Forming and maintaining groups is not easy, despite impressions to the contrary from the media. Why do we have the impression that terrorist groups are long-lasting and difficult to eradicate? Probably because we hear so much about the few groups that are successful. But for Al Qaeda and ETA, there are many more short-lived, relatively unknown groups such as the Anti-Capitalist Brigades and the Revolutionary Flames.

Counterterrorism

Just as some researchers and policy makers are overly optimistic about the abilities of governments to use deterrence measures to stop terrorist groups, other researchers and policy makers are overly pessimistic about the chances that terrorist organizations will make mistakes and miscalculations that can be exploited. Although research on the desistance of terrorist groups has been neglected for a long time, the topic has been receiving increased research attention in recent years.[26]

Dugan, Huang, LaFree and McCauley [27] recently used the GTD to examine the targeting strategies of two terrorist groups – the Armenian Secret Army for the Liberation of Armenia (ASALA) and the Justice Commandos of the Armenian Genocide (JCAG) –that were based in Turkey and were especially active during the 1970s and 1980s. At the end of the World War I, the Armenian Diaspora included roughly 1.4 million people in 34 countries. Armenians worldwide

had been traumatized by the brutal attacks that killed approximately one million Armenians in Turkey in 1915. Fifty years after these mass attacks, many Armenians felt considerable impatience with their traditional leadership groups who had been unable to advance recognition of the attacks, let alone advance national liberation for Armenians remaining in Turkey and the USSR. This discontent laid the foundation for ASALA and JCAG.

In Figure 7, I show total terrorist attacks committed by ASALA and JCAG from 1975 to 1988 according to data from the GTD. As evidenced in Figure 7, there was a dramatic increase in attacks by both groups, peaking in 1980 for JCAG and 1981 for ASALA. Following these peaks, attack levels fell off dramatically, especially for ASALA. While ASALA staged 46 attacks in 1981, by 1984 the annual total had dropped to only five attacks and four years later, ASALA had stopped attacking altogether. While JCAG never had as many attacks as ASALA, the number of attacks launched by JCAG also fell dramatically after 1982. Our goal in this research project was to figure out what explained the sudden desistance in violent attacks of ASALA and JCAG after the early 1980s.

Figure 7: Attacks by ASALA and JCAG, 1975 to 1988

Source: Dugan, Huang, LaFree and McCauley (2009)

After modeling many possible explanations for this sudden desistance, our conclusion was that the most convincing explanation was a strategic shift by ASALA in its targeting strategy. Before the early 1980s, ASALA was careful to target Turks and avoided non-Turkish and especially Armenian casualties. But starting in the early 1980s, they became far less discriminate in their

targeting methods. The pivotal historical event in our analysis was an especially brutal attack on Orly Airport of Paris, in 1983. An explosive device detonated prematurely in the terminal area near the Turkish Airlines counter, killing eight people (four French, two Turkish, one American, one Swedish) and wounding over 50 more. The expansion of increasingly inept attacks such as the one at Orly created a polarized and hostile climate within ASALA and in Armenian perceptions of ASALA. We concluded that this change in targeting strategy seriously undermined the legitimacy of ASALA among its supporters in the Armenian diaspora and in the West. Interestingly, although JCAG was not involved in the Orly bombing and in general had a much more disciplined approach to the use of terrorist violence, JCAG attacks also declined rapidly following Orly. These results suggest that when a terrorist organization that depends heavily on a diaspora over-reaches in terrorist targeting, this may offer a strong opening for discrediting terrorism as a tactic, even discrediting terrorist groups that have not over-reached.

The belief that the credible threat of severe punishment deters crime and other objectionable behavior is as old as criminal law itself and has broad appeal to both policy makers and the public. Deterrence models generally assume that human beings are rational, self-interested actors who seek to minimize personal cost while maximizing personal gain.[28] An important implication of such perspectives is that individual behavior can be altered by the threat and imposition of severe punishment. Deterrence models would seem to be especially appropriate for understanding terrorist violence, given that many terrorist attacks are carefully planned and appear to include at least some consideration for risks and rewards. Indeed deterrence-based thinking has dominated counter terrorist policies in most countries since the origins of modern terrorism in the late 1960s 29] and there is substantial research support for the argument that deterrence-based policies can reduce terrorism.[30]

However, research on terrorism [31] and more generally, research from criminology [32] and psychology [33] suggests that the threat and/or imposition of punishment does not always deter future acts of violence and may in some cases, actually increase violence. Thus, it is useful to contrast *deterrence effects* (i.e., the extent to which government threats or imposition of punishment reduces the future incidence of prohibited behavior) from *backlash effects* (i.e., the extent to which government threats or imposition of punishment increases the future incidence of prohibited behavior).

My colleagues and I [34] recently used GTD data to contrast deterrence and backlash perspectives based on the efforts of the British to stop terrorist violence in Northern Ireland committed by the IRA and their allies. Based on a region about the size of Connecticut, with a population of about 650,000, the Republicans launched nearly continuous strikes from the 1960s through the early 1990s that made Northern Ireland the most politically violent region in the European Community (later the European Union) during this period. We identified six high profile counter-terrorist interventions used by the British from 1969 to 1992 to reduce republican violence in Northern Ireland and then we used statistical tests to determine whether the future

risk of attacks during this period increased, decreased or remained the same after each of the major interventions.

Figure 8: Violent Attacks in Northern Ireland, 1969-1992

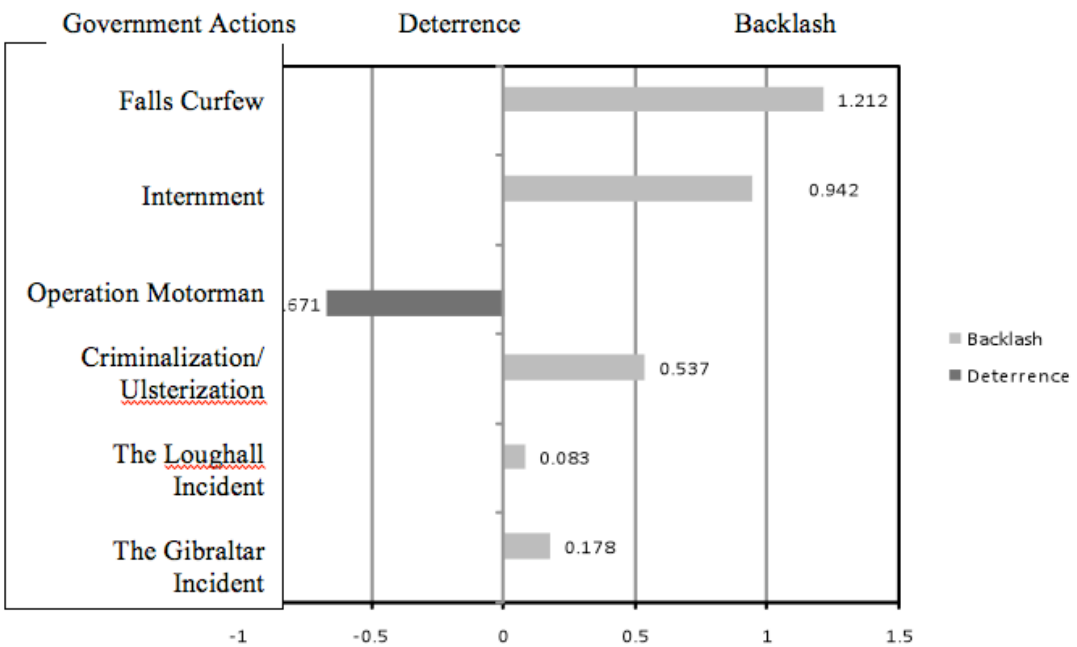


Figure 8 shows that the results of these British interventions were more consistent with backlash than deterrence explanations. Three of the six British interventions produced significantly higher risks of future terrorist strikes by Republicans and two interventions had no significant effects. The five interventions that were either followed by no change in terrorist strikes or significantly more terrorist strikes included two targeted assassinations of terrorist leaders (Loughall and Gibralter incidents), attempts to treat terrorists more like common criminals than politically-motivated activists (criminalization), a military curfew (Falls), and a partial suspension of due process rights for those suspected of terrorism (internment). The only clear cut-support for the deterrence thesis among these six interventions was the use of a major military surge called Operation Motorman which significantly reduced the risk of new attacks.

I should hasten to add that this is the result found is a single case study. We do not know whether government counter-terrorist strategies have had similar effects in other regions of the world, on different groups or individuals, or indeed, even in this region of the world during different time

periods. Nevertheless, our results strongly suggest that in terms of the operation of the IRA in Northern Ireland at least, many deterrence-based measures adopted by the British either had no effect on future terrorist strikes or actually increased their likelihood. We need a great deal more careful analyses of the deterrent and backlash effects of various counter-terrorist strategies in different countries and contexts.

The Future of Terrorism Event Data

In recent years, there have been major new efforts to broaden open source terrorism event databases by systematically collecting domestic as well as transnational event data. Most notably, the US National Counterterrorism Center (NCTC) has recently begun releasing its terrorism event data known as the Worldwide Incidents Tracking System (WITS, see John Wigle article in this issue). The NCTC was established in August 2004 by Presidential order as the primary organization in the United States government for collecting, integrating and analyzing data on terrorism and counter-terrorism. In December 2004, Congress codified the NCTC in the Intelligence Reform and Terrorism Prevention Act and placed the NCTC in the Office of the Director of National Intelligence. The WITS data now provide an important new unclassified, publicly available data source on terrorism. [35] NCTC began reporting event-based data on terrorism in 2004 and substantially improved the comprehensiveness of their data collection efforts.

Now that we have access to increasingly comprehensive terrorism event databases like GTD and WITS, it is possible to think constructively about ways to further improve their quality and to expand the types of analysis being conducted with the data. I recommend three avenues for additional research – (i) validation studies, (ii) expanding databases beyond completed terrorist attacks, and (iii) geospatial analysis. First, as event databases improve, new avenues for validating them become feasible. An important method for assessing the quality of event databases on terrorism will be to do systematic comparisons between different sources of event data and between terrorism data drawn from other sources. Thus far there have been very few comparative studies of this type owing to many of the methodological problems encountered in defining and measuring terrorism such as no universally accepted definition of terrorism, the absence of international data from official sources, and difficulties in conducting victimization or self -report surveys. Still, much more can be done. In some situations, it is possible to compare event data to police or court data, including corrections statistics on terrorism from individual countries. It is also possible to examine media sources used in the GTD and WITS to look for differential patterns of bias and incorrect or incomplete reporting.

Second, an important limitation of event databases is that they often exist in a vacuum, only providing information on actual attacks without any context for failed plots of for situations when a group decided to use an approach other than terrorism to pursue their goals. The utility of databases like GTD and WITS could be greatly increased by combining them with databases that provide a more complex range of independent and dependent variables. For example, START is

embarking on research that allows analysts to compare terrorist attacks to non-terrorist actions taken by extremist groups. [36] This could include a wide variety of activites ranging from legitimate political participation to social service functions to crime and piracy. This approach can also be applied to analyses designed to provide insights on terrorist target selection. In this realm, START is conducting a project to examine why terrorists employ IEDs against specific targets while not launching such weapons at other similar targets. [37] By expanding and applying event databases in this way, we can begin to address the question of when and why individuals and groups choose terrorist methods instead of other methods. When examined in a longitudinal framework, such analysis strategies may also give us insight into behavior that precedes terrorist attacks, such as crimes committed before terrorist attacks occur.

And finally, perhaps the two most salient characteristics of comprehensive event databases like GTD and WITS lie in their longitudinal and spatial dimensions. Thus far, the longitudinal characteristics of these databases have been exploited much more frequently than their spatial characteristics. Descriptive point maps can be useful for identifying locations of attacks and groups claiming responsibility. But more sophisticated analysis can be done using exploratory spatial data analysis techniques. For example, such methods are useful for distinguishing between random and non-random spatial patterns of events such as how a specific type of terrorism like suicide bombings spreads across regions. Even better would be more analyses that extends static cross-sectional views of the spatial distribution of events to consider dynamic features of changes over time in spatial dependencies.

One of the most important innovations in Open Source databases in the past four decades is the increasing availability of event data to the research community. As psychologist Donald Campbell has pointed out, there is nothing that moves knowledge ahead faster than a "disputatious community of truth seekers." [38] Making data publicly available provides an important mechanism for critical feedback. Openness adds oxygen to the flame of scientific inquiry.

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Endnotes

[1] Interested readers can access the GTD directly at http://www.start.umd.edu/gtd.

[2] For an overview of this process, see Gary LaFree and Laura Dugan.(2007). "Introducing the Global Terrorism Database," *Political Violence and Terrorism* 19:181-204.

[3] Gary LaFree, Sue-Ming Yang and Martha Crenshaw. (2009). "Trajectories of Terrorism: Attack Patterns of Foreign Groups that have Targeted the United States, 1970 to 2004," *Criminology and Public Policy* 8:445-473.

[4] Systematic recording of sources evolved over time for the PGIS data collectors. Thus, in 1970 the original PGIS data included a source in only 32 per cent of the recorded terrorist incidents. By 1978, PGIS data collectors recorded specific sources for the events recorded in 95 per cent of the cases. By the early 1980s, nearly all incidents had at least one source recorded.

[5] However, we were able to reconstruct total numbers of events by country from original PGIS reports. In 2006, we undertook an exhaustive search for the missing 1993 cases in an effort to restore them, but were never able to come close to reproducing the number of cases in the original PGIS data. While we do not know all the reasons for this outcome, one likely possibility is that many open sources, particularly those originating from regional and local newspapers, are likely to no longer be available over time.

[6] Gary LaFree and Laura Dugan.(2002). "The Impact of Economic, Political, and Social Variables on the Incidence of World Terrorism, 1970 to 1997," National Institute of Justice, pp. 1-41.

[7] The committee included Gary Ackerman, Victor Asal, Martha Crenshaw, Susan Cutter, Laura Dugan, Michelle Keeney, Gary LaFree, Clark McCauley and Alex P. Schmid.

[8] Susan Cutter. 2005. "Geo-coded Terrorism Attacks in India." Unpublished manuscript, University of South Carolina.

[9] Brandon Behlendorf. (2008). "Spatial Choices and Terrorist Incidents." Paper presented at the American Society of Criminology meetings, St. Louis, November.

[10] We estimate missing 1993 rates here by taking the average value for 1992 and 1994.

[11] However, verifying these results is challenging given that many of the original media sources no longer exist and because the PGIS was the only Open Source database during this period to collect data on domestic attacks. One reason to expect that compared to more recent attacks, PGIS may have been more likely to miss early attacks is that the number of sources they relied on increased over time.

[12] Eric Neumayer and Thomas Plumper. (2008). *Foreign Terror on Americans*. Unpublished manuscript, London School of Economics, p. 2.

[13] Martha Crenshaw. (2006). "Why the United States is targeted by terrorism." Presentation at the International Studies Association Annual Convention, San Diego, California, p. 8.

[14] LaFree, Yang and Crenshaw, 2009.

[15] The 1993 World Trade Center bombing was not included in the analysis because the perpetrators of this attack were not affiliated with any of the 53 terrorist groups identified by this study at the time when the attack occurred.

[16] The GTD excludes attacks related to open combat between opposing armed forces, both regular and irregular. However, the GTD includes attacks against the military if the military is there as an internationally recognized peacekeeping force, if the attack is against military forces on leave away from their area of operation (as in the attack on the *USS Cole*), or if the attacks are against military personnel who are in their place of residence (LaFree and Dugan, 2007).

[17] Martha Crenshaw. (2001). "Why America? The Globalization of Civil War," *Current History* 100:425-32.

[18] LaFree, Yang and Crenshaw (2009)

[19] Ronald V. Clarke. and Graeme R. Newman. (2006). *Outsmarting the Terrorists*. Westport, CN: Praeger, p. 154.

[20] Brent L. Smith and Kelly R. Damphousse. (2009). "The Life Course of American Eco-Terrorists: Informal and Formal Organizations." *Criminology and Public Policy* 8:475-496.

[21] Clarke and Newman, 2006, p. 143.

[22] U.S. State Department. (2008). *Country Reports on Terrorism, 2007*. Washington, D.C.: Office of the Coordinator for Counterterrorism (April).

[23] LaFree and Dugan (2009)

[24] Brian M. Jenkins. (1975). "International Terrorism: A New Model of Conflict." In *International Terrorism and World Security*, edited by David Carlton and Carla Schaerf. London: Croom Helm.

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[30] Clarke and Newman (2006); Laura Dugan, Gary LaFree and Alex R. Piquero.(2005). "Testing a Rational Choice Model of Airline Hijackings" *Criminology* 43:1031-1066; Walter Enders and Todd Sandler. (2006). "Distribution of transnational terrorism among countries by income class and geography after 9/11," *International Studies Quarterly* 50: 367-93.

[31] Clark McCauley.(2006). "Jujitsu Politics: Terrorism and Responses to Terrorism." Pp. 45-66 in *Collateral Damage: The Psychological Consequences of America's War on Terrorism*. P. Kimmel and C. Stout (Eds.). Greenwood Publishing; John A. Nevin. 2003. "Retaliating Against Terrorists" *Behavior and Social Issues* 12:109-128.

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[34] LaFree, Dugan and Korte, 2009.

[35] ('http://wits.nctc.gov/Main.do).

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[38] Donald Campbell (1988). "The Experimenting Society," In *Methodology and Epidemiology for Social Science*, Ed. E. Samuel Overman. Chicago, IL: University of Chicago Press.