Explosives Terrorism Attack

An act of terrorism using one or more explosive or incendiary devices against people or property in the U.S.

Data Summary

In the following table, note that the low and high likelihoods do not correspond to the low and high impacts. In addition, low and high impacts are not necessarily correlated with each other between different impact categories.

Category	Description	Metric	Low	Best	High
Health and Safety	Fatalities	Number of Fatalities	0[1]	1[2]	3,650[3]
	Injuries and Illnesses	Number of Injuries or Illnesses	0[4]	11[5]	4,500[6]
Economic	Direct Economic Loss	U.S. Dollars (2011)	$42,000[7]	$3.4 million[8]	$20 billion[9]
Social	Social Displacement	People Displaced from Home ≥ 2 Days	0[10]	5[11]	400[12]
Psychological	Psychological Distress	Qualitative Bins	See text		
Environmental	Environmental Impact	Qualitative Bins	Low[13]		
LIKELIHOOD	Frequency of Events	Number of Events per Year	0.72[14]	7.0[15]	25[16]

[1] Minimum from Table 7.
[2] Average (1.00) number of fatalities from Table 7.
[3] Extrapolated by OBP and from Lundberg (2013), based on successful 1993 WTC bombing, successful 2005 Bojinka plot, and successful 2006 trans-Atlantic aviation plot. See Health and Safety discussion for details.
[4] Minimum from Table 7.
[5] Average (10.8) number of injuries from Table 7.
[6] Number of injuries, 1998 bombing of the U.S. Embassy in Nairobi, Kenya: SNRA project team assumption using this historical event as proxy. See Health and Safety discussion.
[7] Total 2011-dollar adjusted property damages ($1.061 billion) 1988–1988 divided by total number of bombing incidents (25,065), including actual, attempted, and [1998 reporting only] accidental explosive and incendiary U.S. incidents.
[8] Estimate based upon per-casualty average property damage of all U.S. bombings 1988–1998, FBI (1999b), for decontamination, disposal, and physical destruction (DDP); per-casualty proportion of $10 million direct business interruption costs to the businesses in the 12 block exclusion zone following the 2013 Boston Marathon bombing, Luna (2013), Dedman et al (2013); medical costs, medical costs for gunshot injuries per fatality and per non-fatal injury, Corso et al (2007); one year lost spending to the national economy per fatality, $42,500, SNRA 2015 standard (this does not represent a value of statistical life (VSL)). See Direct Economic Loss section for details. All estimates converted to 2011 U.S. dollars.
[9] Mean of four property loss estimates from a 20,000-lb VBIED in major US cities in Kunreuther et al (2014), adjusted to 2011 dollars.
[10] Minimum from Table 7 (SNRA project team assumption of 0 for all 1980-2005 incidents excepting Oklahoma City bombing).
[11] Average from Table 7.
[12] Maximum from Table 7 (400 persons displaced from home, 1998 Oklahoma City bombing, DOJ (2000)).
[13] Experts provided both first and second choice categories, allowing the experts to express uncertainty in their judgments as well as to reflect the range of potential effects that might result depending on the specifics of the event. The first choice represents the 'Best' estimate.
[14] Inverse of maximum inter-arrival time, 508 days expressed in years, between incidents in Table 7 (11/27/1993 Chicago fire bombings and 4/19/1995 Oklahoma City bombing).
[15] Average number per year of explosive/incendiary incidents 1980–2005 as reported by FBI (2006), 181 incidents in 26 years (Table 7).
[16] Maximum number of explosive/incendiary incidents 1980–2005 occurring in any one year (each of 1981 and 1982) in Table 7.

Event Background

Frequency, fatality, and injury estimates for the 2015 SNRA Explosives Terrorism Attack event were derived from unclassified statistical and historical data published by the Federal Bureau of Investigation (FBI).[17] These results were compared with and supplemented by data and research from additional primary and secondary public sources, peer-reviewed literature, and U.S. and foreign press sources.

Weapon Characteristics and Tactics[18]

An Explosives Terrorism Attack is an act of terrorism using one or more "explosive devices" against people or property in the U.S., including vessels or aircraft en route to or from U.S. territory, intended to destroy, incapacitate, harass, or distract. Terms such as bomb, homemade bomb, incendiary device, firebomb, and more recently improvised explosive device (IED) are also used to describe the type of weapons involved.[19] The term IED will be used to generically refer to constructed devices with explosive and incendiary effects in the following discussion.

IEDs consist of a variety of components including an initiation system, a main explosive charge, and a container to house and sometimes conceal the components. Because they are improvised, IEDs can come in many forms, ranging from a small pipe bomb to a sophisticated device capable of causing massive damage and loss of life. IEDs are often surrounded by or packed with additional materials or "enhancements" such as nails, glass, or metal fragments designed to increase the amount of shrapnel propelled by the explosion. Enhancements may also include other elements such as hazardous materials.

Many commonly available materials, such as fertilizer, gunpowder, and hydrogen peroxide, can be used as the main charge explosive materials in IEDs (see Table 1). Explosives must contain a fuel and an oxidizer, which provides the oxygen needed to sustain the reaction. A common example is ammonium nitrate – fuel oil (ANFO), a mixture of ammonium nitrate, which acts as the oxidizer, and fuel oil (the fuel source). Concern about the use of explosives created from liquid components transported in a stable form and mixed at the site of attack is the reason that in 2006 the U.S. Department of Homeland Security restricted the amount of liquids passengers may carry on commercial aircraft. Explosives are sensitive to heat, shock, and friction, which are used to initiate them. Initiation systems may rely on a variety of methods depending on the intended use, such as a burning fuse, electric charge, chemical reaction, physical force, or some combination. In practice, those methods may employ simple mechanisms like a pressure plate, digital timer, mechanical clock, or other means to being the initiation process. Initiated systems are triggered by the bomber or by the victim, depending on intended use.

[17] FBI (1963, 1981, 1982, 1983, 1986, 1987, 1999b, 2000, 2006, 2007b, 2008a, 2010, 2011), FBI (2009, April 21); additional FBI sources as cited.
[18] Substantial portions of this section are adapted from National Academies and U.S. Department of Homeland Security (2004), IED attack: improvised explosive devices (NAS/DHS (2004)).
[19] Explosive devices are sometimes considered weapons of mass destruction (WMDs). See relevant definitions for terrorism, destructive devices, and WMDs in 18 U.S.C. §921, §1864, §2331, and §2332, and 26 U.S.C. §5845. For the purposes of the SNRA, this threat event includes explosive attacks (including rocket attacks) and incendiary attacks.

Table 1: Examples of Explosive Materials[20]

	Common Uses	Common Form	Known IED Use
High explosives (HE)			
Ammonium nitrate and fuel oil (ANFO)	Fertilizer, engine fuel, mining and blasting (in mixed form)	Solid	Oklahoma City bombing
Triacetone Triperoixide (TATP)	No common uses; mixed from common household items	Crystalline solid	2005 bombings in London
Semtex, C-4	Primarily military explosives	Plastic solid	Irish Republican Army bombings
Ethylene glycol dinitrate (EGDN)	Component of low-freezing dynamite	Liquid	Millennium Bomber, intended for Los Angeles airport, 1999
Urea nitrate	Fertilizer	Crystalline solid	World Trade Center 1993
Low explosive			
Smokeless powder	Ammunition	Solid	Olympic Park bombings

In addition to the initiation systems, IEDs tactics include how they are placed at the target. They can be carried, placed, or delivered by person or vehicle; thrown by a person; delivered in a package; or concealed at the target location in advance, such as along a roadside. Bombs can also be surreptitiously carried by an unknowing individual on their person or in their bags or vehicle. This tactic is sometimes used to avoid security measures and reduce the likelihood of attribution to the actual bomber. Another common tactic is to target multiple locations simultaneously or in near succession. Security and rescue efforts can be hampered by the need to respond to more than one site. Suicide tactics are also associated with bombings. Suicide tactics allow the perpetrators to get close to their target and time the attack precisely for maximum success. Another tactic, known as a secondary attack, uses a distraction, such as a phoned bomb threat, 911 call, fire alarm, gunfire, small initial bombing, or other surprises, to drive or attract people to a location and then detonate the device at the gathering point. Evacuees, first responders, and bystanders are usually the targets of secondary attacks.

Effects

An explosion in or near a building or public transportation venue may blow out windows, destroy walls, and shut down building systems such as power, ventilation, fire suppression, water/sewage, and others. Exit routes may be disrupted or destroyed, and smoke and dust may travel through stairways and elevator shafts, making navigation difficult. Building failure may result in the release of hazardous materials used within a building, such as radioactive material from medical devices, or incorporated within the structure of a building, such as asbestos insulation. An IED attack may cause disruptions in municipal services such as electricity, water, communications, and transportation, which may continue for days to weeks after the attack.

The explosion of a bomb can cause secondary explosions if gasoline, natural gas, or other flammable material is ignited. Secondary hazards that result can include fire with possibly toxic

[20] NAS/DHS (2004), *op. cit.*

smoke, disruption of electric power, ruptured natural gas lines and water mains, and debris. There can be a loss of traffic control in the area of the blast with possible traffic accidents involving fleeing people.

The extent of damage caused by an IED depends on the quantity and type of its explosive content, construction, and placement relative to its target. Table 2 predicts the damage radius based on the volume or weight of explosive (TNT equivalent) and the type of bomb. Vehicle bombs, also known as vehicle-borne IEDs (VBIEDs), can carry significantly more explosive material, and therefore, do more damage.

Table 2: Recommended Evacuation Distance based on Potential Effects of Explosive Weights[21]

Device Type	Explosive Capacity (HE Only)	Building Evacuation Distance	Outdoor Evacuation Distance
Pipe Bomb	5 lb	70 ft	1,200 ft
Suicide Bomber	20 lb	110 ft	1,700 ft
Briefcase/Suitcase	50 lb	150 ft	1,850 ft
Car	500 lb	320 ft	1,900 ft
SUV/Van	1,000 lb	400 ft	2,400 ft
Small Moving Van/Delivery Truck	4,000 lb	640 ft	3,800 ft
Moving Van/Water Truck	10,000 lb	860 ft	5,100 ft
Semi-Trailer	60,000 lb	1,570 ft	9,300 ft

The type of injuries and the number of people hurt will vary depending on the physical environment and the size of the blast; the amount of shielding between victims and the blast; fires, or structural damage that result from the explosion; and whether the explosion occurs in a closed space or an open area. There are several known injuries common to explosions:

- Overpressure damage to the lungs, ears, abdomen, and other pressure-sensitive organs—blast lung injury, a condition caused by the extreme pressure of a high explosive (HE) explosion, is the leading cause of illness and death for initial survivors of an explosions;
- Fragmentation injuries caused by projectiles thrown by blast—material from the bomb, shrapnel, or flying debris that penetrates the body and causes damage;
- Impact injuries caused when the blast throws a victim into another object, e.g., fractures, amputation, and trauma to the head and neck;
- Thermal injuries caused by burns to the skin, mouth, sinus, and lungs;
- Other injuries including exposure to toxic substances, crush injuries, and aggravation of pre-existing conditions (asthma, congestive heart failure, etc.).

Some health effects caused by IEDs, including eye injuries, abdominal injuries, and traumatic brain injuries may not be apparent initially, but can cause symptoms and even fatalities hours to months after the event. Psychological effects in attack survivors, first responders, and others are not unusual in the aftermath of a high-casualty event. While most symptoms diminish with time, in some cases assistance and guidance from mental health professionals may be required.

[21] NAS/DHS (2004), *op. cit.*

Usage History in the United States

Terrorists and criminals with diverse motives have used explosive devices in the U.S. Thousands of terrorist and criminal incidents involving bombings, attempted bombings, incendiary bombings, stolen explosives, and related offenses occur each year. Most are minor criminal and mischief-related events. Table 3 shows statistics for explosive-related incidents in the U.S. from 1973 through 1999,[22] while Table 4 shows selected incidents, including 44 high-casualty incidents (i.e., more than four casualties), since the late 19th Century. In the past 127 years, periods of both intense explosive device use and relative infrequency have occurred. Flashpoints of activity often coincide with periods of social or economic unrest, such as labor and anarchist movement violence in the late 19th and early 20th century, Jim Crow and Civil Rights eras, and during anti-war and anti-government violence in the 1960s through 1980s. In several cases, individual or small groups of serial bombers have conducted terror campaigns with extreme frequency for a short period or infrequently over extended periods of time. Examples include more than 44 bombings and attempted bombings from April to June 1919 by Galleanist anarchists;[23] the New York City bomber George Metesky in the 1940s and 1950s;[24] the Weather Underground during the 1960s and 1970s;[25] Ted Kaczynski during the late 1970s through 1990s;[26] Eric Rudolph during the 1990s;[27] and al Qaeda and affiliated groups since the 1990s.[28]

The recognized likelihood and risk of explosive attacks to the Nation remains an enduring policy and security concern for the U.S. Government today.[29]

[22] The last year FBI published national statistics.
[23] FBI At: http://www.fbi.gov/philadelphia/about-us/history/famous-cases/famous-cases-1919-bombings.
[24] FBI At: http://vault.fbi.gov/Criminal%20Profiling/Criminal%20Profiling%20Part%201%20of%207.
[25] FBI At: http://www.fbi.gov/news/stories/2004/january/weather_012904 .
[26] FBI At: http://www.fbi.gov/news/stories/2008/april/unabomber_042408.
[27] FBI At: http://www.fbi.gov/news/stories/2005/may/swecker_051605 .
[28] FBI At: http://www.fbi.gov/news/testimony/al-qaeda-international .
[29] Chertoff, Michael (2007), testimony: http://www.gpo.gov/fdsys/pkg/CHRG-110shrg38842/html/CHRG-110shrg38842.htm; DNI (2008), Annual Threat Assessment; Obama, Barack (2012, February): http://www.whitehouse.gov/sites/default/files/docs/cied_1.pdf; DoD/JIEDDO (2012, June), https://www.jieddo.mil/content/docs/20120712_Barbero_testimony.pdf; DNI (2013, March), Annual Threat Assessment, http://www.intelligence.senate.gov/130312/clapper.pdf; Mueller, Robert (2013, August), Reflections: http://www.npr.org/2013/08/23/214549458/outgoing-fbi-boss-on-his-legacy-and-what-kept-him-up-at-night.

Table 3: Bombing and Arson-related Incidents in the U.S. 1973–1999[30]

Year	Incidents	Actual Explosions	Injuries	Fatalities
1999	1,797	1,193	114	9
1998	2,300	1,432	160	16
1997	2,217	1,590	204	18
1996	2,573	1,884	336	23
1995	2,577	1,968	744	193
1994	3,163	2,461	308	31
1993	2,980	2,418	1,323	49
1992	2,989	2,493	349	26
1991	2,499	1,974	230	29
1990	1,582	1,198	222	27
1989	1,208	844	202	11
1988	977	749	145	20
1987	848	704	107	21
1986	858	709	185	14
1985	847	677	144	28
1984	803	645	112	6
1983	687	569	100	12
1982	795	679	99	16
1981	1,142	952	133	30
1980	1,249	1,078	160	34
1979	1,220	1,033	173	22
1978	1,301	1,117	135	18
1977	1,318	1,115	162	22
1976	1,570	1,257	212	50
1975	2,074	1,701	326	69
1974	2,044	1,651	207	24
1973	1,955	1,529	187	22
Total	45,573	35,620	6,779	840
Per Year	**1,688**	**1,319**	**251**	**31**
Per Explosion			**0.19**	**0.024**

[30] Reconstructed from data, Bureau of Justice Statistics (FBI data) (1973–1999).

- Federal Bureau of Investigation (1998). FBI Bomb Data Center: 1998 Bombing Incidents. General Information Bulletin 98-1. 1988-1998 tabulation, p. 7. At https://www.hsdl.org/ ?view&did=458703.
- Bureau of Justice Statistics (2003). Bombing incidents known to police by type of incident and device, value of property damage, and outcome of incident, United States, 1973-1999. Table 3.170 p. 337, Sourcebook of Criminal Justice Statistics. At http://www.albany.edu/sourcebook/pdf/t3170.pdf.

Table 4: Selected U.S. Terrorist Bombings 1886–2013 (Not SNRA Data Set)[31]

Date	City	State	Fatal	Injured	Dis-placed	Perpetrator	Target	Source
5/4/1886	Chicago	IL	11	100	0*	Labor/Anarchists	Crowd (Haymarket Square)	AP[32]
6/6/1904	Cripple Creek	CO	14	7		Labor/Anarchists	Independence Depot railway station	Press[33]
1/1/1910	Los Angeles	CA	20	100	0*	Labor/Anarchists	LA Times building	Press[34]
7/4/1914	New York City	NY	0	19	140	Labor/Anarchists	Apartment in New York City	Press[35]
7/22/1916	San Francisco	CA	10	40	0*	Labor/Anarchists	Crowd (Preparedness Day Parade)	Press[36]
11/24/1917	Milwaukee	WI	11	2	0*	Unknown	Church; exploded in police station	Press[37]
9/4/1918	Chicago	IL	4	75	0*	Labor/Anarchists	Federal Building	Press[38]
9/16/1920	New York City	NY	40	300	0*	Unknown	Wall Street	FBI, Press[39]
5/18/1927	Bath	WI	45	58	0*	Individual	Bath School House	NCTC, FBI[40]
10/10/1933	Chesterton	IN	7	0	0*	Individual	United Airlines	AP[41]
11/16/1940	New York	NY	0	10	0*	Individual	ConEd Power Plant	Press[42]
11/1/1955	Longmont	CO	44	0	0*	Individual	United Airlines Flight 629	FBI[43]
12/2/1956	New York	NY	0	6	0*	Individual	Brooklyn Paramount Theater	Press[44]
11/16/1959	Gulf of Mexico		42	0	0*	Individual	National Airlines Flight 967	Press
1/6/1960	Bolivia	NC	34	0	0*	Individual	National Airlines Flight 2511	Press
10/13/1960	New York	NY	0	33	0*	Individual	Time Square Subway Station	Press
11/7/1960	New York	NY	1	18	0*	Individual	125th Street Subway Station	Press
5/22/1962	Unionville	MO	45	0	0*	Individual	Continental Airlines Flight 11	Press
9/16/1963	Birmingham	AL	4	16	0*	Ku Klux Klan	Church	AP, FBI[45]
8/7/1969	New York	NY	0	20	0*	Weather Underground	Marine Midland Building	Press[46]
3/6/1970	New York	NY	3	2		Weather Underground	Greenwich Village townhouse	Press
3/8/1971	St. Louis	MO	0	10	0*	Unknown	Military	GTD[47]
1/26/1972	New York	NY	1	13	0*	Jewish Defense League	Business	GTD[48]
8/6/1974	Los Angeles	CA	3	26	0*	Individual	Airport/Aircraft	GTD[49]
1/24/1975	New York City	NY	4	53	0*	PR nationalists	Fraunces Tavern	AP, FBI[50]
7/15/1975	Los Angeles	CA	0	4	0*	Cuban Action	Diplomatic	GTD[51]
12/29/1975	New York City	NY	11	75	0*	Croatian nationalists	TWA terminal, LaGuardia (locker)	AP[52]
4/22/1976	Boston	MA	0	22	0*	United Freedom Front	Government	GTD[53]
8/3/1977	New York City	NY	1	7	0*	FALN[54]	Business	GTD[55]
12/11/1979	New York City	NY	0	8	0*	Omega-7	Diplomatic	GTD[56]
1/13/1980	New York City	NY	0	4	0*	Cuban exiles	Aeroflot	GTD, FBI[57]
3/17/1980	New York City	NY	0	3	0*	Croatian nationalists	Yugobank office	GTD, FBI[58]
8/20/1980	Berkeley	CA	0	2	0*	Iranian exiles	High school student meeting	GTD, FBI[59]
10/12/1980	New York City	NY[60]	0	5	0*	Armenian nationalists	Turkish mission (UN), travel agency	GTD, FBI[61]
5/16-18/1981	New York City	NY	1	0	0*	PR nationalists	Pan Am terminal JFK	GTD, FBI[62]
6/27/1981	College Park	MD	1	4		Unknown	Educational Institution	GTD[63]
4/5/1982	New York City	NY	1	7	0*	Jewish Defense League	Restaurant (arson)	GTD, FBI[64]
8/11/1982	Honolulu	HI	1	15	0*	May 15 Organization[65]	Airport/Aircraft	GTD[66]
12/31/1982	New York City	NY	0	3	0*	PR nationalists	Federal buildings	GTD, FBI[67]
8/15/1985	Paterson	NJ	1	1	0*	Jewish Defense League	Alleged war criminal	GTD, FBI[68]
9/06/1985	Brentwood	NY	0	1	0*	Jewish Defense League	Alleged war criminal	GTD, FBI[69]
10/11/1985	Santa Ana	CA	1	7	0*	Jewish Defense League	Arab-American activist	GTD, FBI[70]
10/28/1986	Multiple[71]	PR	0	1	0*	PR nationalists	Multiple bombings	GTD, FBI[72]
8/21/1989	Atlanta	GA	0	8	0*	ACFJS[73]	NGO	GTD[74]
10/21/1989	Lockerbie	UK	270			Libyan Government	Pam Am Flight 103	FBI[75]
2/26/1993	New York City	NY	6	1,042	0*	al Qaeda	World Trade Center	GTD, FBI[76]
4/19/1995	Oklahoma City	OK	168	754	400[77]	Individual	Federal Building	GTD, FBI[78]
7/27/1996	Atlanta	GA	1	110	0*	Individual	Olympic Games	GTD, FBI[79]
1/16/1997	Atlanta	GA	0	6	0*	Individual	Abortion clinic	GTD, FBI[80]
2/21/1997	Atlanta	GA	0	4	0*	Individual	Nightclub	GTD, FBI[81]
1/29/1998	Birmingham	AL	1	1	0*	Individual	Abortion clinic	GTD, FBI[82]
6/24/1998	Santa Isabel	PR	0	1	0*	PR nationalists	Bank offices	GTD, FBI[83]
8/02/2008	Santa Cruz	CA	0	1	4	Animal Liberation Front	Researcher's home	GTD, FBI[84]
4/15/2013	Boston	MA	3	264		Individual	Boston Marathon finish line	FBI[85]

[31] This data set is intended for developing distributions for extended visualizations and stakeholder engagement in follow-on work to the 2015 SNRA, and is still under development and documentation.
[32] AP (2013); characterization of anarchist movement bombings as terrorist, FBI (2008a).

[33] http://law2.umkc.edu/faculty/projects/ftrials/haywood/HAY_N66.HTM.
[34] AP (2013), King (1960), Harrison (2011); characterization of anarchist movement bombings as terrorist, FBI (2008a).
[35] All four persons killed were the bomb plotters. Seven seriously injured, 'about a dozen' less seriously injured. 140 displaced: 150 building tenants, minus seven injured and four plotters killed (who were building residents), rounded to two significant figures [NYT (1914) has contradictory reports of building damage, but describes substantial damage to apartments in the majority of floors]. NYT (1914, 1915), AP (1914).
[36] AP (1961), ATF (1970), Gage (2004) 4; characterization of anarchist movement bombings as terrorist, FBI (2008a).
[37] AP (1917), NYT (1917), LA Times (1917), Tanzilo (1992), Gurda (2001); USG characterization as terrorist act, Hutchinson (2001).
[38] AP (1918a, 1918b), Morning Oregonian (1918), NYT (1918a, 1918b); characterization of anarchist movement bombings as terrorist, FBI (2008a).
[39] AP (2013); Gage (2004) pp 142, 143; FBI (2007b).
[40] NCTC (2007).
https://www.fbiic.gov/public/2008/sept/NCTC%20Did%20you%20know%20the%20first%20suicide%20car%20bombing%20took%20place%20in%20Bath,%20Michigan%20in%201927.pdf
[41] AP "Suspects Bomb Wrecked Plane." Prescott Evening Courier. 10/12/1933. Page 3. At
http://news.google.com/newspapers?id=D_EKAAAAIBAJ&sjid=0E8DAAAAIBAJ&pg=5344%2C6739444
[42] Forbes at www.forbes.com/sites/williampentland/2014/03/16/meet-americas-first-electric-grid-saboteur
[43] http://www.fbi.gov/about-us/history/famous-cases/jack-gilbert-graham
[44] New York Times at: http://query.nytimes.com/gst/fullpage.html?res=9C05E4DF1530F933A2575AC0A9629C8B63
[45] AP (2013), FBI (1963) part 1, page 50.
[46] New York Times at: http://cityroom.blogs.nytimes.com/2009/08/27/1969-a-year-of-bombings/.
[47] GTD.
[48] GTD 197201260003.
[49] GTD 197408060004.
[50] AP (2013), FBI (1999a) 16.
[51] GTD 197507150001.
[52] AP (2013).
[53] GTD 197604220004.
[54] Fuerzas Armadas de Liberacion Nacional.
[55] GTD 197708030006.
[56] GTD 197912110003.
[57] GTD 198001130006, FBI (2006).
[58] GTD 198003170025, FBI (2006).
[59] GTD 198008200004, FBI (1982) 48, FBI (2006).
[60] Includes the bombing of the Turkish Mission to the UN with four injuries, and a second bombing the same day of a travel agency in Hollywood, CA causing one injury.
[61] GTD 198010120008, 198010120009, FBI (2006).
[62] GTD 198105160004, FBI (1982, 2006).
[63] GTD 198106270006
[64] GTD 198204050005, FBI (1983, 2006).
[65] May 15 Organization for the Liberation of Palestine
[66] GTD 198208110007
[67] GTD 198212310009, 198212310010, 198212310011, 198212310012, FBI (1983, 2006).
[68] GTD 198508150001, FBI (1986, 2006).
[69] GTD 198509060007, FBI (1986, 2006).
[70] GTD 198510110002, FBI (1986, 2006).
[71] Fajardo, Fort Buchanan, Santurce, Aguadilla, Mayaguez, Bayamon (FBI (1987)).
[72] GTD 198610280017, 198610280018, 198610280019, 198610280020, 198610280021, 198610280022, 198610280023, FBI (1987, 2006).
[73] Americans for a Competent Federal Judicial System.
[74] GTD 198908210014
[75] FBI At: http://www.fbi.gov/news/stories/2003/december/panam121903
[76] GTD 199302260001, FBI (1999b, 2006).
[77] U.S. Department of Justice (2000), p. 1.
[78] GTD 199504190004, FBI (2006).
[79] GTD 199607270003, FBI (2006).
[80] GTD 199701160006, FBI (2006).
[81] GTD 199702210003, FBI (2006).
[82] GTD 199801290002, FBI (2006).
[83] GTD 199806240003, FBI (2006).
[84] GTD 200808020023; FBI (2009, April 21). Press release regarding a man suspected of different crimes, but describing the 2008 Santa Cruz firebombing as a terrorist act. For additional detail see McCord (2008), Knoll et al (2008), Buchanan et al (2008), FBI (2010).
[85] FBI At: http://www.fbi.gov/boston/press-releases/2013/federal-grand-jury-returns-30-count-indictment-related-to-boston-marathon-explosions-and-murder-of-mit-police-officer-sean-collier.

Assumptions

Frequency

To identify the national risk baseline for this kind of attack, explosives terrorist attacks were analyzed as a recurring historical event similar to the SNRA's analysis of natural and technological hazards. In part, this analytic treatment reflects agnosticism in the absence of other public information of predictive value. Terrorism is driven by multiple deterministic drivers, as well as stochastic (chance) factors. However, without absolute knowledge of those factors that would both remain valid and have predictive value for each successful attack in the U.S. for the next three to five years (the time frame of the 2015 SNRA), representation as a random event without additional qualifications is the most accurate representation of our actual state of knowledge.[1] This treatment was also chosen for consistency with the findings of past U.S. Government reviews that periods of political violence of even greater intensity—and public awareness of that intensity—than that of today are, in fact, the historical norm for our country, rather than the exception.[2]

Historical incident data can be derived from several publically available government and academic sources. Because publically available Department of Justice (DOJ) data is limited to after 1973 and include criminal and terrorism intent, other sources are needed to help build a data set of terrorism-related bombings. The RAND Database of Worldwide Terrorism Incidents (RDWTI) and University of Maryland START Global Terrorism Database (GTD)[3] are valuable sources for bombing incident data already filtered for terrorist intent; however, they do not contain data from incidents prior to 1970.

The DOJ has formally maintained bombing incident statistics since the early 1970s through the FBI Bomb Data Center (to 1999) and the U.S. Bomb Data Center (USBDC) of the Bureau of Alcohol, Tobacco, and Firearms (ATF).[4] Data were released publically through annual reports until the early 2000s and are now made available via summary publications. DOJ data include all types of incidents related to bombings—threats, failed attempts, and successful bombings, as well as arson/incendiary incidents. An advantage of the DOJ data is that it best demonstrates the frequency of explosive threats, overall, regardless of terrorism intent or outcome. Table 3 shows that a very high frequency of successful bombing and incendiary attacks of all kinds have occurred in the 26 years for which data is publically available—close to 1,400 events per year.

A longer time period provides additional information useful for the estimation of the likelihood of rare, high-impact explosive attacks (Table 4). As part of SNRA 2015 project work, analysts

[1] Mohtadi et al (2005, 2009a).
[2] Staff and Commission reports and data set produced for/by the 1968-69 National Commission on the Causes and Prevention of Violence (Graham et al (1969), Kirkham et al (1969), Levy (1969a, b, c), National Commission on the Causes and Prevention of Violence (1969)). See also [non-USG] Gage (2004), Gage (2011), START GTD (2013), Turchin et al (2014). The labor and anarchist related disturbances of the 1880s through the early 1920s saw dozens of bombings every year, which reached national attention (FBI Philadelphia Division (unknown date: retrieved February 2015), 1919 Bombings: http://www.fbi.gov/philadelphia/about-us/history/famous-cases/famous-cases-1919-bombings.) However, bombings that reach national attention historically have represented the tip of a very large iceberg of bombings that do not. For example, by the close of the 1960s, total bombings were estimated to number in the thousands per year (4,330 in the sixteen months from January 1969 to April 1970: Allyn, Bobby (2009, August 27), 1969, a year of bombings. Note, *New York Times*: at http://cityroom.blogs.nytimes.com/2009/08/27/1969-a-year-of-bombings/).
[3] START, the National Consortium for the Study of Terrorism and Responses to Terrorism, is a DHS Center of Excellence and network of scholars coordinated from the University of Maryland. Since 2011, when the first SNRA was executed, the START GTD has become the most commonly cited source for global terrorism statistical data, and is now used as the primary data source (with similar parameters as the 2011 SNRA) for the U.S. Government's annual Statistical Annex on Terrorism published for the U.S. State Department's Country Reports on Terrorism. START GTD (2013). The GTD is an open-source database with information on terrorism events around the world (including domestic, transnational, and international incidents) from 1970 to 2010. For each GTD incident, information is available on the date and location of the incident, the weapons used and nature of the target, the number of casualties, and—when identifiable—the group or individual responsible.
[4] DOJ At: http://www.justice.gov/oig/reports/ATF/a0501/final.pdf .

from multiple DHS components[5] developed new data sets and methods for estimating the absolute and conditional probabilities of such events.

- For purposes of illustration, Table 4 includes data that can be used to estimate the likelihood of an explosive attack resulting in four or more casualties—what could be considered a "mass casualty incident." Forty-four such incidents within the 127-year historical data set in Table 4 represent a mean likelihood of 0.3 incidents per year.
- Low, mean, and high likelihood estimates of a mass casualty bombing in the next five years can be developed by reviewing the data in Table 4 and identifying the number of qualifying incidents per five-year historical period. Forty-four events within 25 five-year periods represent a mean of 1.76 incidents per period, with a low of 0 (multiple periods) and high of six (1975–1980).

Using mass casualty incidents as the basis for overall frequency analysis may be more reliable under the assumption that those incidents were more reliably reported and recorded than the vastly larger number of incidents in which there were no casualties. Such incidents are also more likely to be considered events of national significance. However, the disadvantage of that approach is that the chance factors associated with bombing impacts mean that the risk posed by bombings that did not result in casualties may be overlooked. It is for this reason that the 2015 SNRA examines bombing attacks with a lower threshold,[6] in order to capture this broader picture of risk to the Nation.

Low, best, and high frequency estimates of Explosives Terrorism Attacks are based upon 1980-2005 data reported by the FBI. This data set was chosen because of its high quality, prior vetting, and internal consistency. It was also chosen to avoid the inherent value judgments and interpretation of what to include in the data set designated as 'terrorist', which are properly questions for stakeholders rather than the analyst. The prior designation by a single U.S. Government entity responsible for counterterrorism of a set of historical incidents spanning three decades made this data set ideal for the purposes of the SNRA. The best estimate of frequency represents the average number of occurrences per year of this set; the low estimate of frequency represents the inverse of the longest inter-arrival time (the longest gap between incidents); and the high estimate of frequency represents the largest number of incidents occurring in any one year.

Health and Safety

Estimating impacts from explosive attacks is also difficult due to the multiple factors involved in the outcome of an explosion, such as explosive quantity, proximity to target, blast mitigation, and chance (i.e., intended targets are not present). However, historical incident data and predictive modeling based on potential impacts from past events and adversary capability can assist in health and safety impact estimation.

The low and best estimates of fatalities and injuries are the minimum (0 for both) and average numbers of fatalities and injuries per incident in Table 7. Perpetrator fatalities and injuries are

[5] National Protection and Programs Directorate (NPPD), DHS Office of Policy, and FEMA. The following discussion represents work still in progress, and does not represent the opinion of any one contributing Component or analytic team. The intended end state of this project is the representation of the Explosives Terrorism Attack event, along with the other threats and hazards in the 2015 SNRA, in full distributional form. Its purpose is to put the threshold decisions (terrorist attacks only? minimum fatalities or casualties? hoaxes causing economic impacts?) that are presently made by DHS analysts by necessity into the hands of stakeholders where they belong. This work is still in progress.

[6] Comparable to those of the CBRN terrorist attacks in the 2011 SNRA.

not included in the data tables and were not included in the quantitative calculations for this event.

For the high estimate, the SNRA project team judged that this historical data set was not adequately representative of the potential for larger mass-casualty events than have been observed to date in the United States, and would not be suitable as the basis for a high estimate for the risk communication purposes of the SNRA. High estimates for the SNRA impacts were adapted from historical events overseas and plausible alternative outcomes to 'near-miss' explosives attacks targeting the U.S. population or U.S. interests.

For injuries, the 1998 bombing of the U.S. Embassy in Nairobi Kenya is one of the most significant in the historical record, with more than 4,500 reported.[7] This is likely a conservative high estimate because a similar sized VBIED in a major urban core in the U.S. would be expected to affect a higher population density; however, in the absence of other defensible estimates located in the literature, it was taken as a reasonable high estimate.

For fatalities, three previous incidents in the historical record were identified as suitable for alternative outcome analysis: (1) the failed 2006 plot to simultaneously target seven transatlantic aircraft;[8] (2) the failed 1995 plot simultaneously targeting 11 transpacific aircraft, known as the "Bojinka plot,"[9] and (3) the successful 1993 bombing of the World Trade Center.[10] Had either of the aviation plots succeeded, fatality estimates can be made based on aircraft capacity and the assumption of total loss of airframe. Further, assuming full aircraft in the Boeing 747[11] or 777[12] class, fatality estimates would range from approximately 2,840 to 4,460 overall, for an average of 3,650. According to the U.S. Government, transnational terror groups remain interested in targeting aviation,[13] and more recent attempts made in 2009[14] and 2010[15] support the reasonability of these scenarios as the basis for the fatality high estimate.

Estimates of alternative outcomes during the World Trade Center Bombing have also been conducted that assume the same loss as a single tower during the 9/11 attacks—approximately 2,000 fatalities.[16] However, during 9/11, the majority of the potential victims were able to evacuate prior to the towers' collapse. A VBIED detonating without warning, like in 1993, capable of collapsing the building would not afford victims the opportunity to evacuate. Theoretically, most or all of those in the building itself would be killed as well as many in the path of the collapsing building. Twenty-five thousand people were estimated to work in each of the World Trade Center towers.

Direct Economic Loss

The SNRA direct economic metric includes

- Decontamination, Disposal, and Physical Destruction (DDP): The value or replacement cost of physical buildings, infrastructure, building contents, vehicles, and other physical property

[7] FBI at http://www.fbi.gov/about-us/history/famous-cases/east-african-embassy-bombings-1998.
[8] FBI at http://leb.fbi.gov/2011/september/the-evolution-of-terrorism-since-9-11.
[9] New York Times at http://www.nytimes.com/1996/09/09/nyregion/bomb-trial-jurors-say-panel-had-no-doubts.html.
[10] FBI at http://www.fbi.gov/news/stories/2008/february/tradebom_022608.
[11] Boeing technical data. 747 class averages 467 passengers per aircraft. At http://www.boeing.com/boeing/commercial/747family/index.page?
[12] Boeing technical data. 777 class averages 344 passengers per aircraft. At http://www.boeing.com/boeing/commercial/777family/background.page?
[13] FBI (2011) 4.
[14] DOJ at http://www.justice.gov/opa/pr/umar-farouk-abdulmutallab-sentenced-life-prison-attempted-bombing-flight-253-christmas-day
[15] FBI (2011) 8.
[16] Lundberg (2013) 204.

directly destroyed by the attack. This includes the cost of decontamination, if any, and debris removal costs.

- Business Interruption: Business interruption costs caused directly by the incident or the immediate investigation, as opposed to shock, substitution, or second-order effects on the economy.
- Medical Costs: Cost of medical care to injured, including those who become fatalities.
- Lost Demand from Fatalities: No economic value was assigned to a human life (or injury) in itself as a Value of Statistical Life, because this is a value judgment that differs from person to person, and because it would represent double counting with these impacts counted separately. The lost contribution to the national economy as spending was captured, but capped at one year for consistency with benchmark risk assessments. This value was taken at $42,500, the midpoint of the median $35,000–$50,000 household earning value used as the average one year spending per person by past assessments.

Direct economic costs for the low and best estimates were calculated separately from the high estimate. The low and best estimates were calculated by the SNRA project team using the following assumptions:

Low and Best Estimates

DDP Costs

A per-casualty multiplier (factor approach) was constructed as the average property damage per casualty for all U.S. bombings between 1988 and 1998. Property damage figures were converted to 2011 dollar values prior to calculation. Because these figures include many thousands of bombings of much lower destructive power than those of the SNRA data set (Table 7), the average property damage of $227,000 per casualty, as opposed to average property damage per incident (which was used as the low estimate, see below) was used to construct this multiplier for the best estimate (Table 5).

Table 5: Direct Economic Loss Estimates for Historical Incidents of Table 7[17]

	Inputs per		Number		
			Fatalities	Injuries	
Component	Fatality	Injury	1	10.8	Total
DDP	$227,000	$227,000	$227,000	$2,451,600	$2,678,600
BI	$37,000	$37,000	$37,000	$399,600	$436,600
Medical	$5,200	$24,000	$5,200	$259,200	$264,400
Lost spending	$42,000	$0	$42,000	$0	$42,000
					$3,421,600

Because this approach would have resulted in zero dollar loss (as the other components of the SNRA direct economic loss metric are also tied to the fatality and injury estimates) for the low estimate, which was judged unrealistic for the comparatively small set of incidents called out by the FBI source as terrorist incidents, the average property damage per incident of the 1988–1998 set was used as a reasonable low estimate of direct economic loss. Total 2011-dollar adjusted

[17] Kunreuther et al (2014).

property damages ($1.061 billion) from 1988 to 1988 were divided by the total number of bombing incidents (25,065), including actual, attempted, and [1998 reporting only] accidental explosive and incendiary U.S. incidents, to generate a low estimate of $42,000.

Business Interruption

Business interruption costs were also estimated by a proxy multiplier applied to the total number of fatalities and injuries. The only definite estimate of business interruption that could be obtained for any of the historic events was zero.[18] Since this was due to unusual circumstances particular to the event, a per-casualty multiplier was obtained from the 2013 Boston bombing in the same manner as for the armed assault event.[19]

Business interruption costs were estimated from the $10 million lost business costs to the approximately 500 businesses in the 12-block immediate impact area of the 2013 Boston Marathon bombing, restricted for approximately one week of investigation.[20] The size and duration of the restricted immediate impact area was considered to be a reasonable estimate for the post-attack investigation of any explosives terrorist attack of comparable magnitude in this country. This per-casualty (fatality + injury) cost of $37,000 of the Boston bombings was applied to the remaining incidents.[21,22]

Medical Costs

To these costs, an average medical cost of $5,200 per fatality and $24,000 per non-lethal injury were applied.[23] These numbers are the same as used for armed assault.

- These numbers differed substantially from medical costs due to burns, blunt-force, and other trauma injuries from violent causes in the United States, which averaged in the low- to mid-single thousands. However, gunshot injuries were judged to be a closer analog to injuries from terrorist explosive devices due to their exceptionally violent and targeted nature.
- This assumption was supported by a parallel analysis of the 1995 Oklahoma City bombing,[24] which resulted in an average per-injury cost of $23,000 (2011 dollars).[25]

[18] This was the 1920 Wall Street bombing (Gage (2004)). Business and political leaders perceived this attack to be an attack upon the capitalist system and rapidly restored normal commercial operations as an act of defiance and to maintain investor confidence. The bomb site was cleaned up the same day; normal business operations with replacement staff resumed the following day; and public communications by political, business, and press leaders designed to boost investor confidence resulted in stock and bond values rising above their pre-attack averages within days. The prioritization of restoring normal operations and public confidence over preserving evidence at the bomb site for investigation resulted in minimal interruption of business compared with other historic U.S. terrorist attacks. However, this prioritization came at the cost of justice: the perpetrator or group was never determined.

[19] Because the SNRA project team could not be confident in the assessment of zero business interruption cost for the 1920 attack based upon inference from the literature, this multiplier was also applied to obtain proxy business interruption estimates for this attack rather than using the apparent historical value of zero.

[20] Exclusion zone 12 blocks, with 500 businesses, Luna (2013); cost to businesses in exclusion zone for one week restrictions $10 million, Dedman et al (2013). Costs of the citywide lockdown and law enforcement deployment were excluded from the estimate here, because they are not characteristic of the aftermath of most terrorist attacks in this country. Direct property damage costs were also excluded, since these were specific to the bomb attack. Note that estimates of $250–$300 million often reported (Green et al (2013), Dedman et al (2013), Luna (2013)) in the media refer to costs of the lockdown. They are a reasonable estimate of this (being calculated as a 1/2-1/3 of one day's economic activity of Boston), but such broad lockdowns accompany few, if any, of the other bombing and shooting attacks included here. Most conventional-weapon terrorist attacks (bombs, flame, guns) are very localized in their direct effects to property and business interruption.

[21] This counts interruptions to public sector activity, such as the Fort Hood or Little Rock shootings at U.S. Government facilities, on the same basis as private sector economic activity. This equivalence is applied only in this estimator (e.g., lost taxes or parking fines and public sector response costs not counted in the medical costs are not included in the total direct economic loss estimates).

[22] As the Boston bombing itself occurred in 2013 after the time frame of the main data sources used for this event, it was not included directly but only as a source of proxy estimates to fill in data gaps for other incidents.

[23] Medical cost per fatal and non-fatal injury for gunshot injuries in the United States from Corso et al (2007), adjusted from 2000 to 2011 dollars using the general CPI-U inflator (1.31). Estimated costs from lost labor productivity are not included.

[24] Shariat et al (1998).

[25] Costs: Hospital acute care costs, excluding emergency transport, physician, surgeon, and rehabilitation charges, $2.5 million [$3.7 million in 2011 dollars]. Mean charges: treated and released from ER, [over] $350 [$520], hospitalized, $28,000 [$41,000]. Long -term medical costs (follow-up 1996) for 494 persons interviewed of 914 persons affected by the bombing: $5.7 million [$8.2 million] total, average $16,000 [$23,000] per person.

Lost Demand from Fatalities

To estimate the costs of lost demand from deaths, the SNRA project team multiplied the number of deaths listed in Table 7 by $42,500, the same figure used across the SNRA 2011 events.[26]

High Estimate

Like health and safety impacts, direct economic losses caused by IEDs can have vast disparity. Loss will range from minimal in most cases to billions of dollars for the most large-scale attacks in densely built urban environments.

As with health and safety analysis, a high estimate ($350 million) generated by this method using the high fatalities (168) and injuries (1,042) from the data set in Table 7 appeared overly conservative given knowledge of historical incidents. This estimate has been exceeded routinely, including an estimated $4.3 billion in property losses attributed to the 1992 IRA bombing of the London Financial District.[27] Instead, the SNRA project team constructed the high estimate from an analysis of property losses expected following a 20,000-lb. VBIED in Los Angeles, New York City, Chicago, or Houston.[28] The results are shown in Table 6. The average property loss of $20 billion is significant, but not unreasonable when compared to historical incidents such as the 1995 Oklahoma City bombing or 1993 World Trade Center bombings, both of which caused nearly $1 billion in property loss, but also contained damage to a more isolated area than would be expected in the center of an urban core.

Table 6: Massive VBIED Property Loss Model[29]

City	Property Loss ($2011 billion) (DDP + BI)
Chicago	$25.1
Houston	$18.1
Los Angeles	$18.9
New York	$18.4

This scenario does not report fatalities or injuries. However, estimation of medical costs and lost spending due to fatalities using the 3,650 fatalities and 4,500 injuries of the SNRA high estimate and the inputs of Table 6 summed to $280 million. As the correlation between the high estimates of fatalities and injuries and direct economic loss would have required additional analyst assumptions and this addition would not have had an effect on the total within the order of magnitude precision of the SNRA, the reported high direct economic estimate includes only the $20.1 billion average of the DDP + business interruption estimates above.

84 incurred no medical expenses, so 410 persons did; 410 x $16,000 = $6.56 million; it is unclear how to account for the discrepancy. 92 percent of the 494 interviewed (454) had been injured in the bombing. The project team used $5.7 million total /454 injured = $13,000 per injury long-term cost, $5.7 million x 754/454 = $9.5 million [$13.6 million 2011 dollars]. Total medical costs in 2011 dollars is $17.3 million, or $23,000/injury.

[26] This number originates from the 2008 Bioterrorism Risk Assessment (BTRA 2008) (the BTRA as a whole is classified Secret, but its economic methodology appendix is U//FOUO), and represents the midpoint (the expected value of a linear uniform distribution over the interval) of the $35,000–$50,000 median household income band in 2011. DHS (2008) pp. E2.7–34. (Appendix reference is UNCLASSIFIED//FOR OFFICIAL USE ONLY; Extracted information is UNCLASSIFIED.)

[27] GTD 199204100007 (2011 USD).

[28] Kunreuther et al (2014). Converted to 2011 dollars using 2014 to 2011 CPI of 0.950. The property damage metric in the RMS insurance model used for this study corresponds to the SNRA DDP (structure and contents) and business interruption cost estimates: published scenarios such as these also calculate all losses, not only insured losses, so these numbers are directly comparable without additional adjustment. Workers' compensation costs, typically on the same order of magnitude as property damage losses in RMS scenarios, are not counted in the SNRA direct economic loss metric.

[29] Kunreuther et al (2014).

Indirect, induced, or total economic loss estimates were not calculated for the 2015 revision of the SNRA.

Social Displacement

For the purposes of the SNRA, social displacement was defined as the number of people forced to leave home for a period of two days or longer. Note that there are limitations to this measure of social displacement, as the significant differences between temporary evacuations and permanent displacement due to property destruction are not captured. As noted, incidents of bomb threats or hoaxes frequently displace people for shorter periods of time but still cause disruption and economic impact.

- A few of the attacks in the historic data sets that were directed at specific persons, such as the 1985 and the 2008 bombings by the Jewish Defense League (JDL) (Table 7) and the Animal Liberation Front (ALF) (Table 4) respectively, occurred in residential neighborhoods. Like most terrorist attacks, bombings tend to occur in urban centers where concentrations of people can be found rather than residential neighborhoods.

In the majority of cases, however, the number of displaced from these historical attacks could not be determined from primary sources available to the SNRA project team. The one exception in the SNRA primary data set was the 1995 Oklahoma City bombing that left approximately 400 people homeless (Table 7).

Although not included in the SNRA primary data set, two other incidents are included in Table 7—the 2008 ALF firebombing attack, which displaced a family of four, and a 1914 accident where a group of bomb-makers working in their apartment blew themselves up but also caused substantial injury and damage to the other apartments and residents of their building (estimated 140 displaced).

The SNRA project team was unable to identify other instances of terrorist explosives attacks in the event data set resulting in displacement. For this reason, the 2015 SNRA project team made the assumption that the remaining events most likely resulted in zero persons displaced from their homes.

Low, best, and high estimates reflect the minimum (0), average (2.2, reported as 2), and maximum (400) numbers of persons displaced from the set of incidents in Table 7.

Psychological Distress

Psychological impacts for the SNRA focus on *significant distress* and *prolonged distress*, which can encompass a variety of outcomes serious enough to impair daily role functioning and quality of life. An index for significant distress was created that reflected empirical findings that the scope and severity of an event is more important than the type of event.[30] The equation for this index uses the fatalities, injuries, and displacement associated with an event as primary inputs. A multiplicative factor elicited from subject matter experts weights the index for differing psychological impact based on the type of event, but as a secondary input.

The Significant Distress Index is calculated from these inputs using a formula proposed by subject matter experts consulted for the SNRA project: $N_{SD} = C_{EF} \times (5\ Fat + Inj + \frac{1}{2}\ D)$, where N_{SD} represents the number of persons significantly distressed, C_{EF} is the expert assessed Event

[30] See Appendix G for references and additional discussion of the SNRA Psychological Distress metric.

Familiarity Factor, *Fat* is the number of fatalities, *Inj* is the number of injuries and/or illnesses, and *D* is the number of persons displaced (Social Displacement).

- In words, this formula suggests that there are five significantly distressed persons for each life lost; one for each person injured; and one for each two people displaced. This formula was constructed to reflect the empirical finding that the most severe stressor of a disaster is losing a loved one, followed by injury, followed by displacement.
- The Event Familiarity Factor is intended to capture the extent to which the event entails an ongoing threat with uncertainty regarding long-term effects, is unfamiliar, or that people dread, exacerbating psychological impacts. This factor, ranging from 1.0 for familiar events to 1.3 for unfamiliar events, was provided by subject matter experts for each national-level event included in the SNRA: Explosives Terrorist Attack was given a C_{EF} of 1.2.
- Uncertainty was captured by applying the index formula to the low, best, and high estimates of these three human impact metrics.

The numerical outputs of this index formula were used to assign events to bins of a risk matrix for a semi-quantitative analysis of psychological risk in the SNRA.

Environmental Impact

In 2011, the U.S. Environmental Protection Agency (EPA) convened an ad hoc group of environmental experts representing the fields of environmental science, ecological risk, toxicology, and disaster field operations management to estimate environmental impacts for this event in the 2011 SNRA. Estimates are based on the following assumptions:

- Experts were elicited to provide estimates in the environmental impact category based on assumptions. Actual environmental/ecological harm that occurs as a result of the events described in a given scenario may vary considerably, and will depend on numerous *variables* (e.g., chemical or biological agent, contamination extent, persistence, toxicity,—both chronic and acute toxicity—and infectivity).
- EPA defined environmental consequence (impact)[31] as the potential for adverse effects on living organisms associated with pollution of the environment by effluents, emissions, wastes, or accidental chemical releases; energy use; or the depletion of natural resources.
- The environmental assessment included effects resulting from terrorism threats, but did not include human health effects or effects in urban areas, because these effects are already reflected in other impact measures.
- Experts identified the best estimate for environmental impacts as “Low” explaining that the overall environmental impacts are low, but that they could become more severe if a water treatment plant or chemical plant were targeted.

[31] The 2011 SNRA referred to impacts as ‘consequences’ because of prior usage in quantitative risk assessment (Kaplan and Garrick [1981, March], On the quantitative definition of risk: *Risk Analysis* 1(1) 11-32). Except where it will cause confusion, ‘impact’ is used synonymously in this document because of pre-existing connotations of the word ‘consequence’ within FEMA.

Additional Relevant Information

Adjustment for population density

Fatality, injury, and direct economic loss incident information for older historical attacks in urban areas (the majority of attacks) could be multiplied in proportion to the greater population density or greater density of modern very high-occupancy business district buildings over the past, using historical relative urban population density data.[32] However, the effects of adjusting the threshold for the higher-casualty observation class (the threshold will differ from four casualties and will be different for different time periods) would need to be accounted for in some way.

Scope

Risks posed by IEDs occur regardless of the actor's intent (e.g., terrorism vs. criminal): therefore, a more thorough analysis of historical incidents would ideally include criminal incidents.

Moreover, IED incidents are unusual in that threats or hoaxes can easily present significant economic impacts (and occasional injuries/fatalities due to panic). Therefore, effective risk communication would also ideally include consideration for these types of incidents. For example, economic impacts from business interruption and response costs are not insignificant. A series of Twitter-based bomb threats to planes necessitated response from military aircraft estimated to cost $22,500 per hour.[33] Closing Denver International Airport at noon for two hours to evaluate a threat or security breach was estimated to cost $2.5 million in flight cancellations directly related to the airport and affect an additional 800 flights nationwide.[34]

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[32] Such as those presented in figures 2.1, 2.2, pp. 4–5 RMS (2004).
[33] See http://www.economist.com/blogs/gulliver/2015/01/hoax-bomb-threats
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Table 7: SNRA 2015 Data Set
U.S. Historical Explosives and Incendiary Terrorist Attacks 1980-2005[35]

Date	Location	Incident type	Perpetrator	Killed	Injured	Dis-placed
1/7/1980	San Juan, PR	Pipe Bombing	Anti-Communist Alliance	0	0	0*[36]
1/13/1980	New York, NY	Bombing	Omega 7	0	4	0*
1/13/1980	Miami, FL	Bombing	Omega 7	0	0	0*
1/19/1980	San Juan, PR	Bombing	Omega 7	0	0	0*
3/17/1980	New York, NY	Bombing	Croatian Freedom Fighters	0	3	0*
3/25/1980	New York, NY	Attempted Bombing	Omega 7	0	0	0*
6/3/1980	Washington, DC	Bombing	Croatian Freedom Fighters	0	0	0*
6/3/1980	New York, NY	Bombing	Croatian Freedom Fighters	0	0	0*
7/14/1980	Dorato, PR; San Juan, PR	Multiple Bombings (2)	[37]	0	0	0*
7/14/1980	Ponce, PR; Mayaguez, PR	Multiple Arsons (2)	[38]	0	0	0*
7/22/1980	Puerto Rico (multiple)[39]	Multiple Bombings (4)	[40]	0	0	0*
8/20/1980	Berkeley, CA	Pipe Bombing	Iranian Free Army	0	2	0*
10/7/1980	New York, NY	Attempted Bombing	[41]	0	0	0*
10/12/1980	New York, NY	Bombing	[42]	0	4	0*
10/12/1980	Hollywood, CA	Bombing	[43]	0	1	0*
12/21/1980	New York, NY	Pipe Bombing	[44]	0	0	0*
12/30/1980	Hialeah, FL	Attempted Bombing	Omega 7	0	0	0*
1/8/1981	Puerto Rico (multiple)[45]	Multiple Incendiary Bombings (3)	[46]	0	0	0*
1/12/1981	San Juan, PR	Bombing	[47]	0	0	0*
1/23/1981	New York City, NY	Bombing	Croatian Freedom Fighters	0	0	0*
1/26/1981	San Francisco, CA	Bombing	[48]	0	0	0*
2/2/1981	Los Angeles, CA	Attempted Bombing	October 3	0	0	0*
2/22/1981	Hollywood, CA	Bombing	[49]	0	0	0*
3/15/1981	San Juan, PR	Attempted Bombing	[50]	0	0	0*
4/27/1981	Washington, DC	Incendiary Bombing	Iranian Patriotic Army	0	0	0*
5/16-18/81	New York City, NY	Multiple Bombings (5)	P.R. Armed Resistance	1	0	0*
6/25/1981	Torrance, CA	Incendiary Bombing	Jewish Defenders	0	0	0*
6/26/1981	Los Angeles, CA	Bombing	June 9 Organization	0	0	0*
8/20/1981	Washington, DC	Arson	Black Brigade	0	0	0*
8/20/1981	Los Angeles, CA	Bombing	June 9 Organization	0	0	0*
8/27/1981	Carolina, PR	Bombing	Grupo Estrella	0	0	0*
9/3-4/1981	New York City, NY	Multiple Bombings (2)	Jewish Defense League	0	0	0*
9/11/1981	Miami, FL	Multiple Bombings (2)	Omega 7	0	0	0*
9/12/1981	New York City, NY	Bombing	Omega 7	0	0	0*

[35] FBI (2006) 57-66. Explosives attacks (including rocket attacks), incendiary attacks, and attempted attacks designated as terrorist in nature in cited source.
[36] * = Assumption, SNRA project team.
[37] Organization of Volunteers for the Puerto Rico Revolution.
[38] Organization of Volunteers for the Puerto Rico Revolution.
[39] Hato Rey, PR; Santurce, PR; Rio Piedras, PR.
[40] Revolutionary Commandos of the People, Ready and at War.
[41] International Committee Against Nazism.
[42] Justice Commandos of the Armenian Genocide.
[43] Justice Commandos of the Armenian Genocide.
[44] Armed Forces of Popular Resistance.
[45] Santurce, PR; Ponce, PR; Rio Piedras, PR.
[46] People's Revolutionary Commandos.
[47] Ejercito Popular Boricua Macheteros.
[48] Jewish Defense League/American Revenge Committee.
[49] Armenian Secret Army for the Liberation of Armenia.
[50] Armed Forces of Popular Resistance.

Date	Location	Incident type	Perpetrator	Killed	Injured	Dis-placed
9/22/1981	Schenectady, NY	Bombing	Communist Workers Party	0	0	0*
9/24/1981	Miami, FL	Attempted Bombing	Omega 7	0	0	0*
10/1/1981	Hollywood, CA	Bombing	[51]	0	0	0*
10/25/1981	New York City, NY	Incendiary Bombing	Jewish Defense League	0	0	0*
11/11/1981	Santurce, PR	Bombing	[52]	0	0	0*
11/20/1981	Los Angeles, CA	Bombing	[53]	0	0	0*
11/27/1981	Santurce, PR; Condado, PR	Multiple Bombings (2)	[54]	0	0	0*
12/24/1981	New York City, NY	Attempted Pipe Bombing	Jewish Defense League	0	0	0*
2/19/1982	Miami, FL	Multiple Bombings (2)	Omega 7	0	0	0*
2/19/1982	Washington, DC	Bombing	Jewish Defense League	0	0	0*
2/21/1982	Rio Piedras, PR	Pipe Bombing	[55]	0	0	0*
2/28/1982	New York City, NY	Multiple Bombings (4)	[56]	0	0	0*
3/22/1982	Cambridge, MA	Bombing	[57]	0	0	0*
4/5/1982	Brooklyn, NY	Arson	Jewish Defense League	1	7	0*
4/28/1982	New York City, NY	Multiple Bombings (2)	Jewish Defense League	0	0	0*
4/29/1982	San Juan, PR; Bayamon, PR	Multiple Bombings (2)	[58]	0	0	0*
5/17/1982	Union City, NJ	Incendiary Bombing	Omega 7	0	0	0*
5/20/1982	San Juan, PR	Attempted Bombing	[59]	0	0	0*
5/30/1982	Van Nuys, CA	Attempted Bombing	[60]	0	0	0*
6/10/1982	Carolina, PR	Multiple Bombings (3)	[61]	0	0	0*
7/4/1982	New York City, Astoria, NY	Multiple Pipe Bombings (2)	Croatian Freedom Fighters	0	0	0*
7/5/1982	New York City, NY	Multiple Pipe Bombings (2)	Jewish Defense League	0	0	0*
8/20/1982	Old San Juan, PR	Bombing	[62]	0	0	0*
9/1/1982	Naranjito, PR	Attempted Bombing	[63]	0	0	0*
9/2/1982	Miami, FL	Bombing	Omega 7	0	0	0*
9/8/1982	Chicago, IL	Bombing	Omega 7	0	0	0*
9/20/1982	New York City, NY	Bombing	[64]	0	0	0*
9/25/1982	Miami, FL	Attempted Bombing	Omega 7	0	0	0*
10/22/1982	Philadelphia, PA	Attempted Bombing	[65]	0	0	0*
12/8/1982	Washington, DC	Attempted Bombing	Individual	0[66]	0	0*
12/16/1982	Elmont, NY	Multiple Bombings (2)	United Freedom Front	0	0	0*
12/21/1982	New York City, NY	Attempted Pipe Bombing	Jewish Defense League	0	0	0*
12/31/1982	New York City, NY	Multiple Bombings (5)	[67]	0	3	0*
1/11-12/83	Miami, FL	Multiple Bombings (3)	Omega 7	0	0	0*
1/28/1983	New York City, NY	Bombing	Revolutionary Fighting Group	0	0	0*
2/19/1983	Washington, DC	Pipe Bombing	Jewish Defense League	0	0	0*

[51] Armenian Secret Army for the Liberation of Armenia.
[52] Ejercito Popular Boricua Macheteros.
[53] Justice Commandos of the Armenian Genocide.
[54] Ejercito Popular Boricua Macheteros.
[55] Antonia Martinez Student Commandos.
[56] Armed Forces of National Liberation.
[57] Justice Commandos of the Armenian Genocide.
[58] Provisional Coordinating Committee of the Labor Self-Defense Group.
[59] Ejercito Popular Boricua Macheteros.
[60] Armenian Secret Army for the Liberation of Armenia.
[61] Armed Forces of Popular Resistance.
[62] Armed Forces of National Liberation.
[63] Ejercito Popular Boricua Macheteros.
[64] Armed Forces of National Liberation.
[65] Justice Commandos of the Armenian Genocide.
[66] The only fatality was the attacker, shot by police (bomb was a hoax). FBI (1983) 116.
[67] Armed Forces of National Liberation.

Date	Location	Incident type	Perpetrator	Killed	Injured	Dis-placed
3/20/1983	San Antonio, TX	Bombing	Republic of Revolutionary	0	0	0*
4/26/1983	Washington, DC	Bombing	Armed Resistance Unit	0	0	0*
4/27/1983	Miami, FL	Attempted Bombings (4)	Haitian Extremists	0	0	0*
5/12/1983	Uniondale, NY	Bombing	United Freedom Front	0	0	0*
5/13/1983	New York City, NY	Bombing	United Freedom Front	0	0	0*
5/27/1983	Miami, FL	Bombing	Omega 7	0	0	0*
8/8/1983	Detroit, MI	Attempted Incendiary Bombing	Fuqra	0	0	0*
8/9/1983	Detroit, MI	Arson	Fuqra	0[68]	0	0*
8/18/1983	Washington, DC	Bombing	Armed Resistance Unit	0	0	0*
8/21/1983	New York City, NY	Bombing	United Freedom Front	0	0	0*
8/27/1983	Washington, DC	Incendiary Bombing	Unknown	0	0	0*
10/12/1983	Miami, FL	Pipe Bombing	Omega 7	0	0	0*
10/30/1983	Hato Rey, PR	Rocket Attack	[69]	0	0	0*
11/7/1983	Washington, DC	Bombing	Armed Resistance Unit	0	0	0*
12/13-14/83	East Meadow, NY	Multiple Bombings (2)	United Freedom Front	0	0	0*
1/29/1984	New York City, NY	Bombing	United Freedom Front	0	0	0*
2/23/1984	New York City, NY	Bombing	Jewish Direct Action	0	0	0*
3/19/1984	Harrison, NY	Bombing	United Freedom Front	0	0	0*
4/5/1984	New York City, NY	Bombing	Red Guerrilla Resistance	0	0	0*
4/20/1984	Washington, DC	Bombing	Red Guerrilla Resistance	0	0	0*
8/22/1984	Melville, NY	Bombing	United Freedom Front	0	0	0*
9/26/1984	New York City, NY	Bombing	Red Guerrilla Resistance	0	0	0*
9/26/1984	Mount Pleasant, NY	Bombing	United Freedom Front	0	0	0*
12/10/1984	Puerto Rico (multiple)[70]	Multiple Bombings (5)	[71]	0	0	0*
1/25/1985	Old San Juan, PR	Rocket Attack	[72]	0	0	0*
2/23/1985	New York City, NY	Bombing	Red Guerrilla Resistance	0	0	0*
5/15/1985	Northridge, CA	Pipe Bombing	Jewish Defense League	0	0	0*
8/15/1985	Paterson, NJ	Bombing	Jewish Defense League	1	1	0*
9/6/1985	Brentwood, NY	Bombing	Jewish Defense League	0	1	0*
11/10/1985	Santa Ana, CA	Bombing	Jewish Defense League	1	7	0*
1/6/1986	Puerto Rico (multiple)[73]	Multiple Bombings (4)	[74]	0	0	0*
3/17/1986	Ponce, PR	Attempted Bombing	Commando Rojo	0	0	0*
4/14/1986	Rio Piedras, PR	Bombing	[75]	0	0	0*
9/15/1986	Coeur d'Alene, ID	Pipe Bombing	Aryan Nations	0	0	0*
9/29/1986	Coeur d'Alene, ID	Multiple Bombings (4)	Aryan Nations	0	0	0*
10/20/1986	New York City, NY	Incendiary Bombing	Jewish Defense League	0	0	0*
10/28/1986	Puerto Rico (multiple)[76]	Multiple Bombings (7)	[77]	0	1	0*
11/4/1986	Puerta De Tierra, PR	Attempted Bombing	[78]	0	0	0*
12/28/1986	Yauco, PR; Guayama, PR	Multiple Bombings (2)	[79]	0	0	0*
4/16/1987	Davis, CA	Arson	Animal Liberation Front	0	0	0*

[68] The only fatalities were the attackers. FBI (1984) 30.
[69] Ejercito Popular Boricua Macheteros.
[70] Levittown, PR; Rio Piedras, PR; Ponce, PR; Mayaguez, PR; Cayey, PR.
[71] Organization of Volunteers for the Puerto Rican Revolution.
[72] Ejercito Popular Boricua Macheteros/ Organization of Volunteers for the Puerto Rican Revolution.
[73] Cidra, PR; Toa Baja, PR; Guanica, PR; Santurce, PR.
[74] Ejercito Revolucionario Clandestino/ National Revolutionary Front of Puerto Rico.
[75] Organization of Volunteers for the Puerto Rican Revolution.
[76] Bayamon, PR; Fajardo, PR; Mayaguez, PR; Aguadilla, PR; Santurce, PR; Fort Buchanan, PR.
[77] Ejercito Popular Boricua Macheteros.
[78] Ejercito Popular Boricua Macheteros.
[79] Ejercito Popular Boricua Macheteros.

Date	Location	Incident type	Perpetrator	Killed	Injured	Dis-placed
5/25/1987	Puerto Rico (multiple)[80]	Multiple Bombings (7)	Guerr. Forces of Liberation	0	0	0*
1/12/1988	Rio Piedras, PR	Multiple Incendiary Bombings (2)	[81]	0	0	0*
5/26/1988	Coral Gables, FL	Bombing	[82]	0	0	0*
7/22/1988	Caguas, PR	Pipe Bombing	[83]	0	0	0*
9/19/1988	Los Angeles, CA	Bombing	Up the IRS, Inc.	0	0	0*
11/1/1988	Rio Piedras, PR	Multiple Bombings (2)	[84]	0	0	0*
4/3/1989	Tucson, AZ	Arson	Animal Liberation Front	0	0	0*
6/19/1989	Bayamon, PR	Multiple Bombings (2)	[85]	0	0	0*
1/12/1990	Santurce, PR; Carolina, PR	Multiple Pipe Bombings (2)	[86]	0	0	0*
2/22/1990	Los Angeles, CA	Bombing	Up the IRS, Inc.	0	0	0*
5/27/1990	Mayaguez, PR	Arson	Unk. Puerto Rican Group	0	0	0*
9/17/1990	Arecibo, PR; Vega Baja, PR	Multiple Bombings (2)	[87]	0	0	0*
2/3/1991	Mayaguez, PR	Arson	Popular Liberation Army	0	0	0*
2/18/1991	Sabana Grande, PR	Arson	Popular Liberation Army	0	0	0*
3/17/1991	Carolina, PR	Arson	Unk. Puerto Rican Group	0	0	0*
4/1/1991	Fresno, CA	Bombing	Popular Liberation Army	0	0	0*
7/6/1991	Punta Borinquen, PR	Bombing	Popular Liberation Army	0	0	0*
11/19/1992	Urbana, IL	Attempted Firebombing	[88]	0	0	0*
12/10/1992	Chicago, IL	[89]	Boricua Revolutionary Front	0	0	0*
2/26/1993	New York, NY	Car Bombing	Int'l Islamist Extremists	6	1,042	0*
7/20-22/93	Tacoma, WA	Multiple Bombings (2)	American Front Skinheads	0	0	0*
11/27-28/93	Chicago, IL	Firebombings (9)	Animal Liberation Front	0	0	0*
4/19/1995	Oklahoma City, OK	Truck Bombing	Individual	168	754	400[90]
4/1/1996	Spokane, WA	Pipe Bombing/Bank Robbery	Individual	0	0	0*
7/12/1996	Spokane, WA	Pipe Bombing/Bank Robbery	Individual	0	0	0*
7/27/1996	Atlanta, GA	Pipe Bombing	Individual	2	112	0*
1/2/1997	Wash. DC; Leavenworth, KS	Letter Bbing (count.as 1 incident)	Unknown	0	0	0*
1/16/1997	Atlanta, GA	Bombing of Abortion Clinic	Individual	0	8	0*
2/21/1997	Atlanta, GA	Bombing of Alt. Lifestyle Nightclub	Individual	0	5	0*
1/29/1998	Birmingham, AL	Bombing, Reproductive Svcs. Clinic	Individual	1	1	0*
3/31/1998	Arecibo, PR	[91]	[92]	0	0	0*
6/9/1998	Rio Piedras, PR	Bombing of Bank Branch Office	[93]	0	0	0*
6/25/1998	Santa Isabel, PR	Bombing of Bank Branch Office	[94]	0	1	0*
6/27/1998	Espanola, NM	Arson	Individual	0	0	0*
10/19/1998	Vail, CO	Arson Fire at Ski Resort	Earth Liberation Front	0	0	0*
3/19/1999	Santa Fe, NM	Attempted Bombing	Individual	0	0	0*
3/27/1999	Franklin Township, NJ	Bombing of Circus Vehicles	Animal Liberation Front	0	0	0*

[80] Caguas, PR; Carolina, PR; Mayaguez, PR; Cidra, PR; Aibonita, PR; Ponce, PR.
[81] Pedro Albizu Campos Revolutionary Forces.
[82] Organization Alliance of Cuban Intransigence.
[83] Ejercito Popular Boricua Macheteros.
[84] Pedro Albizu Campos Revolutionary Forces.
[85] Ejercito Popular Boricua Macheteros.
[86] Eugenio Maria de Hostos International Brigade of the Pedro Albizu Campos Revolutionary Forces.
[87] Pedro Albizu Group Revolutionary Forces.
[88] Mexican Revolutionary Movement.
[89] Car Fire and Attempted Firebombing (2).
[90] DoJ (2000).
[91] Bombing of Superaqueduct Construction Project.
[92] Ejercito Popular Boricua Macheteros.
[93] Ejercito Popular Boricua Macheteros.
[94] Ejercito Popular Boricua Macheteros (suspected).

Date	Location	Incident type	Perpetrator	Killed	Injured	Dis-placed
5/9/1999	Eugene, OR	Bombing	Animal Liberation Front	0	0	0*
12/25/1999	Monmouth, OR	Arson	Earth Liberation Front	0	0	0*
12/31/1999	East Lansing, MI	Arson	Earth Liberation Front	0	0	0*
1/3/2000	Petaluma, CA	Incendiary Attack	Animal Liberation Front	0	0	0*
1/15/2000	Petaluma, CA	Incendiary Attack	Animal Liberation Front	0	0	0*
1/22/2000	Bloomington, IN	Arson	Earth Liberation Front	0	0	0*
5/7/2000	Olympia, WA	Arson	Revenge of the Trees	0	0	0*
7/2/2000	North Vernon, IN	Arson	Animal Liberation Front	0	0	0*
12/1/2000	Phoenix, AZ	Multiple Arsons	Individual	0	0	0*
12/9-30/00	Suffolk Ct., Long Island, NY	Multiple Arsons	Earth Liberation Front	0	0	0*
1/2/2001	Glendale, OR	Arson	Earth Liberation Front	0	0	0*
2/20/2001	Visalia, CA	Arson	Earth Liberation Front	0	0	0*
3/30/2001	Eugene, OR	Arson	Earth Liberation Front	0	0	0*
4/15/2001	Portland, OR	Arson	Earth Liberation Front	0	0	0*
5/21/2001	Seattle, WA	Arson	Earth Liberation Front	0	0	0*
5/21/2001	Clatskanie, OR	Arson	Earth Liberation Front	0	0	0*
10/14/2001	Litchfield, CA	Arson	Earth Liberation Front	0	0	0*
3/24/2002	Erie, PA	Arson	Earth Liberation Front	0	0	0*
8/11/2002	Warren, PA	Arson	Earth Liberation Front	0	0	0*
11/26/2002	Harborcreek, PA	Arson	[95]	0	0	0*
1/1/2003	Girard, PA	Arson	Earth Liberation Front	0	0	0*
8-9/2003	San Diego, CA	Arson	Earth Liberation Front	0	0	0*
8/28/2003	Emeryville, CA	Bombing	Individual (suspected)	0	0	0*
9/26/2003	Pleasanton, CA	Bombing	Individual (suspected)	0	0	0*
1/19/2004	Henrico County, VA	Arson	ELF suspected	0	0	0*
4/1/2004	Oklahoma City, OK	Arson	Individual/Aryan Nations	0	0	0*
4/20/2004	Redmond, WA	Vandalism and Arson	Earth Liberation Front	0	0	0*
5-7/2004	Provo, UT	Vandalism and Arson	Animal Liberation Front	0	0	0*
12/27/2004	Lincoln, CA	Attempted Arson	Earth Liberation Front	0	0	0*
1-2/2005	Auburn, Sutter Creek, CA	Attempted Arson and Arson	Earth Liberation Front	0	0	0*
4/13/2005	Sammanish, WA	Arson	Earth Liberation Front	0	0	0*
7/7/2005	Los Angeles, CA	Attempted Arson	[96]	0	0	0*
9/16/2005	Los Angeles, CA	Attempted Arson	Animal Liberation Front	0	0	0*
11/20/2005	Hagerstown, MD	Arson	Earth Liberation Front	0	0	0*

[95] Earth Liberation Front/ Animal Liberation Front.
[96] Animal rights extremists (suspected).