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Update on Geospatial Patterns of Antecedent Behavior among Perpetrators in the American Terrorism Study (ATS)

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Report to Resilient Systems Division, DHS Science and Technology Directorate

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National Consortium for the Study of Terrorism and Responses to Terrorism
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Based at the University of Maryland

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About This Report

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This report is part of a series in support of the Prevent/Deter program. The goal of this program is to sponsor research that will aid the intelligence and law enforcement communities in assessing potential terrorist threats and support policymakers in developing prevention efforts.

About START

The National Consortium for the Study of Terrorism and Responses to Terrorism (START) is supported in part by the Science and Technology Directorate of the U.S. Department of Homeland Security through a Center of Excellence program based at the University of Maryland. START uses state-of-the-art theories, methods and data from the social and behavioral sciences to improve understanding of the origins, dynamics and social and psychological impacts of terrorism. For more information, contact START at infostart@start.umd.edu or visit www.start.umd.edu.

Citations

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Contents

Introduction

As part of the Terrorism and Extremist Violence in the United States (TEVUS) database integration effort, researchers at the Terrorism Research Center in Fulbright College at the University of Arkansas and the University of Oklahoma have been adding: 1) federal terrorism court cases and associated data and 2) incident and antecedent geospatial data from these court cases to the American Terrorism Study (ATS). The goal of the project is to examine geospatial patterns in perpetrator behavior and determine if the patterns identified in earlier studies[1] have changed significantly.

The ATS allows examination of a number of different units of analysis. Analyses may examine: (1) characteristics of federal terrorism *court cases*; (2) the characteristics of persons indicted in each court case or involved in incidents, otherwise referred to as *indictees*; (3) characteristics of *incidents* and *planned incidents*; and (4) *antecedent activities* that lead up to the incident and are necessary to carry it out and/or achieve the goals of the persons or groups.

The database allows researchers to examine detailed characteristics of the terrorism *incidents* and *perpetrators' antecedent activities* associated with each of these federal court cases. Since some court cases involved arrests prior to an incident, these cases are not associated with a geocoded incident location unless the conspiracy had progressed to the point of target identification. Other court cases may be associated with multiple incidents. Therefore, the number of cases and number of incidents do not match. In addition to geocoded information on incident or target locations, the ATS includes geocoded information on what are variously referred to as "precursor," "pre-incident," or "antecedent" activities. We make no distinction between these terms, and they may be used interchangeably. For clarity, we will refer to these activities in this report as "*antecedent*" activities. However, we do distinguish between two types of antecedent activities: (1) *preparatory activities* are antecedent activities that are clearly committed in preparation for a terrorist incident; while (2) *ancillary activities* include any other activities conducted by the person or group associated with a terrorist incident that cannot be directly labeled as preparatory. These may include order maintenance offenses, thefts merely to ensure group survivability, target practice, etc.

To provide a sense of the amount of data analyzed, figures in this report show the number of unique locations in addition to the number of unique persons, incidents, and antecedent activities that took place at those locations. In these figures, the term "perpetrators" refers to the number of unique persons in the analysis. A perpetrator may have used one or more unique locations as a residence prior to the commission of an incident. These locations are referred to as "residence locations" and denote the number of unique addresses in the analysis. The term "incidents" refers to the number of unique incidents in the analysis, and "incident locations" are the number of unique addresses for these incidents. If multiple incidents occurred over time at the same location then there can be fewer incident locations than incidents in the figures. Finally the number of antecedent, ancillary, and preparatory activities is shown, and quite often the number of activities exceeds the number of locations as a result of multiple activities occurring at one location over time. The quantities shown for the "activity locations" on each

[1] "Update on Geospatial Patterns of Precursor Behavior among Terrorists," Final Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S. Department of Homeland Security. November 2012; "Geospatial Patterns of Precursor Behavior among Terrorists," Final Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S. Department of Homeland Security. July 2011; Pre-Incident Indicators of Terrorist Activities (PITA), NIJ Grant #2003-DT-CX-0003; Geospatial Analysis of Terrorist Activities (GATA), NIJ Grant #2005-IJ-CX-0200; and Terrorism in Time and Space (TITAS), NIJ Grant #2006-IJ-CX-0037

figure refer to the number of unique addresses associated with these types of activities. Table 1 provides definitions of additional terms used in the analyses.

Table 1. American Terrorism Study Terminology

Term	Definition
Case Study	Consists of one or more terrorism incidents, planned incidents, or conspiracies that are closely related either temporally, spatially, or through perpetrators. One or more court cases may be linked to a case study depending on if the perpetrators were tried individually or as a group.
Incident	An act of terrorism as defined in the Attorney General's (AG) guidelines.[2] In some case studies where a violent terrorism incident was not identified (often from early interdiction by law enforcement) a conspiracy is listed as the incident. Examples include court cases involving material support of terrorism and funding of terrorist groups.
Court Case	A terrorism-related federal court case. The majority of the cases were investigated by the Federal Bureau of Investigation (FBI) under the AG's terrorism guidelines. Additional cases were terrorism related as designated by the Department of Justice (DOJ) or the Executive Office for United States Attorneys (EOUSA).
Indictee	A person indicted in a federal court case. People can be indicted multiple times and so when referencing the number of indictees this is not the number of unique persons in the dataset.

[2] The current guidelines in effect are "The Attorney General's Guidelines For Domestic FBI Operations" signed into effect on 9/29/2008 by Attorney General Michael B. Mukasey. Under "Section C. Enterprise Investigations" guidelines for both domestic and international terrorism investigations are outlined along with their definitions as violations of federal criminal law described in the 18 U.S.C. 2331(5) federal statutes. Under these guidelines the term "international terrorism" means activities that— (A) involve violent acts or acts dangerous to human life that are a violation of the criminal laws of the United States or of any State, or that would be a criminal violation if committed within the jurisdiction of the United States or of any State; (B) appear to be intended— (i) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and (C) occur primarily outside the territorial jurisdiction of the United States, or transcend national boundaries in terms of the means by which they are accomplished, the persons they appear intended to intimidate or coerce, or the locale in which their perpetrators operate or seek asylum. The term "domestic terrorism" means activities that— (A) involve acts dangerous to human life that are a violation of the criminal laws of the United States or of any State; (B) appear to be intended— (i) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and (C) occur primarily within the territorial jurisdiction of the United States.

Data and Methods

In the ATS database, a total of 203 *case studies* involving 335 *court cases* have been coded for geospatial and temporal variables. These *case studies* group data related to one or more incidents and/or court cases based on spatial, temporal, or perpetrator similarities. Of these, 119 case studies involving 235 court cases were linked with specific terrorist incidents. These 409 incidents occurred from 1975 through 2011 and included both planned and carried out attacks.

In order for geospatial analysis to be performed on incidents, at a minimum, location data for target locations and associated terrorist residences and antecedent activities must be available at the city level. Because of this requirement, only 384 of the 409 terrorism incidents were available for geospatial analysis. The number of antecedent activities that were coded and could be linked to these case studies currently totals 2,559. Of these, 1,441 had sufficient location data and an associated incident with location data to be included in the geospatial analyses displayed in Figures 5 through 20.

For this report, new analyses were performed that examine the relationship between the locations of residences, antecedent acts, and incidents occurring within a thirty-mile range. These more detailed analyses required careful examination of the measured distances between locations. A number of measurements were made between residences, antecedent activities, and incidents when only the city was known for these locations. This resulted in 0-mile distances between same-city events as in cases where a measurement was recorded from a residence to a target location in the same city. To avoid discarding these measurements and thus skewing the data towards higher distance ranges, 115 (5%) of 2,182 measurements were altered. These 0-mile distances were replaced with each city's median linear distance based on its square mileage land area. This was done to minimize the amount of error introduced to the analyses. These replacement values ranged from 1 to 8.7 miles.

Note: This is the third edition of the geospatial update for the TEVUS project. Since its inception, the database has been examined thoroughly for errors and has undergone an extensive data cleaning process. Although some patterns have changed, it is important to note that this is not necessarily a result of new data or actual changes in terrorist behavior. Rather the shifts in results are also likely due to erroneous data being removed; relationships between residences, precursor activities, and incidents being better defined;[3] and/or slight changes in methodology.[4]

[3] During the coding of geospatial data, links are created between perpetrators and antecedent activities, perpetrators and incidents, and antecedent activities and incidents. Over the past year the project team has been systematically validating these linkages, which now total over 13,000. During this process erroneous linkages were removed and missing links were established.

[4] Over the past year the methodology for coding activities as "ancillary" and "preparatory" was better defined, and all coding was checked for necessary revisions. Additionally, all case studies were checked for links to official federal terrorism court cases, and if no link could be found, then these incidents were not included in this analysis.

Notable Overall Patterns

Figures 1- 5 provide information on the current status of data collection. The Terrorism Research Center includes over 1,000 federal terrorism-related criminal cases in its tracking list (Figure 1). Approximately one-half of these cases are being or have been collected as part of the TEVUS project while the remainder were or currently are being collected under separate funding.[5] Of the 1,080 federal cases monitored, data collection is complete on slightly less than one-half (44%) of these cases. Significant amounts of data have been collected on another 42%, while no data collection has taken place on 13% of these cases.

Approximately one-half (46%) of the cases being monitored were motivated by either far-right or al-Qa'ida-related (AQ-related) ideologies (Figure 2). Persons motivated by far-left, environmental, and other single issue perspectives represent less than one-fifth (17%) of the cases. However, it should be noted that the ideological motivation of the perpetrators in over one-third (36%) of the cases is unknown at the present time. These include both uncoded cases as well as cases in which federal prosecutors chose not to discuss the motive of the perpetrators during the course of the case proceedings.

Figure 3 provides a summary of the geospatial coding effort. Over three thousand (3,562) antecedent activities by 1,034 defendants in these cases have been geocoded. Of these, 2,559 antecedent acts involving 696 of these persons have been linked to 409 known "committed" or "prevented" terrorist incidents. The most common antecedent activities include "meetings," "communications," and "travel" (Figure 4). These three categories account for 1,310 (51%) of the 2,559 antecedent acts linked to terrorism incidents. In and of themselves, these types of behaviors may or may not be criminal. Figure 5 provides a breakout of the number of ancillary, preparatory, and all antecedent behaviors by category of terrorism, as well as the ratios of these behaviors per incident by category of terrorism.

The following represents some of the most notable findings and patterns that emerge from the analyses provided in Figures 3 through 20.

- Almost one-third (30%) of terrorism cases that were coded for geospatial and temporal variables had no identifiable links to completed or prevented terrorism incidents. These cases either resulted from intervention efforts in terrorist conspiracies prior to the identification of a target or involved material support of terrorism or financing of terrorist organizations (Figure 3).

- Of the 1,878 preparatory activities recorded, 50% involved planning for an attack via meetings (21%), communications (17%), or travel (12%) both within and outside the United States. The next most prevalent preparatory activities included procuring bombs or weapons (9%) and conducting surveillance (7%) (Figure 4).

- AQ-related perpetrators were the most active prior to an attack with an average of 13.46 antecedent acts per incident. This is compared to far-right perpetrators (6.52 antecedent acts per incident), far-left (5.21), and environmental (1.81) (Figure 5).

- Despite an increase in the number of measurements involving residence to incident locations (from 774 to 931 over the last year), the overall patterns remained remarkably consistent. Slightly over one-

[5] MIPT grant 106-113-2000-064; NIJ grants 1999-IJCX-0005, 2003-DT-CX-0003, 2005-IJ-CX-0200, 2006-IJ-CX-0026, and 2006-IJ-CX-0037; DHS COE grants 208-ST-061-ST-0004, N-0001-405-10629, and 2012-ST-061-CS-0001.

third (34%) of perpetrators' residences were within 30 miles and almost half (45%) were within 90 miles of the target location during at least one phase of the preparation for an incident (Figure 6).

- However, the results of the residence to incident analyses do show significant variation when the category of terrorism is examined. A greater percentage of AQ-related perpetrators' residences (55%)[6] and far-right perpetrators' residences (44%) were within 30 miles of the terrorist incident location than were either far-left (29%) or environmental (25%) perpetrators' residences.[7] Both AQ-related and far-right perpetrators exhibited a bi-modal pattern of tending to reside at great distances from or very close to the target during at least one phase of the preparation for an incident (Figure 7).

- Since our last report, there has been a slight decrease (from 46% to 40%) in the percentage of antecedent behaviors committed within 30 miles of perpetrators' residences. The number of residence to antecedent activity measurements did increase slightly (from 2,693 to 2,761) over the last year, but the change is mainly due to data cleaning (Figure 8).

- Perpetrators carry out preparatory and ancillary activities at different distances from their residence locations. Specifically, 44% of preparatory activities were conducted within 30 miles of perpetrators' residences, while only 29% of ancillary activities were in this same range. Over 60% of ancillary activities were conducted farther than 90 miles from perpetrators' residences, but only 43% of preparatory activities were (Figures 10 and 12).[8]

- A similar pattern is observed when examining the locations of antecedent activities in relation to incident locations. A greater percentage of overtly preparatory behaviors (versus ancillary activities) occur closer to the target location (Figures 16 and 18). Specifically, perpetrators engaged in 42% of their preparatory behaviors within 30 miles of the target. This may be extremely relevant for local law enforcement.

- AQ-related and far-left perpetrators committed more than half (55% and 52%, respectively) of their antecedent behaviors (both ancillary and preparatory) within 30 miles of where they lived. In contrast, far-right perpetrators committed less than one-third (31%) and environmental perpetrators about one-fourth (24%) of their antecedent behaviors (both ancillary and preparatory) within 30 miles of their residences (Figure 9).

- On the other hand, just over one-third of the antecedent activities of AQ-related perpetrators and far-left perpetrators (34% and 36%, respectively) occurred within 30 miles of the *incident* location, while more than half (57%) of environmental perpetrators' antecedent activities occurred within this range (Figure 15). In other words, prior to a terrorist event, AQ-related and far-left perpetrators committed

[6] Further analysis of the AQ-related measurements revealed that 30% of the residences were located within 2 to 5 miles from the target location.
[7] The number of measurements compared to last year's analyses increased by 43% for AQ-related perpetrators and 173% for the far-right perpetrators, accounting for the change in patterns. The decrease in the percentage of environmental perpetrators who lived within 30 miles of the incident location is due to data cleaning, as the number of measurements did not increase significantly.
[8] Last year's report showed the opposite pattern where ancillary activities were generally closer and preparatory activities farther away from the residence locations. This change is due to cleaning of the data over the last year where source materials were checked for information that could link an antecedent activity directly to the incident. This resulted in recoding many ancillary activities as preparatory since they could be tied directly to the commission of the incident.

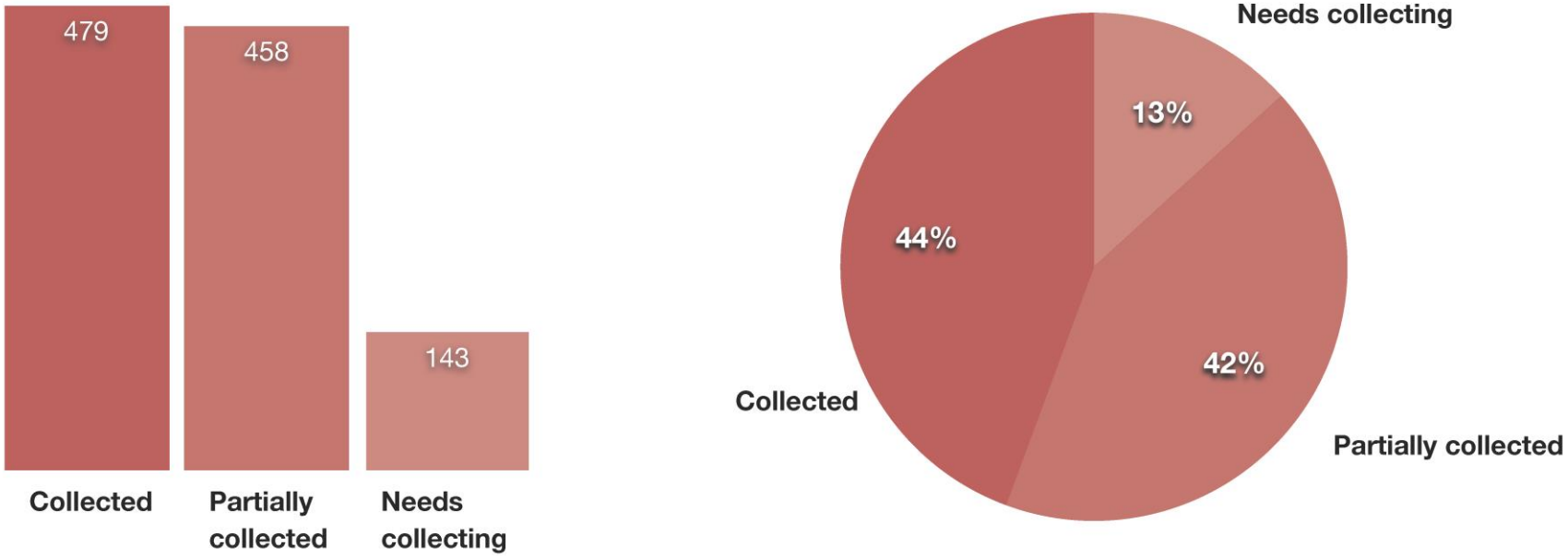
most of their antecedent behaviors closer to where they lived, while environmental perpetrators committed most of these activities nearer to the target location.[9]

- Overall, the general relationships identified in earlier studies have remained fairly stable. Like traditional criminals, most perpetrators of terrorist activity are temporally and spatially bound by their environment. Although they typically venture farther from their homes to commit acts of terrorism than traditional criminals do when plying their trade, they do tend to *act locally*.

[9] When examining only preparatory activities, environmental perpetrators also stand out – 61% of their preparatory activities were carried out within 30 miles of the incident location compared with 35% of AQ-related perpetrators', 38 % of far-left perpetrators', and 46% of far-right perpetrators' (Figure 19).

Figure 1. ATS Federal Terrorism Court Case Collection Status

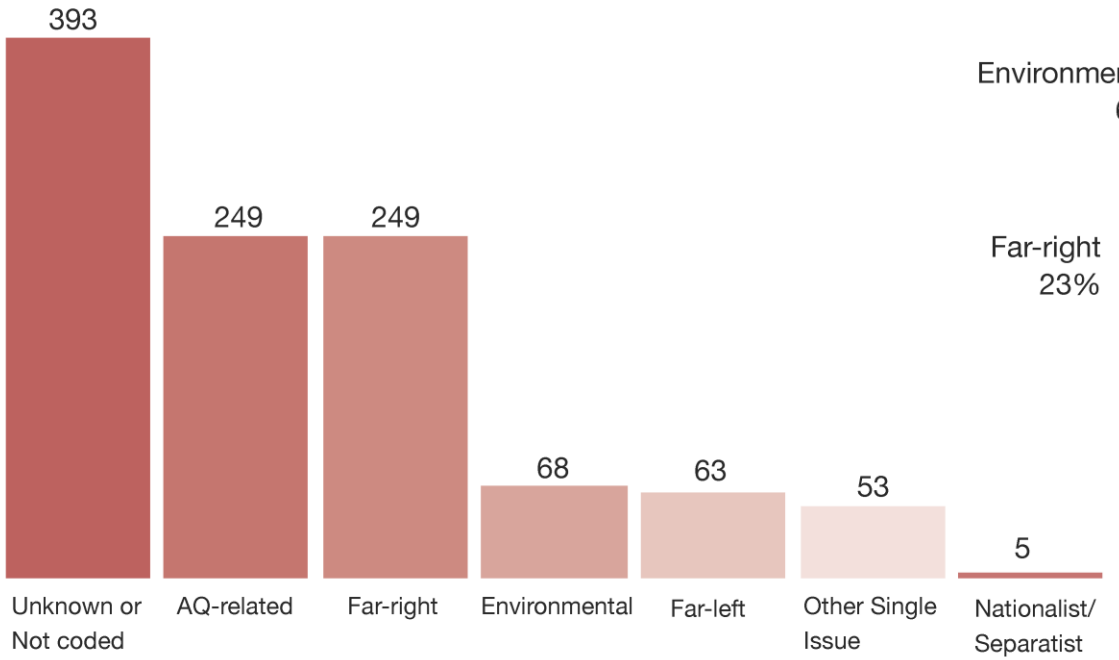
The ATS database is currently tracking 1,080 terrorism-related federal court cases from 1978 through 2012. During the TEVUS effort 223 court cases have been completely collected and 267 partially collected.



Court case documents are collected either by traveling to U.S. District court houses and photocopying the court records or by downloading them electronically from the PACER website. All court documents are not always available on PACER, and these cases are marked as "partially collected" until collection can be completed at the courthouse. Open court cases are periodically checked for availability of new court documents in an attempt to be as up-to-date as possible with court document collection.

Figure 2. Breakdown of ATS Court Cases by Terrorism Category

Identification of the category of terrorism in which each case belongs will occur when the court cases are coded for legal variables. Over the next year the number of cases in the "Unknown/Not coded" category should diminish. From preliminary inspection a large number of these cases have been indicted under the International AG guidelines and will more than likely be al-Qa'ida-related (AQ-related).



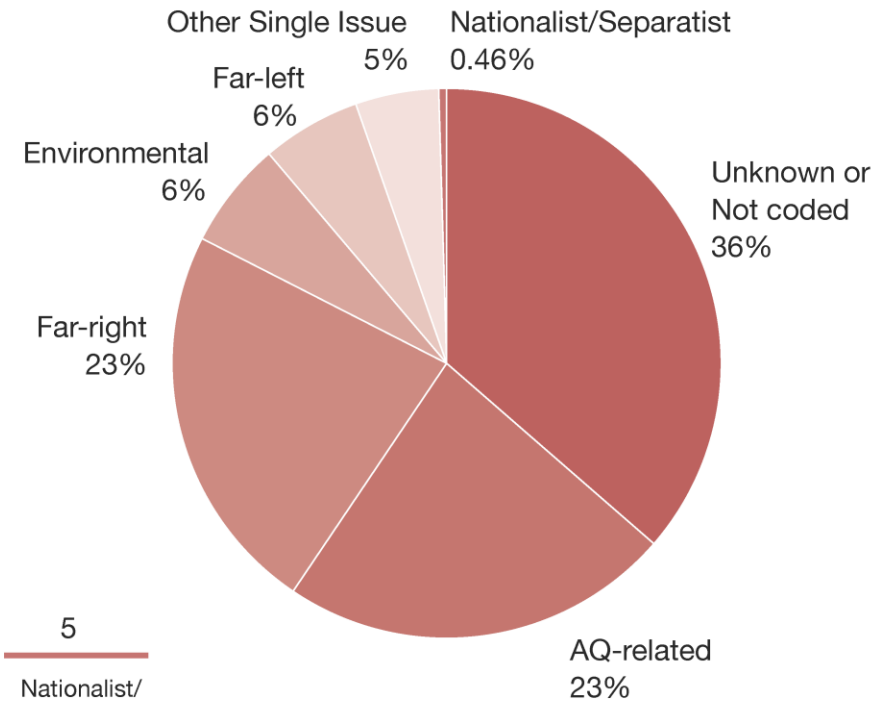
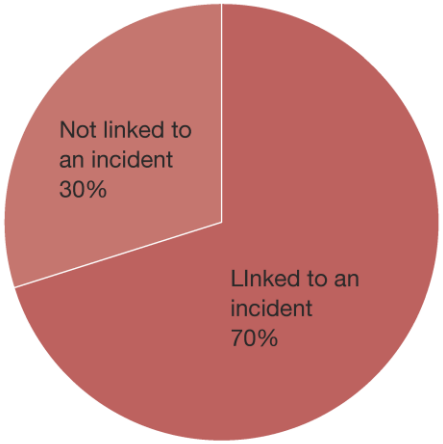


Figure 3. Geospatial Coding of ATS Terrorism Court Cases

Of the 424 court cases that have been coded for legal variables, 335 of these cases have been geospatially coded. A total of 235 of these cases were linked to 409 planned or completed terrorism incidents (69 hoaxes are not included) that occurred between 1975 and 2011. The database also includes 2,559 antecedent activities and 696 unique persons related to these incidents.

Although 100 court cases could not be linked to a planned or completed terrorism incident, these court cases were geospatially and temporally coded. There was not enough information found during the legal or geospatial coding to determine a target, target location, or date of planned attack, but data were coded on the events associated with the cases and the persons involved. A total of 1,003 antecedent activities and 338 unique persons were involved in these court cases.

Court Cases Linked to Incidents



Breakdown of Data Collected

Status	Court Cases	Incidents	Antecedent acts	Persons
Linked to incident	235	409	2,559	696
Not linked to incident	100	NA	1,003	338
Total	335	409	3,562	1,034

Figure 4. Prevalent Antecedent Activities

We have linked a total of 2,559 antecedent activities to terrorism incidents. These antecedent acts have been sub-coded into 681 ancillary and 1,878 preparatory activities.

Category	# of Ancillary	# of Preparatory	Total Antecedent
Meetings	137	394	531
Communications	89	322	411
Travel	152	216	368
Acquire Bombs/Weapons	16	166	182
Surveillance/Reconnaissance	15	125	140
Fraud	18	118	136
Procure Money/Equipment	36	96	132
Training Weapons/Tactics	36	81	117
Violent Acts	26	44	70
Manufacturing Weapons/Bombs	2	49	51
Transport Weapons/Bombs	8	40	48
Establish Residence/Business	25	15	40
Other	121	212	333
Total	**681**	**1,878**	**2,559**

Figure 5. Number of Antecedent Activities and Antecedent Activities per Incident by Category of Terrorism

Category	Incidents	Ancillary acts	Ancillary acts per incident	Preparatory acts	Preparatory acts per incident	Antecedent acts	Antecedent acts per incident
AQ-related	63	194	3.08	654	10.38	848	13.46
Far-left	89	88	0.99	376	4.22	464	5.21
Far-right	134	334	2.49	540	4.03	874	6.52
Environmental	96	27	0.28	147	1.53	174	1.81
All Categories (Total)	409	681	1.67	1,878	4.59	2,559	6.26

Note: Ancillary and preparatory acts are subcategories of antecedent acts. Only antecedent acts that were associated with an incident are included in this table. Additional case studies have antecedent acts, but no incident could be identified for analysis. The statistics for "All Categories" include Other Single Issue, Nationalist/Separatist, and Unknown categories, but are not shown individually as there were not enough data for meaningful analysis. The numbers above may not add up to 100% because of rounding error.

Figure 6. Analysis of Linear Distance Measurements from Residences to Incident Locations

Data

190 Perpetrators
179 Residence locations
218 Incident locations

Quick Stats

Avg. distance	408 miles
Median**	134 miles
Std. dev.	575
Min. distance	0.21 miles
Max. distance	2,696 miles

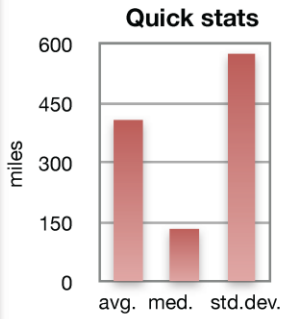
**Medians are particularly useful, indicating that 50% of the measurements were greater and 50% were less, thus providing some control over the effect of outliers.

Distance range	% of measurements
0 miles	0.00%
0.01-1 miles	0.86%
2-5 miles	12.14%
6-15 miles	16.86%
16-30 miles	4.40%
0-30 miles	34.26%
31-90 miles	11.17%
91-270 miles	14.61%
271-810 miles	19.33%
811+ miles	20.62%

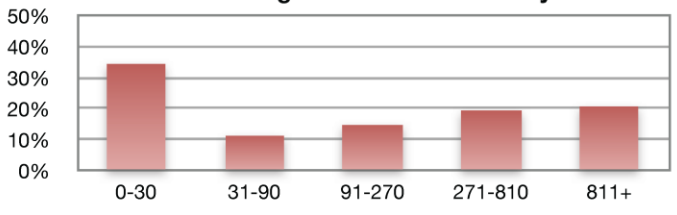
Note: Residential locations can include safe houses, hotel/motels, camps, etc.

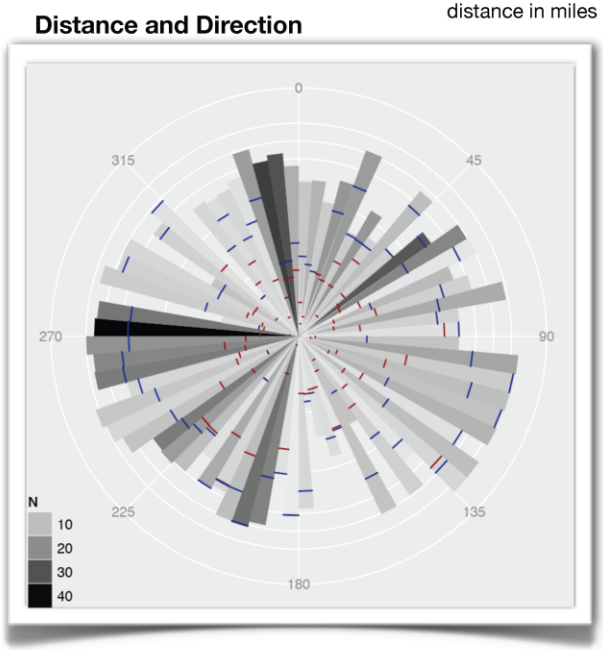
Measurements

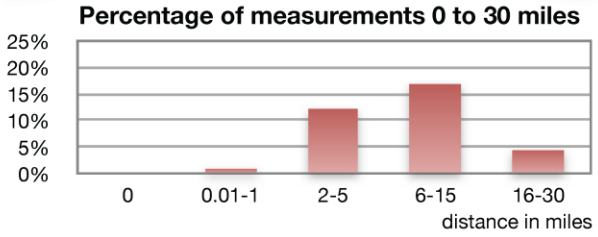
Miles	#
0	0
0.01-1	8
2-5	113
6-15	157
16-30	41
Total 0-30	319
0 -30	319
31-90	104
91-270	136
271-810	180
811+	192
Total	931



A further examination of distance between locations is shown for measurements that fall between 0 and 30 miles The percentages shown are out of all measurements.







The "Distance and Direction" rose diagram above and right shows the spatial relationship between the location of residences and incidents. The center point represents the location of all incidents. The bars show the location of residences in reference to what distance and direction the residence was from the location of the incident. The darker the bar the greater the number of residences that were located in that direction relative to the incident. The blue line on each bar represents the average distance for all measurements in that segment, while the red bar represents the minimum measured distance.

Figure 7. Comparison by Category of Terrorism for Measurements from Residences to Incident Locations

	AQ-related	Environmental	Far-right	Far-left	All Categories
0 - 30 miles	55%	25%	44%	29%	34%
31 - 90 miles	5%	11%	4%	16%	11%
91 - 270 miles	3%	19%	11%	21%	15%
271 - 810 miles	8%	11%	7%	34%	19%
811 + miles	28%	35%	33%	0%	21%
Minimum Distance	1.64	0.46	0.21	1.09	0.21
Maximum Distance	2,275	2,696	1,411	557	2,696
Mean	401	662	415	188	409
Median	17	207	110	128	134
Std. dev.	576	823	479	182	576
Perpetrators	43	50	65	28	190
Residence locations	40	51	62	25	179
Incidents	21	81	83	69	256
Incident locations	19	72	64	61	218
Measurements	60	264	295	306	931

Note: The statistics for "All Categories" include Other Single Issue, Nationalist/Separatist, and Unknown categories but are not shown individually as there were not enough data for meaningful analysis. The numbers above may not add up to 100% because of rounding error.

Figure 8. Analysis of Linear Distance Measurements from Residences to Antecedent Activity Locations

Data

272 Perpetrators
258 Residence locations
454 Antecedent locations

Quick Stats

Avg. distance	420 miles
Median**	75 miles
Std. dev.	637
Min. distance	0.21 miles
Max. distance	2,696 miles

**Medians are particularly useful, indicating that 50% of the measurements were greater and 50% were less, thus providing some control over the effect of outliers.

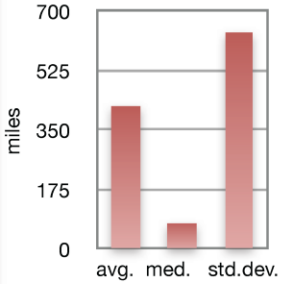
Distance range	% of measurements
0 miles	7.10%
0.01-1 miles	3.15%
2-5 miles	10.83%
6-15 miles	13.07%
16-30 miles	5.98%
0-30 miles	40.13%
31-90 miles	12.02%
91-270 miles	13.04%
271-810 miles	12.89%
811+ miles	21.91%

Note: Residential locations can include safe houses, hotel/motels, camps, etc. Antecedent activities include both ancillary and preparatory activities. These are all events that occurred prior to the incident. Distances are linear miles.

Measurements

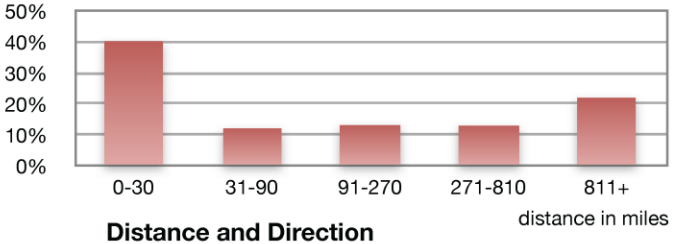
Miles	#
0	196
0.01-1	87
2-5	299
6-15	361
16-30	165
Total 0-30	1108
0 -30	1108
31-90	332
91-270	360
271-810	356
811+	605
Total	2761

Quick stats

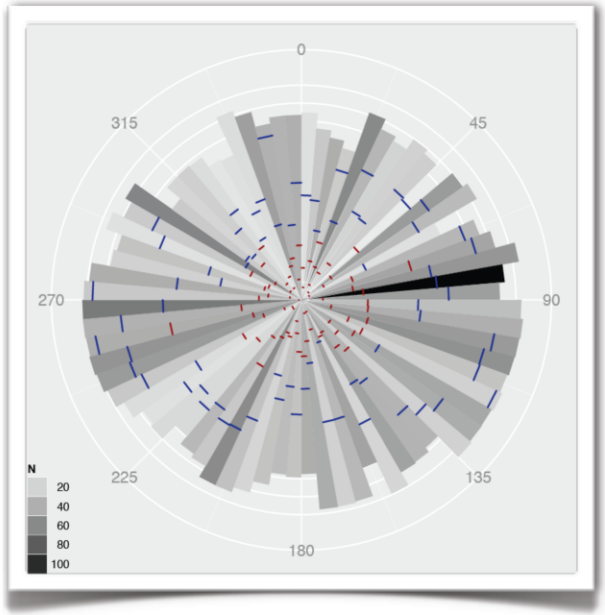


A further examination of distance between locations is shown for measurements that fall between 0 and 30 miles The percentages shown are out of all measurements.

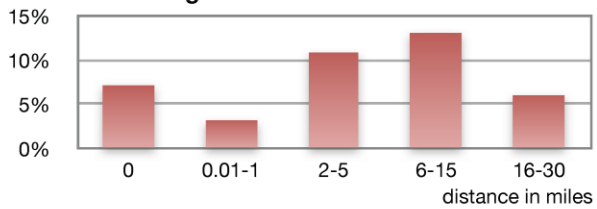
Percentage of measurements by distance



Distance and Direction



Percentage of measurements 0 to 30 miles



The "Distance and Direction" rose diagram above and right shows the spatial relationship between the location of residences and antecedent act locations. The center point represents the location of all antecedent acts. The bars show the location of residences in reference to what distance and direction the residence was from the location of the act. The darker the bar the greater the number of residences that were located in that direction relative to the act. The blue line on each bar represents the average distance for all measurements in that segment, while the red bar represents the minimum measured distance.

Figure 9. Comparison by Category of Terrorism for Measurements from Residences to Antecedent Activity Locations

	AQ-related	Environmental	Far-right	Far-left	All Categories
0 - 30 miles	55%	24%	31%	52%	40%
31 - 90 miles	5%	9%	10%	21%	12%
91 - 270 miles	6%	18%	16%	7%	13%
271 - 810 miles	12%	11%	15%	12%	13%
811 + miles	22%	38%	27%	8%	22%
Minimum Distance	0	0	0	0	0
Maximum Distance	2,696	2,696	2,599	1,927	2,696
Mean	381	839	476	187	420
Median	17	247	137	19	75
Std. dev.	632	980	589	353	637
Perpetrators	65	36	122	38	272
Residence locations	65	42	110	37	258
Antecedent activities	236	107	457	276	1,136
Antecedent activity locations	89	63	211	103	454
Measurements	447	352	1,154	728	2,761

Note: The statistics for "All Categories" include Other Single Issue, Nationalist/Separatist, and Unknown categories but are not shown individually as there were not enough data for meaningful analysis. The numbers above may not add up to 100% because of rounding error.

Figure 10. Analysis of Linear Distance Measurements from Residences to Ancillary Activity Locations

Data

135 Perpetrators
127 Residence locations
162 Ancillary locations

Quick Stats

Avg. distance	580 miles
Median**	206 miles
Std. dev.	682
Min. distance	0.21 miles
Max. distance	2,638 miles

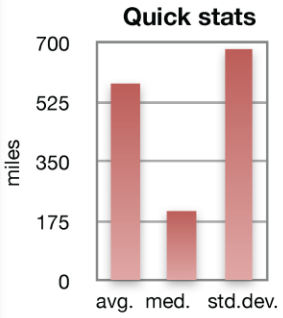
**Medians are particularly useful, indicating that 50% of the measurements were greater and 50% were less, thus providing some control over the effect of outliers.

Distance range	% of measurements
0 miles	5.53%
0.01-1 miles	3.03%
2-5 miles	12.96%
6-15 miles	15.26%
16-30 miles	7.09%
0-30 miles	29.43%
31-90 miles	8.09%
91-270 miles	15.06%
271-810 miles	15.76%
811+ miles	31.66%

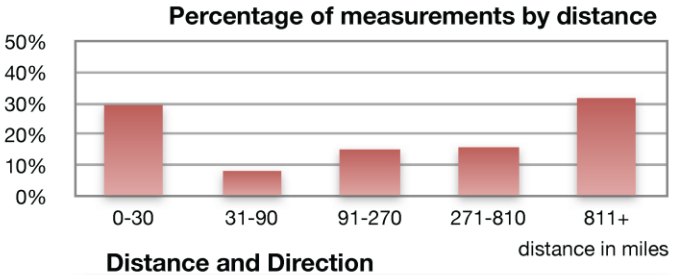
Note: Residential locations can include safe houses, hotel/motels, camps, etc. Ancillary activities are events that occurred prior to the incident or planned incident but could not be directly tied to carrying out the attack. Distances are linear miles.

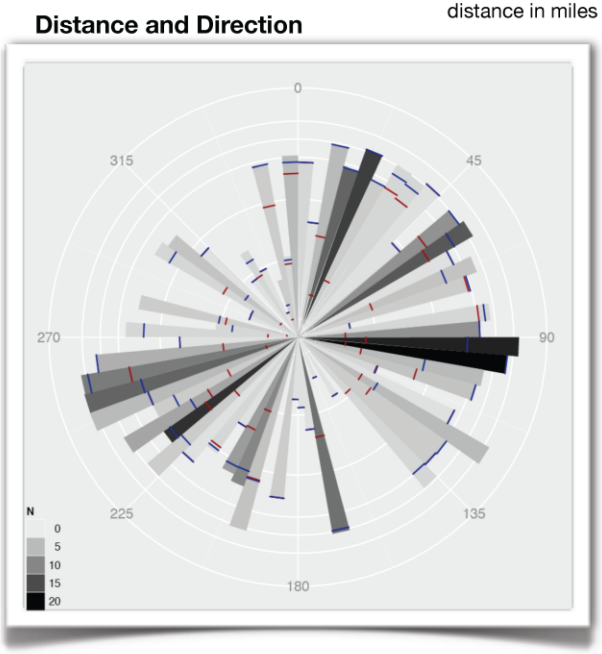
Measurements

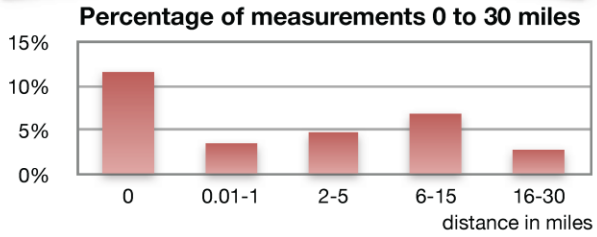
Miles	#
0	83
0.01-1	25
2-5	34
6-15	49
16-30	20
Total 0-30	211
0 -30	211
31-90	58
91-270	108
271-810	113
811+	227
Total	717



A further examination of distance between locations is shown for measurements that fall between 0 and 30 miles The percentages shown are out of all measurements.







The "Distance and Direction" rose diagram above and right shows the spatial relationship between the location of residences and ancillary act locations. The center point represents the location of all ancillary acts. The bars show the location of residences in reference to what distance and direction the residence was from the location of the act. The darker the bar the greater the number of residences that were located in that direction relative to the act. The blue line on each bar represents the average distance for all measurements in that segment, while the red bar represents the minimum measured distance.

Figure 11. Comparison by Category of Terrorism for Measurements from Residences to Ancillary Activity Locations

	AQ-related	Environmental	Far-right	Far-left	All Categories
0 - 30 miles	51%	20%	26%	34%	29%
31 - 90 miles	0%	2%	8%	17%	8%
91 - 270 miles	2%	15%	17%	14%	15%
271 - 810 miles	17%	9%	13%	33%	16%
811 + miles	31%	54%	36%	3%	32%
Minimum Distance	0	0	0	0	0
Maximum Distance	2,448	2,638	2,565	1,662	2,638
Mean	630	1,089	604	237	580
Median	17	1,007	243	83	206
Std. dev.	836	966	648	305	682
Perpetrators	19	14	79	19	135
Residence locations	28	20	60	22	127
Ancillary activities	29	16	183	38	275
Ancillary activity locations	27	15	94	31	162
Measurements	59	54	484	109	717

Note: The statistics for "All Categories" include Other Single Issue, Nationalist/Separatist, and Unknown categories but are not shown individually as there were not enough data for meaningful analysis. The numbers above may not add up to 100% because of rounding error.

Figure 12. Analysis of Linear Distance Measurements from Residences to Preparatory Activity Locations

Data

237 Perpetrators
237 Residence locations
354 Preparatory locations

Quick Stats

Avg. distance	364 miles
Median**	61 miles
Std. dev.	611
Min. distance	0 miles
Max. distance	2,696 miles

**Medians are particularly useful, indicating that 50% of the measurements were greater and 50% were less, thus providing some control over the effect of outliers.

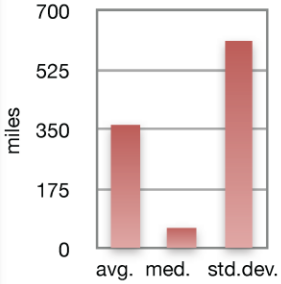
Distance range	% of measurements
0 miles	5.53%
0.01-1 miles	3.03%
2-5 miles	12.96%
6-15 miles	15.27%
16-30 miles	7.09%
0-30 miles	43.85%
31-90 miles	13.41%
91-270 miles	12.33%
271-810 miles	11.89%
811+ miles	18.50%

Note: Residential locations can include safe houses, hotel/motels, camps, etc. Preparatory activities are events that occurred prior to the incident or planned incident that were directly tied to carrying out the attack. Distances are linear miles.

Measurements

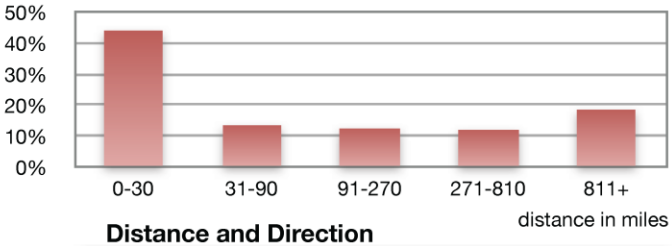
Miles	#
0	113
0.01-1	62
2-5	264
6-15	312
16-30	145
Total 0-30	896
0 -30	896
31-90	274
91-270	252
271-810	243
811+	378
Total	2043

Quick stats

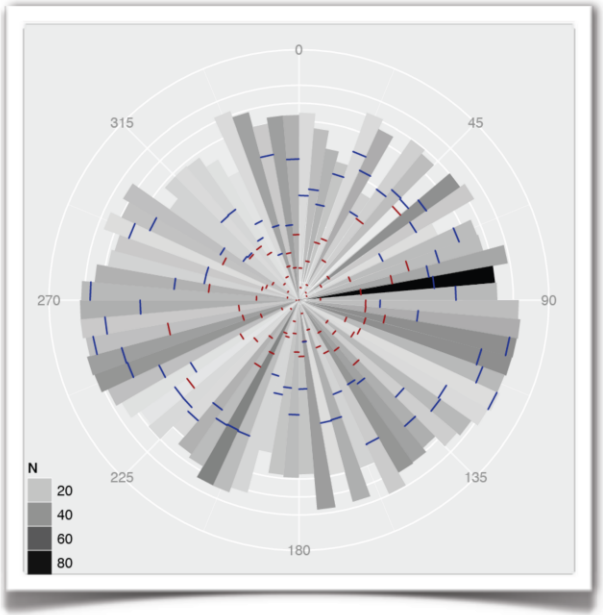


A further examination of distance between locations is shown for measurements that fall between 0 and 30 miles The percentages shown are out of all measurements.

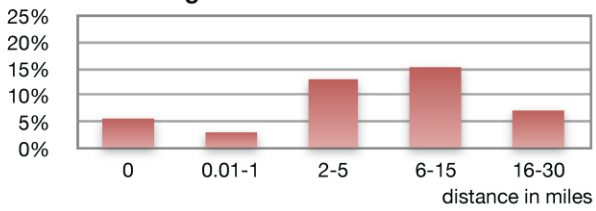
Percentage of measurements by distance



Distance and Direction



Percentage of measurements 0 to 30 miles



The "Distance and Direction" rose diagram above and right shows the spatial relationship between the location of residences and preparatory act locations. The center point represents the location of all preparatory acts. The bars show the location of residences in reference to what distance and direction the residence was from the location of the act. The darker the bar the greater the number of residences that were located in that direction relative to the act. The blue line on each bar represents the average distance for all measurements in that segment, while the red bar represents the minimum measured distance.

Figure 13. Comparison by Category of Terrorism for Measurements from Residences to Preparatory Activity Locations

	AQ-related	Environmental	Far-right	Far-left	All Categories
0 - 30 miles	55%	25%	35%	55%	44%
31 - 90 miles	6%	11%	12%	22%	13%
91 - 270 miles	7%	19%	16%	5%	12%
271 - 810 miles	11%	11%	17%	9%	12%
811 + miles	21%	35%	21%	9%	19%
Minimum Distance	0	0	0	0	0
Maximum Distance	2,696	2,696	2,599	1,927	2,696
Mean	343	793	383	179	364
Median	16	207	119	16	61
Std. dev.	586	977	523	361	611
Perpetrators	63	33	96	35	237
Residence locations	64	38	98	34	237
Preparatory activities	207	91	274	238	861
Preparatory activity locations	76	49	154	81	354
Measurements	388	298	670	619	2,043

Note: The statistics for "All Categories" include Other Single Issue, Nationalist/Separatist, and Unknown categories but are not shown individually as there were not enough data for meaningful analysis. The numbers above may not add up to 100% because of rounding error.

Figure 14. Analysis of Linear Distance Measurements from Antecedent Activities to Incident Locations

Data

402 Antecedent activity locations
200 Incident locations

Quick Stats

Avg. distance	391 miles
Median**	116 miles
Std. dev.	546
Min. distance	0 miles
Max. distance	2,613 miles

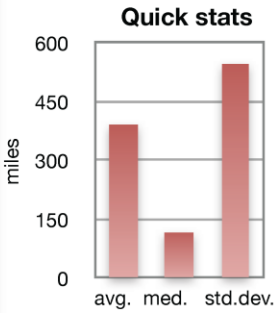
**Medians are particularly useful, indicating that 50% of the measurements were greater and 50% were less, thus providing some control over the effect of outliers.

Distance range	% of measurements
0 miles	6.55%
0.01-1 miles	4.58%
2-5 miles	11.65%
6-15 miles	9.36%
16-30 miles	7.12%
0-30 miles	39.26%
31-90 miles	9.10%
91-270 miles	16.12%
271-810 miles	10.97%
811+ miles	24.54%

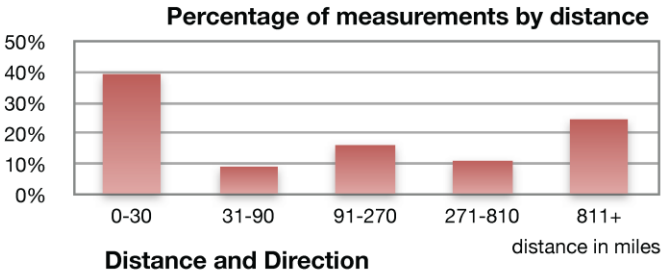
Note: Antecedent activities include both ancillary and preparatory activities. These are all events that occurred prior to the incident. or planned incident that were directly tied to carrying out the attack. Distances are linear miles.

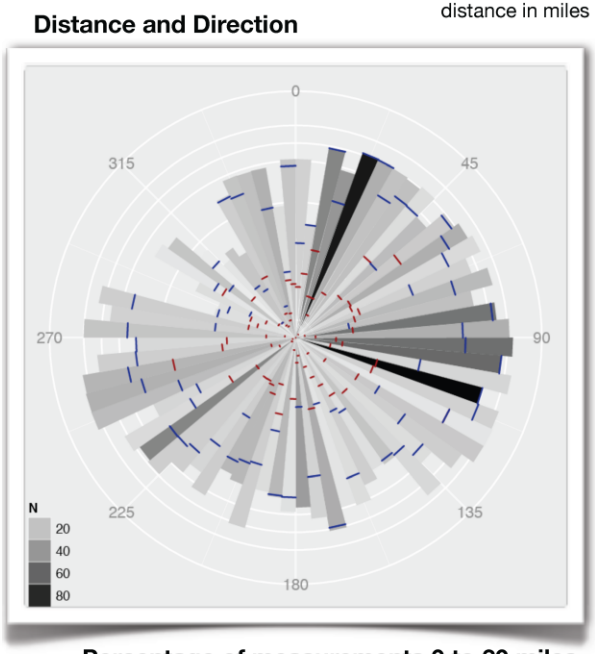
Measurements

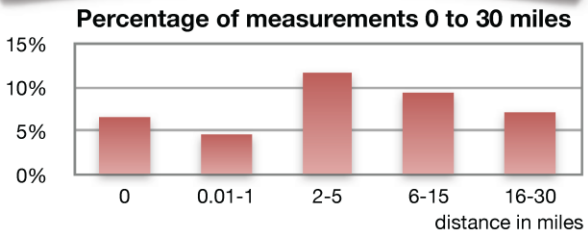
Miles	#
0	126
0.01-1	88
2-5	224
6-15	180
16-30	137
Total 0-30	755
0 -30	755
31-90	175
91-270	310
271-810	211
811+	472
Total	1923



A further examination of distance between locations is shown for measurements that fall between 0 and 30 miles The percentages shown are out of all measurements.







The "Distance and Direction" rose diagram above and right shows the spatial relationship between the location of antecedent activities and incidents. The center point represents the location of all incidents. The bars show the location of antecedent activities in reference to what distance and direction the act was from the location of the incident. The darker the bar the greater the number of antecedent activities that were located in that direction relative to the incidents. The blue line on each bar represents the average distance for all measurements in that segment, while the red bar represents the minimum measured distance.

Figure 15. Comparison by Category of Terrorism for Measurements from Antecedent Activities to Incident Locations

	AQ-related	Environmental	Far-right	Far-left	All Categories
0 - 30 miles	34%	57%	39%	36%	39%
31 - 90 miles	4%	16%	3%	16%	9%
91 - 270 miles	10%	6%	24%	17%	16%
271 - 810 miles	9%	5%	23%	7%	11%
811 + miles	43%	16%	10%	24%	25%
Minimum Distance	0	0	0	0	0
Maximum Distance	2,613	2,443	1,768	2,229	2,613
Mean	620	376	268	328	391
Median	388	23	197	86	116
Std. dev.	661	774	331	432	546
Antecedent activities	228	108	332	296	1,023
Unique act locations	91	61	161	96	402
Incidents	31	54	60	46	203
Unique incident locations	28	50	53	41	200
Measurements	527	210	469	651	1,923

Note: The statistics for "All Categories" include Other Single Issue, Nationalist/Separatist, and Unknown categories but are not shown individually as there were not enough data for meaningful analysis. The numbers above may not add up to 100% because of rounding error.

Figure 16. Analysis of Linear Distance Measurements from Ancillary Activities to Incident Locations

Data

106 Ancillary activity locations
97 Incident locations

Quick Stats

Avg. distance	442 miles
Median**	251 miles
Std. dev.	596
Min. distance	0 miles
Max. distance	2,443 miles

**Medians are particularly useful, indicating that 50% of the measurements were greater and 50% were less, thus providing some control over the effect of outliers.

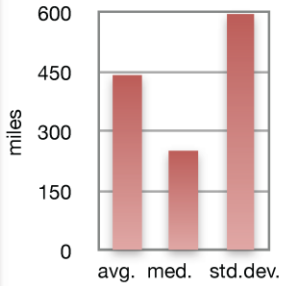
Distance range	% of measurements
0 miles	0.96%
0.01-1 miles	4.14%
2-5 miles	6.37%
6-15 miles	10.51%
16-30 miles	5.73%
0-30 miles	27.71%
31-90 miles	7.01%
91-270 miles	22.29%
271-810 miles	24.20%
811+ miles	18.79%

Note: Ancillary activities are events that occurred prior to the incident or planned incident but could not be directly tied to carrying out the attack. Distances are linear miles.

Measurements

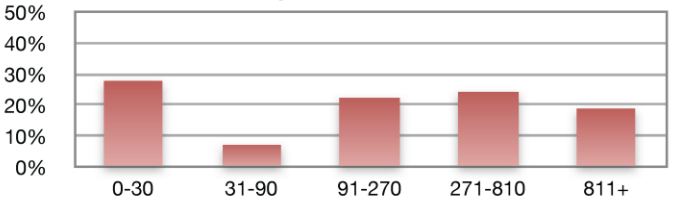
Miles	#
0	3
0.01-1	13
2-5	20
6-15	33
16-30	18
Total 0-30	87
0 -30	87
31-90	22
91-270	70
271-810	76
811+	59
Total	314

Quick stats

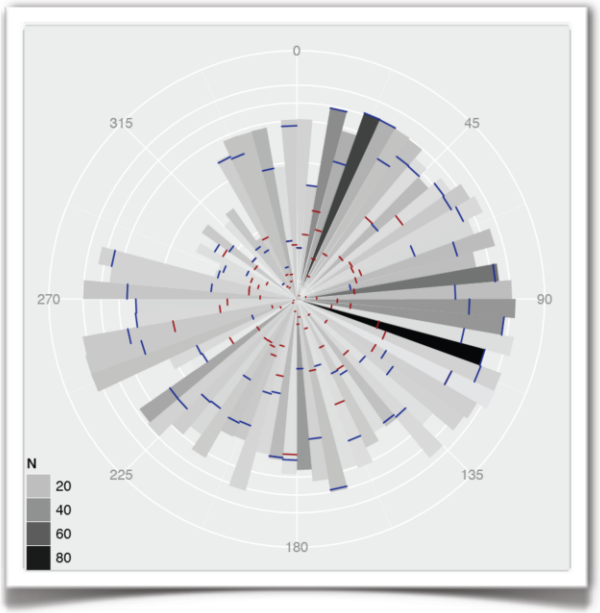


A further examination of distance between locations is shown for measurements that fall between 0 and 30 miles The percentages shown are out of all measurements.

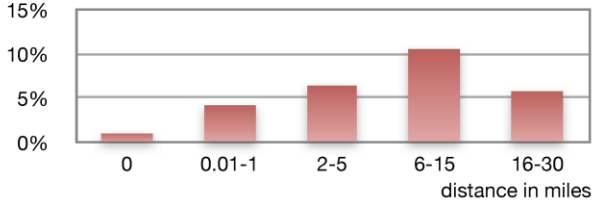
Percentage of measurements by distance



Distance and Direction



Percentage of measurements 0 to 30 miles



The "Distance and Direction" rose diagram above and right shows the spatial relationship between the location of ancillary activities and incidents. The center point represents the location of all incidents. The bars show the location of ancillary activities in reference to what distance and direction the act was from the location of the incident. The darker the bar the greater the number of ancillary activities that were located in that direction relative to the incidents. The blue line on each bar represents the average distance for all measurements in that segment, while the red bar represents the minimum measured distance.

Figure 17. Comparison by Category of Terrorism for Measurements from Ancillary Activities to Incident Locations

	AQ-related	Environmental	Far-right	Far-left	All Categories
0 - 30 miles	22%	42%	23%	21%	28%
31 - 90 miles	10%	7%	2%	16%	7%
91 - 270 miles	32%	5%	24%	25%	22%
271 - 810 miles	12%	0%	36%	29%	24%
811 + miles	24%	47%	15%	8%	19%
Minimum Distance	0	0	1	0.27	0
Maximum Distance	2,408	2,443	1,619	1,654	2,443
Mean	489	998	374	292	442
Median	172	199	274	153	251
Std. dev.	654	1,083	354	350	596
Ancillary activities	25	13	82	28	157
Unique act locations	19	13	46	23	106
Incidents	17	24	28	27	106
Unique incident locations	16	21	25	27	97
Measurements	41	43	138	75	314

Note: The statistics for "All Categories" include Other Single Issue, Nationalist/Separatist, and Unknown categories but are not shown individually as there were not enough data for meaningful analysis. The numbers above may not add up to 100% because of rounding error.

Figure 18. Analysis of Linear Distance Measurements from Preparatory Activities to Incident Locations

Data

338 Preparatory activity locations
151 Incident locations

Quick Stats

Avg. distance	381 miles
Median**	86 miles
Std. dev.	535
Min. distance	0 miles
Max. distance	2,613 miles

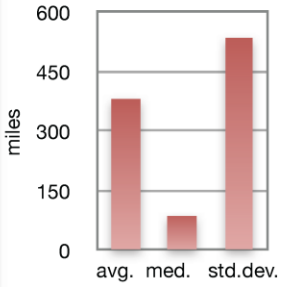
**Medians are particularly useful, indicating that 50% of the measurements were greater and 50% were less, thus providing some control over the effect of outliers.

Distance range	% of measurements
0 miles	7.64%
0.01-1 miles	4.66%
2-5 miles	12.68%
6-15 miles	9.14%
16-30 miles	7.40%
0-30 miles	41.52%
31-90 miles	9.51%
91-270 miles	14.92%
271-810 miles	8.39%
811+ miles	25.67%

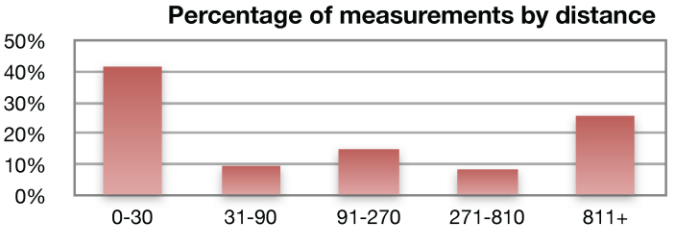
Note: Residential locations can include safe houses, hotel/motels, camps, etc. Antecedent activities include both ancillary and preparatory activities. These are all events that occurred prior to the incident. Distances are linear miles.

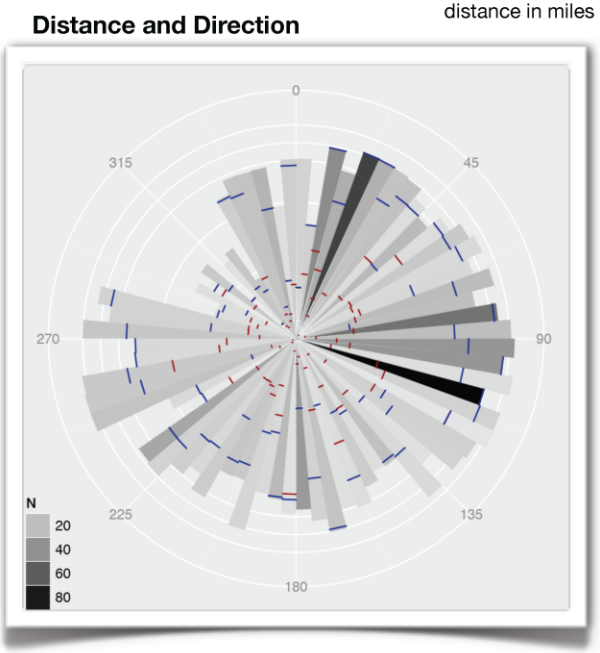
Measurements

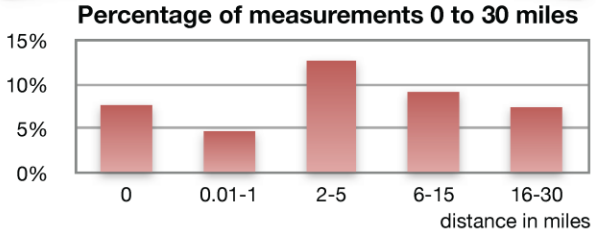
Miles	#
0	123
0.01-1	75
2-5	204
6-15	147
16-30	119
Total 0-30	668
0 -30	668
31-90	153
91-270	240
271-810	135
811+	413
Total	1609



A further examination of distance between locations is shown for measurements that fall between 0 and 30 miles The percentages shown are out of all measurements.







The "Distance and Direction" rose diagram above and right shows the spatial relationship between the location of preparatory activities and incidents. The center point represents the location of all incidents. The bars show the location of preparatory activities in reference to what distance and direction the act was from the location of the incident. The darker the bar the greater the number of preparatory activities that were located in that direction relative to the incidents. The blue line on each bar represents the average distance for all measurements in that segment, while the red bar represents the minimum measured distance.

Figure 19. Comparison by Category of Terrorism for Measurements from Preparatory Activities to Incident Locations

	AQ-related	Environmental	Far-right	Far-left	All Categories
0 - 30 miles	35%	61%	46%	38%	42%
31 - 90 miles	4%	19%	3%	16%	10%
91 - 270 miles	8%	6%	24%	16%	15%
271 - 810 miles	8%	7%	18%	4%	8%
811 + miles	45%	8%	8%	27%	26%
Minimum Distance	0	0	0	0	0
Maximum Distance	2,613	2,443	1,768	2,229	2,613
Mean	631	216	223	332	381
Median	405	22	115	81	86
Std. dev.	661	575	311	442	535
Preparatory activities	203	95	250	268	864
Unique act locations	77	49	145	91	338
Incidents	27	39	54	45	167
Unique incident locations	25	37	49	40	151
Measurements	486	167	331	576	1,609

Note: The statistics for "All Categories" include Other Single Issue, Nationalist/Separatist, and Unknown categories, but are not shown individually as there were not enough data for meaningful analysis. The numbers above may not add up to 100% because of rounding error.

Figure 20. Comparison by Category of Terrorism for Measurements Less than 30 Miles

Category	Residence - Incident	Residence - Antecedent	Residence - Ancillary	Residence - Preparatory	Antecedent - Incident	Ancillary - Incident	Preparatory - Incident
AQ-related	55%	55%	51%	55%	34%	22%	35%
Environmental	25%	24%	20%	25%	57%	42%	61%
Far-right	44%	31%	26%	35%	39%	23%	46%
Far-left	29%	52%	34%	55%	36%	21%	38%
All Categories	34%	40%	29%	44%	39%	28%	42%

Note: The statistics for "All Categories" include Other Single Issue, Nationalist/Separatist, and Unknown categories but are not shown individually as there were not enough data for meaningful analysis. The numbers above may not add up to 100% because of rounding error.