County-level Correlates of Terrorism in the United States, 1990 to 2010

Final Report to the Resilient Systems Division,
Science and Technology Directorate,
U.S. Department of Homeland Security

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About This Report

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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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Executive Summary

This report builds on a previous one that examined the patterns and predictors of terrorism in the United States and presented descriptive data on county-level terrorism from 1970 to 2008 (LaFree and Bersani, 2012). In the current report, we were able to extend our analysis to cover the years from 1990 to 2010. As in the earlier report, we constructed a list of likely predictors of terrorism based in large part on variables that have been found to be especially important in predicting ordinary crime, including concentrated disadvantage, residential instability, and population heterogeneity. We then examined the relationship between these variables, which were drawn from the U.S. Census, and county-level terrorism attacks, taken from the Global Terrorism Database (GTD). With the expanded data analysis it soon became evident that the relationships between the county-level characteristics we examined and our measures of terrorism were in some cases different before and after the September 11, 2001 terrorist attacks. Given the impact that these attacks had on public policy regarding terrorism in the United States, this is hardly surprising. Accordingly, much of the report that follows examines these differences. Three core research concerns are addressed here:

- *Geographic Concentration of Terrorism, 1990 to 2010*

We examine patterns of dispersion and clustering in terrorist attacks annually from 1990 to 2010. During this time, nearly 600 terrorist attacks occurred on U.S. soil. We find evidence that incidents of terrorism have trended downward over the last two decades with a strong majority of these attacks occurring in the 1990s (n = 348). When we examine patterns of terrorism at the county level, we find clear evidence that terrorist attacks cluster in specific geographic areas. A quarter of all attacks occurred in just 10 counties. Manhattan, NY experienced the highest number of attacks during this time (n = 30), followed by Los Angeles County, CA (n = 19), San Diego County, CA (n = 16), Washington, D.C. (n = 15), and Miami-Dade County, FL (n = 14). But notably, smaller counties were also targeted by terrorism, including Bernalillo County, NM (n = 13), Lane County, OR (n = 8), and Tulsa County, OK (n = 8). Despite evidence of geographic clustering of terrorism, it is also clearly evident that terrorist attacks are widely dispersed; each of the 48 continental U.S. states experienced at least one terrorist attack between 1990 and 2010.

- *Geographic Profile of the 'Typical' U.S. County that Experienced a Terrorist Attack*

It is clear that place matters in thinking about patterns of terrorist attacks in the United States. Based on our analysis of county-level characteristics, we describe what the average or typical county that experienced at least one terrorist attack looks like. Compared to counties with no terrorist attacks from 1990 to 2010, we find that counties experiencing at least one terrorist attack over this same time period were characterized by a larger population, more young men aged 15 to 24 years, a greater proportion of Asian, Hispanic, and foreign-born residents, and higher rates of language diversity.

We are particularly cognizant of the potential and likely effect of the September 11, 2001 attacks, and as such we were interested in whether or not the characteristics of the 'typical' county targeted by terrorism differed in the 1990s and in the first decade of the 21st century. For the analysis, we disaggregated

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attacks by decade (i.e., 1991 to 2000 and 2001 to 2010) and compared characteristics of counties that experienced attacks across these two time periods. Our results provide preliminary evidence that the geographic targets of terrorist attacks may be changing in important ways. Compared to the average profile of counties that experienced a terrorist attack in the 1990s, those that experienced a terrorist attack from 2001 to 2010 had smaller proportions of males aged 15 to 24 years, higher levels of concentrated disadvantage, greater proportions of foreign-born citizens, and higher rates of language diversity. We want to be very clear; these results *do not* suggest that terrorist attacks were more likely to be completed by individuals who were poor, who were foreign-born or those who primarily speak a language other than English at home. Our data cannot speak to the profile of individuals involved in terrorism. Rather, the results suggest that on average, counties that were targets of terrorist attacks in the last decade were characterized by fewer young males, higher rates of foreign-born population and language diversity compared to the average county targeted by a terrorist attack in the 1990s.

- ***Predicting Concentrations of Terrorism, 1990 to 2010***

Our final core research concern involves examining the county-level characteristics that have the strongest connections to county-level frequencies of terrorism and determining whether there are changes in these relationships before and after the September 11, 2001 attacks on the United States. We find strong, statistical relationships between the frequency of terrorism in a county and its level of residential instability and language diversity. Specifically, higher levels of residential instability and language diversity are associated with a *higher* frequency of terrorism at the county level. We also find empirical evidence for a significant reduction in terrorist attacks in the first decade of the 21st century compared to the 1990s. Further investigation revealed that the reduction in terrorism was differentially felt across U.S. counties. Counties characterized by higher levels of concentrated disadvantage and residential instability saw the greatest reduction in the rate of terrorism in the last decade. Whereas counties characterized by higher levels of foreign-born population and language diversity saw lesser reductions in the rate of terrorism post-2001.

Key Conclusions

We found that a set of variables commonly used for predicting crime rates in the United States had a good deal of utility in predicting county-level trends in terrorism as well. Moreover, we found substantial variation in the effects of these variables both in the aggregate and before and after the September 11, 2001 attacks.

- ***Concentrated Disadvantage***

Our measure of concentrated disadvantage had a very different relationship with terrorism than what is widely reported for research on common crime. Overall, more economically disadvantaged counties had lower than expected rates of terrorism. Further analysis showed that this relationship is being driven especially by terrorism in the 1990s. Generally, concentrated disadvantage is associated with lower rates

of terrorism in the 1990s and has no significant relationship to terrorism in the first decade of the 21st century.

- ***Residential Instability***

Counties with higher rates of residential instability have higher rates of terrorism. This effect is significant for the full period between 1990 and 2010 and for the first decade of the 21st century. It is nearly significant for the 1990s.

- ***Percent Foreign-born***

For both the 1990s and the first decade of the 21st century, counties with a higher proportion of foreign-born citizens have higher rates of terrorism. However, when included in the multivariate analysis, percent foreign-born is not a statistically significant indicator of terrorism rates. This is most likely due to the fact that percent foreign-born is highly correlated with both residential instability and language diversity.

- ***Language Diversity***

Percent foreign-born has been the most common measure of ethnic heterogeneity in past research. One of the innovations of this research is that we were able to also measure ethnic heterogeneity by including a county-level measure of language diversity in the analysis. Greater county-level language diversity is associated with higher rates of terrorism in the 1990s, the first decade of the 21st century, and for both decades combined.

- ***Demographic Characteristics***

Counties with larger populations have significantly higher rates of terrorism in the 1990s, the first decade of the 21st century, and for both decades combined. Counties with a higher proportion of young men aged 15-24 had higher rates of terrorism in the 1990s and the first decade of the 21st century; however, this variable was not significant when included in the multivariate models.

While our data lend evidence to the assertion that the terrorist events of September 11, 2001 dramatically altered the landscape of terrorism both nationally and globally, we are limited in making inferences about what motivated or initiated these changes. For example, the findings of this research tell us that certain counties experienced greater reductions in terrorism after September 11, 2001; however the extent to which these changes are the result of the development of focused policing tactics and directed counter-terrorism strategies or instead the result of the evolution and changing nature of terrorist strategies is unknown. Moreover, we do not yet know whether the altered geographic distribution of terrorism is a short-term change or marks a new trend in terrorist activity.

Introduction

This report builds on an earlier one that analyzed hot spots of terrorism and other crimes in the United States from 1970 to 2008 (LaFree and Bersani, 2012). This earlier study examined the geographic concentration of terrorist attacks across the United States and the connection between the distribution of terrorism and the distribution of ordinary crimes as measured by standardized police data collected by the Federal Bureau of Investigation. We also provided results from a multivariate analysis of both county-level terrorism and ordinary crime for the years 2000 to 2008. A key theme emerging was the importance of place in understanding patterns of terrorism. That is, we found substantial evidence that over nearly four decades, terrorist attacks clustered within certain U.S. counties. Using ideas gleaned from the criminological literature, we conducted an analysis to examine whether county characteristics could explain this clustering of terrorism in the most recent decade. Results demonstrated that increased residential instability and ethnic heterogeneity (language diversity and percent foreign-born) were associated with higher concentrations of terrorism in the United States.

In the current report, we build on the earlier research in a number of key respects. First, we broaden the time horizon of the descriptive and multivariate analysis going back in time one decade to 1990 and forward two years to include data through 2010. This expanded time period allows us to replicate our original study with considerably more data. Second, with the additional data, we also investigate potential changes in the average profile of counties that experienced terrorism before and after the September 11, 2001 attacks on the U.S. to examine whether targets of attacks have altered following this pivotal historical event. Finally, and based on a finding in the previous report, we expand our analysis of the relationship between immigration, language diversity, and terrorism with a particular focus on examining whether the influence of predictors of terrorist attacks in the United States changed after the September 11, 2001 attacks. To do so, we employ a statistical strategy that models the annual frequency of terrorist attacks over the two-decade period while also accounting for the fact that many terrorist attacks cluster in the same counties.

All terrorism data analyzed in this report are from the Global Terrorism Database (GTD). We begin by presenting descriptive information on the geographic concentration of terrorism by examining county-level trends in terrorist attacks in the United States from 1990 to 2010. We then compare the bivariate differences between counties that did and did not experience terrorist attacks in the 1990s and the first decade of the 21st century. Finally, using data from the U.S. Census, we examine whether county-level characteristics (e.g., concentrated disadvantage, residential instability, and population heterogeneity) are predictive of terrorism and whether any of these relationships differ in the time periods before and after September 11, 2001. We find that terrorism, like ordinary crime is not randomly distributed but rather concentrated in time and space. We conclude that the same type of statistical data that are now routinely used by police departments to help forecast crime hot spots and deploy police officers can also be a helpful tool for those countering terrorism.

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Identifying Clusters of Extremist Violence

As we noted in our earlier report, a growing body of research finds that certain areas are "hot spots" of criminal activity (Sherman, Gartin and Buerger, 1989). That is, ordinary crime is not randomly dispersed across space, but is instead systematically concentrated in a few areas. In fact, research has shown that the clustering of ordinary crime in geographic areas is stronger than the clustering of ordinary crime among individuals. As a result, the prediction of where ordinary crime occurs may be easier than the prediction of who commits ordinary crime. Specifically, Sherman (1995:36-37) demonstrated that ordinary crime is "six times more predictable by the address of the occurrence than by the identity of the offender." Moreover, while characteristics of geographic areas do change (e.g., changes in population composition, land use), research has demonstrated that ordinary crime hot spots are relatively stable over extended periods of time (Weisburd et al. 2004). Consistent with the general crime literature, in our earlier report (LaFree and Bersani 2012) we also found a good deal of stability in the concentration of terrorist attacks at the county level over nearly four decades of data for the United States.

Characteristics of Clusters of Violent Extremism

One useful way to examine the distribution of extremist violence is to determine the extent to which the distribution in time and space of terrorism is correlated with ordinary criminal behavior. There is currently a debate about this correspondence in criminology. While LaFree and Dugan (2004) point out that terrorism differs from ordinary crime in several important ways, Clarke and Newman (2006, vii) argue that "terrorism is a form of crime in all essential respects" and predict that terrorist attacks will cluster in time and space in the same way as ordinary crimes. Our previous study, which analyzed data from 1970 to 2008, found that while there was a correlation between terrorist attacks and ordinary crime, it was moderate (.25).

Social Disorganization Theory

Social disorganization or ecological theories examining connections between community-level measures such as economic disadvantage or residential instability have been common in the social sciences for nearly a century. The classic work of Shaw and McKay and their colleagues at the University of Chicago (1932; Shaw, McKay, and McDonald, 1938) spawned a massive body of research around the theme of social disorganization. Much of this work was animated by growing concern in the first half of the twentieth century with the impact of large-scale immigration on the social fabric of the United States and most particularly its impact on cities. As immigrants from around the world settled disproportionately in a few large urban centers, they often experienced high rates of poverty, residential instability, and ethnic heterogeneity. These communities were widely held to be fertile ground for ordinary crime and other social problems.

After decades of research on ordinary crimes within communities, it is clear that place matters. This body of research identifies a number of robust structural factors or community-level predictors of crime. Although many are not directly related to crime, a number of characteristics have been found to be related to the ability to acquire and mobilize resources that hinder or foster crime. Previous research finds support for the strong predictive value of socioeconomic status and residential instability on crime

(e.g., Krivo and Peterson, 1996; McNulty, 1999; Sampson et al., 1997); however, the evidence concerning ethnic heterogeneity (e.g., concentrated immigration) runs counter to theoretical expectations (Sampson et al., 2005). Recent research suggests that ethnic heterogeneity (operationalized as the percentage of the population that is foreign-born or percentage of the population who migrated to the United States in the last 10 years in a defined geographic area) is not related to increased crime (Martinez, Stowell, and Lee, 2010; Ousey and Kubrin, 2009; Reid et al., 2005; Sampson et al., 2005). Rather, concentrated immigration has been shown to be negatively related to crime (Sampson, 2008; Stowell et al., 2009; Wadsworth, 2010). Stated simply, ethnic heterogeneity appears to suppress crime in the United States (Sampson 2005).

Socioeconomic Status. Although Shaw and McKay (1932) originally linked crime to poverty in general, more recent advancements of this theory aimed at understanding patterns of crime in modern times have highlighted the role of concentrated disadvantage in explaining variation in crime levels across communities (Sampson and Wilson, 1995; Krivo and Peterson, 1996). The concentration of disadvantage (e.g., poverty, joblessness, female-headed households, heightened employment in menial occupations) results in areas and residents in these areas being socially isolated from mainstream America and generally lacking an ability to mobilize resources to ward off crime. The relationship between higher concentrated disadvantage and higher crime has received consistent empirical support (see e.g., Krivo and Peterson, 1996; Kubrin and Weitzer, 2003; Morenoff, Sampson and Raudenbush, 2001).

There is reason to believe that socioeconomic status, and specifically concentrated disadvantage, may not exhibit a similar relationship when examining terrorist attacks. Empirically, previous research examining various types of terrorism finds that the individuals who comprise terrorist groups are often more educated and skilled than their counterparts (Krueger and Maleckova, 2003; Pape, 2005; Russell and Miller, 1977; Sageman, 2004) and therefore may be unlikely to reside in areas characterized by extreme disadvantage. While individuals who commit terrorist attacks may be more advantaged, to our knowledge, our earlier report (LaFree and Bersani 2012) was among the first to examine directly whether areas characterized by advantage or disadvantage are associated with terrorism. And in fact, based on our earlier analysis limited to 2000 through 2008, we found that measures of concentrated disadvantage had no significant impact on measures of county-level terrorism.

Residential Instability. A substantial body of research has also demonstrated a strong link between residential instability and higher crime rates. Similar to the relationship described above between concentrated disadvantage and crime, a heightened level of mobility in a neighborhood destabilizes the community by weakening social ties, impeding communication, and undermining the ability of residents of communities to establish and uphold norms in their neighborhoods (Bellair, 1997; Sampson and Groves, 1989; Sampson, Raudenbush and Earls, 1997). As a result, crime increases in highly transient neighborhoods. Again, when we undertook this project, we knew of no prior research that specifically examined the connection between residential instability and terrorism. However, to the extent that weak social ties with neighbors, limited communication and feelings of isolation or alienation are higher in communities with greater residential instability, we might expect a positive connection to terrorism.

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Along these lines, our previous multivariate analysis focused on the period between 2000 and 2008 found that greater residential instability was related to increased terrorism.

Ethnic Heterogeneity. The expectation that the level of ethnic heterogeneity in a community would be related to crime has historical roots in the dramatically changing urban landscape of the early 20th century. With massive numbers of immigrants of various European origins flocking to cities, urban communities were rapidly transformed into centers of diversity, the result of which was not immediately positive. An inherent byproduct of immigration is that not only do individuals migrate to new areas, but these individuals bring with them sets of rules, norms, and mores unique to their homelands. These values are often different from and sometimes in opposition to the dominant values in the host society as well as the values of other immigrants. As a result, the communities in which concentrations of immigrants initially settle are characterized by volatility as groups of individuals – each acting in accordance with its own set of rules – come in contact with one another.

With the United States once again experiencing a surge in the number of individuals migrating to the country, emphasis has again been placed on understanding the link between ethnic heterogeneity and crime. Researchers have operationalized ethnic heterogeneity as the percentage of immigrants (percentage of the population that is foreign-born) residing in specified geographic areas. Contrary to theoretical expectations, this body of work has demonstrated that higher concentrations of immigrants in geographic areas (cities, census tracts, neighborhoods) are not associated with increased crime (see e.g., Martinez, Stowell, and Lee, 2010; Ousey and Kubrin, 2009; Reid et al., 2005; Sampson et al., 2005) and may instead function to suppress crime (Sampson, 2008; Stowell et al., 2009; Wadsworth, 2010). This unexpected finding may be due to the use of the percentage of the population that is foreign-born as the measure of ethnic heterogeneity. This measure presumably taps into the spatial concentration of immigrants. Graif and Sampson (2010) have argued that a more valid measure of the heterogeneity construct is the diversity of language use by the immigrant population in the community. That is, a community could have a high concentration of foreign-born people, yet if they are all from the same country, then the community would not be ethnically heterogeneous. A more accurate characterization of the social disorganization theory concept of ethnic heterogeneity is a measure of the diversity of the composition of the population residing in the same geographic locale. Looking at variation in homicide rates across Chicago city census tracts, Graif and Sampson find that their measure of ethnic heterogeneity (i.e., language diversity) is negatively related to homicide even in models controlling for the percentage of the population that is foreign-born.

Though Graif and Sampson (2010) find that population diversity is negatively related to homicide, there is debate in the literature about the potential impact of diversity in a community. Some argue that diversity adversely affects community relations. For instance, Putnam (2007) has argued that at least in the short term, neighborhood ethnic diversity reduces social solidarity and social capital thereby reducing social trust and increasing feelings of isolation. In support of his argument, Putnam finds that in the United States, higher levels of ethnic diversity in a neighborhood are related to lower levels of trust. Shihadeh and Barranco (2010) also find negative consequences of diversity and particularly linguistic isolation. Specifically, they found that counties characterized by a greater proportion of linguistically

isolated households (i.e., English non-fluency) experienced more homicide. On the other hand, others have argued (see, e.g., Lazear, 1999; Fischer, 1975) that diversity is advantageous for immigrants and communities more generally. The idea is that greater diversity encourages the learning of the dominant group's language/culture, promoting assimilation whereas less diverse areas (with perhaps strong ethnic enclaves) encourage the maintenance of traditional language and culture, hindering communication with the dominant group and potentially promoting the maintenance of alternate norms.

Despite the long-standing interest of researchers in potential connections between population heterogeneity and crime, few researchers to date have examined if these variables are related to extremist crime or terrorism in the United States. If Clarke and Newman's (2006: vii; see also LaFree and Dugan, 2004; Rosenfeld, 2004) recent argument that "terrorism is a form of crime in all essential respects" is correct, then the theoretical underpinnings used to explain the occurrence of crime should apply to the occurrence of terrorist acts as well. Perhaps of greatest interest here is an understanding of the relationship between ethnic heterogeneity (percent foreign-born and language diversity) and terrorist attacks. In our earlier report (LaFree and Bersani 2012) we reasoned that if terrorism functions similarly to ordinary crime, then diversity should not be related to terrorist attacks. And indeed in the analysis we did for that report, we found that in our multivariate analysis of data from 2000 to 2008, the percentage of the population that was recent foreign-born had no significant impact on terrorism rates. At the same time, we found that increased language diversity did predict increased rates of terrorism at the county level.

Data and Methodology

Data

The data for this report come from the Global Terrorism Database (GTD) and the 1990 and 2000 U.S. Census. The Global Terrorism Database (GTD) has been maintained since 2005 by the National Consortium for the Study of Terrorism and Responses to Terrorism (START; LaFree & Dugan, 2009). It currently includes data on the characteristics of more than 104,000 terrorist attacks that occurred worldwide between 1970 and 2011. The construction of the GTD began in 2002 when a team of researchers digitized data originally collected by the Pinkerton Global Intelligence Service (PGIS), a private company that recorded terrorism incidents from 1970 to 1997 from wire services (including Reuters and the Foreign Broadcast Information Service [FBIS]), U.S. State Department reports, other U.S. and foreign government reporting, U.S. and foreign newspapers (including the *New York Times*, British *Financial Times*, *Christian Science Monitor*, *Washington Post*, *Washington Times*, and *Wall Street Journal*), and information provided by PGIS offices around the world. In June 2011, START released GTD data through 2010 with the expectation of annual spring releases of updated, new event data going forward.[1]

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[1] START released GTD data for 2011 in October 2012. Please note that GTD data for 1993 were lost by the original collectors in an office move and have never been successfully recovered. We therefore exclude 1993 from the analysis.

Terrorism

The definition of terrorism used by the GTD is: *the threatened or actual use of illegal force, directed against civilian targets, by non-state actors, in order to attain a political, economic, religious or social goal, through fear, coercion or intimidation.*[2] It is important to note that the classification of an event as terrorism depends as much on threats as the actual use of violence. For example, the GTD includes instances in which individuals seize an aircraft and threaten to blow it up unless their demands are met. Note also that by specifying the threatened or actual use of force the definition of terrorism used by the GTD excludes hoaxes. The requirement that these events be limited to the actions of "non-state actors" means that considerable violence and terrorism that is directly attributable to states or their militaries is also excluded. And the requirement that the act have a direct political, economic, religious or social goal means that ordinary criminal violence is excluded. Thus, the GTD excludes state terrorism and many types of crime and genocide, topics that are important and complex enough to warrant their own separate analysis.

The frequency of terrorist acts is recorded for each U.S. county for each year from 1990 through 2010. Counties with no recorded terrorist attacks are coded "zero." The vast majority of counties (n = 2901; 92%) did not experience any terrorist attacks during the period of time observed here: 1990 to 2010. While more than half of the remaining counties experienced just one terrorist attack (n = 140; 57%), the incidence of terrorist attacks in a county over this 20-year period ranged from 1 to 30 attacks.

Independent Variables

County-level indicators of social disorganization (i.e., socioeconomic status, residential instability, and ethnic heterogeneity) and demographic characteristics found to be important predictors of ordinary crime are taken from the 1990 and 2000 U.S. Census.

Socioeconomic Status. Consistent with recent research, our indicator of socioeconomic status captures the extent of concentrated disadvantage in counties. To construct this measure a factor analysis of the following variables was conducted: percentage of families below the poverty line, percentage of unemployed individuals in the civilian labor force, percentage of female-headed households with children under the age of 18, and the percentage of individuals receiving public assistance. Factor analysis indicated that all items loaded strongly on one component (alpha = .85). Regression scores were saved and are used in the analyses below.

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[2] This was the original PGIS definition of terrorism applied from 1970 to 1997. When data collection was taken over by START in 2005, researchers required that two of the following three criteria also had to be met for inclusion in the database: (1) the violent act was aimed at attaining a political, economic, religious, or social goal; (2) the violent act included evidence of an intention to coerce, intimidate, or convey some other message to a larger audience (or audiences) other than the immediate victims; and (3) the violent act was outside the precepts of International Humanitarian Law. These criteria were constructed to allow analysts and scholars flexibility in applying various definitions of terrorism to meet different operational needs. The data presented in this report include all cases that meet any two of these three criteria.

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<u>Residential Instability</u>. Two variables are used to measure the level of residential instability in a county: percentage of 5-year-old or older residents who resided in the same household for five or more years prior to the survey and the percentage of owner-occupied housing units in the county. These two items are significantly correlated (r = .20; p = .000). Regression scores were saved and are used in the analyses below.

<u>Ethnic Heterogeneity</u>. Following Graif and Sampson (2010), we argue that a more valid measure of the heterogeneity construct is the diversity of language use in a community. For instance, a large portion of the population of a county may be foreign-born, but if all the foreign-born in the county are from Mexico, then the county is very ethnically homogeneous. However, if foreign-born in the county are from various countries, then that county is ethnically heterogeneous.

Our measure of language diversity refers to the language spoken at home. The language diversity measures available to us from the Census varied somewhat for the 1990s and the first decade of the 21st century. For the 1990s, our measure of language diversity captures 29 different languages.[3] In 2000, the U.S. Census increased the number of languages captured by this measure to 40.[4] Language diversity is calculated using the Herfindahl formula:

$$L_t = 1 - (\sum \pi_r^2)_t$$

where t is the county, r is a particular language group in that county, π_r is the proportion of the population speaking that language in the county. Language diversity ranges from 0 to 1, where 0 indicates that the same language is spoken at home by all residents in the county. As the language diversity measure increases it indicates an increase in the proportion of the county's population that speaks different languages. In these data, language heterogeneity ranges from a high of .65 to a low of 0 (mean = .12). The top 5 most diverse areas in 1990 include: Queens, NY; San Francisco County, CA; Hudson County, NJ; Cibola County, NM; and Los Angeles County, CA. There is evidence of both stability and change looking at the most diverse counties in 2000 which include: Queens, NY; Kings, NY; Hudson County, NJ; Santa Clara County, CA; and San Francisco County, CA.

In addition, we use the traditional measure of ethnic heterogeneity – percentage of the population that is foreign-born – in our analytic models. Counties range from a high of 45% of the population reporting being born outside the United States to a low of 0% (mean = 2%). The five counties with the highest proportion of foreign-born in 1990 include: Miami-Dade County, FL; Santa Cruz County, AZ; Queens, NY;

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[3] These languages include English, Spanish or Spanish Creole, French, (including Patios and Cajun), French Creole, Italian, Portuguese or Portuguese Creole, German, Yiddish, other West Germanic languages, Scandinavian, Greek, Russian, Polish, other Slavic languages, Indo-European languages, Chinese, Japanese, Korean, Mon-Khmer and Cambodian, Vietnamese, Tagalog, Hungarian, and Arabic.

[4] These languages include English, Spanish or Spanish Creole, French, (including Patios and Cajun), French Creole, Italian, Portuguese or Portuguese Creole, German, Yiddish, other West Germanic languages, Scandinavian, Greek, Russian, Polish, Serbo-Croatian, other Slavic languages, Armenian, Persian, Gujarathi, Hindi, Urdu, other Indic languages, Indo-European languages, Chinese, Japanese, Korean, Mon-Khmer and Cambodian, Miao and Hmong, Thai, Laotian, Vietnamese, other Asian languages, Tagalog, other Asian Pacific Island languages, Navajo, other native North American languages, Hungarian, Arabic, Hebrew, and African languages.

Maverick County, TX; and Starr County, TX. In 2000, the five counties with the highest proportion of foreign-born residents include: Miami-Dade County, FL; Queens, NY; Hudson County, NJ; Kings, NY; and Maverick County, TX.

<u>Demographic Variables</u>. The racial and ethnic composition of each county was measured using variables capturing the proportion of the population that is non-Hispanic black, non-Hispanic Asian, non-Hispanic white, and Hispanic in a county.   We also include the percentage of the population that is male, age 15 to 24 years.

<u>Time</u>. We include two measures reflecting dimensions of time. The first is a measure capturing the 21 years of data examined in these models ('year'). The second variable, post-2001, is coded 0 in years 1990 to 2000 and coded 1 in years 2001 to 2010 and is used to examine differences in the 1990-2000 time period compared to the 2001-2010 time period.

<u>Controls</u>. We control for a number of general county-level characteristics including the total population (lagged due to extreme values), the geographic size or land area of each county, and if the county was the borough of Manhattan, NY. This final variable is important to include as a large portion of terrorist attacks occur in Manhattan, and we wanted to ensure that our findings were not driven by the attacks in this one location.

Methodology

Research Question 1: To what extent is terrorism concentrated across U.S. counties?

As noted above, we provided detailed information about the distribution of terrorism by county in the United States between 1970 to 2008 in LaFree and Bersani (2012). In this report we focus on the data that will be used for the multivariate analysis, covering 1990 to 2010. To examine patterns of terrorism across U.S. counties from 1990 to 2010, yearly data on the frequency of events in each county were used to create proportional symbol maps using ESRI ArcGIS v9.3 software.

Research Question 2: What is the geographic profile of the 'typical' U.S. county that experienced a terrorist attack between 1990 and 2010?

While previous research demonstrated that place matters when thinking about terrorism in that certain counties can be identified as *hot spots* of terrorism between 1970 and 2008, research also finds that terrorism is widely dispersed with no U.S. state immune to terrorist attacks. Using information on county characteristics, we describe the characteristics of an average county that experienced at least one terrorist attack between 1990 and 2010. We also disaggregate by decade to investigate whether the typical profile of a targeted county has significantly changed over this time period by conducting mean difference tests comparing the two decades included in the analysis (i.e., 1991 to 2000 and 2001 to 2010).   The selection of the two time periods of comparison was chosen for two main reasons. First,

because the census predictors come from 1990 and 2000, we used years following those data collection points to ensure correct temporal ordering between our county-level variables and terrorism. Second, this cut point strategy works well in our comparison of the average characteristics of counties that were targets of terrorist attacks before and after September 11, 2001 with an equitable distribution of years preceding and following these events.

Research Question 3: **Do traditional predictors of crime (e.g., concentrated disadvantage, residential instability, demographic composition) also predict geographic concentrations of terrorist attacks?**

During the past year, we were able to locate and code complete data for the key theoretical measures described above for an additional decade, which allowed us to extend our analysis of the correlates of terrorism from 1990 to 2010. We examine the relationship between these county-level predictors and terrorism in two steps. For the first part of the analysis we sum all terrorism in the United States during the two periods of interest (1991 to 2000; 2001 to 2010) into a single indicator measuring the total number of terrorist attacks per period and assess the bivariate relationships between these indicators and each predictor taken separately. Next, we conduct a series of longitudinal regression models to more accurately test whether ecological characteristics measured at the U.S. county-level are predictive of terrorist attacks that occurred each year. To do so we employ Poisson-based regression models because of the count nature of the dependent variable (frequency of attacks in each county) and the high frequency of zeros (no terrorist attacks in a county) in these data (Osgood 2000). Additionally, because of the structure of the data, where counties have 21 years of observations, the data are considered nested or clustered. Clustered data negatively influence statistical models by resulting in incorrect (smaller) estimates of the standard errors and an increase in the likelihood of concluding that a relationship exists that really doesn't (a type 1 error or a false positive). We employ a hierarchical modeling strategy that can accommodate the clustered nature of these data and allow us to examine trends in terrorism at the county level over time. For these analyses, the county-level independent variables were all measured in 1990.

Results

Before proceeding to the findings for the research questions posed above, we first present basic descriptive information regarding the number of terrorist attacks in the United States from 1990 to 2010. It is clear from the pattern shown in Figure 1 that the total number of terrorist attacks in general has decreased significantly from 1990 to 2010. Whereas nearly 350 attacks took place in the 1990s (*n* = 348), this number dropped by nearly half in the following decade (from 2000 to 2010, *n* = 233). While the absolute number of attacks has clearly dropped, questions remain as to the source of the reduction and to what extent the profile of terrorism has changed in the recent decade compared to the previous decade.
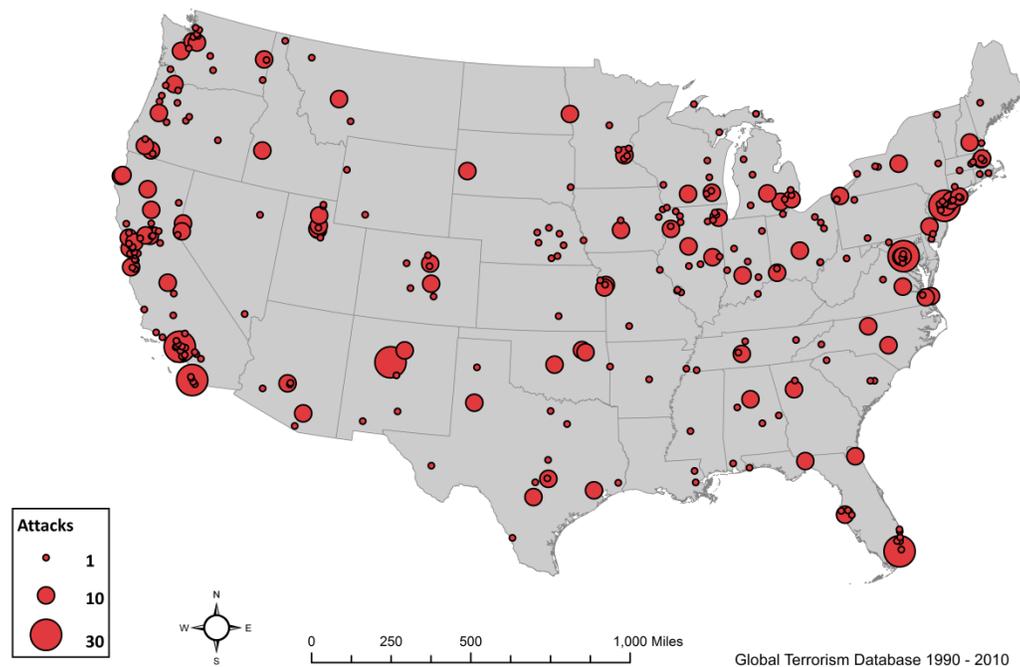
Figure 1. Number of Terrorist Attacks in the U.S., 1990 - 2010

Figure: Frequency of Terrorist Activity in the United States, 1990-2010
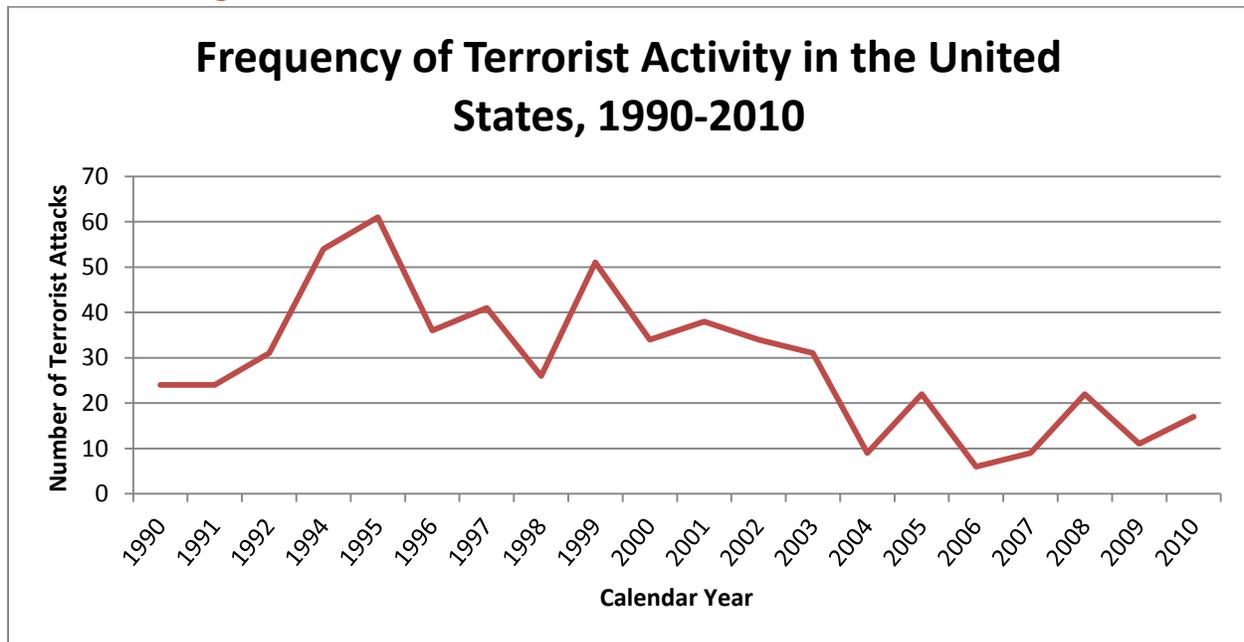
Research Question 1: To what extent is terrorism concentrated across U.S. counties?

Proportional symbol maps were created to visually display the concentration of terrorist attacks across U.S. counties in the 48 contiguous states (the GTD included no terrorist attacks for either Alaska or Hawaii during the 1990 through 2010 time period). The findings shown in Figure 2 span the period from 1990 through to 2010. The size of the dots is proportional to the number of events taking place in an area (larger dots representing a higher frequency of events). Two patterns are clear from Figure 2: (1) a small number of counties account for a large portion of U.S. terrorist attacks, and (2) the impact of terrorist attacks is felt across the entire United States as terrorist attacks have occurred in each state.

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Figure 2. Geographic Concentration of Terrorist Attacks in the U.S., 1990 – 2010

Out of the 581 attacks experienced from 1990 to 2010, a quarter of all attacks took place in just 10 counties. The largest number of attacks occurred in New York County, NY (Manhattan) (n = 30), followed by Los Angeles County, CA (n = 19), San Diego County, CA (n = 16), Washington, D.C. (n = 15), Miami-Dade County, FL (n = 14), Bernalillo County, NM (n = 13), Maricopa County, AZ (n = 12), King County, WA (n = 9), Lane County, OR (n = 8), and Tulsa County, OK (n = 8).

Research Question 2: What is the geographic profile of the 'typical' U.S. county that experienced a terrorist attack from 1990 to 2010?

We leverage information garnered from criminological work examining the ecological distribution of crime to explore variables that may help explain the similarities and differences in the geographic profiles of counties that experienced terrorist attacks between 1990 and 2010. We report the means and standard deviation values for the characteristics of counties that were and were not targeted by terrorism in between 1990 and 2000 in Table 1 and between 2001 and 2010 in Table 2. Significant differences in the characteristics of counties that did and did not report a terrorist attack during these years are indicated in the final column of Tables 1 and 2. According to Table 1, in the 1990s larger counties, counties with a higher proportion of Asians, Hispanics, and foreign-born residents, counties

with more residential instability, and counties with greater language diversity were significantly more likely to have experienced a terrorist attack. Conversely, counties with a higher proportion of white residents and counties with higher levels of concentrated disadvantage were less likely on average to experience a terrorist attack.

Table 1. Means Differences in Characteristics Comparing U.S. Counties that Experienced a Terrorist Attack with Counties that did not Experience a Terrorist Attack, 1990 - 2000

	No Terrorist Attack		Terrorist Attack		Means Difference Test
	Mean	SD	Mean	SD	
Total Population	51936.91	1.13E-05	534209.70	8.90E-05	***
Percent Male Ages 15 to 24	21.87	3.13	21.81	3.56	
Percent White, Non-Hispanic	85.11	18.21	77.42	17.96	***
Percent Black, Non-Hispanic	8.40	14.35	10.46	13.88	
Percent Asian, Non-Hispanic	0.58	2.79	2.86	3.81	***
Percent Hispanic	4.21	11.01	8.63	12.37	***
Concentrated Disadvantage	0.01	1.01	-0.20	0.71	**
Residential Instability	-0.08	0.95	1.22	0.98	***
Percent Foreign-born	1.96	3.06	6.77	7.28	***
Language Diversity	0.11	0.11	0.20	0.14	***

*** p < .001.

A similar pattern of results is observed when we compare counties with no incidents of terrorism in the first decade of the 21st century with counties experiencing at least one attack in that time period; however two new results emerge in the more recent decade. First, counties with a higher proportion of young males ages 15 to 24 years were more likely to experience a terrorist attack. Second, we find no significant difference comparing counties by level of concentrated disadvantage.

Table 2. Means Differences in Characteristics Comparing U.S. Counties that Experienced a Terrorist Attack with Counties that did not Experience a Terrorist Attack, 2001 - 2010

	No Terrorist Attack		Terrorist Attack		Means Difference Test
	Mean	SD	Mean	SD	
Total Population	69126.28	1.66E-05	653344.77	1.17E-06	***
Percent Male Ages 15 to 24	14.22	3.44	15.35	4.48	***
Percent White, Non-Hispanic	81.73	19.01	73.68	18.83	***
Percent Black, Non-Hispanic	8.67	14.51	9.92	12.82	
Percent Asian, Non-Hispanic	0.79	2.04	3.29	4.06	***
Percent Hispanic	6.01	11.94	10.94	12.69	***
Concentrated Disadvantage	0.00	1.01	-0.04	0.84	
Residential Instability	-0.04	0.97	1.14	1.18	***
Percent Foreign-born	3.25	4.45	9.63	9.59	***
Language Diversity	0.13	0.12	0.25	0.16	***

*** p < .001.

We were also interested in assessing whether the variables associated with terrorist attacks changed before and after the historical attack of September 11, 2001. Accordingly, in Table 3 we compare the characteristics of counties that experienced a terrorist attack in the 1990s and the first decade of the 21st century. According to Table 3, compared to the average profile of counties that experienced terrorist attacks from 1991 to 2000, those that experienced terrorist attacks from 2001 to 2010 had a significantly smaller proportion of males aged 15 to 24 years (from 21.82% to 15.35%) and higher levels of concentrated disadvantage (from -.20 to -.04).[5] Moreover, counties that experienced terrorist attacks in the most recent decade had a higher percentage of the population who were foreign-born (from 6.77% to 9.63%) and had a higher level of language diversity (from .20 to .25).

Table 3. Mean Differences in Characteristics of U.S. Counties that Experienced a Terrorist Attack

	1991-2000		**2001-2010**		Means Difference
	Mean	SD	Mean	SD	Test
Total Population	534209.7	8.90E+05	653,344	1.17E+06	
Percent Male Ages 15 to 24	21.82	3.56	15.35	4.48	**
Percent White, Non-Hispanic	77.42	17.96	73.68	18.83	
Percent Black, Non-Hispanic	10.46	13.88	9.92	12.82	
Percent Asian, Non-Hispanic	2.86	3.81	3.30	4.06	
Percent Hispanic	8.63	12.37	9.92	12.82	
Concentrated Disadvantage	-.20	.71	-.04	.84	*
Residential Instability	1.22	.98	1.14	1.18	
Percent Foreign-born	6.77	7.28	9.63	9.59	**
Language Diversity	.20	.14	.25	.17	**

* p < .05; ** p < .01.

In sum, we find much consistency across time periods when comparing counties that were the victim of a terrorist attack with those that did not experience a terrorist attack. In general, larger counties, those characterized by greater population and language diversity, and those with higher rates of residential instability on average are more likely to experience a terrorist attack. We also find some evidence that the geographic profile of the typical U.S. County experiencing at least one terrorist attack changed between 1990 and 2010. Compared to the 1990s, terrorist attacks in the first decade of the 21st century occurred, on average, in counties with fewer people, fewer young males, more foreign-born and more linguistically diverse populations.

Research Question 3: Do traditional predictors of crime (e.g., concentrated disadvantage, residential instability, demographic composition) also predict geographic concentrations of terrorist attacks?

[5] Recall that this variable is standardized so that larger positive values represent higher levels of concentrated disadvantage.

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The final question we addressed in this research was whether traditional aggregate-level predictors of ordinary crime (e.g., concentrated disadvantage, residential instability, population heterogeneity, and demographic composition) also predict terrorist attacks. We examined the relationship between the independent variables and the frequency (count) of terrorist attacks in a multivariate framework. A multivariate framework allows for the simultaneous observation of relationships between sets of independent variables and the outcome of interest, terrorist attacks. This form of analysis is more rigorous than examining associations between variables because it controls for the effects of a set of alternative explanations. Because we examine the frequency or count of terrorist attacks in each county-year, we estimated Poisson regression models (Allison 1999).[6] In addition, we utilize a statistical strategy that models annual county-year trends (i.e., trends by county by year) in the frequency of terrorist attacks over the two-decade period while also accounting for the fact that many terrorist events cluster in the same counties. We present the results of the longitudinal multivariate analyses in Table 4.

In Model 1 in Table 4 we first present the results examining the relationship between traditional social disorganization variables and the frequency of terrorism across county-years from 1990 to 2010. The findings demonstrate a significant statistical relationship between the frequency of terrorism in U.S. counties and measures of total population, concentrated disadvantage, residential instability, and language diversity. Compared to counties with smaller total populations, counties with larger total populations have a higher rate of terrorism, holding all other variables in the model constant.   According to Table 4, counties with higher levels of concentrated disadvantage have a lower expected rate of terrorism. While the negative finding for concentrated disadvantage is counter to what we would expect based on theories drawn from the ordinary crime literature, this finding is consistent with other research examining community correlates of terrorism (Krueger and Maleckova, 2003; for a review, see LaFree and Ackerman, 2009). Moreover, it is worth pointing out that whereas most of the previous research examining the relationship between concentrated disadvantage and ordinary crime is conducted at a neighborhood or city level, the current research was conducted at a higher level of aggregation (i.e., county level) which may account in part or in total for the disparate findings.

The results also demonstrate that compared to counties with less residential instability, counties with greater residential instability have a higher rate of terrorism. These results are consistent with our theoretical expectations and track previous findings from the criminology literature for ordinary crime. Additionally, compared to counties with less language diversity, counties with greater language diversity have a higher rate of terrorism.

Model 1, Table 4 also shows a statistically significant change in the expected rate of terrorism in the period from 2001 to 2010. Specifically, post-2001 the rate of terrorism declined compared to the 1990 to

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[6] A Poisson distribution is appropriate in this case because many U.S. counties never experience a terrorist attack during the period spanned by these data. Additionally, while there are a sizeable number of counties that experience one attack, a rapidly declining number experience successively higher numbers of attacks. The high rate of zero cases combined with a rapid decline in the number of attacks can complicate the interpretation of statistical analyses when using ordinary least squares regression methods. The Poisson regression models used here are better suited for handling this particular type of distribution (see Allison 1999).

2000 time period. While we look at annual rates, this finding does support arguments suggesting a change in the dynamics of terrorism following the September 11, 2001 attacks. In the series of analyses that follow, we further investigated this change by examining whether the expected reduction in terrorism was felt similarly across all U.S. counties or whether certain counties differentially benefitted from this reduction. To do so, we examine a series of interactions between our key theoretical constructs of interest (i.e., concentrated disadvantage, residential instability, percent foreign-born, and language diversity) and the post-2001 dummy variable. The results of these analyses are presented in Table 4, Models 2 through 5, beginning on the next page.

Table 4. Multivariate HLM Predicting the Frequency of Terrorism by U.S. County by Year, 1990 to 2010

	Model 1			Model 2			Model 3			Model 4			Model 5		
	coeff.	sig.	se	coeff.	sig.	se	coeff.	sig.	se	coeff.	sig.	se	coeff.	sig.	se
Intercept	-6.401	***	.059	-6.406	***	.059	-6.391	***	.059	-6.411	***	.059	-6.415	***	.059
Land Area	.014		.068	.014		.068	.014		.068	.014		.068	.014		.068
Total Population	.900	***	.049	.900	***	.049	.900	***	.049	.900	***	.049	.900	***	.049
Males by Age	-.004		.016	-.004		.016	-.004		.016	-.004		.016	-.004		.016
Black	.003		.005	.003		.005	.003	*	.005	.003		.005	.003		.005
Hispanic	.007		.008	.007		.008	.007		.008	.007		.008	.007		.008
NYC	1.655		2.354	1.658		2.355	1.656		2.356	1.651		2.351	1.647		2.350
Concentrated Disadvantage	-.434	***	.072	-.456	***	.072	-.435	***	.072	-.433	***	.072	-.433	***	.072
Residential Instability	.605	***	.063	.605	***	.063	.598	***	.063	.606	***	.063	.606	***	.063
Percent Foreign-born	.018		.021	.018		.021	.018		.021	.019		.021	.018		.021
Language Diversity	1.693	*	.779	1.698	*	.779	1.699	*	.779	1.687	*	.779	1.773	*	.779
Post 2001	-.509	***	.023	-.527	***	.023	-.442	***	.034	-.562	***	.029	-.587	***	.030
Concentrated Disadvantage	--			-.126	***	.018	--			--			--		
Residential Instability	--			--			-.044	***	.012	--			--		
Percent Foreign-born	--			--			--			.007	***	.001	--		
Language Diversity	--			--			--			--			.563	***	.066
Year (1990 to 2010)	-.015	***	.002	-.015	***	.002	-.015	***	.002	-.015	***	.002	-.015	***	.002

* p < .05; ** p < .01; ***p<.001.

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In Model 2, we first add the post-2001 dummy variable and interact it with the concentrated disadvantage measure. The results show that this interaction is significant and in the negative direction. The negative effect of concentrated disadvantage along with the negative effect of post-2001 suggests that the post-2001 reduction in the frequency of terrorism was greatest in areas defined by higher levels of concentrated disadvantage. More specifically, in areas of average level disadvantage, there was a 41% reduction (1 – *exponentiation* (-.527)) in the rate of terrorism after 2001. A one unit increase in concentrated disadvantage increases the reduction in the rate of terrorism after 2001 to 48% (1 – *exponentiation* (-.527 + -.126)). In other words, although in general concentrated disadvantage was associated with a lower frequency of terrorism, the relationship between concentrated disadvantage and the frequency of terrorism was stronger between 2001 and 2010.

A similar pattern is observed in Model 3 when we look at the interaction between residential instability and the post-2001 dummy variable. The interaction is significant and in the negative direction suggesting that the reduction in the frequency of terrorism was greatest in areas defined by higher levels of residential instability. Counties characterized by an average level of instability saw a 36% reduction (1 – *exponentiation* (-.442)) in the frequency of terrorism post-2001. A one unit increase in residential instability is associated with a 39% reduction (1 – *exponentiation* (-.442 + -.044)) in the frequency of terrorism in the post-2001 time period. In other words, in general residential instability is associated with a higher frequency of terrorism. However, this effect is weaker between 2001 and 2010.

The interactions of percent foreign-born (Model 4) and language diversity (Model 5) with post-2001 are both significant and in the positive direction. The positive direction of the effect indicates that counties characterized by higher levels of foreign-born population and/or language diversity had a smaller reduction in the frequency of terrorism in the post-2001 time period. Counties characterized by average levels of foreign-born population saw a 43% reduction (1 – *exponentiation* (-.562)) in the frequency of terrorism post-2001. A one unit increase in the percentage of foreign-born population is associated with a 42% reduction (1 – *exponentiation* (-.562 + .007)) in the frequency of terrorism. This difference, though statistically significant, is relatively modest. In general, percent foreign-born did not have a significant effect on the frequency of terrorism, but its effect was significantly greater between 2001 and 2010.

Conversely, the differences observed when looking at the influence of language diversity are more substantial. Counties characterized by average levels of language diversity saw a 44% reduction (1 – *exponentiation* (-.587)) in the rate of terrorism in the post-2001 time period. Compare this to counties characterized by a one unit increase in language diversity which saw only a 2% reduction (1 – *exponentiation* (-.587 + .563)) in the rate of terrorism post-2001. In other words, greater language diversity was associated overall with higher frequencies of terrorism, and this relationship was significantly stronger between 2001 and 2010.

In sum, the results from the interaction analyses indicate that the reduction in the expected count of terrorist attacks was not equally felt across all U.S. counties. Rather, certain counties, specifically those characterized by higher levels of concentrated disadvantage and residential instability saw a larger reduction in the rate of terrorism between 2001 and 2010 whereas counties characterized by higher

proportions of foreign-born population and language diversity saw a smaller reduction in the rate of terrorism between 2001 and 2010.

Conclusions

The goal of this research was to build on our previous work (LaFree and Bersani, 2012) by extending our multivariate analysis of terrorism from eight years (2000 to 2007) to 21 years (1990 to 2010). We began by examining descriptive patterns in terrorism over time and across counties. While terrorism has received much public attention, the patterns documented here show that U.S. terrorist attacks have been relatively infrequent in the last decade. While it is encouraging to find that terrorist attacks are down from the highs experienced in the 1970s and have maintained a low level for some time, as observed in our earlier report (LaFree and Bersani 2012), the rise in the likelihood of fatalities among recent terrorist attacks warrants continued attention (in 2001 and 2007 a quarter of all terrorist attacks were fatal).

One of the main strategies we used in this report was to examine the extent to which rates of county-level terrorist attacks could be accurately predicted by using variables commonly used to predict ordinary crime rates. In general, we found both similarities and differences in terms of the best predictors of terrorism and more ordinary crime. Similar to ordinary crime, terrorist attacks have been concentrated in large metropolitan areas such as Los Angeles County, CA, Miami-Dade County, FL, and New York County, NY (Manhattan). The clustering of terrorist attacks in large urban areas was consistently documented across the entire 1990 to 2010 time period. A long history of criminological research has documented a strong relationship between ecological variables and ordinary crime. Specifically, drawing upon the preeminent theoretical work of Shaw and McKay and contemporary extensions of their ecological theory, we examined whether differences in socio-economic status, residential stability, and population heterogeneity distinguished counties that experienced terrorism.

Consistent with findings related to ordinary crime, areas characterized by higher rates of residential instability face larger numbers of terrorist attacks. This effect is significant for the full period between 1990 and 2010 and for the first decade of the 21st century. It is in the same direction and nearly significant for the 1990s. Compared to less residentially stable areas, those that are more residentially stable may benefit from stronger social ties and more consistent norms.

For both the 1990s and the first decade of the 21st century, counties with a higher proportion of foreign-born citizens have higher rates of terrorism. However, when included in the multivariate analysis, percent foreign-born is not a statistically significant indicator of terrorism rates. This is most likely due to the fact that percent foreign-born is highly correlated with both residential instability and language diversity. This finding is also similar to other findings in the criminological literature where the evidence of a link between percent foreign-born and crime disappears when other variables are controlled.

The demographic results were also somewhat in line with results from the analysis of ordinary crimes. Thus, as with county-level analysis of crime, counties with larger populations have significantly higher

rates of terrorism in the 1990s, in the first decade of the 21st century, and for the full period between 1990 and 2010. Also, consistent with the analysis of ordinary crime, counties with a higher proportion of young men aged 15-24 had higher rates of terrorism in the 1990s and the first decade of the 21st century. However, this variable was not significant when included in the multivariate models.

We also found important differences between terrorism and ordinary crime. To begin with, and counter to traditional ecological theory in criminology, whereas socioeconomic status, and specifically concentrated disadvantage, evidences a robust positive relationship with ordinary crime, our measure of concentrated disadvantage had a very different relationship with terrorism. Overall, more economically disadvantaged counties had lower than expected rates of terrorism. Further analysis showed that this relationship is being driven especially by terrorism in the 1990s. Generally, concentrated disadvantage is associated with lower rates of terrorism in the 1990s and has no significant relationship to terrorism in the first decade of the 21st century.

One of the innovations of this research is that we were able to include a county-level measure of language diversity in the analysis—which has been rare in criminology research. Most prior research has used percent foreign-born as a measure of ethnic heterogeneity. In our analysis, we find that compared to percent foreign-born, language diversity has a more consistent effect on the terrorism measure. While counties with a higher percent foreign-born had higher rates of terrorism for both the 1990s and 2000s, percent foreign-born was not statistically significant when we controlled for the other variables in our models. Our language diversity measure includes 29 different languages in the 1990s analysis and 40 different languages in the analysis of the first decade of the 21st century. In contrast to percent foreign-born, language diversity has a very consistent effect on terrorism rates: greater county-level language diversity is associated with higher rates of terrorism in the 1990s, the first decade of the 21st century, and for both decades combined.

Finally, the results of our research demonstrate that while there was a significant reduction in the frequency of terrorism in the first decade of the 21st century, the reduction was differentially felt across U.S. counties. Counties characterized by high levels of concentrated disadvantage and residential instability saw the greatest reduction in the rate of terrorism in the last decade. Counties characterized by high levels of foreign-born population and language diversity saw less reduction in the rate of terrorism between 2001 and 2010. We find these last findings intriguing and are very interested in exploring them further in future research.

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