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A Multi-level Approach to the Study of Violent Extremism

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About This Report

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About START

Established in 2005 as U.S. Department of Homeland Security Center of Excellence led by the University of Maryland, the National Consortium for the Study of Terrorism and Responses to Terrorism (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.

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Summary

A common conclusion of nearly two decades of research on radicalization is that challenges stemming from the heterogeneity of extremists, low base rates of offending, and the seemingly prosaic nature of radicalization correlates make it difficult to generate reliable risk factors for violent extremism. At the same time, the need for insights to help identify individuals at risk of radicalizing, as well as to make evidence-based decisions about the rehabilitation and reintegration of extremist offenders, has never been greater. The number of individuals adhering to hate-based and extremist ideologies in the United States has grown considerably in the last decade, while law enforcement agencies and those who are responsible for administering community-based prevention programs continue to struggle with limited resources.

The purpose of this study is to improve the validity, reliability, and utility of risk analyses of violent extremism by creating a relational database that combines individual-level radicalization risk factors with variables at the meso and macro-levels of analysis. In 2012, with support from the National Institute of Justice (Grant Award #2012-ZA-BX-0005), our research team at START began work on a database of political extremists called Profiles of Individual Radicalization in the United States (PIRUS). The PIRUS dataset contains individual-level information on 2,225 violent and nonviolent extremists from across the ideological spectrum who committed crimes in the United States from 1948 to 2018. The database includes 147 variables that cover a wide range of micro-level attributes relevant to an individual's radicalization process, such as their personal history, basic demographic information, group membership, interaction with online extremist content, mobilization mechanisms, and prior criminal history.

This project expanded PIRUS into a suite of relational datasets that include individual-level, network, and community data. We began by mapping the co-offender networks present in PIRUS and we used them to construct a new dataset called the Social Networks of American Radicals (SoNAR). SoNAR allows users to model the co-offending networks in which the subjects in PIRUS were embedded at the times that they committed their crimes. Users can then perform social network analysis (SNA) to understand the dynamics of extremist co-offending relationships in the United States and they can integrate network-level variables alongside individual-level characteristics in their studies of radicalization.

We then constructed an additional dataset of structural variables based on county-level demographic, political, and economic indicators to account for influences at the macro-level. These indicators can be mapped to the subjects in PIRUS by using unique county-level identifiers that appear in both datasets. These data allow users to isolate the effects of macro-level changes in U.S. communities on individuals' radicalization trajectories.

Preliminary analyses of these data reveal several important findings. Data from SoNAR indicate that historically, U.S. extremists from across the ideological spectrum have been embedded in expansive co-offender networks. SoNAR includes information on 3,953 offenders who collectively formed more than 8,000 offender dyads. While these networks included many connections that spanned similar sub-ideological groups, they also bridged individuals and organizations on opposite ends of the political spectrum. However, these dynamics have changed in recent years. Contemporary U.S. extremists more often offend alone or as members of isolated cliques. For instance, the number of subjects from 1990 who are classified as lone actor offenders in SoNAR is 23%, while in 2018, 64% of the subjects included in SoNAR are classified as lone actors. If isolated cliques are added to this figure, the percentage of subjects who were not part of a broad network of offenders in 2018 was 87.5 percent.

We find that these changes have serious implications for the nature of radicalization among U.S. extremists. Individuals who are embedded in large networks, and especially those who maintain central positions within the networks, are less likely to radicalize to violence than offenders who are members of isolated cliques or act alone. Large networks promote specialization that allows members to adopt non-violent roles; they can draw attention to their causes through non-violent, mass mobilization crimes; and they have gatekeepers who moderate or otherwise control the behaviors of their members. Lone actor offenders and isolated cliques, on the other hand, do not have the co-offender connections to engage in specialization; they often can only draw attention to their causes and themselves through acts of violence; and they operate in digital spaces where enablers, rather than gatekeepers, encourage them to mobilize to violence.

We demonstrate these dynamics by looking at U.S. extremists inspired by the Islamic State of Iraq and Syria from 2014-2020, as well as offenders from the modern militia movement. We find that local network dynamics play a critical intervening role in the decision-making of extremists in the United States. For instance, ISIS-inspired offenders who were member of large networks, networks with high levels of interconnectedness, and networks based on trust were more likely to attempt to travel to join the group overseas that to plan terrorist attacks in the United States. Offenders who did not have strong local network connections, and thus lacked the knowledge, resources, and relationships to make travel a viable option, chose instead to plan acts of terror on U.S. soil.

We identify similar dynamics in the U.S. militia movement. Analyzing offenders from the Oath Keepers, Three Percenters, and Boogaloo Movement, we find that despite similarities in their beliefs and comparable rates of individual-level risk factors for violence, offenders from the three movements often reached different radicalization outcomes. Oath Keeper offenders were less likely to radicalize to violence than either members of the Three Percenters or Boogaloo Movement. Our results suggest that these differences in radicalization outcomes are due to the intervening role of offender networks. Individuals who were a part of large networks, and especially networks with established leaders, like the Oath Keepers, were significantly less likely to radicalize to violence than offenders who acted alone or as members of isolated cliques, which tended to be the case for many Three Percenters and Boogaloo Movement members.

In contrast to the influence of networks on radicalization, we do not find that community-level pressures, as measured by county-level indicators of social, political, and economic change, have an effect on individual-level radicalization to violence. Through a series of multivariate models, we show that while individual risk factors for violence, such as gender (male), age (young), previous criminality, low socio-economic status, and mental health disorders, are robust predictors of violence among U.S. extremists, county-level demographic and economic indicators are not.

There are several implications of these findings from criminal justice professionals and terrorism researchers. Perhaps most important, as the extremist offender landscape in the United States and elsewhere continues to become less centralized and more loosely connected, our results suggest that radicalization to violence will become more common, especially among those who display a combination of network isolation and individual-level risk characteristics for violence. Practitioners engaged in the prevention of violent extremism will need to look beyond individual-level vulnerabilities and consider how the dynamics of extremist relationships can influence one's radicalization trajectory. Specifically, programs that are designed to prevent extremism, or to off-ramp individuals who have begun to radicalize, should consider how social connections in online and offline spaces may accelerate or moderate an individual's pathway to violence. Moreover, social media companies and technology providers will need to continue to investigate how they can break extremist echo chambers that form in online communities. While large technology firms, like Meta, Google, and Twitter, have made some progress in countering extremism on their platforms, smaller companies, such as Telegram, Reddit, Gab, and many others, have done far less to combat the spread of dangerous ideas on their sites. These issues may be especially important for younger persons, who have grown up with the explosive growth of social media and may be especially vulnerable to the negative effects of smaller platforms.

Introduction

Risk assessment tools in criminology can be traced back at least to the 1920s, when Ernest Burgess and his colleagues examined the records of 3,000 former inmates of Illinois prisons to find the variables that distinguished those who committed new crimes while on parole from those who did not (Bruce et al., 1928). Burgess found 22 such variables, and in 1933, the prediction instrument he devised was put into practice to help inform parole decisions in the Illinois prison system. Similar prediction instruments have been developed and applied in the United States and elsewhere for decades. Over time this collective knowledge has been used by researchers and practitioners to measure vulnerability to violent crime and by criminal justice professionals to make informed decisions about resource allocation, sentencing, release, and parole.

The study of violent political extremism by criminologists has a much more recent history (LaFree & Dugan, 2004; LaFree & Freilich, 2017) and to this point in time has produced no widely accepted conclusions about radicalization to violence. In a recent review, Monahan (2017:521) states simply that there is "scant empirical evidence of the validity of putative risk factors for terrorism beyond the demographically obvious"—by which the author means young men. In fact, a common conclusion (Gill, 2015; Hafez & Mullins, 2015; Horgan, 2008) of more than a decade of research on radicalization is that challenges stemming from the heterogeneity of extremists, the low base rates of offending, and the seemingly prosaic nature of radicalization correlates make it unlikely that we will soon succeed in identifying reliable extremism risk factors.

At the same time, the need for insights to help identify individuals at risk of committing acts of violent political extremism, as well as to make evidence-based decisions about the rehabilitation and reintegration of extremist offenders, has never been greater. According to recent estimates (Anti-Defamation League, 2022; Blazak, 2009; Southern Poverty Law Center, 2022), the number of groups and individuals adhering to hate-based or extremist ideologies in the United States has grown considerably in the last decade, while law enforcement agencies and those who are responsible for administering community-based countering violent extremism (CVE) programs continue to struggle with limited resources. Prioritizing individuals who are at the highest risk of committing acts of extremist violence is, and will continue to be, important to the success of prevention and counter-terrorism efforts (Borum, 2014; Kruglanski et al., 2009; Monahan & Skeem, 2014).

While violent extremism is undoubtedly a complex phenomenon, there are reasons why it may be premature to dismiss the possibility of identifying risk factors for violent extremist offenders. First, the pessimistic conclusions that are often reached by researchers studying extremism typically follow the analyses of data which are inappropriate for establishing or measuring risk. Radicalization research is typically based on qualitative assessments of a small numbers of cases (e.g., Bloom, 2007; Kydd & Walter, 2006; McCauley & Moskalenko, 2011) that, in most instances, cover large time periods (Gill, 2015) and only include violent individuals (e.g., Gill, Horgan, & Deckert, 2014; Gruenewald, Chermak, & Freilich, 2013; Kruglanski et al., 2009; Pape, 2005; Sageman, 2004) or those who adhere to specific ideologies (e.g., Bakker, 2006; Gruenewald, Chermak, & Freilich, 2013; Klausen, 2015; Sageman, 2004, 2008). The failure of radicalization research to find meaningful regularities among extremists may be due to the exclusion of non-violent individuals as reference groups and the amplification of sample heterogeneity through cohort aggregation rather than any true absence of extremist risk factors (Gill, 2015). Indeed, a recent study by LaFree et al. (2018) found that offenders who engaged in acts of violence displayed key differences on several measures of risk when compared to their nonviolent counterparts. This included significantly higher rates of pre-radicalization criminal behavior, more extensive membership in radical cliques, poor employment performance, and evidence of mental illness.

Second, most research on extremism in the United States takes a restricted view of the variables that make individuals vulnerable to extremist narratives and behaviors. In general, we can divide social and behavioral variables into three levels, distinguishing between micro (individuals), meso (small groups and networks) and macro (communities or whole societies). Prior research on violent political extremism has focused especially on micro-level characteristics (Horgan, 2008; Kruglanski et al., 2009; Schmid, 2014). These studies typically do not include meso and macro-level variables, even though there is general agreement among researchers that they are important contributors to extremist violence. Criminological research on violent crime has made progress in identifying risks for offending in large part because it often spans multiple levels of analysis. Thus, research on offending not only explores micro-level correlates, such as age, gender, race, and socioeconomic status (Ahonen, Loeber, & Pardini, 2016; Loeber & Farrington, 1998; Lattimore, Visher, & Linster, 1995; Sampson & Lauritsen, 1994), but also meso-level variables that are tied to criminal activities (e.g., gang activities, peer networks [Haynie, 2001, 2002; Papachristos, Hureau, & Braga, 2013; Sutherland, 1947]) as well as macro-level structural conditions (e.g., poverty, inequality, mobility) that create permissive or restrictive environments for crime (Sampson, Raudenbush & Earls, 1997; Shaw& McKay, 1942).

And finally, research (e.g., Horgan, 2008) on extremism often dismisses the notion of identifying risk factors for violent extremism out of legitimate concerns that the resulting assessment tools will be plagued by inaccuracies. However, as criminological research has shown (Monahan & Walker, 1986; Hoffman, 1994), there is still utility in risk assessments that are less than perfect. Indeed, no current risk assessment used for pretrial detention, sentencing, probation, parole, or civil commitment provides anything close to perfect prediction (Monahan & Steadman, 2011; Monahan & Skeem, 2014), and yet they are vital to the success of the U.S. criminal justice system. Following Kraemer et al. (1997), we assume that any risk assessment tool that assists policymakers in making informed decisions about the risk of future incidents of violent extremism is useful, even if such a tool is incomplete.

Project Goals

In 2012, with support from the National Institute of Justice (Grant Award #2012-ZA-BX-0005), our research team at START began work on a database of political extremists called Profiles of Individual Radicalization in the United States (PIRUS). Since then, PIRUS has evolved into the largest individual-level dataset on ideologically motivated criminal extremism in the United States, and it has proven to be a valuable resource to academic researchers and criminal justice practitioners seeking to understand the complex processes of radicalization and violent extremism. Currently, the PIRUS dataset contains individual-level information on 2,225 violent and non-violent extremists across the ideological spectrum in the United States from 1948 to 2018. An update to the database that is due to be completed in the Fall of 2022 will add approximately 400 subjects from 2019-2021. PIRUS includes 147 variables that cover a wide range of micro-level attributes relevant to an individual's radicalization process, such as their personal history, basic demographic information, group membership, interaction with online extremist content, mobilization mechanisms, and prior criminal history.

The purpose of the research that we detail in this report was to improve the validity, reliability, and utility of risk analyses of violent extremism by expanding PIRUS' individual-level focus to include variables at the meso and macro-levels of analysis. This was first accomplished by mapping the co-offender networks present in PIRUS and using them to construct a new dataset called the Social Networks of American Radicals (SoNAR). SoNAR allows users to model the co-offending networks in which the subjects in PIRUS were embedded at the times that they committed their crimes. Users can then perform social network analysis (SNA) to understand the dynamics of extremist co-offending relationships in the United States and they can integrate network-level variables alongside individual-level characteristics in their studies of radicalization.

We then constructed an additional dataset of structural variables based on county-level indicators to account for influences at the macro-level. These indicators can be mapped to the subjects in PIRUS by using unique county-level identifiers that appear in both datasets. These data allow users to isolate the effects of macro-level changes in U.S. communities on individuals' radicalization trajectories. Before moving on to describe these additions in more detail, we first briefly discuss the theoretical justification for expanding PIRUS into a multi-level, relational database.

The Potential Importance of Meso-Level Factors

While meso-level determinants of violent extremism have received far less attention than micro-level determinants, there are a growing number of studies that examine the influence of social networks and group-level variables on extremist outcomes. These studies have built on decades of criminological research (Gottfredson & Hirschi, 1990; Hirschi, 1969; Krohn & Massey, 1980) that posits a negative relationship between parental monitoring and attachment and crime, and argues (Akers, 2009; Warr & Stafford, 1991) that small-group peer interaction and communication are the primary drivers of violent behavior. Of particular importance are social learning perspectives (Warr, 2002) that emphasize how peers, through mechanisms such as fear of ridicule and loyalty, transmit delinquent behaviors to others through a process of socialization.

As we noted above, studies that have explored the processes of radicalization have disproportionately focused on the influence of individual-level variables, but a growing number of scholars have begun to investigate how social networks shape the beliefs and behaviors of extremists. Indeed, some analysts (Sageman, 2004, 2008) argue that radicalization is fundamentally a social process whereby family, peers, and close associates socialize each other to extremist belief systems. As Sageman (2008: 24) notes, terrorist groups are not made up of "complete strangers who do not know each other;" but rather they are "often the extension of natural groups of friends and family."

While Sageman reviewed the social connections that underpin the global Jihadist movement, similar social dynamics are at play in all extremist milieus. Participants in white power movements, for instance, are often socialized to hate beliefs by family members or close friends prior to seeking out, or being recruited into, formal hate groups (Simi, Windisch, and Sporer, 2016). Likewise, the "leaderless resistance" strategy employed by extremist environmental groups relies heavily on familial and friendship connections for success (Joosse, 2007, 2012). Groups like the Earth Liberation Front (ELF) encourage their followers to socialize friends and loved ones to extremist views and to collectively form independent micro-organizations that pursue the broader goals of the environmental movement.

Social relationships are critical to the adoption of extremist beliefs and the formation of radical movements because they provide the crucial links that allow for the collective adoption of ideas and behaviors (Mullins & Dolnik, 2010; Zech & Gabbay, 2016). They are also important because they influence extremist outcomes, such as the nature of command and control in terrorist organizations (Shapiro, 2013), the adoption of terrorist tactics (Pedazhur & Perliger, 2006), and the success of terrorist plots (Klausen, 2015). Importantly, as we show in the results sections below, the size and structure of co-offender networks can help explain an individual's radicalization to violence.

Finally, models based on group dynamics show how cognitive biases that are common in small cliques can lead to extreme forms of violent expression (Allison, 1971; Bion, 1961; Janis, 1972; McCauley, 1989; Post, 1998). The intense bonds experienced within cliques, and the weak bonds tying individual members to those on the outside, can lead to the formation of echo chambers and remove barriers to individual participation in violent extremism. Sageman (2008), for example, shows how the insular environment of cliques linked to al Qa'ida led to increasingly extreme behaviors among their members by promoting a process of one-upmanship. Similarly, recent studies by Jasko et al. (2017) and LaFree et al. (2018) found evidence that the presence of radicalized friends in an individual's social network and the subsequent formation of cliques increased an individual's likelihood of using violence.

A critical contrast between criminology and research on violent extremism is that the former more commonly utilizes SNA as a rigorous methodological technique for studying the role of networks in facilitating violent behavior (for an exception, see Klausen, 2015). Criminologists (see McGloin and Kirk, 2010 for an overview) have made several convincing arguments for why social network analysis is a fruitful method for understanding individual behavior. Although extremism researchers have made similar claims about the utility of SNA for terrorism studies (Caspi, Freilich & Chermak, 2012; Perliger & Pedahzur, 2011; Mullins 2013; Basu et al., 2014; Klausen, 2015), appropriate data are often not available for researchers to take advantage of SNA tools. Most of the studies that have looked at the social connections of extremists have been based on case studies of particular individuals, organizations, or terrorist plots. Those who have utilized SNA in their examinations of individual-level extremism have either not made their data available to the broader research community (Caspi et al. 2012; Pedahzur & Perliger, 2006), or have collected data that are limited to specific ideological milieus (Caspi et al. 2012; Klausen, 2015). SoNAR, which is detailed below, seeks to fill this gap by providing the terrorism research community with a large-scale, cross-ideological dataset on the co-offender connections of U.S. extremists that can be used to leverage SNA and related tools in the study of violent extremism.

The Potential Importance of Macro-Level Factors

Research addressing macro levels of analysis in criminology is informed largely by sociological theories that view neighborhoods, states, and state legitimacy as variables that create restrictive or permissive environments for crime. The evidence in criminology research on the utility of macro-level indicators for understanding violence is clear. A meta-analysis by Pratt and Cullen (2005: 378) concluded that "…the strongest and most stable macro-level predictors of crime include racial heterogeneity (when measured as either the percent nonwhite or the percent Black), poverty, and family disruption-factors typically treated as indicators of 'concentrated disadvantage.'"

While macro-level theories have a long history in criminology, researchers rarely use them to understand individual-level violent extremism. In fact, research on political extremism generally lacks the data sources that are needed to allow for a layering of macro-level indicators onto individual-level profiles. The studies that have attempted to consider macro-level influences on extremism in the United States have been limited to explaining community-level outcomes. For example, in a study of terrorist attacks against 3,144 U.S. counties from 1990 to 2011, LaFree and Bersani (2014) find substantial support for social disorganization arguments. Counties with a greater urban population, more residential instability, higher percent foreign born, and extensive language diversity experience higher rates of terrorism than others. Similarly, Freilich et al.'s (2015) study of far-right homicides in U.S. counties from 1990 to 2012 found that counties with a high percentage below the poverty line and high divorce rates have high rates of far-right homicides.

Like meso-level variables, criminological research has developed advanced approaches for including macro-level variables into risk assessment tools. For example, the Level of Service Inventory-Revised (LSI-R) risk/needs assessment tool includes questions about neighborhood crime in order to make individual assessments of recidivism risk (Gendreau et al., 1996). While most researchers would not deny the importance of macro-level variables for explaining extremism, to date they have not been included in analyses of individual-level radicalization.

Data Collection

The Social Networks of American Radicals (SoNAR) Dataset

SoNAR builds on PIRUS, which is a cross-sectional database of the characteristics of a sample of extremists who radicalized in the United States from 1948-2018. The PIRUS project began in January 2013 with a comprehensive name search in open-source records, such as news reports, court documents, academic articles and books, and anthologies. This process produced an initial name list of approximately 3,900 individuals from various ideological milieus and time frames for possible inclusion in the dataset. Each of these observations were then reviewed to determine whether the individuals should be included in the dataset based on the following set of inclusion criteria:

- The individual met all three of the following:
    - The individual radicalized in the United States;
    - The individual espoused ideological motives; and
    - The individual engaged in ideologically motivated criminal acts.
- The individual also met **one** of the following five criteria:
    - The individual was arrested for ideologically motivated activities;
    - The individual was indicted for ideologically motivated activities;
    - The individual was killed as a result of his or her ideologically motivated activities;
    - The individual is/was a member of a designated terrorist organization as listed by the U.S. State Department; or
    - The individual is/was associated with an organization whose leader(s) or founder(s) has/have been indicted of an ideologically motivated violent offense.

Random sampling techniques were then used to draw an initial sample (n=1473) from the qualifying cases for inclusion in the PIRUS database. This process has been repeated in the years since the initial data release in order to update the database with cases from 2014-2018. PIRUS now includes information on 2,225 subjects. An update which is set to be completed in the Fall of 2022 will add a sample of cases from 2019-2021 to the database.

PIRUS covers individuals who ascribed to far-right, far-left, Jihadist, and single-issue ideologies and it includes 147 variable fields with information on the subjects' criminal activities and/or violent plots, their relationships with extremist groups, their radicalization processes, their ideological beliefs, and their demographic characteristics and personal histories. PIRUS is coded entirely from open sources, such as newspaper articles; secondary datasets; peer-reviewed academic articles; journalistic accounts, including books and documentaries; court records; police reports; transcribed interviews; and information credited to the individual being researched (e.g., verified personal websites, autobiographies, and social media accounts).

SoNAR expands on the PIRUS project by capturing the dyadic connections and relationship attributes of U.S. extremist co-offenders. Every individual who has been coded for PIRUS is included in SoNAR along with a mapping of their associations to other extremists who have committed criminal offenses. Given that PIRUS is based on a sample and is not a comprehensive database of U.S. extremists, SoNAR includes additional offenders who had direct ties to subjects in PIRUS but were not themselves randomly selected to be included in the PIRUS dataset. The decision to include these additional actors in SoNAR was made to ensure that the resulting extremist co-offender networks are as comprehensive as possible, and to increase the accuracy of core network measures, such as size, shape, density, and centrality.

Additional actors were only included in SoNAR if they satisfy the PIRUS inclusion criteria that are noted above, and they had direct online or offline communications with at least one person in the PIRUS dataset. This requirement means that SoNAR, like PIRUS, does not include individuals who engaged exclusively in legally protected activities, even if they clearly ascribed to an extremist ideology, nor does it include individuals who indirectly influenced the actions of the subjects in PIRUS through the general promotion of extremist beliefs. Furthermore, due to data limitations, SoNAR does not map the potential connections between individuals in PIRUS and subjects who radicalized outside of the United States. This includes online discussions that may have taken place between PIRUS subjects and non-U.S. extremists living in foreign countries or conflict zones. Thus, SoNAR likely underestimates the true size of the communication networks that may have impacted the radicalization processes of the subjects in PIRUS.

Variable Selection

With the inclusion of all the subjects in PIRUS, as well as additional co-offenders, SoNAR includes information on 3,953 individuals who collectively formed 8,150 extremist dyads. The mapping of dyads can be used to estimate key social network metrics, including size, shape, density; and various measures of centrality, like degree, betweenness, and eigenvector. We describe these common SNA measures below. Moreover, a subset of dyads from 1990 to 2018 are coded to include additional information about the setting, type, and direction of the co-offender relationships, such as whether communication between dyads occurred primarily online or offline; whether the relationships consisted of family members, friends, romantic partners, or acquaintances; and whether the relationship displayed asymmetric influence (e.g., recruiter/recruitee, mentor/mentee). Since there are nearly 9,000 dyads in SoNAR, our research team prioritized the most recent and violent cases for inclusion in the expanded subset. Therefore, we coded (1) all jihadist cases; (2) all violent far-right cases from 1990-2018; (3) all violent far-left and single-issue cases, as well as all non-violent far-right cases from 2000-2018 and (4) all non-violent single issue and far-left cases from 2010-2018. Overall, 2,457 unique dyads were coded for the expanded subset of relationship variables.

The decision of which variables to include in the SoNAR dataset was driven by data requirements for utilizing standard SNA techniques, as well as a consideration of the unique aspects of extremist social connections. Given the complexity of extremist relationships, we felt that it was important for SoNAR to include variables that allow researchers to identify mixed-type relationships, such as family members who were also extremist recruiters or spouses who facilitated the extremist behaviors of their partners. Thus, this subset of SoNAR includes coding for up to three relationship types per dyad. The additional variables about the dynamics of extremist relationships can be used to construct directed SNA graphs and to analyze the influence of relationship type on various radicalization outcomes.

Finally, for the subsets of jihadist offenders and offenders tied to the anti-government militia movement, SoNAR includes information about whether the networks included confidential human sources who worked on behalf of law enforcement, and/or undercover law enforcement agents who infiltrated the groups. This information can be used to estimate how often law enforcement utilizes informants to undermine extremist networks and to judge the utility of various law enforcement strategies for disrupting terrorist plots. The full list of variables included in SoNAR, as well as their descriptions, are include with the data download files.

Sources and Coding Procedures

Like PIRUS, the SoNAR dataset has been constructed using publicly available sources. Court records, such as indictments and criminal complaints, were used to identify co-conspirators to illegal extremist activities, while news accounts, social media profiles, and biographies were used to identify direct contacts between offenders who did not participate in the same extremist crimes. Sources of questionable validity, such as posts on extremist forums, were only used if the information could be corroborated by additional sources of better credibility. More than 30,000 individual sources were used to code PIRUS and SoNAR cases.

Coding for SoNAR occurred in multiple steps. Project researchers and student research assistants first reviewed each case in PIRUS and identified the full range of their extremist associations. Those connections were then formatted as dyads and sent to trained research teams for full coding. Cases were double coded, as time and resources permitted, to ensure sufficient inter-coder reliability. Once the coding was complete, the project's director and full-time researchers reviewed the cases for missing dyads, data entry inaccuracies, or cases that did not fully meet the inclusion criteria discussed above.

Research Questions

SoNAR was designed to explore a broad array of research questions about the nature of extremist relationships and related terrorist behaviors. In combination with PIRUS, SoNAR can be used to answer questions about how individual and network-level variables influence the characteristics and performance of whole networks, as well as how network variables influence individual-level behaviors, such as participation in extremist violence. Some of the questions that SoNAR was designed to answer include:

1. How well connected are U.S. extremist offenders? Are extremist offender networks in the United States typically dense or disconnected?
2. How do the size, density, and performance of U.S. extremist offender networks vary within and across ideologies? How often are networks from different ideologies connected to each other?
3. How often are extremist offender networks in the United States formed by family members, close friends, or romantic partners? How well do these networks perform in comparison to networks of acquaintances or online contacts?
4. How do extremist connections influence the processes of radicalization and mobilization to violence?
5. Do individual-level attributes, such as age, gender, socioeconomic status, or military experience, explain the roles that individuals assume in their respective networks?
6. Are extremists with many social connections more likely to engage in certain extremist behaviors than individuals with few or no connections?
7. Are individuals who are embedded in networks with recruiters, facilitators, and mentors more likely to successfully carry out terrorist attacks or travel to foreign conflicts?

Below, we provide preliminary results that address several of these questions but given the size and scope of PIRUS and SoNAR, users will have the opportunity to expand on these results and design their own studies that explores additional questions to ones listed above.

Community-Level Indicators

We used data from the IPUMS National Historical Geographic Information System (NHGIS) for all our macro-level community measures. This dataset provides access to Census Bureau data with summary files and time-series estimates that ensure accuracy over time when data sources change. We collected the data for 1990 and 2000 from the Decennial Census, and 2010 and 2018 data from the American Community Survey (ACS). We used five-year ACS estimates to ensure the representativeness of all the counties in the United States and used linear interpolation to produce estimates for the non-census years. In addition to the main theoretically-driven community variables, we also include standard demographic measures (i.e., sex, age, and race/ethnicity).

We merged the yearly estimates into the PIRUS dataset using the date of exposure and the county the individual lived in at the time of radicalization as the matching variables. This resulted in a final analytic dataset of 1,274 individuals engaged in either violent or non-violent extremism from 2000 to 2018 in the United States, including individual and community/county variables.

Results from SoNAR

As we note above, the SoNAR dataset allows users to (1) map extremist co-offending networks in the United States, (2) employ SNA tools in their analyses of extremist behavior, and (3) utilize multi-level models to explain radicalization to violence. These capabilities are illustrated in the following three results sections, which map the co-offending relationships of extremism offenders in the United States through 2021[1] and demonstrate how networks interact with individual-level characteristics to explain extremist outcomes. In the first section, we provide an overview of the SoNAR data that explores the unique dimensions of U.S. extremist networks by comparing co-offender relationships and network attributes across ideological subgroups. The second section explores how networks influence terrorist decision-making and radicalization to violence by explaining the behaviors of U.S. Islamic State of Iraq and Syria (ISIS) supporters from 2014-2020. We show how local networks were critical to determining whether ISIS supporters made the decision to join the group abroad or to plan attacks in the United States. In the final section, we explore the connections that often form individuals and groups within ideological sub-categories, and we analyze the impact that these types of heavily bridged and dense networks have on their members' radicalization processes. We do this by mapping the co-offending relationships within and across the three largest contemporary anti-government militias in the United States: Oath Keepers, Three Percenters, and the Boogaloo Movement.

Before moving on to describing these results, we first provide brief descriptions of several key SNA terms and measures that will be used throughout the remainder of this section.

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[1] As we note above, the publicly available version of PIRUS currently includes cases through 2018. However, an update planned for the Fall of 2022 will add subjects from 2019-2021 to PIRUS. The analyses we provide here draw from the forthcoming PIRUS updates.

SNA is a powerful analytic tool not only because it allows users to visualize networks in two (and sometimes three) dimensional spaces, but also because the methods behind SNA provide several measures that help researchers understand how the structure of a network relates to its overall performance, as well as the performance of its individual nodes. While the measures that one can extract from SNA are vast, we focus on five primary estimates of centrality and density: (1) degree centrality, (2) eigenvector centrality, (3) betweenness centrality, (4) stress centrality and (5) ego-network density.

Key SNA Terminology and Measures

Network

A network refers to a set of relationships between objects, which can be people, organizations, communities, or other entities that form ties to each other (Kadushin, 2012: 14-15). SNA tools are used to map the relationships between objects, providing graphical representations of the networks they form, which are often referred to as sociograms. Networks can be small or large and can take on many forms, such as having completely connected objects, like in the case of many family units, or incomplete ties, as is often the case in companies where an employee knows some, but not all, workers. The networks in SoNAR capture the relationships between U.S. extremist offenders. Thus, the database is useful for analyzing co-offending networks of extremists who conspired to commit crimes together, or those who exchanged ideas, knowledge, skills, or technologies with each other before committing separate crimes.

Node

In SNA, a node is simply the object or objects that form the relationships that makeup a network. In SoNAR, nodes are individuals who were motivated by their extremist beliefs or associations and committed crimes in the United States. However, by linking SoNAR to PIRUS, it is possible for users to incorporate other objects, such as extremist groups or criminal events, into their network visualizations and analyses.

Edge

An edge refers to the tie that connects two nodes in a network. An edge between two nodes creates a dyad, or pair of objects that are connected to each other. Edges can be directed, thus signifying the path, temporality, or strength of a tie between two nodes, or they can be undirected (Faust & Tita, 2019). Edges can indicate loose relationships, such as two individuals who are physically located in the same space but do not interact, or strong connections, such as the relationship between a parent and child. The collection of nodes and their edges allows researchers to visually display a complete network and statistically capture measures related to the network's size, structure, density, and performance.

Degree Centrality

In undirected network graphs, degree centrality captures the total number of connections, or edges, that a node has within a network. In the case of social networks, this measure usually captures how many people within a defined network (e.g., a company, school, online community, etc.) a particular node is connected to; although, some graphs may also display the connections between people, organizations, and events. In directed graphs, degree centrality is divided into two measures: in-degree centrality, which captures a node's incoming links, and out-degree centrality, which measures a node's out-going connections (Kadushin, 2012: 34).

Eigenvector Centrality

While degree centrality is an important and widely used measure in SNA, it simply provides the total number of a node's connections and does not estimate how important those relationships are within the overall network. For instance, a node sitting on the edge of a network can have many ties, but its lack of central positioning within the network means that it cannot spread information beyond its immediate neighbors. Similarly, a node can have few ties but occupy a central place in a network, making its connections to adjacent nodes critical to the spread of information to distant areas of the network. Eigenvector centrality captures the transitive influence of nodes by giving higher centrality scores to the ones that are connected to other nodes that have high degree centrality scores (Golbeck, 2013). That is, a node with a high eigenvector centrality score is a one that is connected to many nodes that are also well connected within a network.

Betweenness Centrality

Betweenness centrality also captures the relative influence of a node in a network but rather than estimating influence by adjusting a node’s centrality score based on the connectedness of its ties, betweenness centrality captures a node’s influence by calculating the fraction of shortest paths in a network that must go through it (Scott, 2017). Put simply, betweenness centrality measures how often a node sits in-between two other nodes and helps facilitate the flow of information between them. Nodes that have high betweenness centrality, therefore, are crucial to the flow of information across parts of a network that would otherwise be disconnected.

Stress Centrality

Stress centrality is closely related to betweenness centrality but rather than providing the fraction of all shortest paths in network that go through a node, stress centrality provides the absolute number of shortest paths that pass through the node (Jia et al., 2012). Both measures capture the influence of nodes in a network, but unlike betweenness centrality, stress centrality does not give extra weight to nodes that acts as bridges between two networks.

Ego-Network Density

Ego-network density is a continuous measure bounded between 0 and 1 that captures the extent to which all the nodes in a network are connected to each other (Golbeck, 2013). Lower values indicate a network where only a small percentage of all possible connections are present, while higher values indicate a network in which many, if not all, of the nodes are connected to each other. Ego-network density is an especially important measure for explaining role diversity within networks. High ego density within a network can promote specialization, where nodes adopt specific roles instead of diversifying their functions. The high-level of interconnectedness in these types of networks allows nodes to engage in this type of specialization because the odds are high that a node will be connected to another node that performs a different function within the network.

Part I: Co-Offending Extremist Networks in the United States

Despite widespread agreement in the research community that radicalization to violence is, in part, the result of social processes that involve the formation, growth, and dissolution of social networks, few scholars have attempted to map the co-offending relationships of U.S. extremists across time and sub-ideologies. In comparison to cognate subjects, like gang members or more traditional offenders, we know little about the extent of co-offending relationships in U.S. extremist communities and the effects those connections have on extremist outcomes.

The SoNAR data seek to fill this gap in research on U.S extremist perpetrators. The data can be used to map co-offender networks and, when paired with the PIRUS data, they allow researchers to perform multi-level analysis that considers the effects of individual-level characteristics and network dynamics on extremist outcomes, including violence. In this section, we focus on describing the co-offending networks that are present in the SoNAR dataset, and we provide visualizations and descriptive statistics that capture the networks' respective sizes, structures, and levels of connectedness.

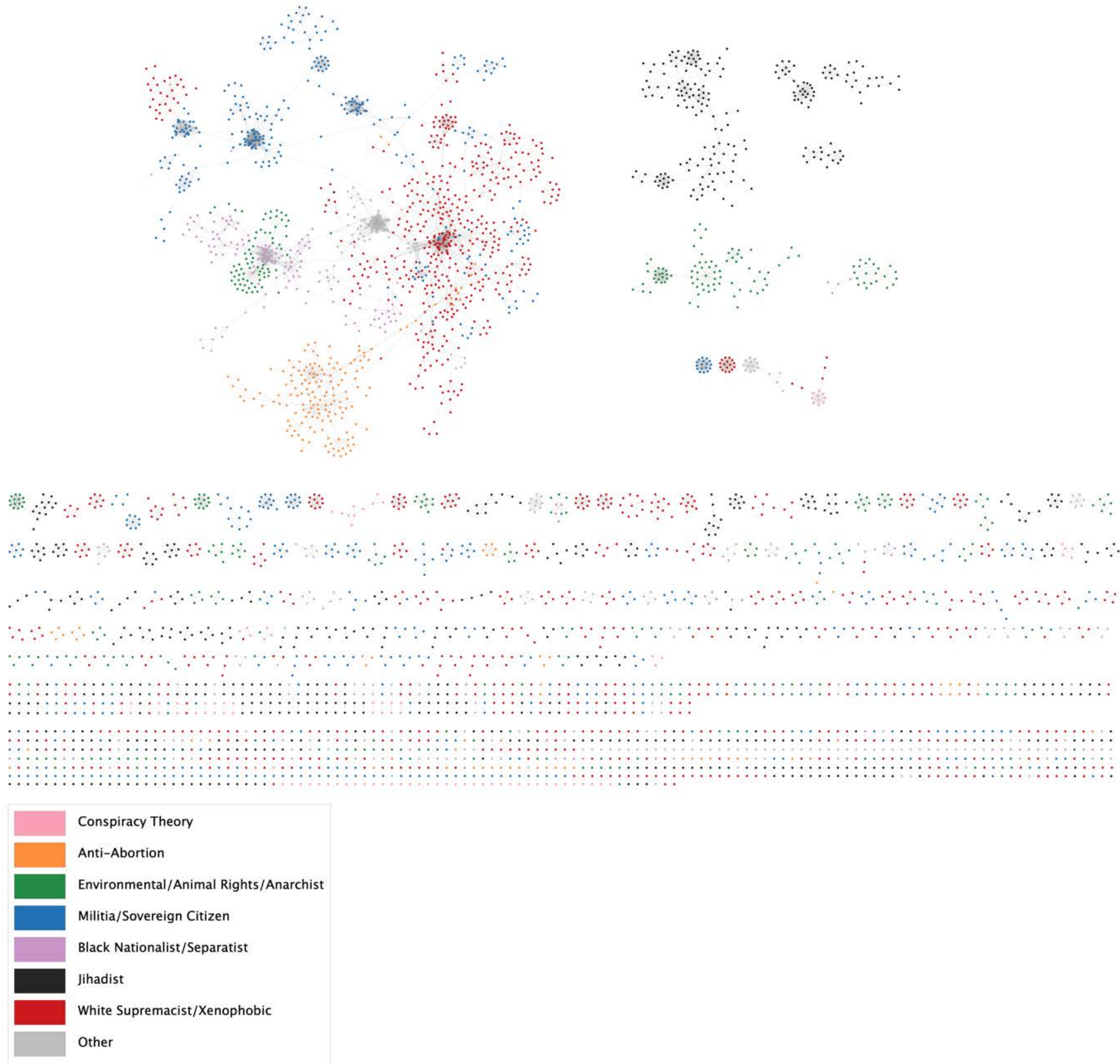
An Overview of the Networks

SoNAR contains information on 3,953 extremist offenders who committed criminal acts in the United States from 1948-2021. Collectively, these offenders formed 8,150 dyads. Each dyad in SoNAR represents a pair of offenders who either (1) co-conspired with each other (and possibly others) to commit a crime, or (2) engaged in organizing, training, or the transfer of knowledge before committing separate crimes.

In addition to mapping co-offender dyads, we also assigned every node in the data to one of seven primary sub-ideological affiliations: anti-abortion; Black nationalist or separatist; conspiracy theory; environmental, animal rights, or anarchist; jihadist; militia movement or sovereign citizen; white supremacist or xenophobic; and other, which captures individuals who were motivated by non-jihadist ethno-nationalist causes, such as Puerto Rican independence. This was done to allow users to easily compare networks across ideological milieus. However, it is important to note that extremists often align themselves with more than one ideological movement, which is why subjects in the PIRUS data can be coded for up to three sub-ideological affiliations. In the cases where subjects were coded for more than one sub-ideology in PIRUS, we used a combination of their group affiliations, the targets of their criminal acts, and their stated goals in committing their crimes to assign them to a primary sub-ideology. For example, if an offender was a member of a militia organization and targeted the federal government in a crime to protest proposed regulations on the ownership of firearms, they were coded as belonging to the militia sub-ideology even if they also expressed views of white supremacy.

Figure 1 displays the co-offending networks that are present in the SoNAR data. There are several important takeaways from this visualization. First, 32% of the nodes occupy space within a large, well-connected cluster in the upper lefthand corner of the graphic. This large cluster is made up of 1,248 nodes which collectively form 4,421 dyads. Although jihadist offenders are largely isolated from this cluster, it includes dozens of offenders from every other ideological sub-category. This indicates that over the time period covered by the PIRUS dataset (1948-2021), approximately one-third of extremist offenders in the United States radicalized and committed crimes as part of an expansive community of extremist offenders, many of whom were directly tied to each other.

Figure 1: Extremist Co-Offender Networks in SoNAR



This large cluster of offenders has a network diameter score of 22, which means that information could flow from one end of the network to the other by traversing 22 individuals who act as bridges across the network. This cluster shows extensive connectedness among offenders from the same ideological sub-categories, indicating a high degree of homophily—the tendency for people to seek out those who are similar to themselves. However, there are several nodes in the data that link offenders from one sub-ideology to offenders from another. This includes bridges between offenders and groups who are ideologically similar, such as anti-abortion extremists and anti-government militia groups, but also groups and movements on opposite ends of the ideological spectrum, like Black nationalists and white supremacists.

Second, approximately 38% of the nodes in the visualization were members of cliques—small, interconnected groups typically consisting of less than 10 offenders who were isolated from broader offender networks or organized extremist groups. Isolated cliques appear across the ideological sub-categories in SoNAR and, during the period that we reviewed, they often consisted of dyads and triads of offenders who co-conspired to commit crimes together. As we note below, the presence of many isolated cliques in U.S. extremist networks is important because their members are not subject to the same moderating influences that exist in large, hierarchical groups that are well-connected to each other.

Finally, there are 805 nodes on the graphic that represent lone actor offenders. These individuals, who represent approximately 20% of the offenders in SoNAR, committed their crimes without the direct participation of others, and there is no evidence in open sources that they had communication relationships with any other extremists who committed criminal offenses (although it is possible, and perhaps even likely, that they communicated with individuals who shared their beliefs but did not commit crimes). Lone actor offenders can be found in all the ideological sub-categories, but they are more heavily concentrated in some movements. For example, Table 1 reports several common SNA metrics by sub-ideology and shows that lone actor offenders were most common among the conspiracy theory (37.3%) and jihadist (24.6%) extremists in SoNAR.

Table 1: SNA Measures in SoNAR by Sub-ideology

	Offenders	Lone Offenders	% Lone Offender	Avg. Degree	Avg. Betweenness	Avg. Shortest Path	Avg. Stress
Anti-Abortion	226	33	14.6%	3.07	0.01	9.43	1.63
Black Nationalist/Separatist	178	28	15.7%	6.04	0.02	7.85	2.22
Conspiracy Theory	99	37	37.3%	1.93	0.02	2.11	0.15
Environmental/Anarchist	448	60	13.4%	3.30	0.03	3.41	0.32
Jihadist	765	188	24.6%	2.99	0.04	2.30	0.48
Militia/Sovereign Citizen	734	136	18.5%	6.27	0.02	5.64	1.09
Other*	308	105	34.1%	4.72	0.01	4.14	1.02
White Supremacist/Xenophobic	1195	218	18.2%	3.78	0.02	4.67	0.95
Total	3953	805	20.4%	4.12	0.02	4.61	0.90

* Other includes: Incels, non-Jihadist ethno-nationalist movements, and anti-LGBTQ+

Although lone actor offenders have received considerable attention from the terrorism research community (Gill, Horgan, & Deckert, 2014; Hamm & Spaaij, 2017; Hofmann, 2018), the SoNAR data suggest that historically most extremist offenders in the United States were connected to other perpetrators of crimes, and most did not act alone. Indeed, on average, the offenders in SoNAR were connected to four other extremists who committed crimes motivated by their ideological commitments, with most being co-conspirators in the same plots and attacks. Across some sub-ideologies, these numbers are even higher. For instance, extremists in SoNAR from the militia/sovereign citizen and Black nationalist/separatist sub-ideological milieus were connected to six other offenders on average. Furthermore, these offenders display high scores on SNA measures that are designed to capture the influence of nodes in a network. This includes offenders from the Black nationalist/separatist category who score high on stress centrality, indicating that influential nodes within the sub-ideology often sit on the shortest paths between other nodes in the network.

However, the SoNAR data reveal that these dynamics have changed in recent years. For instance, the number of subjects from 1990 who are classified as lone actor offenders in SoNAR is 23 percent. By comparison, 64% of the subjects included in SoNAR from 2018 are classified as lone actor offenders. If isolated cliques are added to this figure, the percentage of subjects who were not part of a broad network of offenders in 2018 is 87.5 percent.

Descriptive Analysis of Relationship Types

Table 2: Relationship Types in SoNAR

Relationship	Anti-Abortion	Black Nationalist/ Separatist	Other Far-Left	Jihadist	Militia/ Sovereign Citizen	White Supremacist	Other
Total Dyads	25	15	106	1020	504	793	42
Co-conspirator	7	10	98	909	427	474	39
Recruiter	3	5	8	85	17	25	0
Facilitator	2	1	0	303	42	46	1
Mentor	6	3	9	214	82	198	2
Fellow extremist/activist	18	10	77	564	393	580	2
Friend prior to extremism	0	0	2	117	7	52	4
Family member	1	0	0	93	16	24	6
Significant other	0	0	3	18	12	26	4
Co-worker	1	4	0	17	4	16	0

Table 2 shows the total number of dyads and relationship types for each sub-ideology within the expanded subset of the SoNAR data. The largest number of dyads are jihadist, militia/sovereign citizen, and white supremacist/xenophobic. Anti-abortion, Black nationalist/separatist and other miscellaneous each represent a small sample of dyads, at 25, 15, and 42 respectively. Overall, these three sub-ideologies illustrated small numbers of recruiter, facilitator, and personal relationship types. However, within the anti-abortion sub-ideology, 24% of the dyadic relationships contained a mentor. Many of these dyads included Scott Roeder, who murdered George Tiller, a physician who was known for performing abortions for late pregnancies (Stumpe & Davey, 2009). He received guidance on ideology from several anti-abortion extremists. Black nationalist/separatist dyads comprised 33% of the recruiter relationships and 27% of the relationships in which the two individuals were co-workers. The majority of environmentalist/animal rights activist/anarchist dyads conspired to commit ideologically-motivated crimes with one another; however, less than 10% of these relationships included a facilitator, mentor, or personal relationship.

Nearly 90% of the jihadist dyadic relationship conspired to commit ideologically motivated crimes together. Although only 8.3% of these relationships involved a recruiter, 29.7% had a facilitator and 21% involved a mentor. Facilitator relationships are often crucial in foreign fighter networks in order to assist in travel, such as providing logistical information, contacts, and financial resources. Nearly a quarter of the jihadist dyads illustrated personal relationships, such as friends, family members, significant others, or co-workers.

Finally, 85% of the militia/sovereign citizen dyads were co-conspirators in plotting ideologically motivated crimes. Only 8% involved a facilitator and another 16% included a mentor. Personal relationships were less common compared to jihadists, with only 8% involving a friend, family member, significant other, or co-worker. Approximately, 60% of white supremacist dyadic relationships conspired together to commit ideologically motivated crimes. Recruiters represented 3% of the relationships, facilitators 6%, and mentors 16 percent. Only 15% of the dyads represented personal relationships, such as friends, family members, significant others or co-workers.

Why Network Dynamics Matter

We argue that changing network dynamics in the United States are important for understanding contemporary radicalization to violence. Specifically, individuals who are embedded in large networks, and especially those who maintain central positions within the networks, are less likely to radicalize to violence than individuals who sit on the edges of those networks or offenders who are members of isolated cliques or act alone. There are three reasons why we believe that high degree centrality, as well as high scores on measures of network influence, are associated with a lower likelihood that an individual will radicalize to the point of attempting an act of violence.

First, individuals who are members of large networks can engage in role specialization—a process whereby nodes are free to focus on performing certain tasks because other network members with whom they are connected are providing the other core functions of the network (Burt, 1992; Davern & Hachen, 2006; Surowiecki, 2004). For domestic extremist networks, these roles can include ideological figurehead, public relations liaison, tactical decision-maker, trainer, financer, and foot soldier. In large networks, therefore, there is a high probability that individuals will adopt non-violent roles within their respective groups or movements. In smaller networks and isolated cliques, members do not have the luxury of focusing on individual tasks but instead must be willing to play a variety of roles, including that of a member who plans and conducts attacks. This increases the chance that lone offenders and offenders who are members of isolated cliques will commit acts of violence.

Second, networks that are large and well-connected can generate publicity for their causes and garner new recruits by engaging in mass mobilization, non-violent events, such as protests, counter-protests, and armed standoffs. These events are often enough to satisfy the social identity and self-glorification needs of central members of the network. Moreover, by mobilizing large numbers of people to engage in non-violent events, big networks can forge partnerships with mainstream political actors who see their size and influence as a way of growing their constituencies. By comparison, individuals who are isolated from large networks or act alone cannot generate the same public interest in their causes, or raise their own public profiles, through similar non-violent means. Instead, lone actor offenders, members of isolated cliques, and individuals who sit on the edges of networks must engage in spectacular acts that draw the attention of outsiders. This usually involves acts of violence, the targeting of high-profile public officials, or attacks on notable physical structures, such as federal facilities.

Finally, large networks, and especially ones with nodes that exert asymmetric influence over the networks' other members, are more likely to have gatekeepers who moderate or otherwise control the behaviors of their members. Research has shown that leaders in extremist organizations often prohibit their members from engaging in acts of violence, especially mass casualty terrorism, because indiscriminate violence can be determinantal to the group achieving its long-term goals (Abrahms & Potter, 2015; Chenoweth & Stephan, 2011; Greenwald, 2007; Jasko & LaFree, 2020; Shapiro & Siegel, 2012; Von Krogh et al., 2012). The downsides of engaging in violence for organized groups not only comes in the form of increased law enforcement attention, but also bad publicity that can diminish the group in the eyes of the public. Lone actor offenders and isolated cliques are typically not subject to pressures to conform to the wishes of influential individuals in the broader movement. Rather, these actors get their ideological and tactical guidance from online communities that lack structure, common goals, and leadership. Rather than moderating behavior, participants in online communities actively encourage each other to participate in violence and they engage in a process of one upmanship in which they inspire the next offender to be more extreme than the last (Kennedy et al., 2022; Schlegel, 2021). As we have argued in previous studies (Jensen et al., 2016; LaFree et al., 2018), these dynamics are amplified in isolated cliques because they are prone to cognitive biases and echo chamber effects that encourage their members to adopt increasingly extreme beliefs.

Table 3: Co-Offender Networks and Radicalization to Violence

	Model 1: Total Co-Offenders	Model 2: Influence	Model 3: Lone Offenders	Model 4: Cliques + Lone Offenders
Intercept	-1.208***	-1.244***	-1.318***	-1.607***
	(0.153)	(0.151)	(0.153)	(0.201)
Network Variables				
Degree Centrality	-0.016*			
	(0.006)			
Stress Centrality		-0.047*		
		(0.021)		
Lone Offender			0.204*	
			0.102	
Isolate				0.381**
				(0.148)
Controls				
Other	1.944***	1.957***	1.880***	1.928***
	(0.205)	(0.205)	(0.205)	(0.204)
Jihadist	2.283***	2.297***	2.282***	2.305***
	(0.181)	(0.181)	(0.181)	(0.181)
Militia	1.407***	1.409***	1.354***	1.377***
	(0.192)	(0.192)	(0.190)	(0.191)
White Supremacist	1.944***	1.977***	1.925***	1.971***
	(0.171)	(0.173)	(0.171)	(0.172)
Anti-Abortion	0.212	0.301	0.206	0.293
	(0.250)	(0.253)	(0.250)	(0.252)
Black Nationalist	1.714***	1.760***	1.650***	1.733***
	(0.239)	(0.244)	(0.238)	(0.240)

N = 2,225. ( ) = Standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Note: Reference category for the sub-ideologies is Environmental/Anarchist. Due to the large variance in absolute stress centrality scores, Model 2 uses the Log of the stress centrality variable.

We test these arguments in detail below by looking at U.S. offenders inspired by the Islamic State of Iraq and Syria from 2014-2020 who were making the decision to travel abroad or plot attacks in the United States, and by exploring network dynamics and violence in the U.S. militia movement. However, even simple bivariate models run on the PIRUS data show the potential importance of these types of network influences on radicalization to violence. Table 3 displays the results of four simple logistic regression models that estimate the effects of several common SNA measures on the likelihood that an offender in PIRUS attempted, or engaged in, an act of violence. Even when controlling for the effects on the subjects' sub-ideological beliefs, the SNA measures display significant relationships to extremist violence.

In Model 1, degree centrality, which captures the number of extremist offenders to which a subject in PIRUS is connected, has a negative and significant relationship to violence. For every connection that a subject in PIRUS has to other perpetrators, their odds of being classified as a violent extremist in the database decreases by 2.6 percent. Thus, a subject in PIRUS who has ties to 10 other offenders is 26% less likely to be classified as a violent extremist when compared to lone actor offenders. This lends initial support to our claim that large networks with many edges between their nodes include fewer violent offenders than networks made up of isolated cliques or lone actors.

Model 2 looks at the relationship between a node's level of influence in a network and their likelihood of being classified as a violent extremist in PIRUS. Influence is estimated by using each subject's score on stress centrality, which captures the number of shortest paths between any two nodes in a network that must traverse the subject. As we argue above, influential nodes are less likely to radicalize to violence than subjects who do not acts as bridges between other offenders within a network. Subjects with high stress centrality scores tend to be the leaders of organized groups who exert influence over their followers and moderate behaviors out of concerns for their own reputations and those of their groups. The results appear to support these claims. For every shortest path in a network that transverses a node in PIRUS, the likelihood that the node is classified as a violent offender in the database decreases by 5 percent.

Conversely, Models 3 and 4 show that lone actor offenders and members of isolated cliques are more likely to radicalize to violence than offenders who have many connections in large networks. In Model 3, lone actor offenders are 1.23 times more likely to be classified as violent extremists than offenders who were connected to at least one additional offender. Model 4 combines members of cliques with lone actors. The results show that subjects who are isolated from broader networks are 1.46 times more likely to be classified as violent extremists than the subjects who were members of expansive offender networks.

These results, while preliminary, support our argument that network-level influences play an important role in radicalization processes and their related extremist outcomes. We explore these dynamics further below, demonstrating how networks influence terrorist decision-making and radicalization to violence in U.S. jihadist and anti-government communities.

Part II: Networks and Terrorist Decision-Making—The Case of U.S. ISIS Foreign Fighters

From 2011 to 2016, it is estimated that at least 42,000 people traveled from over 120 countries to fight alongside jihadist groups in Syria and Iraq (CISAC, 2021). While estimates vary, among them were as many as 300 Americans who either traveled or attempted to travel to join the Islamic State of Iraq and Syria (ISIS; Barrett, 2017; Meleagrou-Hitchens, Hughes & Clifford, 2018). During the same period, nearly 100 individuals who were inspired by, or connected to, ISIS plotted to commit terrorist attacks in the United States. Among these plots was the 2016 Pulse nightclub shooting, which resulted in 49 fatalities and 53 injuries, and remains the deadliest terrorist attack on U.S. soil since 9/11. The actions that were taken by American jihadists to support ISIS underscore a fundamental choice that individuals make when they decide to assist the efforts of foreign terrorist organizations: they can travel to be fighters overseas or they can stay at home and plot terrorist attacks. Both behaviors help foreign groups wage their campaigns of terror. Both involve the risk of jail or death. And both promise glory, adventure, and a sense of purpose. What, then, ultimately persuades individuals to choose one course of action over the other?

Unlike the vast body of research estimating the antecedent factors that promote engagement in violent extremism (e.g., Dalgaard-Nielsen, 2010; Ferguson, & McAuley, 2020; Jensen, et al., 2016; McCauley & Moskalenko, 2017; LaFree et al., 2018; Moghaddam, 2005), little has been written about the fundamental choice to fight at home or abroad. Indeed, the literature on foreign fighters is very much in its infancy (Hegghammer, 2010; Malet, 2015), and most of it has focused on country-by-country statistics (Haner, Wichern & Fleenor, 2018; Marone & Vidino, 2019; Pokalova, 2019; Reynolds & Hafez, 2017; Shtuni, 2015) or comparisons across regions (Orozobekova, 2016; Rosenblatt, 2020). Some studies have explored the push and pull factors (e.g., Borum & Fein, 2017) and demographic risk characteristics (e.g., Weggemans, Bakker & Grol, 2015; Dawson, 2021) associated with foreign fighting more generally. Others have charted the variables that either promote or hinder the return and reintegration of fighters (Greenwood, 2019), or have provided recommendations on how to deal with the potential threats they pose (Bakker, Paulussen & Entenmann, 2014; Barrett, 2017). However, to our knowledge, the existing literature on foreign fighters has not provided an empirical assessment of the individual-level decision to fight overseas.

Similarly, research on terrorist decision-making has been largely limited to explaining why terrorist groups adopt specific attack methods, such as suicide bombings (Crenshaw, 2007; Hoffman & McCormick, 2004; Pape 2005), or choose controversial targets, like children (Biberman & Zahid, 2019; Fahey & Asal, 2020). These studies often rely on rational choice frameworks rooted in perceived costs and benefits (McCormick, 2003; Shapiro, 2012; Gill et al., 2020) or theories of outbidding to explain terrorist decision-making (Bloom, 2004, 2005; Kydd & Walter, 2002, 2006). However, this prior research has generally overlooked the fundamental choice that jihadists make when they decide where to join the fight.

Using the SoNAR dataset, below we analyze why some American jihadist extremists in recent years decided to plot attacks in the United States on behalf of ISIS, while others attempted to join the group overseas. We examine 224 ISIS-inspired or affiliated American jihadists, 39.7% of whom plotted terrorist attacks within the United States between 2013 and 2020 and 60.3% of whom attempted to join ISIS overseas. Controlling for several expected determinants of the decision to become a foreign fighter, we find that three characteristics of local social networks help explain why some ISIS supporters attempted to stage attacks in the United States while others attempted to join the group abroad. We find that subjects were more likely to attempt to travel if they were embedded in large networks, networks in which many of the individuals were directly connected to each other (i.e., high ego density), and networks that were based on personal relationships rooted in family ties and trust.

By providing their members with the resources, knowledge, and relationships that are needed for travel abroad, these networks make foreign travel a more viable option. In comparison, we find that the individuals who plotted attacks in the United States in the name of ISIS typically had few or no co-offending ties to other U.S. extremists. While these individuals may have preferred to fight alongside ISIS in Syria or Iraq, they lacked the social network connections that would have facilitated travelling abroad. Instead, they opted to act on behalf of ISIS in the United States, often plotting attacks that did not require help from others.

Social Networks and Becoming a Foreign Fighter

Although there is limited empirical research on the decision-making of Western jihadists, Hegghammer (2013) has shown that the flow of Westerners to foreign conflicts has outpaced the number of individuals who have launched attacks in their own countries on behalf of international terrorist groups. He provides what is likely the most common explanation as to why travelling to fight rather than engaging in terrorism at home has been favored among Western jihadists: foreign fighting is depicted as a legitimate activity within Islamic teachings and thus Western jihadists only choose terrorism at home when travel abroad becomes impractical. While there is a debate among some clerics on the legitimacy of carrying out mass casualty attacks in non-conflict zones, there is almost no debate among Islamist religious authorities about fighting within war zones. Hegghammer also points out that jihadist propaganda imagery is almost exclusively drawn from conflict zones, indicating that the propagandists expect these images to be more appealing to potential recruits. Venhaus (2010) aligns with Hegghammer's view of foreign fighting, arguing that it is often portrayed as a heroic pursuit to protect Muslim populations abroad and that it provides young men with an avenue to fulfill desires for revenge, status, identity, and adventure. While Venhaus and Hegghammer provide a cogent rationale for the shared preferences of Western jihadists, their arguments are less useful for explaining the specific choices that individuals make: Why would someone ignore their preferences to engage in a less desirable behavior, as nearly half of the jihadists in our sample did?

We explore the possibility that local social networks play an important role in mobilizing individuals to travel to foreign conflict zones and, conversely, that the lack of local connections is a major factor in the decision to abandon travel in favor of plotting attacks at home. Prior research has shown the importance of social networks to explaining key aspects of political violence (Perliger & Pedahzur, 2011; Zech & Gabbay, 2016), such as rebel alliances (Gade et al., 2019a), conflict between militant groups (Gade et al., 2019b), insurgency and counterinsurgency (Reed, 2007; Ginty, 2010), and the decision to join local terrorist groups (della Porta, 1988; Sageman, 2004). Thus far, however, social networks have only been analyzed a handful of times in studies of foreign fighters. For example, Reynolds and Hafez (2019) studied 99 German foreign fighters who sought to join ISIS and found that nearly 80% of them were mobilized within a single interconnected network. Bergema and van San (2019) found similar results in their study of Dutch ISIS fighters, noting that more than half of them had overlapping social connections. Similarly, Daymon, de Roy van Zuijdew, and Malet (2020) found that fighters were often mobilized to ISIS territory though social networks that consisted of family members, friends, and other trusted partners, while Rostami et al. (2020) found that 46.3% of deceased Swedish fighters in ISIS-held territories had kinship or friendship ties to other travelers. Finally, Holman (2016) found that Western subjects who were connected to experienced facilitators were more likely to contact fighters in conflict zones and successfully travel.

While these studies illustrate the important role that social networks play in the movement of fighters abroad, they have been limited by two key shortcomings. First, except for Holman (2016), these studies are descriptive, and they do not offer or test a causal logic that explains how social networks facilitate foreign fighting and influence terrorist decision-making. Second, they are limited from a key omission: they exclude individuals who could have become foreign fighters, but instead elected to attempt attacks in their own countries. By only including samples of individuals who traveled abroad to join foreign groups, extant research has not ruled out the possibility that social networks are just as important to the mobilization of individuals who plan to wage terrorism at home (Dawson, 2021).

The Importance of Social Networks for Foreign Fighters

In our analysis, we extend earlier work on terrorist decision-making, social networks, and foreign fighters by examining the roles that local networks play in the decision to fight abroad or at home. Drawing on the social network analysis that has been conducted in terrorism studies (e.g., Basu, 2014; Knoke, 2015) and cognate areas of inquiry (e.g., McGloin & Piquero, 2010; Papachristos et al., 2014), we argue that individuals who are embedded in large networks, networks that are dense, or networks that include family members, romantic partners, and close friends are more likely to attempt travel to foreign conflict zones than they are to plan attacks in their home countries. Individuals in these types of networks are more likely to have family ties to, or contacts in, conflict zones, and there is a greater chance that they will be connected to past fighters or have trusted relationships with individuals who can provide expertise on how to travel successfully. Furthermore, networks built on trusted personal relationships are difficult for law enforcement to penetrate, making it more likely that their members will advance to the point of attempting to travel abroad and less likely that their preferences will be swayed by confidential informants or undercover law enforcement agents.

Conversely, we argue that individuals who have few or no connections to local jihadists are more likely to plot terrorist attacks in their home countries because they do not have access to the expertise or overseas contacts to make travel a viable option. In the Western jihadi context, these networks are often made up of newly radicalized individuals and converts to Islam who do not have familial ties to, or intimate knowledge of, conflict zones. Instead, these aspiring jihadists disproportionately rely on online communities for information, partnerships, and motivation. While information about traveling to foreign conflicts is often plentiful online, it is of varying quality and would-be fighters may not be connected to a trusted narrator who can separate the good advice from the bad. Moreover, establishing relationships with bona fide fighters online is difficult and aspiring fighters can never be completely sure who they can trust. In the U.S. context, aspiring fighters who attempt to expand their networks online often unknowingly establish relationships with confidential informants and undercover law enforcement agents. Law enforcement actors who penetrate extremist networks can disrupt individuals' plans to travel by arresting them on charges unrelated to fighting abroad or by persuading them to abandon their travel plans in favor of plotting attacks on U.S. soil.

As a result of limited resources, poor access to reliable information, and a lack of operational security, jihadists without local network connections will be tempted to discard travel in favor of committing attacks at home. Although committing an attack in one's home country requires access to weapons and some familiarity with potential targets, it does not require the specialized skills, expertise, or trusted co-conspirators that local networks provide (Hegghammer, 2013;

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Hegghammer & Nesser, 2015). Indeed, most attacks that have been inspired by ISIS in the United States have used readily available weapons, such as firearms, knives, and vehicles, and have overwhelmingly exploited soft targets with unrestricted access to potential civilian victims (Bergen, Sterman, & Salyk-Virk, 2019).

Our argument, therefore, aligns with and expands upon prior research that suggests that practical considerations and social relationships act as critical intervening variables between shared preferences and individual decision-making. Importantly, we aim to test these arguments by examining a sample of jihadist offenders that includes individuals who attempted to fight abroad and those who plotted attacks at home. Below we examine the social networks and extremist behaviors of 224 American jihadist offenders who made attempts to travel to Iraq and Syria to join ISIS or plotted ISIS-inspired terrorist attacks in the United States. We use these data to test three related hypotheses.

First, we test the hypothesis that American jihadists who are embedded in large networks (i.e., those with many nodes) are more likely to make the decision to attempt to travel abroad to join foreign terrorist organizations. Subjects within large networks are more likely to have direct or indirect connections to past foreign fighters and other individuals who possess knowledge on how to travel successfully. Large networks are also more likely to include individuals who can effectively facilitate relationships to fighters abroad.

> **H1**: Individuals embedded in large local networks are more likely to attempt fighting abroad.

Second, we test the hypothesis that individuals who are members of networks that have high ego density are more likely to attempt to join foreign terrorist groups overseas. Ego network density refers to the percentage of all possible ties in a network that are actually present. Thus, this score provides a measure of the extent to which all the nodes in a network are directly connected to each other. Studies have shown that networks with high ego density are better at providing their members with access to resources, knowledge, and opportunities (Burt, 1992; Davern & Hachen, 2006; Surowiecki, 2004). Moreover, some studies suggest that criminal co-offending networks with high redundancy promote specialization (McGloin & Piquero, 2010), providing members with access to others who can offer critical information or resources that help them achieve their goals. Networks with high ego density, therefore, may be more likely to include individuals with specialized expertise in, or experiences with, joining foreign terrorist organizations. These networks can include members who play the role of recruiters who identify prospective fighters, mentors who provide aspiring travelers with critical knowledge on how to travel successfully, or past fighters who maintain contacts with individuals who are still in conflict zones (Holman, 2016). Importantly, aspiring travelers in networks with high ego density are more likely to have direct, dyadic connections to these important nodes, thus eliminating the need for potential travelers to work through intermediaries to gain the resources, information, and contacts that are needed to travel abroad.

> **H2**: Individuals who are embedded in networks with high ego density (i.e., interconnectedness) are more likely to attempt to fight abroad.

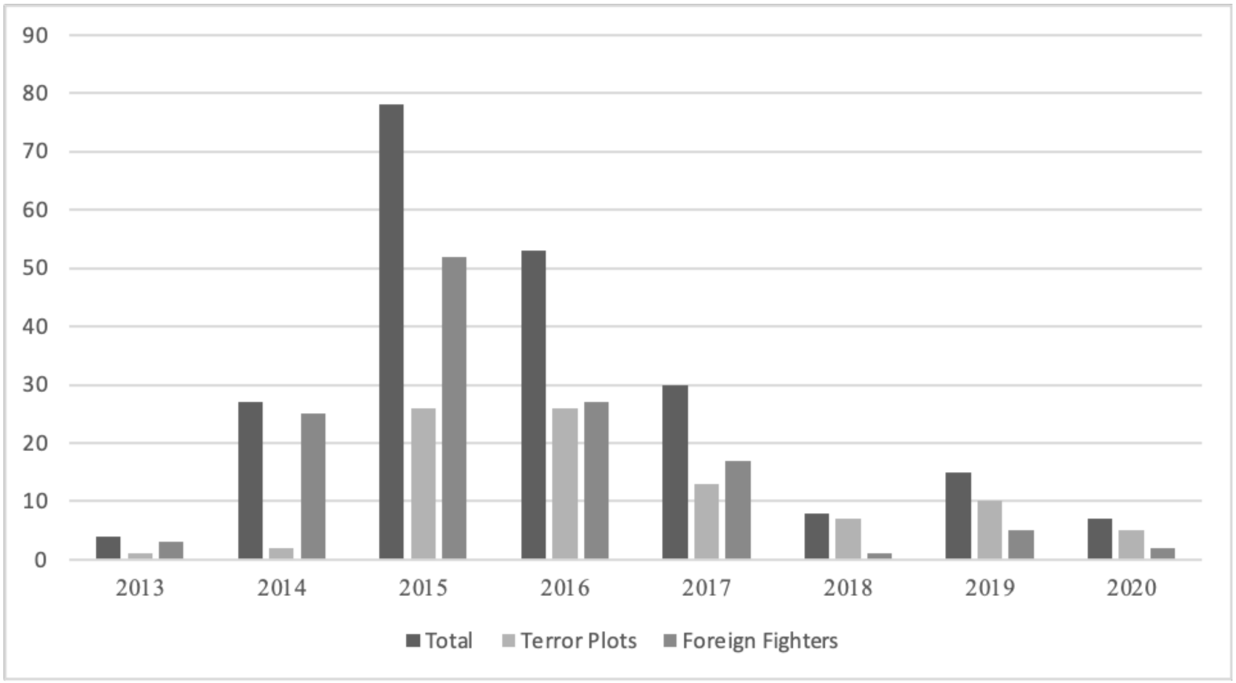
Finally, we test the hypothesis that jihadists who are embedded in networks that include family members, romantic partners, or close friends are more likely to attempt to travel abroad. Networks based on these types of emotional relationships enjoy high levels of interpersonal trust, making them less likely to be undermined by law enforcement or outside actors who might otherwise thwart an individual's travel plans or influence their decision-making. Moreover, these networks are more likely to include family units with direct ties to, or contacts in, conflict zones, making travel more feasible for their members.

H3: Individuals who are embedded in networks that include family members, romantic partners, or pre-radicalization friends are more likely to attempt to fight abroad.

Dependent Variable

The dependent variable used in this study is a dichotomous measure that is coded "1" if individuals attempted to travel overseas to join ISIS and "0" if they plotted a terrorist attack on U.S. soil. To be considered a foreign fighter, a subject must have expressed an interest in joining ISIS abroad and taken substantial steps toward achieving that goal. This includes purchasing airline tickets; raising or borrowing money for travel expenses; applying for a passport; attempting to contact fighters in Syria or Iraq or other individuals with knowledge of traveling; and researching travel routes, crossover points, or safe house locations. Of the 224 subjects that we identified for inclusion in this study, 135 (60.3%) made serious attempts to join ISIS abroad. We coded subjects as being involved in plots to launch terrorist attacks in the United States if they identified targets for the attacks and took at least one additional step toward carrying out their plots. This includes acquiring, or attempting to acquire, weapons or weapons making materials; researching how to breach security deterrents; raising or securing funds to carry out attacks; or recruiting co-offenders for plots. In Figure 2, we show the total number of domestic plots and foreign travelers by year. Of the 224 subjects included in the database, 89 (39.7%) were involved in plots to carry out terrorist attacks in the United States. Of these, seven had previously attempted, but failed, to join ISIS in Syria or Iraq. We discuss how these cases were treated in the methods section below. The data show that the largest number of U.S. ISIS cases took place at the height of the ISIS Caliphate in 2015 and 2016. Foreign fighters outnumbered domestic attackers from 2013 through 2017, but domestic attackers were more common in 2019 and 2020. To date, no ISIS foreign fighter has successfully returned to the United States and then plotted an attack on U.S. soil.

Figure 2: Number of United States ISIS-inspired Domestic Terror Plots and United States ISIS Foreign Fighters by Year of Terror Plot or Travel



Independent Variables

We provide details about the coding scheme used for all independent and control variables, as well as descriptive statistics, in Table 4. We use three primary independent variables to test the relationship between social networks and decision-making. The first independent variable is *degree centrality*, which is a continuous measure that captures the total number of dyadic connections an individual had to other U.S. extremists. This includes face-to-face interactions and those which occurred online. Since this study explores the effects of local networks on terrorist decision-making, this measure does not include ties to non-U.S. individuals living abroad. While distant network connections might be important to terrorist decision-making, it is often not possible to collect reliable data on these relationships given their clandestine and anonymous nature. We discuss this further in the limitations section below.

The second independent variable is *ego network density*, which is a continuous measure bounded between 0 and 1 that captures the extent to which all the nodes in a subject's network were connected to each other. Lower values indicate a network where only a small percentage of all possible connections were present, while higher values indicate a network in which the majority, if not all, of the nodes were connected to each other.

The final independent variable is *trust network*, which is coded "1" if the subject's extremist network included a family member, romantic partner, or pre-radicalization friend and "0" if not. We conceptualized pre-radicalization friend as an individual who established a friendship with the subject prior to either of them radicalizing.

Control Variables

We control for several other variables that may have influenced the perpetrators' decisions to fight at home or abroad. First, younger individuals may be more inclined to travel abroad because they have fewer social bonds or professional responsibilities tying them to their communities in the United States. Indeed, a common theme in research on foreign fighters is the assertion that young adults with limited educational or work prospects disproportionately make up the travelers from Western countries (Bakker & Grol, 2015; Bergema & van San, 2019; Gustafsson & Ranstorp, 2017; Weenink, 2015; Weggemans et al., 2014). Moreover, younger subjects are often targeted by jihadist recruitment narratives that emphasize travel as a means of satisfying their desires for adventure, status, religious fulfillment, and marriage partners (Dawson & Amarasingam, 2017). To account for these dynamics, we control for the age of the subject when they made their travel attempt or began plotting an attack in the United States.

Table 4: Descriptive Statistics and Variable Coding Schemes

Variable	Mean (SD)	Frequency (%)	Missing (%)	Coding Scheme
Network Characteristics				
Degree Centrality	1.9 (3.5)			A continuous measure that captures a subject's total number of network connections.
Ego Network	0.5 (0.5)			A continuous measure bounded between 0 and 1 that captures the extent to which all the nodes in a subject's network are connected.
Trust Network		0: 147 (65.6%) 1: 77 (34.4%)		Coded 1 if the subject's network included a family member, romantic partner, or pre-radicalization friend and 0 if not.
Controls				
Age	25.9 (7.4)		14 (6.25%)	A continuous measure that captures the age of the subject at the time of the primary event.
Gender		0: 18 (8%) 1: 206 (92%)		Coded 0 if the offender is female and 1 if they are male.
Immigrant		0: 107 (49.5%) 1: 109 (50.5%)	8 (3.57%)	Coded 1 if the subject was a first- or second-generation immigrant from a Muslim majority country and 0 if not.
Law Enforcement		0: 114 (50.9%) 1: 110 (49.1%)		Coded 1 if the subject's network included a confidential informant or undercover law enforcement officer and 0 if not.
Post-Caliphate		0: 193 (86.2%) 1: 31 (13.8%)		Coded 1 if the subject's decision-making took place after the fall of the ISIS Caliphate in 2017 and 0 if not.
Dependent Variable				
Foreign Fighter		0: 89 (39.7%) 1: 135 (60.3%)		Coded 1 if the subject attempted to travel to join ISIS abroad and 0 if they plotted a terrorist attack in the United States.

Second, we control for gender to account for the possibility that women, who are often recruited to be wives and mothers in conflict areas (Peresin, 2018), may be more likely to travel to fulfill maternal roles, while their male counterparts, who are often encouraged to fight wherever they can, may see fighting at home as a legitimate option outside of travel.

Third, we control for whether the subjects were first- or second-generation immigrants from Muslim-majority countries. Following the argument of Malet (2013), we anticipate that jihadist recruitment narratives that emphasize traveling to protect Muslim populations in conflict areas will resonate with those who have kinship ties to Muslim-majority countries. Furthermore, regardless of the state of their local social networks in the United States, individuals who have familial ties to conflict zones may be more capable of establishing contacts in those areas, making travel easier.

Fourth, we control for whether the subjects' local social networks were infiltrated by law enforcement, either through the use of confidential informants or the work of undercover agents. Observers who have been critical of counterterrorism techniques after 9/11 argue that the terrorist plots that have been foiled in recent years would not have progressed as far as they did without the help of undercover agents and informants (Mueller, 2006; Norris & Grol-Prokopczyk, 2015). Law enforcement, according to these critics, is often pivotal in helping perpetrators identify targets, engage in military-style training, and acquire what the perpetrators believe are real weapons. Thus, subjects' whose social networks include law enforcement actors may be swayed to plot attacks in the United States, even if their preference is to travel abroad.

Finally, we control for whether subjects were making their decisions before or after ISIS lost most of the territory it controlled in Syria and Iraq. According to Byman (2019), perceived success was a major motivator for those who sought to join ISIS abroad. Potential foreign fighters saw ISIS as capable and strong because it controlled territory, collected taxes, enforced its interpretation of Islamic law, and offered social services. Moreover, by controlling large swathes of territory, crossing into ISIS-held areas via Turkey was easily accomplished through established networks. However, by the end of 2017, ISIS had lost much of its territory in Syria and Iraq (Wilson Center, 2019), making it less appealing, and perhaps even impossible in some instances, to join the group abroad. We control for the effects of the fall of the ISIS caliphate on the subjects' decision-making by including a dummy variable that captures whether perpetrators were making their plans before or after July 2017. We chose July 2017 as the end of the caliphate because by this time ISIS had lost most of Mosul and Raqqa (Wilson Center, 2019), which were the most important strategic and symbolic areas under the group's control.

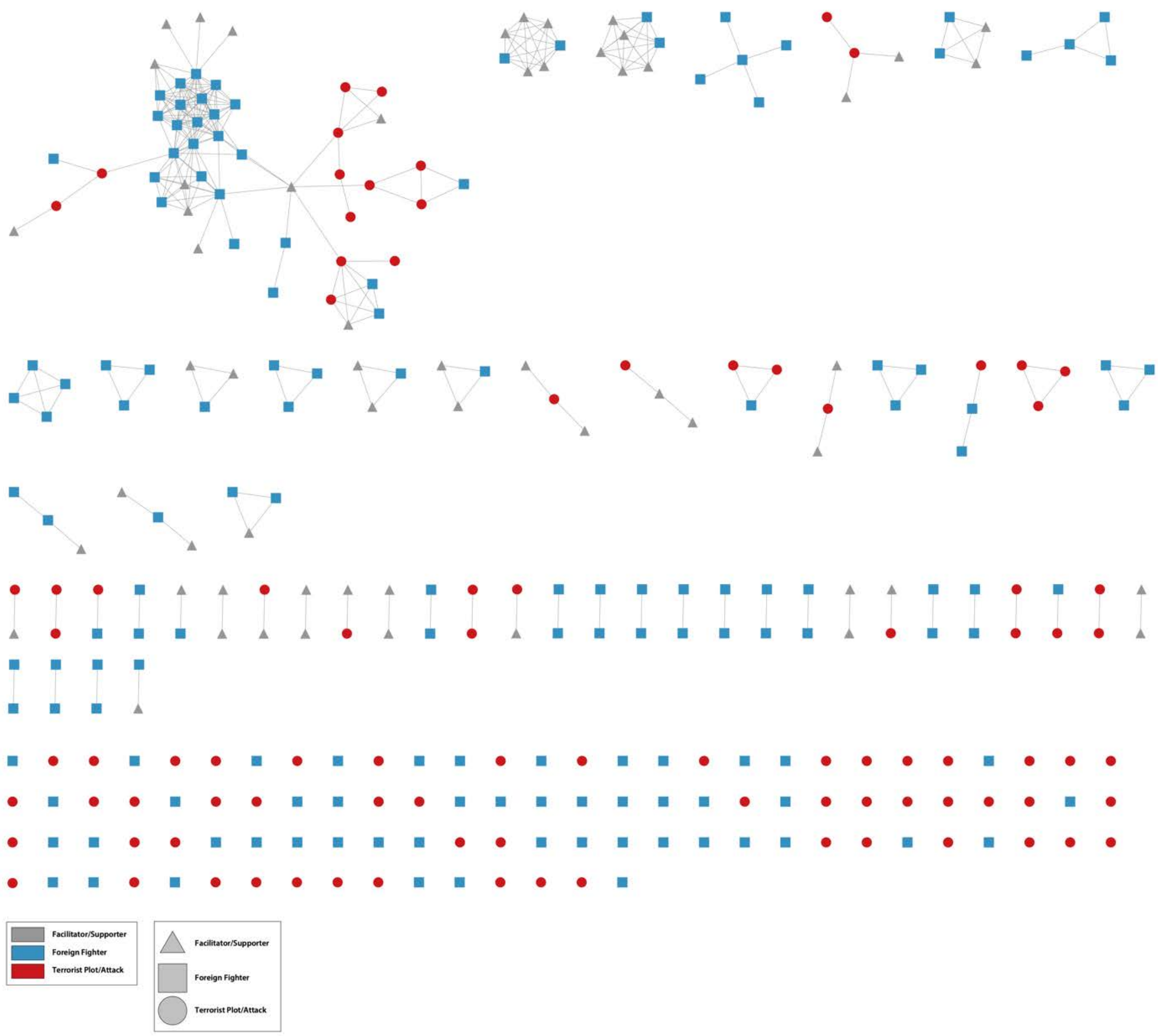
Analytical Methods

Since we are utilizing observations from social networks with interconnected nodes, our data violate the assumption that observations are independent, which is common to standard statistical techniques. Using single-level methods with interdependent data commonly yields underestimated standard errors, which can lead analysts to incorrectly reject null hypotheses (Hox, 1998; Raudenbush & Bryk, 2002; Singer & Willet, 2004). We therefore use generalized estimating equations (GEE) to avoid these potential pitfalls (Ghisletta & Spini, 2004; McNeish, 2014). We chose GEE over other multi-level methods that are designed to be used with interdependent data because it has been shown to perform better when the data include clusters with only a few observations (McNeish, 2014). As we note below, the local networks of ISIS supporters in the United States typically included less than three subjects.

Descriptive and Bivariate Results

According to Table 1, the subjects in this study were on average connected to two other U.S.-based extremists (Mean=1.9, SD=3.5) when they were making their decisions to travel abroad or commit attacks in the United States. However, as shown in Figure 3, the range of local extremist connections in the sample varied considerably. Many of the ISIS-inspired American jihadists we reviewed were lone actors who did not have any connections to other U.S. extremists (n=100; 44.6%). Others were embedded in large networks and had connections to as many as 19 other extremists who were residing in the United States.

Figure 3: Local Networks of United States ISIS Foreign Fighters and ISIS-inspired Domestic Plotters from 2013-2020



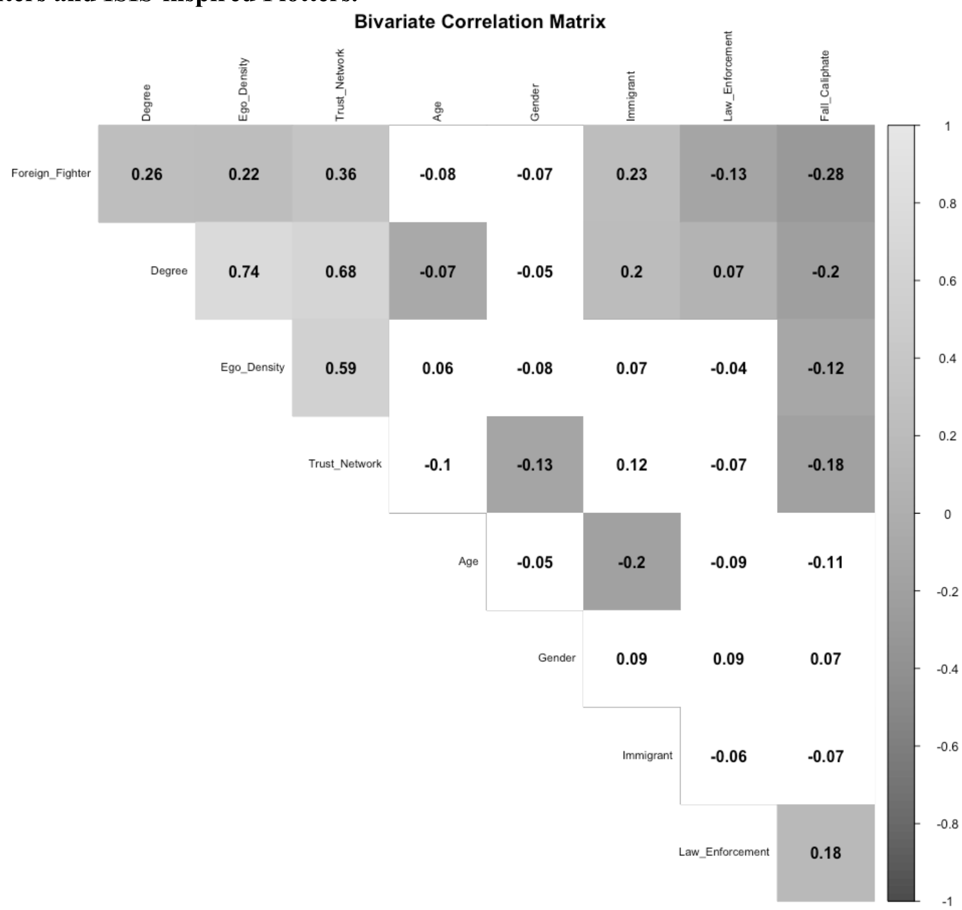
In Figure 4 we show bivariate correlations between our three network measures, the control variables, and whether perpetrators were classified as domestic attackers or foreign fighters. In support of our first hypothesis, there is a positive and significant association between degree centrality and the decision to attempt to join ISIS abroad. In our sample, the foreign fighters had on average 2.6 local extremist connections (SD=4.3), while the domestic attack plotters had less than one (Mean=0.78; SD=1.2). According to the bivariate results, the odds that a subject in the sample attempted to become a foreign fighter increased by 19 percent for every additional local extremist connection they had.[2]

Similarly, in support of our second hypothesis, we find that the redundancy of local extremist networks was greater for individuals who attempted to become foreign fighters than it was for those who plotted attacks in the United States. Foreign fighters in the sample had an average ego network density score of 0.601, indicating that a substantial portion of all possible connections were present in their networks. ISIS-inspired attack plotters, on the other hand, had an average ego density score of just 0.369. Moreover, according to Table 2, the bivariate association between ego network density and foreign fighting is positive and significant, indicating that subjects with dense networks were more likely to attempt to join ISIS abroad. In terms of connections to trusted associates, 24.6% of the subjects in the study were in extremist networks that included family members, 12.9% had networks that included pre-radicalization friends, and 9.4% had networks that included romantic partners. Lending support to our third hypothesis, we find that these types of trusted relationships were more common among the foreign fighters in the data. For instance, 33.3% of the foreign fighters in the study were in

[2] This figure is based on the odds ratio from a bivariate logistic regression test of the relationship between degree centrality and the decision to become a foreign fighter.

networks that included at least one of their family members, while only 10.1% of attack plotters had similar familial relationships to extremists.

Figure 4: Bivariate Correlation Matrix of Network Measures and Control Variables for United States ISIS Foreign Fighters and ISIS-inspired Plotters.



Note: Shaded boxes = p < .05

Moreover, the foreign fighters in the data were the only subjects to be coded as having friendships with network members that began before either person radicalized. Overall, 65 of 135 foreign fighters in the study (48.1%) had connections to extremist family members, pre-radicalization friends, or romantic partners, while only 12 of the 89 attack plotters (13.5%) had similar relationships. The bivariate results in Figure 3 show that relationships based on trust have the strongest positive correlation with the decision to become a foreign fighter.

We note in passing that several of the control variables were significant in the bivariate results. For example, while the majority (50.4%) of the 224 individuals in the data were first- or second-generation immigrants from Muslim majority countries, most were concentrated in the subgroup of foreign fighters. Indeed, 60% of the subjects who attempted to travel to join ISIS had familial ties to Muslim majority countries, while only 36.5% of attack plotters were first- or second-generation immigrants from countries with predominantly Muslim populations. Moreover, among the ISIS-inspired U.S. attack plotters, 50.6% were converts to Islam who were born in the United States.

The bivariate results also support the argument that subjects whose extremist networks were infiltrated by law enforcement were less likely to attempt to travel abroad than to plan attacks in the United States. Approximately half of our sample had been infiltrated by law enforcement (n=110). Most of these connections were with confidential informants (n=84), but nearly a quarter of the subjects in the data were also connected to undercover law enforcement agents (n=50). Importantly, the subjects with connections to law enforcement were more likely to plot attacks in the United States than to attempt to become foreign fighters. Nearly 60% of the ISIS-inspired attack plotters were connected to confidential informants or undercover law enforcement, while just over 40% of the foreign fighters had similar connections.

Our results also suggest that the decision to become a foreign fighter may, in part, depend on the perceived success of foreign terrorist groups abroad and their ability to control territory. While most of the travel attempts and terror plots in the data took place during the time of the ISIS caliphate (n=193), 31 plots and travel attempts happened after ISIS lost control of Mosul and other large swathes of territory in 2017. However, nearly all (94%) of the foreign fighters in the data attempted travel between 2013 and 2017 when the caliphate was still active. By comparison, more than one quarter of the ISIS-inspired attack plotters made their plans after ISIS had lost most of its territory and several foreign governments had declared the group defeated. Finally, it is worth noting that the ISIS-inspired attack plotters in the sample had nearly identical age and gender profiles to the foreign fighters. The attack plotters were on average 26.1 years old when they offended, while the foreign fighters were on average 25.7 years old when they attempted to travel abroad. Regardless of their decision-making, both samples were overwhelmingly male (90.4% for foreign fighters versus 94.4% for attack plotters). Neither age nor gender, therefore, appear to be meaningful to the explanation of decision-making among these American jihadists.

Multivariate Results

We report the multivariate results testing our three hypotheses in Table 5. We used listwise deletion when missing data were present, leaving us with a final sample of 202 subjects. As noted above, seven subjects who plotted attacks in the United States had made previous attempts to join ISIS abroad but failed. To account for these cases, we ran each model twice, once including the subjects as foreign fighters and once as attack plotters. The results from this process were not substantially different, and, thus, below we report results from the models that included these subjects as attack plotters, which represents the outcome for which they were criminally charged. Because our three network measures are not independent of each other (see Figure 3), we follow the standard practice of introducing each of the measures one at a time.

In Model 1, there is a positive and significant relationship between degree centrality and the decision to become a foreign fighter. Indeed, the association between degree centrality and foreign fighting is stronger in the multivariate model than it was in the bivariate results. The results from Model 1 suggest that with every additional local extremist connection, the odds that a subject in the data was classified as a foreign fighter increased by 28 percent. According to Table 3, immigrants from Muslim majority countries were twice as likely to attempt to join ISIS abroad, whereas those who were making their decisions after ISIS lost most of its territory were approximately 58% less likely to become foreign fighters. Interestingly, the variable that captures connections to confidential informants or undercover law enforcement agents is no longer significant in the multivariate model; though, its coefficient runs in the hypothesized direction.

Table 5: Generalized Estimation Equation Models: Foreign Fighter Travel Attempt

	Model 1: Degree Centrality	Model 2: Ego Network Density	Model 3: Trust Network
(Intercept)	0.626	0.713	0.115
	(0.769)	(0.764)	(0.903)
Network Attributes			
Degree Centrality	0.245**		
	(0.081)		
Ego Network Density		0.923**	
		(0.355)	
Trust Network			1.715***
			(0.458)
Controls			
Age	0.002	-0.012	0.001
	(0.021)	(0.023)	(0.023)
Male	-0.803	-0.757	-0.605
	(0.573)	(0.611)	(0.698)
Immigrant	0.774*	0.895*	0.963**
	(0.327)	(0.353)	(0.366)
Law Enforcement	-0.395	-0.209	-0.138
	(0.331)	(0.314)	(0.320)
Post-Caliphate	-0.875•	-1.127*	-0.891•
	(0.508)	(0.510)	(0.486)
Observations	202	202	202
QIC	255.5	260.1	246.0

( ) = Robust standard errors. • p < .10, * p < 0.05, ** p < 0.01, *** p < 0.001

Model 2 uses the same control variables but substitutes degree centrality for ego network density. Again, the results show a positive and significant relationship between the level of interconnectedness of local networks and the decision to travel abroad. Subjects who were embedded in dense networks were 2.5 times more likely to become foreign fighters than subjects who were embedded in loosely connected groups or who acted alone. Being an immigrant from a Muslim majority country was again positive and significant in this model (odds ratio = 2.45). Similarly, the variable capturing the fall of the ISIS caliphate was negative and significant, again suggesting that subjects were less likely to attempt to travel abroad after ISIS lost most of its territory.

In Model 3 we analyze whether individuals who were part of networks based on trust, as measured by connections to extremist family members, romantic partners, and pre-radicalization friends, were more likely to become foreign fighters who sought to join ISIS. After controlling for the same confounding variables as in the previous models, we find that this network measure is also positive and significant. In fact, of the three network measures used in these models, relationships based on trust have the strongest association with becoming a foreign fighter. Subjects with these types of social connections were 5.6 times more likely to attempt travel than individuals who did not have close, personal relationships to fellow extremists. Being an immigrant from a Muslim majority country is again positive and significant (OR = 2.6), while engaging in decision-making after the fall of the ISIS caliphate is again negative and significant (OR = 0.41).

Discussion

These results highlight the importance of local networks to the decision-making processes of American jihadists. Our results show that from 2013 to 2020 jihadists who were embedded in large networks, networks with high interconnectivity (ego density), and networks based on interpersonal trust were more likely to attempt to join ISIS abroad than to plan terrorist attacks in the United States. These results suggest that while aspiring jihadists might have a shared preference for becoming foreign fighters, travel is often only a viable option for individuals who have local associates who can assist them with finances, visas, travel routes, safe houses, and establishing foreign contacts. Moreover, local networks are often key to providing the operational security that is necessary for aspiring fighters to avoid detection and relocate overseas.

As Models 1 and 2 show, individuals who are embedded in large and dense networks are more likely to have relationships with local extremists who can facilitate their travel abroad. In addition to having a far greater number of local connections on average, the foreign fighters in this study often had connections to individuals with experience facilitating the movement of fighters overseas (n=41, 30.4%). Indeed, we find that the odds that an ISIS-inspired or affiliated subject in our data was connected to a local travel facilitator increased by 37% for each additional node in the subject's networks. Even more telling, individuals who were embedded in networks with high ego density were 17 times more likely to be connected to a travel facilitator than those with loose or indirect affiliations with the other members of their networks. By comparison, none of the individuals in our study who plotted attacks in the United States were connected to experienced travel facilitators.

Similarly, Model 3 shows that individuals whose networks include family members, romantic partners, and pre-radicalization friends are more likely to become foreign fighters. In our data, the networks that were based on interpersonal trust were the most likely to include individuals with kinship ties to Muslim-majority countries (n=44, 58.7%), which is consistently correlated with an increased probability of travel in all our models. Moreover, the subjects whose networks included close personal relationships were less likely to be connected to law enforcement actors. For example, only 15.6% of the individuals whose extremist networks included family members, friends, or romantic partners were also connected to undercover law enforcement officers, while more than one quarter (25.9%) of the subjects without ties based on interpersonal trust were connected to undercover agents.

The importance of local networks in the decision to become a foreign fighter is nowhere more apparent than in the collection of individuals from Minneapolis, Minnesota, who attempted to join ISIS between 2013 and 2020. The Minneapolis network included 38 individuals, several of whom played critical roles as recruiters, facilitators, and mentors. Several others had familial and friendship ties to fellow network members. For example, Abdi Nur, who joined ISIS in 2014 after reaching Syria, served as a travel facilitator and mentor for 11 other network members (Shane, 2015). Even individuals in the Minneapolis network who failed in their attempts to join ISIS often served as travel facilitators for others. For instance, Abdirizak Mohamed Warsame, who attempted to travel to Syria but failed, played an important role within the network by facilitating the travel attempts of at least four other network members (Griffith, 2017).

The Minneapolis network also demonstrates the importance of family connections and relationships based on trust for jihadist decision-making. Brothers Hamse and Hersi Karie served as recruiters and radicalized others by introducing them to ISIS and its ideology. The Karie brothers recruited three of their cousins—Abdirahman Abdi Rashiid Bashiir, Hanad Mohallim, and Abdullahi Ahmed Abdullahi—into the network and all of them later played important roles radicalizing additional local jihadists (Huncar, 2018).

Our results suggest that American jihadists who are not embedded in large, dense, or trust-based networks often abandon their preferences for travel in favor of plotting attacks at home. In addition to maintaining relatively few connections to other local extremists, the ISIS-inspired attack plotters in our data rarely radicalized alongside family members and none of them were connected to friends they knew before they embraced extremism. Furthermore, nearly 60% of the ISIS attack plotters in our study were converts to Islam who lacked any discernable kinship or network ties to conflict zones. As a result, the U.S. attack plotters who were inspired by ISIS between 2013 and 2020 were either lone actors or those with a small number of newly established local connections.

Lacking the local help that is needed to travel, many of these offenders opted to plot attacks that were low in sophistication and did not require specialized skills or the participation of others. For example, Munir Abdulkader, who had no known connections to other U.S. extremists, originally intended to travel to Syria to join ISIS. He attempted to obtain a passport, researched logistics, and even saved money to purchase airline tickets (United States Department of Justice, 2016). However, he became worried about his ability to successfully travel to Syria without established contacts in ISIS-held territories. After an informant asked him if he had "considered other jobs if he could not be a fighter," Abdulkader began planning a low sophistication firearms attack on a military employee and a police station in Ohio (USA v. Abdulkader, 2015). In coordination with the informant, Abdulkader purchased materials for the attack, conducted surveillance, and carried out firearms training.

The case of Abdulkader highlights the important role that local networks play in providing operational security for individuals to pursue their preferences. Like Abdulkader, several others ISIS-inspired attack plotters appear to have abandoned their travel plans after their porous networks were easily infiltrated by law enforcement. Take, for example, Christopher Lee Cornell, a Muslim convert who was arrested in 2015 for plotting to attack government officials during President Obama's State of the Union Address. Cornell, who had no family members or friends involved in extremism, posted online his desires to travel to Syria to join ISIS, but he lacked the money and contacts that he needed for travel (USA v. Cornell, 2016). Using social media, Cornell tried to establish relationships with other U.S.-based jihadists who shared his interest in making *hijra* to Syria (USA v. Cornell, 2015). He was eventually contacted by an FBI informant online and their discussions quickly turned to the possibility of Cornell conducting an attack in the United States. During preparation for the Cornell trial, it was revealed that Cornell told the informant that he did not believe committing an attack in the United States was justifiable under Islamic teachings. At that point, the informant fabricated a story about being in contact with an ISIS Emir who had blessed operations on U.S. soil (USA v. Cornell, 2016). After hearing this, Cornell, with the encouragement of the informant, began crafting his plot.

Part III: Explaining Militia Violence

Domestic extremists in the United States often form dense communities that span sub-ideologies and movements. The connections between the groups and individuals that make up these networks allow dangerous ideas to spread from one movement to another, and they provide opportunities for mobilization and co-offending. To illustrate these dynamics, we mapped the co-offending relationships of the three largest contemporary militia movements in the United States: Oath Keepers, Three Percenters, and the Boogaloo Movement. While these movements often portray themselves as defensively minded organizations that are focused on recruitment, military training, and counter-protesting, we show that each have been involved in dozens of criminal schemes, including violent plots, since 2009. Like ISIS supporters in the United States, local network dynamics help explain the nature of offending within these movements, including radicalization to violence. We begin by describing each movement, the structure of their networks, and their criminal activities. We then analyze how these network dynamics interact with individual-level offender characteristics to explain violence within the modern militia movement.

Oath Keepers

The Oath Keepers believe that the U.S. federal government is engaged in a coordinated effort to strip Americans of their constitutionally protected civil liberties, including the right to bear arms. The group was formed by former Army paratrooper, Elmer “Stewart” Rhodes, shortly after he completed work on Congressman Ron Paul’s failed 2008 Presidential campaign (Lederman, 2021). The group is divided into a national leadership, led by Rhodes, and dozens of state and local chapters throughout the country. It focuses on recruiting members of the military, law enforcement, and first-responder communities, and exploiting their tactical knowledge as a means of forming local units across that country that can protect Americans from threats posed by the government and its international allies (Anti-Defamation League, 2020b). These threats, which are based on conspiracy theories and are not rooted in evidence, include the belief that the federal government and its United Nations partners are conspiring to (1) impose martial law in the United States, (2) confiscate firearms from U.S. citizens, (3) relocate the population into protected camps, and (4) create a supranational government based on the principles of socialism (Jackson, 2020).

The Oath Keepers portray themselves as a self-defense organization that encourages its members to prepare for an impending showdown with the federal government by acquiring firearms and engaging in military-style training. The group also mobilizes its members to defend those who they view as victims of government overreach or those who they deem to be under threat from left-wing groups (Jackson, 2020). The group's members have participated in several counter-protests and prolonged standoffs in Arizona (Lenz, 2011), Missouri (Fernandez and Blinder, 2014), Nevada (Childress, 2017), Oregon (Southern Poverty Law Center, "Oath Keepers"), New York (Wu, 2020), and Texas (Goldenstein, 2017). The group has also acted as an armed security detail for public figures and regularly serves as protection for pro-Trump speakers at rallies and political events (Michel, 2017; Brown, 2017; Triebert, 2021). During the height of the COVID-19 pandemic in 2020, Oath Keepers were present at anti-lockdown demonstrations held across the United States (Kasler, 2020; Anti-Defamation League, 2020a).

While exact membership numbers in the Oath Keepers are not known, the organization appears to have been successful in attracting thousands of adherents over the past decade, especially among active public safety officials and former members of the military (Spina, 2022). Although the Oath Keepers' leadership has gone to great lengths to portray the organization as a defensive militia, at least 70 of its members have been charged for criminal offenses related to the group's activities, according to the PIRUS and SoNAR data. Most recently, dozens of Oath Keepers were accused of mobilizing to attack the U.S. Capitol on January 6, 2021 (Lewis, 2022). To date, 37 individuals with ties to the group have been charged with participating in the riot (Jensen, 2022), including Rhodes, who faces the most serious charge—seditious conspiracy—that has been leveled against any of the Capitol riot defendants (United States Department of Justice, 2022). The attack on the Capitol, however, was not the beginning or the end of Oath Keepers' criminal activity. The group's members have been involved in 23 unique criminal events since 2009, including plots to commit violent attacks. For instance, an alleged Oath Keeper was sentenced to 14 months in federal prison after he posted online about his plans to assassinate New Mexico Governor, Michelle Lujan Grisham, who had ordered schools closed in an effort to combat COVID-19 (Gallagher, 2020). Similar crimes linked to the Oath Keepers have included plots to attack mosques, synagogues, schools (USA v. Burrus, 2020), and federal buildings (USA vs. Keebler, 2018; United States Department of Justice, 2011), as well as arrests for the possession of illegal explosive devices, including chemical weapons (United States Department of Justice, 2011; Yamson, 2014). In total, individuals linked to the Oath Keepers have been responsible for crimes that resulted in three victim deaths, as well as three crimes that involved the destruction of property (MacNab, 2014; Chappell, 2021; Coello, 2018).

Three Percenters

The Three Percenters were started in 2008 by Mike Vanderboegh, who emerged as a leader in the anti-government movement after the Waco siege in 1993. The Three Percenters initially consisted of gun rights advocates who vehemently opposed any restrictions on the ownership or carrying of firearms. However, in more recent years, the Three Percenters have adopted the policy positions of the broader militia movement in the United States, including advocating for strict immigration policies and securing the southern border, and protesting the public health measures that were adopted during the COVID-19 pandemic. The Three Percenters ideology is based on the mistaken belief that only three percent of the American colonists actively fought against British forces in the American Revolution. The movement's adherents believe that an armed conflict between the federal government and its citizens is imminent, and that a small contingent of dedicated patriots will rise to defeat government forces and protect individual liberties, the most important of which is the right to own firearms (Beutel and Johnson, 2021).

Unlike the Oath Keepers, the Three Percenters are an ideological movement that has no discernable organization or structure at the national level (Southern Poverty Law Center, "Three Percenters"). Anyone can self-identify as a Three Percenter and operate in the name of the movement. However, the ideology of the Three Percenters has inspired the creation of dozens of local, organized militia groups, some of which have established leaders and defined roles for their members. Examples of these groups include the Three Percent United Patriots, Real III% of Idaho, Georgia Security Force III%, and Southwest Kansas III%, to name a few. The fluid nature of the Three Percenters movement allows local groups to bridge ideologies and form partnerships with like-minded organizations. For instance, many Oath Keepers also describe themselves as Three Percenters and the two movements have merged forces on several occasions to participate in armed standoffs and counter-protests. Oath Keepers and local Three Percenter groups were part of a formal alliance of militias that was established during the Bunkerville, Nevada, standoff in 2014, when anti-government extremists from around the United States joined the Bundy family in an armed clash with agents from the Bureau of Land Management (Childress, 2017). Three Percenter groups also mobilized to join occupiers at the Malheur National Wildlife Refuge in Oregon in 2016 (Levin, 2016), and dozens of self-proclaimed Three Percenters participated in the January 6, 2021, attack on the U.S. Capitol (Program on Extremism, 2021).

Like the Oath Keepers, most Three Percenter groups describe themselves as self-defense organizations that are primarily concerned with arming and training their members for an inevitable armed conflict with the federal government (Beutel and Johnson, 2021). However, according to PIRUS and SoNAR data, at least 83 individuals with ties to the Three Percenters have been charged for participating in 40 unique criminal events since 2011. This includes 31 Capitol riot defendants who self-identified as Three Percenters, and numerous individuals who faced criminal charges for participating in the Malheur occupation. Moreover, Three Percenters have been tied to several premeditated plots to commit violent attacks. For example, a self-proclaimed Three Percenter was among a group of individuals who attacked a Black Lives Matter protest in Minneapolis, Minnesota, in 2015, injuring five victims (Neiwert, 2015). Similarly, a follower of the Three Percenters was involved in a plot to attack an apartment complex that housed Somali immigrants in Kansas in 2016 (Barrouquere, 2019), while a Three Percenters group in Illinois successfully bombed a mosque and attempted to bomb an abortion clinic in 2017 (Goudie and Weidner, 2018). Targets of Three Percenter crimes have included mosques, immigrants, law enforcement, educational institutions, and numerous federal buildings. In total, individuals linked to the Three Percenters movement have been responsible for crimes that resulted in five victim deaths and six injuries over the past decade (Las Vegas Sun Staff, 2014; Clay, 2017). They have also been linked to at least nine crimes that resulted in the destruction of property, including an arson attack on government vehicles outside of the U.S. Supreme Court (USA v. Tarner, 2020).

Boogaloo Movement

The Boogaloo movement emerged in 2019 after the term, which is a slang reference to an impending civil war, began appearing frequently on fringe social media platforms. Although at first the term "boogaloo" was used by various groups, including white supremacists, gun rights advocates, and anti-government militias, to encourage armed conflict against perceived enemies, eventually a movement coalesced around the idea that was broadly pro-gun, anti-government, and anti-law enforcement. Boogaloo adherents adopted unique signs, symbols, and language that were based on internet humor and memes to signal their allegiance to the movement. This included plays on the term boogaloo, like "Big Igloo" and "Big Luau," that inspired the adoption of clothing, flags, patches, and stickers featuring images of igloos and Hawaiian symbols. The Boogaloo movement is broadly based on the ideas of libertarianism and anarcho-capitalism, which argue for minimal government, the guarantee of individual liberties, and the protection of free markets (Thomas, 2021; Thompson, 2021; Kriner and Lewis, 2021).

Like the Three Percenters, the Boogaloo movement does not have a national organization or leadership structure, but it has inspired the creation of several local groups who claim an allegiance to its ideological principles. Outside of its pro-gun stance and its steadfast belief in an impending civil war, the Boogaloo movement does not share much in common with its Oath Keeper and Three Percenter counterparts. Boogaloo adherents are vocally anti-police, putting them at odds with the Oath Keepers and Three Percenters, who often mobilize in support of, and recruit from, law enforcement communities. Adherents of the Boogaloo movement have organized anti-police rallies, marched alongside Black Lives Matter demonstrators to protest police violence, and committed attacks against law enforcement officers (Thompson, 2021; Owen, 2020; Kriner and Lewis, 2021). Moreover, most Boogaloo followers do not portray themselves as a defensive militia, but instead advocate for the use of violence to achieve their goals, often using violent imagery to mobilize each other to plan and commit attacks (Evans and Wilson, 2020).

Given the movement's offensive posture, it is not surprising that dozens of Boogaloo adherents have been involved in criminal acts ranging from homicide to kidnapping plots to arson. Unlike the Oath Keepers and Three Percenters, however, Boogaloo adherents did not show up in large numbers at the Capitol on January 6, 2021, to protest the transfer of presidential power (Kriner and Lewis, 2021). Many Boogaloo adherents are not supporters of Donald Trump, whose pro-police stance and former position atop the federal government clash with the movement's anti-law enforcement and anti-government views (Thompson, 2021; Evans and Wilson, 2020).

While the movement has only been active for a little more than two years, at least 77 Boogaloo adherents have participated in 48 unique criminal events, according to the PIRUS and SoNAR data. Boogaloo movement members were particularly active in the protests and riots that occurred in the wake of the murder of George Floyd by a Minneapolis police officer. For instance, a Boogaloo adherent traveled to Minnesota from his home in Texas and was arrested after he fired a weapon into the Minneapolis police department's third precinct (Sepic, 2021). Outside of protest activity, Boogaloo members have been involved in several violent plots. Two Boogaloo adherents affiliated with the Grizzly Scouts group participated in an attack on federal law enforcement in Northern California that resulted in the death of an officer (Perez de Acha, Hurd, and Lightfoot, 2021). A second member of law enforcement was killed days later when authorities attempted to apprehend one of the assailants. In a separate incident, a Boogaloo follower reportedly killed his wife and himself after a clash with police officers in Oklahoma (Raache and Kay, 2021). In total, followers of the Boogaloo movement have been responsible for crimes that resulted in three victim deaths and six injuries (Perez de Acha, Hurd and Lightfoot, 2021; Raache and Kay, 2021; Kachmar, 2021; Snell, 2022). At least six Boogaloo crimes involved the destruction of property (Chappell, 2021; Sepic, 2021; Daysog, 2020; Fitts, 2020; Duvall, Kachmar, and Loosemore, 2021; random facts girl, 2020).

The Offenders

The Oath Keepers, Three Percenters, and Boogaloo Movement have a comparable number of offenders in the PIRUS and SoNAR data, ranging from a low of 70 for the Oath Keepers to a high of 83 for the Three Percenters (see Table 6). The offenders from the three movements are also comparable on several key individual-level risk and protective factors for violence. The offenders are overwhelmingly men, and they display comparatively high, but similar, rates of military service, low-educational attainment, unemployment, pre-radicalization crime, diagnosed mental illness, and substance abuse disorders. The three groups differ, however, on measures of age and age-related social dynamics. While the Oath Keeper and Three Percenter offenders in PIRUS and SoNAR have comparable average ages (46 and 37) and similar rates of marriage and children, offenders associated with the Boogaloo Movement are younger (median age = 29) and are less often married at the time that they commit their offenses. According to our data, Boogaloo offenders are also slightly less likely than their Oath Keeper and Three Percenter counterparts to be the parents of children at the times of their crimes.

Table 6: Summary Statistics

Individual-Level Characteristics			
Age (median)	46	37	29
Married (%)	61.2	48.5	25.4
Parent (%)	75	66.7	42
Female (%)	11.4	4.41	0
Low Education (%)	44.1	43.4	36.3
Unemployed (%)	25	19.3	19.3
Military Background (%)	44.3	32.5	32.5
LE Background (%)	8.6	6	0
Criminal History (%)	41	47.4	44.6
Violent Crime (%)	12.5	21.8	18.5
Mental Illness (%)	25.7	22.9	33.8
Substance Abuse (%)	21.4	31.3	32.5
Trauma (%)	13.2	17.4	22.5
Network Characteristics			
Offenders	70	83	77
Lone Actor Offenders	23	37	17
Isolate Cliques (%)	24.3	38.6	62.3
Degree Centrality (Avg.)	9.98	5.33	4.75
Low-High	0-36	0-38	0-16
Eigenvector Centrality (Avg.)	0.120	0.100	0.070
Betweenness Centrality (Avg.)	0.017	0.026	0.017
Stress Centrality (Avg.)	1.147	0.562	0.531
Outcomes			
Criminal Events	23	40	48
Victim Deaths	3	5	3
Violent Offenders (%)	18.6	57.8	58.4
Victim Injuries	0	6	6
Property Damage	3	9	6

Despite their similarities on most of the risk factors that have been shown to be correlated with radicalization to violence (see LaFree et al., 2018), the offenders from the three groups display considerable variation in terms of their involvement in violent crimes. For instance, only 18.6% of the offenders linked to the Oath Keepers are classified as violent in PIRUS, while nearly 60% of the Three Percenter and Boogaloo Movement perpetrators in the database attempted to commit, or committed, violent crimes. This is especially striking considering how similar Oath Keeper and Three Percenter offenders are on measures of age, marriage, children, military service, criminal history, education, and unemployment. Therefore, on their own, individual-level risk characteristics do not appear to explain the variation in violent outcomes in this subset of extremist offenders. Below, we argue that the variation in violence among members of these three militia groups is largely due to the dynamics of their co-offending networks.

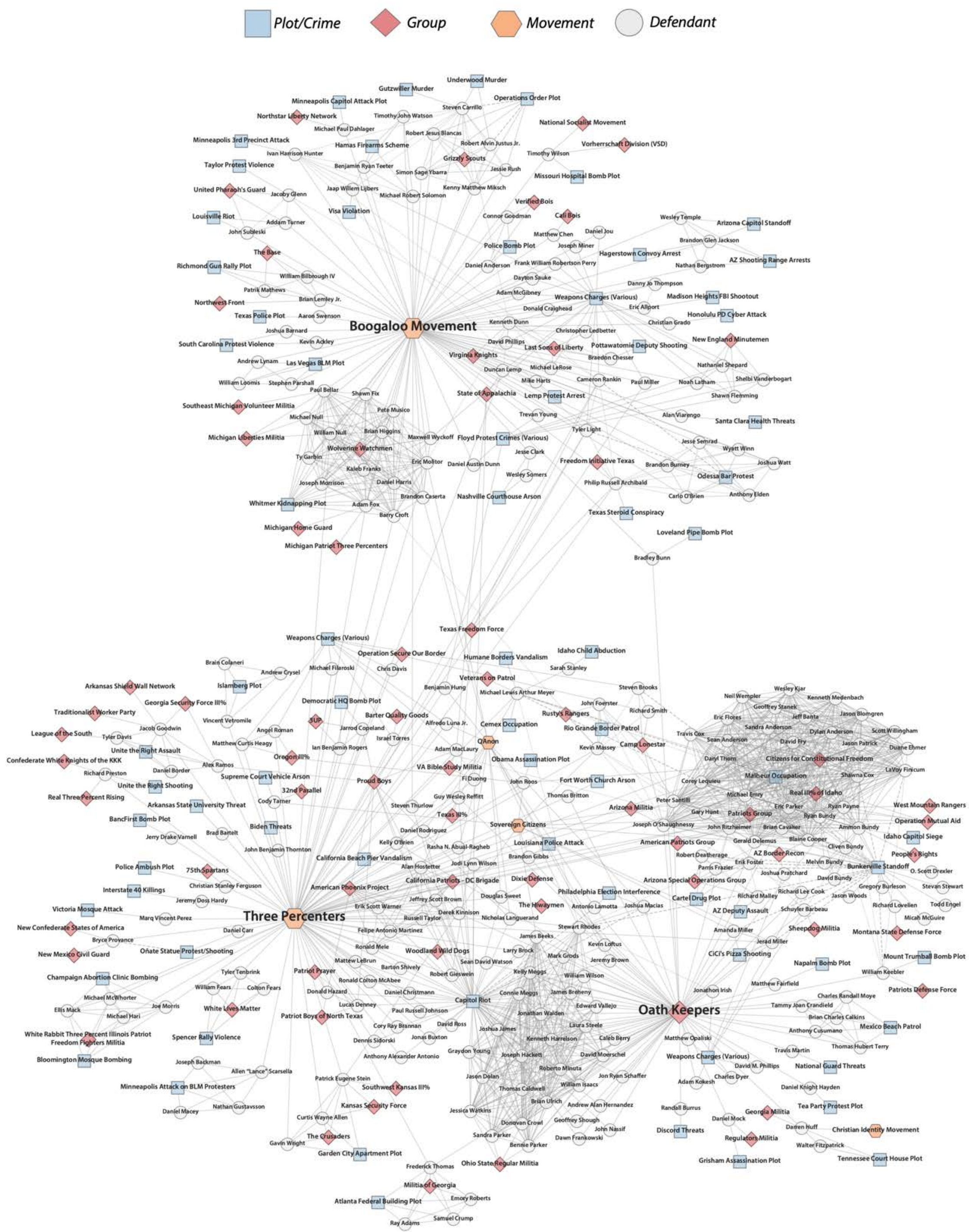
The Networks

The anti-government militia movement in the United States is comprised of a vast array of national and local organizations that are relatively well-connected when compared to other types of U.S. extremists. Indeed, the SoNAR data reveal that offenders from the Oath Keepers, Three Percenters, and Booglaoo Movement had extensive connections to smaller groups and each other. Figure 5, which displays the broader network of extremist offenders who were connected to the individuals from the three groups, shows that offenders linked to the Oath Keepers, Three Percenters, and Boogaloo Movement were connected to no fewer than 72 national and local extremist groups, and they had relationships with at least 59 criminal offenders from other groups or movements. In total, offenders linked to the Oath Keepers, Three Percenters, and Boogaloo Movement formed more than 1,800 dyadic connections to extremist events, other extremist groups, and each other.

However, despite the relatively high degree of connectedness across the three militia movements, important differences emerge when the groups are compared to each other. For instance, although each movement had comparable numbers of offenders who acted alone, they varied considerably in terms of the average number of ties that individuals had to other offenders. As Table 6 shows, Oath Keepers in the SoNAR data were, on average, connected to

10 other extremist offenders. Moreover, Oath Keepers were rarely (24.3%) members of isolated cliques. As Figure 6 shows, the high number of co-offender relationships in the group is due to

Figure 5: Oath Keeper, Three Percenter, and Boogaloo Movement Networks



two large clusters in the network that were involved in mass mobilization crimes. The first cluster, depicted on the left-hand side of the graphic, is comprised of Oath Keepers who faced criminal charges for their participation in the Bunkerville standoff in 2014. The second cluster, located on the right-hand side of the visualization, is comprised of Oath Keepers who are facing criminal charges for participating in the January 6, 2021, attack on the U.S. Capitol. This cluster was tightly networked and included central members of the Oath Keepers' national leadership and several individuals who ran local chapters of the group.

Figure 6: Oath Keeper Co-Offender Networks

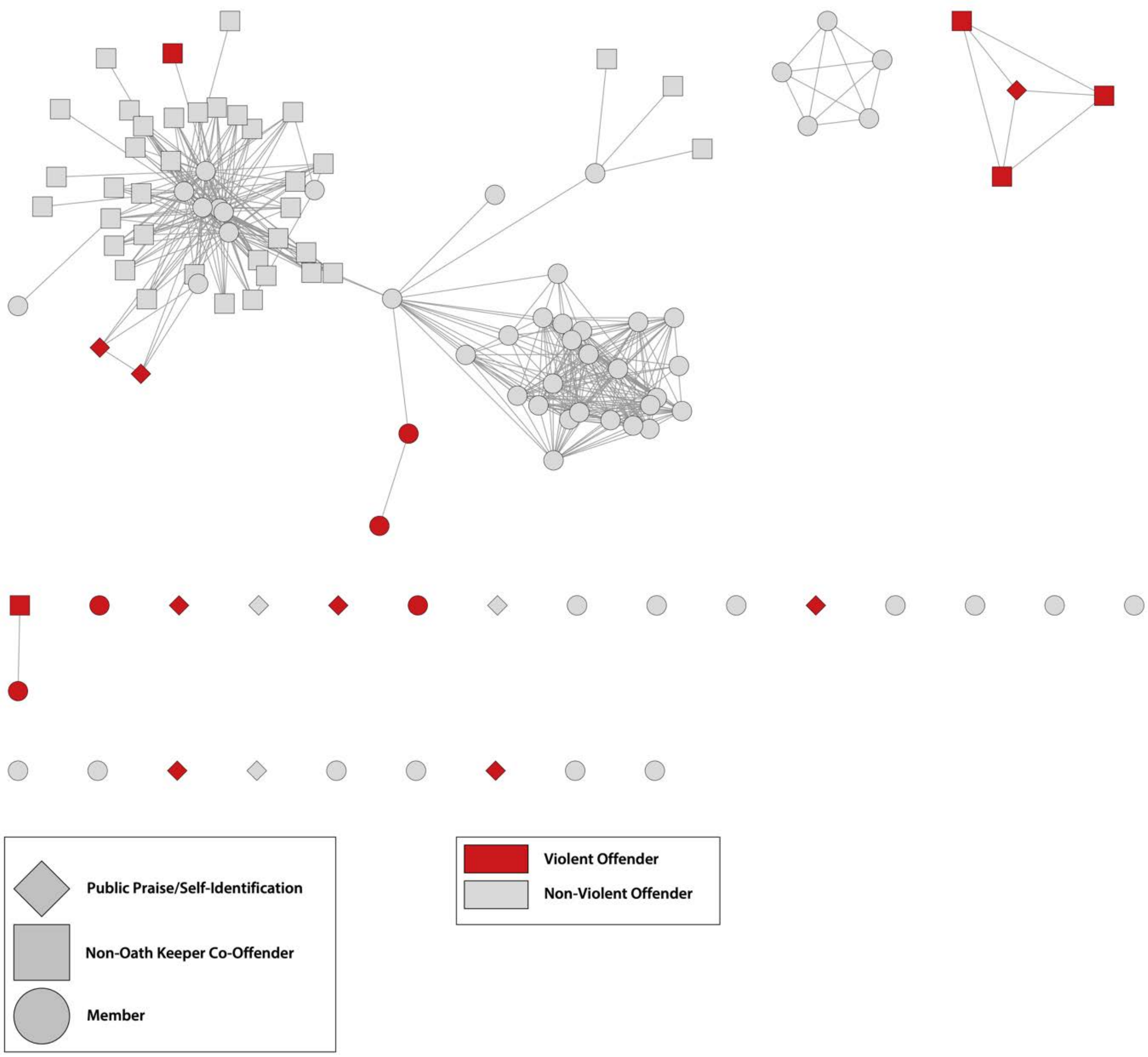
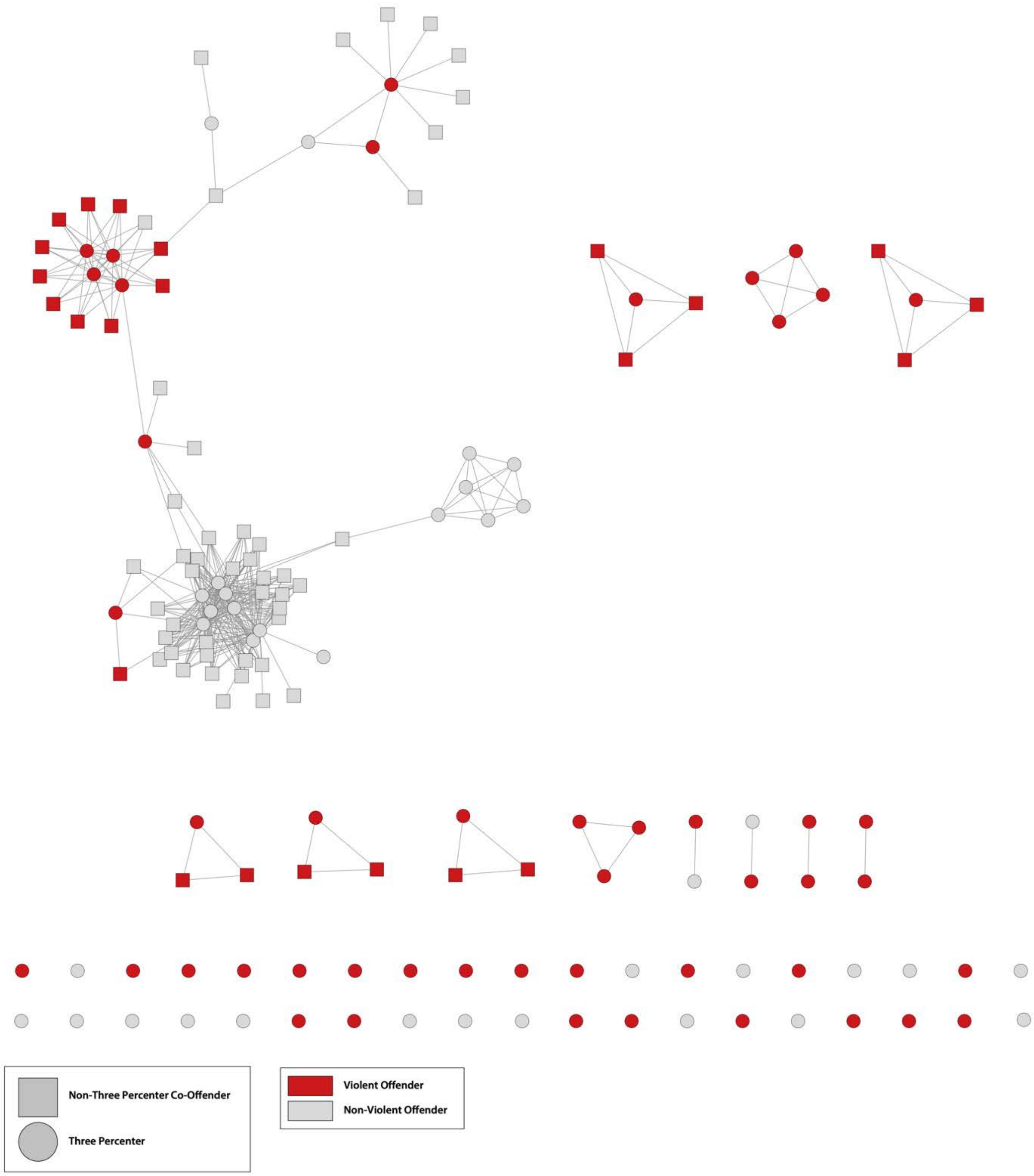
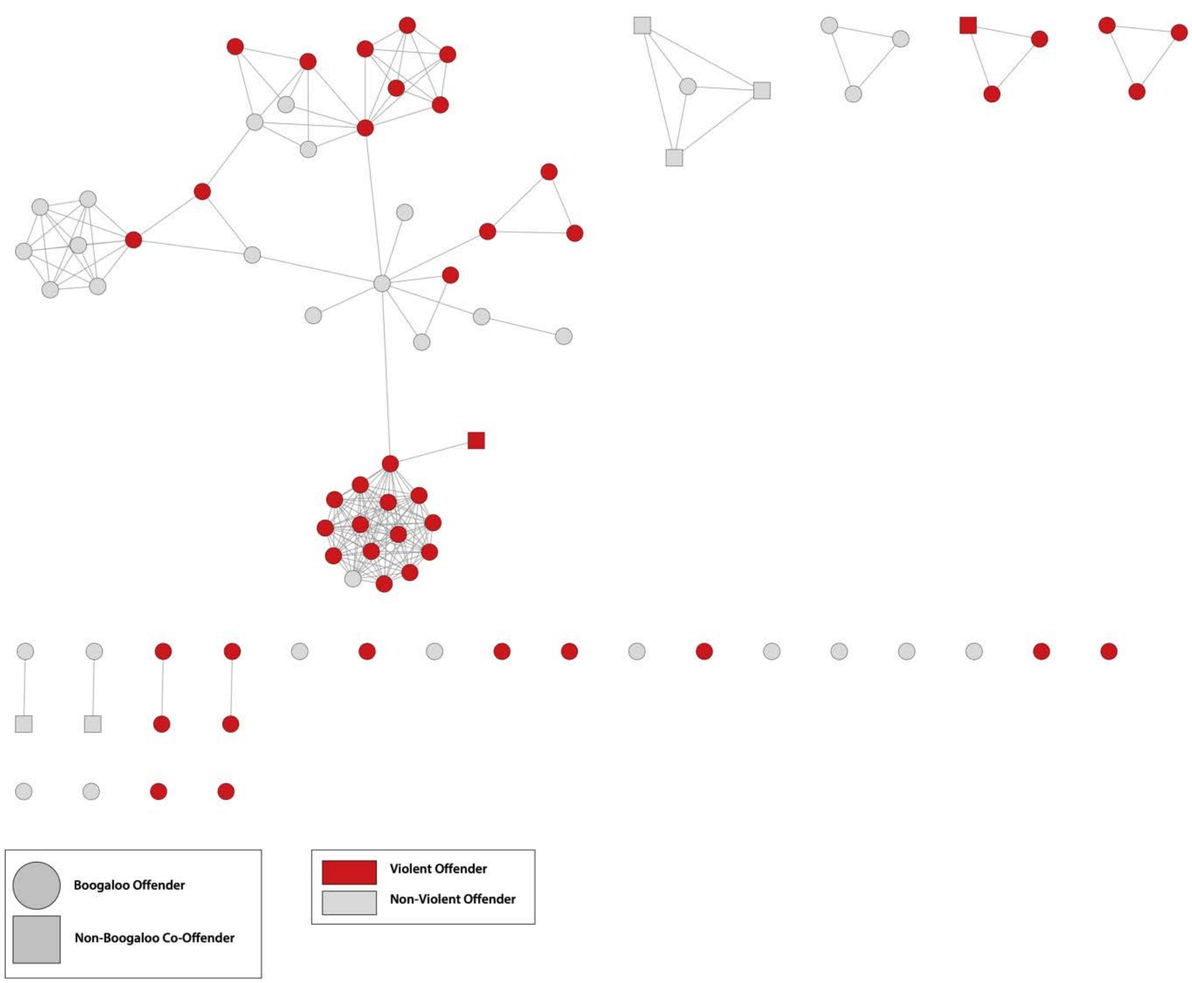


Figure 7: Three Percenter Co-Offender Networks



In addition to high average degree centrality scores, the Oath Keeper offenders in the SoNAR data also have comparatively high scores on stress centrality, indicating that the network was well integrated, with particular nodes serving the critical function of transmitting information throughout the network. Not surprisingly, one of these individuals is Rhodes who, as the leader of the organization, occupies a central position in the network that allows him to control information, facilitate relationships, and direct the actions of the group. However, there are several other nodes in the Oath Keepers network that have played a similar function. For instance, Ryan Payne, a member of the Oath Keepers and Three Percenters who is credited with orchestrating the alliance that brought several militias to the Bunkerville standoff (Bernstein, 2018), has a similar stress centrality score to Rhodes.

Figure 8: Boogaloo Co-Offender Networks



By comparison, individuals affiliated with Three Percenters and Boogaloo movements had ties to approximately five other extremist offenders. The average stress centrality score of the Three Percenter and Boogaloo Movement offenders is less than half that of Oath Keeper offenders. This indicates that compared to the Oath Keepers, each of these networks tends to be less well integrated and interconnected, and that each has a considerable number of lone actor offenders and isolated cliques. Indeed, Figures 7 and 8 graphically illustrate these dynamics in the Three Percenter and Boogaloo Movements. The Three Percenters network is comparable to Jihadist groups in terms of the percentage (44.6%) of lone actor offenders associated with the movement, while the Boogaloo network has the highest number (62.3%) of offenders who were members of isolated cliques across the three groups. As ideological movements without a national leadership or defined organizational structures, these results are unsurprising. Rather than following those with broad leadership positions throughout the movements, individuals affiliated with the Three Percenters and Boogaloo Movement often establish local groups, or organize themselves as isolated cliques, that devise their own operational procedures, strategies, and goals.

Explaining Violence in the Militia Movement

We argue that these network dynamics are important for explaining radicalization processes, especially when it comes to planning or engaging in acts of violence. As we noted in the first section of results from the SoNAR data, we argue that individuals who are embedded in large networks, and especially those who maintain central positions within the networks, are less likely to radicalize to violence than either individuals who sit on the edges of large networks or those who are members of isolated cliques or act alone. Large networks promote specialization that allows members to adopt non-violent roles; they can draw attention to their causes through non-violent, mass mobilization crimes; and they have gatekeepers who moderate or otherwise control the behaviors of their members. Lone actor offenders and isolated cliques, on the other hand, do not have the group membership numbers or co-offender connections to engage in specialization; they often can only draw attention to their causes and themselves through acts of violence; and they operate in digital spaces where enablers, rather than gatekeepers, encourage them to mobilize to violence.

We argue that the effects of networks intervene between individual-level risk factors for violence and extremist outcomes. This explains why despite their similarities in terms of beliefs and their comparable rates on most individual-level risk factors for violence, offenders from the three militia groups achieved drastically different radicalization outcomes. To test these claims, we analyze the effects of three network measures that capture the size of an individual's offender network and their level of influence in the network—degree centrality, stress centrality, and isolation—on an individual's planning or execution of an act of extremist violence. Using data from PIRUS and SoNAR on the offenders and networks associated with the Oath Keepers, Three Percenters, and Boogaloo Movement, we test the following three hypotheses:

> **H1**: Offenders with high degree centrality scores are less likely to participate in acts of extremist violence than individuals with low degree centrality scores.
>
> **H2**: Offenders with high stress centrality scores are less likely to participate in acts of violence than offenders with low stress centrality scores.
>
> **H3**: Offenders who were members of isolated cliques or acted alone are more likely to participate in acts of violence than offenders who are part of broad networks.

We coded our dependent variable *violence* as "1" if the individual engaged in an act that injured or killed at least one person, or the individual plotted to participate in an act that was meant to kill or injure people, even if the plot was disrupted by law enforcement before it could be carried out. Individuals who were arrested on charges related to the illegal possession of

firearms were coded as violent if those charges were made during the course of an investigation that revealed that the subjects had discussed committing crimes of violence against specific targets. Individuals who were charged with weapons violations but limited their activities to military-style training or weapons stockpiling were coded as non-violent (“0”).
We also coded offenders as non-violent if they limited their plots and extremist behaviors to crimes in which no one was hurt or injured, such as property destruction or financial schemes.

Our first independent variable—*degree centrality*—is a continuous measure that captures the total number of dyadic connections an individual had to other offenders in the SoNAR and PIRUS datasets. A connection was established between two individuals if (1) they were co-offenders in the same crime, or (2) they had an established relationship that involved organizing or the exchange of ideas, knowledge, or materials, and each was involved in separate extremist crimes. Our second independent variable—*stress centrality*—estimates a node’s level of influence in a co-offender network by calculating the number of shortest paths between any two nodes in a network that pass through the node of interest. Thus, a node with a high stress centrality score is one that is traversed by a high number of shortest paths. These nodes are influential in a network not only because they facilitate the flow of information between nodes that would otherwise by disconnected, but also because they allow for those relationships to be established quickly, eliminating the need for those nodes to work through long chains or complex pathways to reach each other. We argue that offenders with asymmetric influence in extremist movements are ones that make establishing new relationships quick and relatively easy. Our final independent variable—*isolate*—is a dichotomous measure that indicates if the offender was a part of an isolated clique or acted alone. Offenders who were coded as “1” either committed their crimes without the assistance of other offenders or they radicalized within cliques that were disconnected from the broader militia offender network. We argue that individuals who are isolated from the broader militia movement are not subject to the gatekeeping effects that moderate behaviors in large groups or among well-connected nodes.

Below, we control for several individual-level characteristics that we have found in our previous research to be significantly related to the likelihood that an extremist offender will engage in an act of violence. In terms of characteristics that increase the risk that an offender will engage in an act of violence, we include a history of pre-radicalization violent crime, documented or suspected mental illness, poor employment performance, and gender (male). We also include two factors that we have found to be associated with a lower risk of violence: marriage and age (LaFree et al., 2018).

As we did in the previous section, we test the multi-level relationships between individual-level characteristics, network dynamics, and violent outcomes using GEE, which accounts for the interdependent nature of our data. The results of Model 1, which are displayed in Table 7, show that degree centrality (OR = 0.92) is a negative and significant predictor of violence. That is, as a node's number of connections to other extremist offenders increases, the likelihood that they will be classified as a violent offender in the PIRUS and SoNAR data decreases. Every additional connection to fellow extremist offenders decreases the odds that a node will be classified as a violent offender by nearly 8 percent. This relationship holds despite the presence of several individual-level control variables that have been previously shown to increase the risk that an extremist offender will engage in an act of violence. Indeed, outside of being male, degree centrality is the only other variable in the model that is a significant predictor of whether an offender was classified as violent. This indicates that in the domain of militia extremists, network dynamics play an intervening, and perhaps decisive, role between individual attributes and the occurrence of extremist violence.

Table 7: Networks and Violence in the Oath Keeper, Three Percenter, and Boogaloo Movements

	Model 1: Degree Centrality	Model 2: Stress Centrality	Model 3: Cliques + Lone Actors
(Intercept)	-1.530	-1.259	-2.262
	(1.475)	(1.334)	(1.047)
Network Attributes			
Degree Centrality	-0.080*		
	(0.038)		
Stress Centrality		-0.343*	
		(0.135)	
Isolate			1.157*
			(0.475)
Controls			
Age	-0.019	-0.025	-0.023
	(0.019)	(0.018)	(0.016)
Male	2.326*	2.127*	2.005•
	(1.144)	(0.992)	(1.044)
Married	0.295	0.173	0.105
	(0.527)	(0.548)	(0.556)
Low Education	0.486	0.213	0.138
	(0.411)	(0.437)	(0.453)
Unemployed	-0.483	-0.412	-0.410
	(0.354)	(0.351)	0.350
Military	-0.209	-0.101	-0.122
	(0.254)	(0.245)	(0.236)
Criminal History (Violent)	0.549	0.620	0.596
	(0.719)	(0.694)	(0.678)
Mental Illness	0.169	0.113	0.114
	(0.258)	(0.213)	(0.192)
Substance Abuse	0.630	0.554	0.524
	(0.462)	(0.486)	(0.498)
Observations	208	208	208

( ) = Robust standard errors. • $p < .10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Due to the large variance in absolute stress centrality scores, Model 2 uses the Log of the stress centrality variable.

Model 2 in Table 7 further supports these conclusions, showing that stress centrality is also a negative and significant predictor of whether an offender was classified as violent. An individual's centrality in a network has an even stronger effect (OR = 0.71) on the suppression of violence among militia offenders associated with the Oath Keepers, Three Percenters, and Boogaloo Movement. Indeed, for every unit increase in a node's stress centrality score, the odds that they were classified as a violent offender in PIRUS and SoNAR decreases by 29 percent. This suggests that influential members of extremist networks, like the leaders of groups, not only moderate their own behaviors, but that they also moderate the actions of others with whom they are connected.

Finally, Model 3 supports our argument that members of isolated cliques and lone actors within the militia movement are more likely to radicalize to violence. Subjects who were coded as isolates were 3.18 (OR) times more likely to be classified as violent offenders in PIRUS than individuals who were connected to expansive networks or large clusters of offenders. Again, these results hold even when controlling for several individual-level characteristics that have been shown to increase the likelihood than an offender will engage in an act of extremist violence.

While these results might appear to alleviate concerns about large militia movements in the United States, recent trends, including the emergence and subsequent demise of the Boogaloo Movement, indicate that militias are becoming less organized and hierarchical, and more loosely connected and independent. The presence of isolated cliques and lone actor offenders is growing throughout the militia movement, increasing the probability that its adherents will commit acts of violence. Moreover, given recent law enforcement attention, organized militias currently find themselves in uncertain positions. The leadership of the Oath Keepers has been effectively separated from the local chapters of the group due to the January 6 prosecutions. There is a considerable probability that Rhodes and his key associates will not be able to reestablish control of the group, even if they prevail in their respective court cases. The remaining elements of the

Oath Keepers, therefore, could operate as independent entities separated from each other and the moderating effects of national leadership. As federal law enforcement increases its investigations into militia activity, the broader movement will likely fracture, producing isolated groups and entities that emerge out of the violent and hyper-mobilizing subcultures of online communities.

Community-Level Indicators and Violent Extremism

Prior research has suggested that extremist political violence is not randomly distributed but is concentrated in particular communities (Gruenewald, Chermak, & Freilich, 2013; Perry, 2020; Hasisi et al., 2020). For example, ethnic diasporas concentrate individuals with similar cultures and languages potentially fostering the recruitment of new members of ideological belief systems who share these characteristics. Thus, recent research has linked support for diverse terrorist organizations directly to diaspora communities, including the Irish in the case of the Irish Republican Army (Clutterbuck, 2008), Armenians in the case of Armenian Secret Army for the Liberation of Armenia (Dugan, Huang, LaFree, & McCauley, 2008), and Tamils in the case of the Liberation Tigers of Tamil Eelam (Aryasinha, 2001; Nadarajah & Sriskandarajah, 2005; Sheffer, 2006). To explore potential macro-level effects of community characteristics on our dependent variables, we collected county-level data on communities across three main categories: population heterogeneity, residential instability and concentrated disadvantage.

Population Heterogeneity

The expectation that the level of population heterogeneity in a community is related to disorder and crime has historical roots in the dramatically changing urban landscape of the United States in the early 20th century. With massive numbers of immigrants of mostly European origin flocking to cities, urban communities were rapidly transformed into centers of diversity, the result of which was not always positive. An inherent by-product of immigration is that migrants bring with them sets of rules and norms unique to their homeland: norms that to some degree may be different from and sometimes in opposition to the dominant values in the host society as well as the values of other immigrants (Sellin, 1938). Moreover, prior research also has shown that both informal (Markowitz, Bellair, Liska, & Liu, 2001; Sampson & Groves, 1989) and formal (Greene & Herzog, 2009; Weisburd & Braga, 2006) controls are weaker in heterogeneous communities. Although there is little research testing whether population heterogeneity increases the risk of violent extremism, researchers have linked feelings of alienation in diaspora communities to a perceived schism between the West and traditional values from the migrant's home culture (LaFree & Ackerman, 2009; McCauley & Moskalenko, 2011; Thachuk, Bowman, & Richardson, 2008). Importantly, these feelings of alienation increase the chances that individuals in affected communities will participate in terrorist plots, but more generally, such feelings undermine the effectiveness of social control and the ability of communities to self-regulate. Our community-level measures of population heterogeneity are percent foreign-born and percent non-English speaking.

Residential Instability

Starting with Shaw and McKay (1942), a substantial body of criminology research (Boggess & Hipp, 2010; Osgood & Chambers, 2000; Xie & McDowall, 2008) has demonstrated a link between residential instability and high crime rates. Social disorganization researchers have argued that a heightened level of mobility in a neighborhood destabilizes the community by weakening social ties, impeding communication, and undermining the ability of community residents to establish and uphold norms in their neighborhoods (Bellair, 1997; Sampson & Groves, 1989). To the extent that weak social ties with neighbors, limited communication, and feelings of alienation are higher in communities with greater residential instability, we expect that violent political extremism will be more common in counties with high rates of residential instability. To measure residential stability, we examined the number of residents who lived in the same dwelling for five years or more, the number of owner-occupied housing units and the number of vacant housing units.

Concentrated Disadvantage

Social disorganization theory in criminology emphasizes the importance of concentrated disadvantage in explaining variation in crime levels across communities (Krivo & Peterson, 1996; Sampson & Wilson, 1995). The concentration of disadvantage (e.g., poverty and joblessness) results in areas, and the residents in these areas, being socially isolated from mainstream society and generally lacking an ability to mobilize resources to prevent crime. The relationship between concentrated disadvantage and crime has received fairly consistent empirical support (Krivo & Peterson, 1996; Kubrin & Weitzer, 2003; Morenoff, Sampson, & Raudenbush, 2001). Although similar arguments have been made with regard to terrorism (Arnold, 1988: 135–136), empirical tests of these expectations have received little support. In fact, much prior research (Piazza, 2006; Silke, 2008; LaFree & Bersani, 2014) has shown that in general, terrorists are not drawn from poor communities, and those who participate in terrorist actions are, if anything, somewhat better educated and more prosperous than the populations from which they are drawn. Our measures of concentrated disadvantage include the percentage of the population living below the poverty line and the percentage of households with public assistance, the percentage of female-headed households, and the percent of the working-age population that is unemployed.

Individual-Level Measures

Our choice of individual-level variables for the analysis was informed by theory and by prior work on PIRUS (Jensen et al., 2016; LaFree et al., 2018). We include dummy variables for major ideological categories (i.e., far-right, far-left, Islamist, single-issue). We use previous criminal activity (=1) as a measure of whether the individual engaged in non-extremist illegal activity. We include whether the individual had low socioeconomic status (=1), defined by receiving welfare, living close to the poverty line, being regularly unemployed, working a blue-collar job, or living in subsidized housing. We include a measure of stable employment (=1) to measure whether individuals were regularly employed and a variable for whether they had at least a high school diploma (=1). Additionally, we include whether individuals were divorced (=1) or had a history of mental illness (=1). We include dummy variables for the year to control for any temporal trends in the odds of violent extremism.

Given the prevalence of missing data in PIRUS, we use multiple imputation through chain equations (MICE) to impute missing values for the set of individual-specific variables (Jasko, LaFree & Kruglanski, 2017; LaFree et al., 2018).

Community-Level Measures and Analysis

We focus here on county-level variables drawn from the three theoretical perspectives outlined above. We use data from the IPUMS National Historical Geographic Information System (NHGIS) for all our macro-level community measures. This dataset provides access to Census Bureau data with summary files and time-series estimates that ensure accuracy over time when data sources change. We collected the data for 1990 and 2000 from the Decennial Census and 2010 and 2018 data from the American Community Survey (ACS). We used five-year ACS estimates to ensure the representativeness of all the counties in the United States and used linear interpolation to produce estimates for the non-census years. In addition to the main theoretically-driven community variables, we also include standard demographic measures (i.e., sex, age, and race/ethnicity).

We merged the yearly estimates into the PIRUS dataset using the date of exposure and the county the individual lived in at the time of radicalization as the matching variables. This resulted in a final analytic dataset of 1,274 individuals engaged in either violent or non-violent extremism from 2000 to 2018 in the United States, including individual and community/county variables.

Descriptive Statistics

Table 8: Descriptive Statistics (n=1,274)

	Mean	Std. Err.
Individual Characteristics		
Age	33.83 (0.38)	0.38
Previous Criminal Activity	0.44 (0.02)	0.02
Low SES	0.30 (0.02)	0.02
Islamist	0.39 (0.01)	0.01
Far Left	0.11 (0.01)	0.01
Far Right	0.43 (0.01)	0.01
Single Issue	0.08 (0.01)	0.01
Stable Employment	0.22 (0.02)	0.02
Mental Illness	0.17 (0.01)	0.01
Divorced	0.10 (0.01)	0.01
High School Diploma	0.41 (0.01)	0.01
Male	0.91 (0.01)	0.01
Year	2011.43 (0.14)	0.14
County Characteristics		
% Divorced	8.46 (0.04)	0.04
% age 15-24	41.81 (0.44)	0.44
% male	49.08 (0.03)	0.03
% Black	13.45 (0.36)	0.36
% Foreign Born	14.02 (0.30)	0.30
% Vacant Housing Units	8.37 (0.24)	0.24
% Owner Occupied	61.71 (0.35)	0.35
Residential Stability	66.10 (0.30)	0.30
Disadvantage	2.71 (0.04)	0.04

Note: Descriptive statistics are provided on the analytic sample after MICE which is why standard errors are reported.

In the current analysis we focus on nine county-level measures: percent divorced, percent age 15-24, percent male, percent Black, percent foreign born, percent vacant housing units, percent owner-occupied housing units, residential stability (percent of the population living in the same house > 5 years), and a concentrated disadvantage index. Given the high correlations between several measures of economic disadvantage we created a concentrated disadvantage index that includes standardized scores for five variables: unemployment, female headed households, public assistance, less than high school education and below the national poverty line. The variables and their means and standard errors are shown in Table 8.

Table 9: Bivariate Logistic Regressions Predicting Violence

	Odds Ratio (Std. Err.)
Individual Characteristics	
Age	0.98 (0.00) ***
Previous Criminal Activity	1.40 (0.18) **
Low SES	1.61 (0.28) **
Islamist	2.40 (0.30) ***
Far Left	0.10 (0.02) ***
Far Right	0.89 (0.10)
Stable Employment	1.26 (0.23)
Mental Illness	1.97 (0.33) ***
Divorced	0.89 (0.20)
High School Diploma	1.28 (0.15) **
Male	2.92 (0.61) ***
County Characteristics	
% Divorced	0.96 (0.03)
% Age 15-24	0.00 (0.00) **
% Male	0.93 (0.04)
% Black	1 (0.00)
% Foreign Born	1.02 (0.01) **
% Vacant Housing Units	0.99(0.01)
% Owner Occupied	0.99(0.00)
Residential Stability	1.01(0.01)
Disadvantage	0.97(0.04)

Note: Odds Ratios with robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In Table 9 we show bivariate correlations between our set of independent variables and extremist violence. One of the striking differences between the individual and community/county level variables summarized in Table 2 is that the former are far more likely to be statistically significant than the latter. Eight of the eleven individual variables are statistically significant while only two of the nine county characteristics are significant. According to Table 2, younger individuals, those who have engaged in previous criminal activity, those of low socioeconomic status, Islamists, those who report mental illness, those with a high school education or lower, and males are all significantly more likely to engage in violent extremism. Those who support a far left ideology are significantly less likely to engage in violent extremism. Among the county-level characteristics, violent extremism is associated with a higher proportion of individuals aged 15-24 and a higher percentage of foreign born residents.

We next use multivariate logistic regression with robust standard errors to estimate the impact of individual and community-level variables on violent extremism. In Table 10 we show the results of three analyses including only the individual characteristics (Model 1), only the community/county characteristics (Model 2), and both individual and community characteristics (Model 3). As with the bivariate results, the multivariate analyses show that compared to the county-level characteristics, the individual characteristics are far more important in predicting violent extremism. Six out of eleven of the individual measures are statistically significant in the full model (Model 3) compared to zero of the nine county-level measures. Moreover, individual-level results, whether estimated alone (Model 1) or with the community-level variables included (Model 3) are very similar and generally resemble the bivariate results just described. Younger individuals, those who have engaged in previous criminal activity, those of low socioeconomic status, those who report mental illness, and males are all significantly more likely to engage in violent extremism. Those who support a far left ideology are significantly less likely to engage in violent extremism. In contrast to the bivariate results, supporting an Islamist ideology and having at least a high school education are no longer significant in the multivariate analysis.

When we estimated the effects of the county-level measures alone (Model 2) we found only one significant result: violent extremism was more common in counties with a high percent of foreign-born residents. However, this effect disappears in Model 3 when we include the individual-level characteristics.

Table 10. Multivariate Logistic Regressions Predicting Violence (n=1,274)

	Model 1 Odds ratio (Std. Err.)	Model 3 Odds Ratio (Std. Err)	Model 2 Odds ratio (Std. Err.)
Individual Characteristics			
Age	0.98 (0.01) ***	-	0.98 (0.01) ***
Previous Criminal Activity	1.55 (0.24) **	-	1.58 (0.25) **
Low SES	1.41 (0.27) *	-	1.46 (0.29) **
Islamist	1.16 (0.30)	-	1.05 (0.28)
Far Left	0.09 (0.03) ***	-	0.09 (0.03) ***
Far Right	0.72 (0.18)	-	0.70 (0.19)
Stable Employment	1.21 (0.24)	-	1.25 (0.26)
Mental Illness	1.62 (0.30) **	-	1.63 (0.30) **
Divorced	1.16 (0.31)	-	1.12 (0.31)
High School Diploma	1.19 (0.17)	-	1.21 (0.18)
Male	2.13 (0.54) **	-	2.00 (0.53) **
County Characteristics			
% Divorced	-	1.01 (0.05)	0.99 (0.05)
% age 15-24	-	1.00 (0.01)	0.99 (0.01)
% male	-	0.95 (0.05)	0.95 (0.06)
% Black	-	1.00 (0.01)	0.10 (0.01)
% Foreign Born	-	1.02 (0.01) **	1.01 (0.01)
% Vacant Housing Units	-	1.00 (0.01)	1.00 (0.01)
% Owner Occupied	-	1.00 (0.01)	0.10 (0.01)
Residential Stability	-	1.01 (0.01)	0.99 (0.01)
Disadvantage	-	0.94 (0.06)	0.95 (0.07)

Note: Odds Ratios with robust standard errors in parentheses. Year dummy variables are included in the regressions. Single Issue is the reference category for the ideology variables.
*** p<0.01, ** p<0.05, * p<0.1

Conclusions: Community-Level Indicators and Violent Extremism

We began this study in part based on the assumption that adding community-level measures to individual characteristics would increase the accuracy of models estimating violent extremism. Based on available data choices, the closest we could come to measuring community-level effects was to rely on county-level data for the United States. Our results show that while individual level predictors of violent extremism remain robust, our county-level variables had no significant effect on the likelihood of violent extremism when included in multivariate models.

These findings are surprising, particularly in light of earlier county-level research engaged in by one of the PIs (LaFree & Bersani, 2014). The earlier research, which estimated the impact of a set of county-level measures on 600 U.S. terrorist attacks, 1990-2011, found that attacks were more common in counties characterized by greater language diversity, a larger proportion of foreign-born residents, greater residential instability, and a higher percentage of urban residents. Attacks were less common in counties marked by high levels of concentrated disadvantage. None of these variables were significant in our analysis of whether terrorist attacks are violent. What explains this discrepancy? The most obvious explanation is differences in the dependent variable for the two studies. In the earlier study we used terrorism event data from the Global Terrorism Database while in the current study we used individual-level data from the PIRUS data set. In the earlier study we estimated whether a county had experienced a terrorist attack; in the current study we are estimating whether county-level variables predict whether an individual radicalizes to violence. So, it could be that county-level measures are important for predicting where terrorist attacks occur but not very useful for predicting whether individual perpetrators use violence or not.

More generally, it is unclear how appropriate county-level measures are for measuring community-level effects. Clearly counties conceal a huge amount of community-level diversity. However, there are few systematic databases that include community-level measures over time for units smaller than counties. It could be that we would find significant effects for some of the county-level measures if we were able to examine smaller geographical units and nest individuals within counties. We plan to explore this possibility in future research.

Our analysis was also limited by available sample sizes. Although we were able to include nearly 1,300 cases in our analysis, the United States has over 3,000 counties. Thus, the most typical county has zero terrorist perpetrators over the period spanned by the data. We explored the possibility of conducting multi-level analyses nesting individuals within counties but this proved impossible due to the small sample size of individuals within each county.

Implications

Throughout this report, we have argued that radicalization to violence is a multi-level process in which individual-level risks, vulnerabilities, and protective factors interact with the dynamics of offender networks to produce different extremist outcomes. Network dynamics have an intervening effect that often determines whether individual-level risk factors produce pathways to violence or moderate an individual's extremist behaviors.

There are several implications of these findings from criminal justice professionals and terrorism researchers. Perhaps most important, while our results indicate that network dynamics have relatively consistent effects on radicalization to violence across ideological sub-groups, the nature of extremist co-offending in the United States has changed drastically over the past 30 years. The SoNAR data, as well as several extant studies (Gill, Horgan, & Deckert, 2014; Hamm & Spaaij, 2017; Hofmann, 2018), show that extremism in the United States and elsewhere has largely entered a post-organizational phase where offenders are less likely to be affiliated with hierarchical extremist organizations and are more likely to be members of isolated cliques or to act alone. Our results suggest that these changes have serious consequences for the radicalization processes of U.S. extremists.

Individuals who radicalize within large co-offending networks are subject to the moderating influences of group leaders and other central network actors. Influential nodes carry concerns about how they and their groups are perceived by the larger public, and they limit the actions of their followers to ones that do not undermine the group's larger goals or their personal ambitions. By comparison, individuals who radicalize in isolated cliques or offend alone typically feel less pressures to conform their behaviors to the desires of influential nodes in a network. Quite the opposite. Given the lack of centralization and hierarchy in their communities, isolated offenders are free to pursue whatever course of action they believe will garner them the personal recognition they are seeking. Furthermore, these offenders often operate in online environments where rather than gatekeeping, individuals actively encourage each other to engage in acts of violence. Previous violent offenders are celebrated in these communities and members are constantly exposed to dehumanizing rhetoric that makes violence appear to be justified and necessary (Schlegel, 2021).

As the extremist offender environment in the United States and elsewhere continues to become less centralized and more loosely connected, our results suggest that radicalization to violence will become more common, especially among those who display a combination of network isolation and individual-level risk characteristics for violence. Responding effectively to these changes will require a coordinated effort on several fronts. First, practitioners engaged in the prevention of violent extremism will need to look beyond individual-level vulnerabilities and consider how the dynamics of extremist relationships can influence radicalization trajectories. Programs that are designed to prevent extremism, or to off-ramp individuals who have begun to radicalize, should consider how social connections in online and offline spaces may accelerate or moderate individual pathways to violence. It will be especially important to devise effective programs for targeting individuals who have isolated themselves in online extremist communities.

Second, social media companies and technology providers will need to continue to investigate how they can break extremist echo chambers that form in online communities. While large technology firms, like Meta, Google, and Twitter, have made some progress in countering extremism on their platforms, smaller companies, such as Telegram, Reddit, Gab, and many others, have done far less to combat the spread of dangerous ideas on their sites. These issues may be especially important for younger persons, who have grown up with the explosive growth of social media and may be especially vulnerable to the negative effects of smaller platforms. Leveraging relationships with smaller technology firms and providing them with the tools to counter extremism on their platforms will be crucial to stopping the spread of radicalization online.

Finally, programs and policies designed to rehabilitate and reintegrate extremist offenders after periods of incarceration need to consider network dynamics in addition to individual-level attributes in their assessment of the risk factors that are associated with terrorist recidivism. While internet monitoring is becoming more common among the conditions that are assigned to extremist releasees, it is not without challenges. Identifying what constitutes extremist content online and reviewing the massive volume of online activity in which releasees commonly engage presents considerable challenges for probation and parole officers supervising the cases of extremist offenders. Despite these challenges, it will be imperative for officers to understand the online environments that extremist offenders spend time in and identify when they might be making attempts to form relationships with potential co-offenders.

A major objective of the PIRUS project since it began a decade ago was to increase the accuracy of models estimating violent extremism in the United States. As part of this broad objective, the current project sought to improve violence estimates by including common county-level measures found in earlier studies to be important predictors of criminal behavior. Our results show that although individual and network-level predictors of violent extremism are robust predictors of violent extremism, county-level variables had little effect on the likelihood of violent extremism when included in multivariate models. This result at first seems to contradict earlier research (LaFree & Bersani, 2014), showing that terrorist attacks are more common in counties characterized by greater language diversity, a larger proportion of foreign-born residents, greater residential instability, a higher percentage of urban residents, and low levels of concentrated disadvantage. However, we believe that the main reason for this difference in outcomes is that the earlier research was explaining *where terrorist attacks happen*, whereas the current research project was focused on *whether individuals radicalize to violence*. It appears that county-level measures are useful for predicting where attacks are likely to happen but not very useful for distinguishing between violent and non-violent individuals. County-level measures may simply be too macro-level to be of much help in predicting individual decisions to use violence. In future research it would be useful to try and develop community-level measures that are more fine-grained than counties.

Limitations and Methodological Considerations

While the goal of this study was to analyze the impact of extremist networks and community pressures on radicalization, we acknowledge several limitations of the project. First, while SoNAR maps certain social networks, it is limited to subjects who carried out ideologically motivated crimes. SoNAR does not include connections between offenders and those who harbored extremist views but did not act upon them. Second, these networks are limited to individuals who radicalized within the United States. Therefore, SoNAR does not include the foreign contacts that may have been influential to an individual's radicalization process. Finally, because these networks were drawn from PIRUS, which is a representative database, there are extremist offenders who are not included in SoNAR. Furthermore, for older cases, it was extremely challenging to find information on individuals in open sources and to verify that we had accurately established all their connections. We believe that the effects of limited source availability had a minimal impact on the accuracy of SoNAR, but users should assume that some PIRUS cases from before 2000 are missing co-offender connections in SoNAR.

The SoNAR data can be used in tandem with PIRUS to explore the multi-level effects of networks and individual-level characteristics on radicalization. However, users should be aware of several important methodological considerations before performing this type of analysis. In particular, the combination of PIRUS and SoNAR violates the common assumption in statistics that the observations within a sample are independent of each other. Networked observations are not independent, but rather exert influence on each other. The failure to take the interdependent nature of the observations in PIRUS and SoNAR into consideration when modeling radicalization outcomes can lead to biased standard errors and unreliable results.

Users should use methods designed for modeling multi-level data when combining PIRUS and SoNAR. These methods typically require the analyst to identify unique clusters to which the observations belong. This can be challenging in large networks with long chains or complex relationships. For this reason, we encourage users to perform analyses on sub-groups within the data, like we have done in this report. Smaller samples, such as ideological sub-categories, make it easier to identify unique clusters of observations. If users desire to analyze all the cases in PIRUS and SoNAR at once, they should be clear about the methods they are using for identifying clusters and they should discuss the impact clustering decisions may have on their results. Ideally, users will perform several robustness checks in which they re-cluster the observations several times and see how the changes impact their results.

Similarly, the use of community data based on county-level indicators alongside PIRUS should be done with caution. Hierarchical and nested modeling techniques typically require a minimum number of observations per nested unit. Given that there are over 3,000 counties in the

United States and only 2,225 subjects in PIRUS, most county-years in the community data contain no matching cases from PIRUS. Many others only have a single case. Users wishing to use community variables with PIRUS should considering either aggregating cases to higher units of analyses or treating the community data as a first phase in collecting their own structural indicators to pair with PIRUS.

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