



University of Nebraska at Omaha
DigitalCommons@UNO

Criminology and Criminal Justice Faculty
Publications

School of Criminology and Criminal Justice

2016

The Use of Social Media by Alleged Members of Mexican Cartels and Affiliated Drug Trafficking Organizations

Justin Nix

University of Nebraska at Omaha, jnix@unomaha.edu

Michael R. Smith

University of Texas at El Paso

Matthew Petrocelli

Southern Illinois University Edwardsville

Jeff Rojek

University of Texas at El Paso

Victor M. Manjarrez

Follow this and additional works at: <https://digitalcommons.unomaha.edu/criminaljusticefacpub>



Part of the [Criminology Commons](#)

Recommended Citation

Nix, Justin; Smith, Michael R.; Petrocelli, Matthew; Rojek, Jeff; and Manjarrez, Victor M., "The Use of Social Media by Alleged Members of Mexican Cartels and Affiliated Drug Trafficking Organizations" (2016).

Criminology and Criminal Justice Faculty Publications. 57.

<https://digitalcommons.unomaha.edu/criminaljusticefacpub/57>

This Article is brought to you for free and open access by the School of Criminology and Criminal Justice at DigitalCommons@UNO. It has been accepted for inclusion in Criminology and Criminal Justice Faculty Publications by an authorized administrator of DigitalCommons@UNO. For more information, please contact unodigitalcommons@unomaha.edu.



Justin Nix, Michael R. Smith*, Matthew Petrocelli, Jeff Rojek and Victor M. Manjarrez

The Use of Social Media by Alleged Members of Mexican Cartels and Affiliated Drug Trafficking Organizations

DOI 10.1515/jhsem-2015-0084

Abstract: Focusing on Mexican cartels and affiliated drug trafficking organizations, this article examines how self-proclaimed cartel members use social media to further the criminal activities of their organizations. Employing an open-source, intelligence-driven methodology, the authors identified, followed, and mapped the connections between and among 75 alleged cartel members over a period of 4 months. Results indicated that cartel members actively use Facebook to plan, organize, and communicate in real-time. These findings provide tentative validation to the utility of using open-source social media platforms to study the social structure and operations of Mexican drug cartels. Implications for law enforcement, homeland security, and the intelligence enterprise are discussed.

Keywords: drug trafficking organizations; Facebook; Mexican cartels; social media.

1 Introduction

The inception of organized crime dates back hundreds of years and has always been both a national and international problem. Be it Chinese Triads, Colombian cartels, Dominican criminal organizations, La Cosa Nostra (the Italian/Sicilian mafia), Japanese Yakuza, Korean criminal organizations, Mexican drug cartels,

***Corresponding author: Michael R. Smith**, The University of Texas at El Paso – Center for Law and Human Behavior, Prospect Hall 224 500 W. University, Avenue, El Paso, TX 79968, USA, e-mail: msmith4@utep.edu; michael.robert.smith409@utep.edu

Justin Nix: University of Louisville – Criminal Justice, Louisville, KY, USA

Matthew Petrocelli: Southern Illinois University Edwardsville – Criminal Justice, Edwardsville, IL, USA

Jeff Rojek: The University of Texas at El Paso – Criminal Justice, El Paso, TX, USA

Victor M. Manjarrez: The University of Texas at El Paso – Center for Law and Human Behavior, 500 W. University Avenue Prospect Hall Room 222A, El Paso, TX 79968, USA

Nigerian criminal organizations, the Russian mob, Vietnamese organized crime, or Yugoslavian/Albanian/Croatian/Serbian or “YACS” criminal enterprises, these criminal organizations have always presented a significant threat to society and challenge to law enforcement (Minogue 2000; Morrison 2002). While most of these organizations have been traditionally categorized by national origin or ethnicity, a more modern understanding of the transnational nature of their crimes suggests that a common language or culture only serves to limit our understanding of their contemporary goals and techniques (Albanese 1996). Rather, the global nature of these transnational criminal organizations (TCOs) is now more broadly defined as “self-perpetuating associations of individuals who operate internationally for the purpose of obtaining power, influence, monetary and/or commercial gain, wholly or in part by illegal means, while protecting their activities through a pattern of corruption and/or violence” (USDOJ 2008).

A predominant type of TCO is a drug trafficking organization (DTO). In its National Drug Assessment, the U.S. Department of Justice defines DTOs as, “complex organizations with highly defined command-and-control structures that produce, transport, and distribute large quantities of one or more illicit drugs” (USDOJ 2010: p. 10). When acting in concert, DTOs may comprise drug cartels, which are large, highly sophisticated organizations composed of multiple DTOs and cells with specific assignments such as drug transportation, security/enforcement, or money laundering. Drug cartel command-and-control structures are based outside the United States; however, they produce, transport, and distribute illicit drugs domestically with the assistance of DTOs that are either a part of or in an alliance with the foreign cartel (USDOJ 2010: p. 10).

Mexican cartels and DTOs have become a high priority for American law enforcement as the USDOJ (2010) describes them as “the greatest drug trafficking threat to the United States” (p. 9). The most recent intelligence on Mexican cartels and DTOs identifies eight major organizations, including the Sinaloa Cartel, Cartel Jalisco-New Generation (CJNG), La Familia Michoacana (LFM), Beltran Leyva-organization (BLO), Los Zetas, Gulf Cartel, Juarez Cartel, and the Los Caballeros Templarios (DEA 2015). The Sinaloa Cartel is presently the most dominant DTO, controlling 40–60% of Mexico’s drug trade and earning approximately \$3 billion in profits. It has a presence in 50 countries, operates in all regions of the United States, is highly cohesive, deals in cocaine, heroin, methamphetamine, synthetic drugs and marijuana, and is widely considered to be “the most powerful mafia organization in the Western hemisphere” (Beitels 2015: p. 14).

This article focuses on Mexican drug cartels and their affiliated DTOs. Its purpose is to explore how self-identified cartel members may use social media to further the criminal activities of their organizations. It employs an open-source, intelligence-driven methodology to systematically gather and analyze

information from the social media posts of alleged cartel members (Steele 2007). We begin with a brief review of the literature on the use of social media by TCOs, DTOs, and criminal street gangs. We then describe our data and research methods in detail before presenting the findings from our analysis. We conclude by discussing the implications of our findings for future researchers, law enforcement, and the homeland security enterprise.

2 Review of the Relevant Literature

In this section, we review empirical research findings on the use of technology, the Internet, and social media by TCOs, DTOs, and criminal street gangs. The research methodology adapted for this paper largely comes from this review of the literature and the gaps that it reveals.

2.1 Exploitation of Technology by Criminal Groups

Small and Taylor (2005) assert that despite a deeper and richer understanding of transnational crime in the past few decades, the incidence and severity of crimes committed by these organizations is having a profound effect on the United States, mostly due to economic globalization, increasing numbers of immigrant groups in America and, significantly, the expansion and availability of communication technology via the Internet. Criminal organizations have always sought to exploit technology for their own gain, but the availability of expansive bandwidth coupled with inexpensive and nimble wireless and mobile technologies has exponentially increased that capability (Choo 2008). Indeed, McCusker (2006) maintains that “cybercrime has become an integral part of the transnational threat landscape and conjures up pressing images of nefarious and increasingly complex online activities” (p. 257).

Still, we know relatively little about how these groups have incorporated modern technology into their criminal activities. Indeed, Decker and Pyrooz (2012) posited, “we simply don’t know how gang members use the Internet for criminal and noncriminal purposes and what can be done to respond to such use.” This dearth of knowledge represents a significant gap in our understanding of modern TCOs and DTOs. In 2007, King and colleagues reported that 45 percent of reported gang members used the Internet. In a more recent study, Decker and Pyrooz (2011) found that 82 percent of gang members in America have access to the Internet, and 71 percent use social media platforms such as Facebook or MySpace.

2.2 Social Media Use

The efforts that have been made thus far to explore this rapidly expanding use of technology are sparse and concentrate primarily on the use of social media. The predominant methodology thus far has been using key word searches on major social media outlets. For example, Morselli (2010) examined “cyberbanging” by way of a systematic keyword search that was restricted to the active users of the three primary vehicles for social networking (Facebook, MySpace and Twitter). He concluded that social networking sites did not actively recruit new members but rather provided a venue where individuals who may share gang values can congregate and legitimate those beliefs. Womer and Bunker (2010) explored social networking sites used by Mexican DTOs (specifically Surenos affiliates) and street gangs such as MS-13 and 18th street using keyword searches and also found that there was no active recruitment but rather a concerted effort to advertise their power and danger by way of bragging about their criminal activities (e.g. posting photos of gun-toting members flashing gang signs). In order to assess the overall presence of gangs on social networking sites, Decary-Hetu and Morselli (2011) conducted a keyword search on Facebook, MySpace, and Twitter using more than 50 street gang names and found that gangs have a large presence on social media sites (see also Morselli and Decary-Hetu 2013). Lastly, Patton (2015) used keyword searches on Twitter related to gang violence, crime and substance abuse to analyze 8.5 million tweets by known Detroit gang members and found four distinct ways gang members communicated in those areas, including grieving the loss of a loved one, “beefing” or arguing online with gang rivals, displaying and discussing firearms, and displaying and discussing drugs and/or alcohol.

Although the extant research clearly favors keyword searches as a methodological tool for examining social networks, Wijeratne et al. (2015) argue it has its limitations. A major drawback of these efforts are the authors’ decisions to identify social media posts by searching for those that satisfy a small list of keywords related to violence, drugs, and weapons. Such filtering may significantly bias the topics and modes of use discovered. Consequently, Wijeratne et al. (2015) chose to study tweets collected on Twitter and analyze “specific gangs, operating in specific neighborhoods, in ways that may be useful to design specific judicial services” (p. 2). To do this, they used spatio-temporal-thematic analysis, people-content-network-analysis, and emotion-sentiment analysis to assess negative community effects of gang activities, opinions of leaders who influence the thoughts and actions of gang members, the sentiments of posts targeting communities, and community and gang responses to community and support programs.

Taking a different methodological approach, Sela-Shayovits (2012) used a convenience sample of 30 gang members in Israel and employed in-depth,

semi-structured interviews to study online gang activity. Like previous studies, she found that Internet use does not promote the recruitment of members or gang formation but does play a considerable role in the socialization of members, particularly relating to their computer skills; computer savvy members train others who are less proficient, which results in more overall cyber deviance for the organization as a whole. Similarly, in an effort to assess online presence and criminality, Pyrooz et al. (2015) conducted 585 interviews of current and former gang members ($n=418$) and also non-gang members in five cities Cleveland, Fresno, Los Angeles, Phoenix and St. Louis. Their findings indicate that (1) gang members use social media at the same, if not greater frequency, than non-gang members, (2) gang members commit online crime at a greater rate than non-gang members, and (3) the Internet is used by gang members for symbolic rather than instrumental purposes.

The current study builds upon this body of research by examining the use of social media by Mexican drug cartels and affiliated DTOs. Unlike much of the previous research on social media use by criminal gangs, our unit of analysis is the organizational member rather than keywords themselves. We used keyword searches only as an initial heuristic to identify potential cartel members who we then followed on Facebook over a period of 4 months. Moreover, instead of focusing on the use of social media for recruitment purposes, our efforts explore whether and to what extent members of TCOs or DTOs – principally Mexican drug cartels – used social media to plan, communicate, or otherwise facilitate their illicit activities. Specifically, we explore whether cartel members use social media primarily for symbolic purposes like Pyrooz et al. (2015) found with domestic street gangs or whether they may also use social media for planning, command and control, and/or real-time communications in furtherance of their organization's criminal enterprise.

3 Data and Methods

The research methodology called for identifying potential TCO/DTO members on social media, systematically gathering information from their posts, and then analyzing the resulting data using descriptive, qualitative, and social network analytic techniques. Initially, keyword searches in English and Spanish were conducted on a variety of social media platforms (Twitter, Facebook, Instagram, etc.) using a mixture of cartel and drug-related search terms. Based on the sheer volume of “hits” on Facebook compared to the other social media platforms, the research team decided to focus its data collection efforts solely on the public Facebook pages of self-described cartel members.

3.1 Level I Data Collection

Formal data collection began in August 2014 and continued through December 2014, yielding approximately 4 months of data. Initially, Spanish-speaking research assistants (RAs) at The University of Texas at El Paso (UTEP) conducted keyword searches on Facebook that contained a wide array of cartel and DTO-related search terms (e.g. marijuana, Sinaloa, weapon). These searches returned Facebook profiles of individuals who may be members of a Mexican cartel or DTO. A determination of whether to include a particular profile in the research sample was based on the following criteria: (1) self-admitted cartel or DTO criminal activity; (2) self-admitted membership to a cartel or DTO; (3) displays of recognizable cartel, gang, or DTO-affiliated tattoos; (4) displays (usually photographs) of recognized gang and/or cartel symbols and signs; (5) posts concerning cross-border or international travel for the purpose of criminal behavior; (6) visual displays (e.g. photographs, maps) of transnational criminal activity; (7) photos depicting cartel or DTO criminal activity; or (8) any other evidence of being part of a cartel or DTO criminal hierarchy.

Because of IRB and researcher safety-related concerns, only public Facebook pages were viewed and analyzed for markers of cartel or DTO affiliation. If an initial determination of cartel/DTO affiliation was made by an RA, the principal investigator (PI) confirmed or denied the RA's assessment. If both the RA and PI determined the individual to be a possible member of a cartel or DTO, the subject was assigned a code number, and his or her public Facebook profile was "observed" on Facebook on a weekly basis. During the observation period, non-personally identifiable information about the subject was entered into a password-protected Microsoft Word case observation form and eventually a password-protected SPSS database for subsequent analysis. This data consisted of demographic information (e.g. location and race) about the subject, cartel or DTO affiliation (e.g. cartel membership and specialized training), and behavioral information (e.g. spoke about gang activity) about the subject.

As described above, Level I data collection consisted of information that was posted for public viewing on Facebook. Although Level I observations required a Facebook account, they did not require formal invitations from the possible cartel/DTO members to access restricted portions (requiring the page owner's permission) of their Facebook pages. In order to log onto Facebook, members of the research team developed a group Facebook profile and account using a non-traceable email address.¹ In accordance with Facebook

¹ In accordance with Facebook policy, the group account and profile were established using authentic information. For safety purposes, only the first names of the RAs were used to establish the account.

policy and several federal courts, there is no reasonable expectation of privacy for information that is presented on an individual's public profile page.² Any profiles that were blocked through Facebook settings were not recorded or observed. Further, researchers did not interact with the individuals observed, and they did not attempt to "friend" these individuals in order to gain entry into restricted access portions of their Facebook pages. If there was any elicitation from an individual to engage in communication, those requests were ignored.

3.2 Level II Data Collection

If an individual being observed granted further access into his or her profile without a formal request from a UTEP researcher, observations of the individual continued without direct interaction. For example, if an individual "tagged" the RA account in a picture, this allowed the researcher to access the picture, which may have otherwise been inaccessible. UTEP researchers did not, however, make "friend" requests of the subjects they were observing or otherwise take affirmative steps to gain entry into private areas of subject profile pages.

Once all keyword searches were performed and the initial database of individuals observed was created, other potential DTO and cartel-affiliated subjects were identified if they appeared on the pages of the originally identified members. That is, other individuals who corresponded with a suspected cartel or DTO member also had their profiles examined by an RA to see if the subject met the criteria for inclusion into the database and continued observation. The PI also confirmed inclusion of these individuals into the database. If these subjects merited observations, their data were recorded in the same, non-personally identifiable manner as the subjects in Phase I.

Secondary searches for linked subjects were performed on a weekly basis. Again, no affirmative steps were taken by the UTEP researchers to gain access to linked individuals' restricted access pages. Data recorded from observations for all identified individuals continued as long as evidence of criminal activity remained and the information was publically accessible without invitation. All information that was gathered in Spanish was translated into English by a second RA.

² *Palmieri vs. United States*, 2014 US. Dist. LEXIS 155613 (D. D.C. 2014); *United States vs. Merigildo*, 883 F. Supp. 2d 523 (S.D.N.Y. 2012).

3.3 Data Analysis

Altogether, 75 potential cartel or DTO-affiliated individuals were identified and systematically observed on a weekly basis on Facebook over a 4 month period. All accounts were “active” during the entire observation period. Although not all 75 research subjects posted new material to their Facebook pages every week, most of them did. The amount of new, weekly information posted varied from subject to subject. Altogether, our observations yielded several 100 case observation records (e.g. a new post, photograph, etc.) that were subjected to analysis. Once data collection ended, quantitative, qualitative, and social network analyses were performed to identify how subjects made use of Facebook to assert their cartel/DTO affiliations, how they communicated with others, and how they were connected to one another. In addition, and as reported below, a descriptive statistical analysis was performed to examine the characteristics of identified individuals and their reported activity. In the Findings section below, we refer to research subjects by their assigned code numbers. Due to the sensitive and oftentimes overtly criminal nature of the information observed, all data were collected in a non-personally identifiable manner, and all subjects observed were assigned a unique code number for the purposes of analysis.

4 Findings

4.1 Evidence of Cartel/DTO Affiliation

As previously discussed, possible cartel/DTO affiliation was assessed independently by two members of the research team applying at least one of eight criteria to the subjects’ profile pages for inclusion in the sample. Table 1 displays the number of individuals (and percentage of the sample) who fit each of the criteria outlined above. Nearly 90 percent of the individuals who were observed during the project self-admitted to being involved with a cartel or related cartel/DTO. Three-fourths of the sample had cartel symbols present somewhere on their social media profiles, while about two-thirds of the sample indicated they were part of a criminal hierarchy. Just over half of the sample (53%) self-admitted to being involved in some form of criminal activity. Evidence of international travel for criminal purposes was somewhat less prevalent, but a total of 30 individuals (40%) fit this criterion nonetheless. Twenty-eight individuals’ profiles (37%) provided evidence of transnational

Table 1: Evidence of Criminal Organization Membership.

| | Number | Percent |
|---|--------|---------|
| Self-admission to gang/cartel/TCO membership | 67 | 89% |
| Cartel symbols evident | 57 | 76% |
| Evidence of being part of criminal hierarchy | 52 | 69% |
| Self-admission to criminal activity | 40 | 53% |
| Evidence of international travel for criminal purpose | 30 | 40% |
| Evidence of transnational criminal activity | 28 | 37% |
| Original photo evidence of criminal activity | 23 | 31% |
| Displays gang symbols/signs | 21 | 28% |
| Gang tattoos | 3 | 4% |

criminal activity. Similarly, 23 individuals (31%) posted photos on their profiles that included evidence of criminal activity. It is worth mentioning that 21 individuals (28%) posted original photographs of illegal drugs while five individuals posted original photographs of dead bodies and/or persons who had been tortured.³ Twenty-one individuals (28%) displayed gang symbols/signs on their profiles. The presentation of tattoos was the least common mode of cartel/DTO self-identification through social media – only three individuals met this criterion.

To illustrate, subject AFB004's Facebook page contained pictures of dead bodies, tortured victims, drugs, cartel symbols, and large sums of money. He is a male who claims to be a member of Cartel de Sinaloa and indicates he trained at the Antrax School. He claims to currently live in Tamaulipas, Mexico. The "Los Antrax" group is described as the designated enforcers and the tactical security force of the Sinaloa Cartel. The group was led by the drug lords Jesus Pena and Rodrigo Arechiga Gamboa (El Chino Antrax)⁴ who are responsible for a number of homicides and for providing armed security services to Ismael El Mayo Zambada. The group operates in the State of Sinaloa where it is largely rumored to have a "training academy" referred to as the School of Antrax where paramilitary style boot camp training is conducted for new recruits (Sinaloa Cartel's Top Enforcer 2015).

³ "Original" photos survived scrutiny. All photos were searched for on Facebook, googled, and in general searched for online to ensure that they were not simply tagged or copied by the individual Facebook owner.

⁴ Interestingly, Gamboa allegedly was caught by the DEA because of his social media postings on Instagram.

4.2 Sample Demographics

A total of 56 individuals included their ages on their social media profiles. The youngest individual was 14 years old while the oldest was 45. The average age of the sample was 26.8. In terms of race, the sample was overwhelmingly Hispanic. Of the 67 individuals who provided their race/ethnicity, only two identified themselves as being Caucasian while the remaining individuals identified as Hispanic. Finally, in terms of gender, the sample was predominantly male: 67 subjects were males and eight were females.

4.2.1 Cartel Affiliation

Bearing in mind that several individuals reported being affiliated with more than one cartel or group,⁵ most of the sample ($n=56$) reported affiliation with Cartel de Sinaloa (CDS). Of those reporting CDS affiliation, 46 also indicated being involved in some way with Antrax, while six indicated being affiliated with Mayo Zambada. Zetas-affiliated individuals were the next most represented cartel: 18 individuals reported association with this group. While the majority of individuals classified themselves as either CDS or Zetas, 13 individuals reported affiliation to one of five other groups: Gente Nueva, Cartel de Golfo, Cartel de Jalisco, Cartel de Pacifico, and Viajes Carrillo. It is also worth noting that of the eight females in the sample, six reported affiliation with CDS (five of who also reported being affiliated with Antrax) and two reported connections to Zetas.

The DEA's most recent, unclassified assessment of the major drug trafficking organizations in Mexico asserts that there are eight major cartels operating in the country (DEA 2015). The largest and most powerful of the cartels is Cartel de Sinaloa, which makes up the majority of the individuals in the sample (77% including its affiliates Antrax and Mayo Zambada). While Los Zetas have fragmented and lost key members to death or arrest, they continue to operate as a series of splinter groups and control significant portions of the drug trade along the Mexican Gulf coast. It is interesting to note that our sample contained only one self-identified member of the Cartel de Jalisco or New Generation Jalisco Cartel, which is the fastest growing and perhaps second most powerful cartel in Mexico (Bender 2015; DEA 2015).

⁵ For example, five individuals reported being members of both Cartel de Sinaloa and Gente Nueva.

Table 2: Descriptive Data on Membership, Age, Gender, Rank, and Travel.

| Cartel Affiliation | No. of Members | Mean Age | Percent Male | Modal Rank/ Occupation | Percent Traveled to US |
|--------------------|----------------|----------|--------------|--|------------------------|
| Sinaloa | 56 | 27.6 | 89.0 | Command/ leadership | 42.9 |
| Antrax | 46 | 27.5 | 89.0 | Command/ leadership | 41.3 |
| Mayo Zambada | 6 | 24.2 | 100.0 | Command/ leadership and operations support | 33.3 |
| Zetas | 18 | 24.5 | 89.0 | Command/ leadership and enforcer | 11.1 |
| Gente Nueva | 6 | 28.6 | 100.0 | Command/ leadership | 83.3 |
| Cartel de Golfo | 4 | 25.0 | 75.0 | Command/ leadership and operations | 75.0 |
| Cartel de Jalisco | 1 | – | 100.0 | Tactical | 0.0 |
| Cartel de Pacifico | 1 | – | 100.0 | – | – |
| Viajos Carrillo | 1 | – | 100.0 | Enforcer | – |

4.2.2 Rank or Occupation in Cartel/DTO

Roughly 63 percent of the individuals in the sample ($n=47$) indicated their rank or occupation within their identified criminal organization.⁶ The modal job description listed by each of these 47 individuals within their cartels is reported in Table 2. Within almost all of the cartels represented in the sample, the most common role reported was being a commander or holding some other type of leadership role. In addition, 16 individuals reported having a job description that fell under “Operations Support” (e.g. AFB031 claimed to be a “body disposer”). Eight individuals fell into the “Tactical Support” category. Eleven individuals claimed to be “sicarios” or “hit-men” who upon given the order by cartel leadership will eliminate specified targets, which may include identified snitches, cartel rivals, law enforcement members, public officials, etc., while two individuals reported being recruiters for the Zetas. Of the eight females in the sample, only two indicated their occupation: one reported having an Operations

6 Subject DFB004 suggests on his Facebook page that he works for Customs and Border Protection.

Support role, while the other claimed to be a Recruiter for the Zetas. In most cases, the subjects reported fulfilling an identifiable role within the hierarchy of their organization.

4.2.3 Residence and Travel

Most of the individuals in the sample included their current locations on their social media profiles. The majority were based in either Mexico ($n=48$) or the United States ($n=17$); however, two individuals claimed to be located in Colombia and Norway, respectively. There is also evidence that some of the individuals frequently cross the United States-Mexico border. Subject AFB025, for example, reported that he resided in Sinaloa but claimed to have traveled to Tucson and Phoenix, Arizona; Las Vegas, Nevada, and San Diego, San Jose, Santa Ana, and Los Angeles, California. On the other hand, subject AFB006 indicated that he was residing in El Paso, Texas but had recently visited Ciudad Victoria, Mazatlán, and Badiraguato.

As shown in Table 2, the research team was able to document places that 38 individuals (50 percent of the sample) recently visited either before or during the course of the project. Altogether, these 38 individuals claim to have visited no less than 138 different cities worldwide within the last 2 years. On average, individuals indicated traveling to roughly six unique cities, although subject FB008 reported traveling to 24 different cities in Mexico, the United States, Italy, and China between 2012 and 2014. The top three destinations of choice were Culiacán, Mexico; Los Angeles; and Guadalajara. Each of these cities was visited by at least 10 of the individuals in the sample. Mazatlán, Las Vegas, Phoenix, San Diego, and Tijuana each attracted between six and nine individuals from the sample.

Interestingly, only 2 of the 18 Zetas indicated traveling anywhere on their Facebook profiles. This was in stark contrast to the members of Cartel de Sinaloa: 35 of the 56 members (or 63%) indicated places they had recently travelled on their profiles. This could mean that the Zetas either (1) travel less or (2) are more secretive about their travel. Of course, it is also possible that this difference is merely an artifact of our sampling procedure (i.e. it was by chance that the 18 Zetas we monitored did not discuss travel on their profiles). These data, as well as the current residence of the subjects (above), provide evidence of the inter- and intra-national nature of cartels/DTOs. Frequent travel to carry out their criminal organization's business was a common theme among the research subjects.

4.3 Network Relationship

In the next step of the analysis, we used social network analytic techniques (SNA) to explore the relationships among the 75 research subjects.⁷ SNA focuses on the relationships among social entities rather than the entities themselves and is used extensively in the social sciences (Scott 2013). SNA is used here to uncover relationships between the 75 individuals in the sample and to visually depict how they were connected to each other and to the cartels represented in the sample. For each individual in the sample, a list of affiliates was generated based on the individual's Facebook friends. Sixty-two individuals had at least one other person from the sample in their Facebook friends list. The number of affiliates listed ranged from a minimum of 0 to a maximum of 12.

4.4 Cartel/DTO Affiliation by Network

In the analyses that follow, social network analysis is used to visually depict cartel affiliation. This allows for the identification of subjects who belong to or are affiliated with multiple cartels. In Figure 1, a line is drawn from each individual in the sample to the cartel(s) with which s/he claims affiliation. Figure 1 clearly shows that none of the individuals claiming to be Zetas report being affiliated with any other cartel. However, most, but not all, members reporting Cartel de Sinaloa affiliation also report being affiliated with Viruz Antrax (see Figure 2). The lone member of Viajos Carrillos – FB025 – also reports being affiliated with both Cartel de Sinaloa and Antrax. Similarly, AFB002 is the only individual who reported Cartel de Jalisco affiliation, but he also indicates being affiliated with Cartel de Sinaloa and Antrax. Cartel de Golfo has four individuals reporting affiliation in the present sample – AFB025, AFB031, FB003, and FB007. Each of these four individuals also report affiliation with Cartel de Sinaloa and Antrax. AFB031 further indicates affiliation with Mayo Zambada. Gente Nueva has six members reporting affiliation in the sample. Four of them – AFB004, AFB005, FB009, and JFB009 – claim to also affiliate with Cartel de Sinaloa and Antrax. FB009 further indicates

⁷ Note that a group Facebook page for Antrax run by subject FB011 was included in the social network analyses and was assigned subject code number FB010. FB010 was not included in any of the preceding analyses but it was associated through SNA with a number of individuals in the sample. In addition, five individuals appear in the social network analyses who were not part of the sample – NFB001, NFB002, NFB003, NFB004, and NFB005. Nothing is known about these individuals other than they are associates of JFB009. They were mentioned on JFB009's Facebook page, but we were unable to locate their Facebook pages if indeed they maintained them.

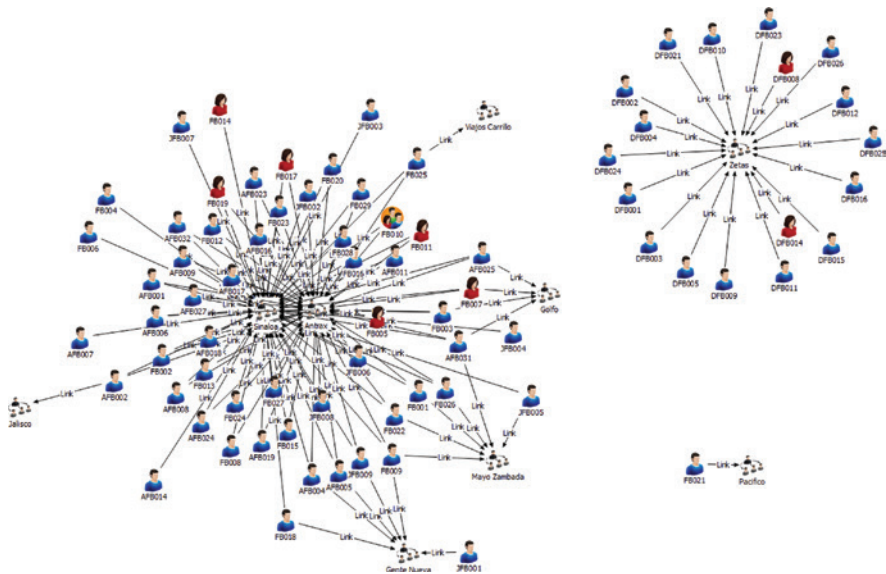


Figure 1: Cartel Affiliations.

belonging to Mayo Zambada. One individual affiliated with Gente Nueva – FB018 – reports affiliation with Cartel de Sinaloa, but not Antrax.

Six individuals from the sample indicate affiliation with Mayo Zambada. Of these six individuals, five of them (AFB031, FB001, FB009, FB022, and FB026) also report affiliation with Cartel de Sinaloa and Antrax. FB009 is also affiliated with Gente Nueva, while AFB031 is also affiliated with Cartel de Golfo. All four individuals connected to Cartel de Golfo – AFB025, AFB031, FB003, and FB007 – also report being affiliated with Cartel de Sinaloa and Antrax (as previously mentioned, AFB031 is also affiliated with Mayo Zambada). Finally, FB021 is the lone individual connected to Cartel de Pacifico, and he is not affiliated with any of the other cartels.

The individual connections to various cartels and the relationships among them uncovered by the social network analysis align with what is generally known about Mexican drug cartels today. The Zetas were once the military enforcement wing of Cartel de Golfo (Gulf Cartel) much like Antrax is the present day enforcement arm of Cartel de Sinaloa. In the early 2000s, the Zetas broke away from the Gulf Cartel and struck out on their own. Today, they are part of a faction of cartels that is at war with the Sinaloa Cartel and its allies, including the Gulf Cartel and the Knights Templar Cartel (Zetas 2015). Thus, it is not surprising that the social network analysis found no relationship between Zetas affiliates and Sinaloa/

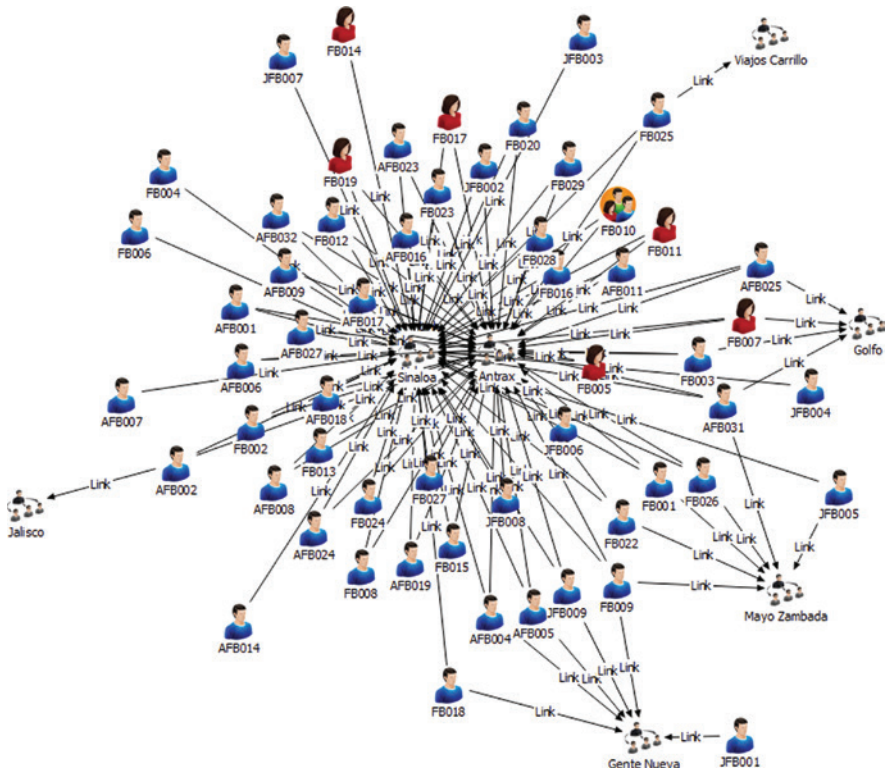


Figure 2: Close-Up of Cartel de Sinaloa and Antrax.

Antrax affiliates, but it adds credibility to the likelihood that the individuals represented in the sample are indeed who they claim to be – members of Mexico’s drug cartels. The patterns of associations found in the social network analysis confirm alliances between the Sinaloa Cartel, the Gulf Cartel, Gente Nueva (another enforcement wing of Cartel de Sinaloa), and followers of Mayo Zambada (“El May”) who is reported to have taken over leadership of the Cartel de Sinaloa following “El Chapo” Guzman’s arrest in February 2014 (Gagne 2015).

4.5 Communications

The underlying purpose of social media is the development and/or maintenance of social relationships, which is partially illustrated by the “friend” ties that are the basis of the social network analysis above. Evidence of these relationships was abundant on the Facebook pages of the subjects in the sample and

included communication between network associates or “friends.” As some of the examples below illustrate, such communication can be statements for general consumption that brag about illegal activities and conquests or that carry direct or indirect threats or assertions of retaliation. In addition, some of the cartel-affiliated members captured in this study also communicated about travel activity and other actions that have possible connection to criminal activity that can be deemed tactical communication.

FB008 is an example. He is a male who lives in Jalisco, Sinaloa and had the highest eigenvector score of the sample. He has nine associates – FB001, FB002, FB006, FB009, FB011, FB012, FB013, FB016, and FB017 – and is a member of the Antrax group Facebook page (FB010). He acclaims to be a tactical commander and uses Facebook to provide direct reports to his group. He communicates threats and promotes his organization’s efforts. He also uses Facebook to call group meetings. Below are some examples of FB008’s usage of Facebook. Direct quotations were translated from Spanish and are italicized and enclosed in quotation marks; words in brackets were added to provide context:

FB008 – (caption beneath a photo of two guns) *“preparing the toys to go out hunting thieves and imposters. I didn’t want to arrive to this, but they wanted to come disturb the territories of my [FB011] MI R_1 this is something that we’ll never permit. Arm yourselves [Antrax] since this is the hour of action that our toys should be ready.”*

FB008 – *“Here from a distance my trucks are ready to act on ‘the voice of command’ of my [FB011]. Today, while waking up I was going to go with ‘La Reyna’, but as I was arriving the ‘Contras’ and government recognized me because I’m the son-in-law and supporter of the ‘Senior’. You’ll see the apocalypse and you’ll know why we are the best of Antrax.”*

FB008 – *“Good afternoon my [FB011], for those people who are sending messages to the queen, asking for jobs, money, or sending insults know that I read everything of hers. I tell people who is in charge of giving jobs, doing jobs, and moving their people. It’s me and always has been. I ask that you abstain from doing that, we do not contract, we are not an agency, and even less by this medium when I receive orders from [FB011] MI R_1. I need people myself, I call looking or to contract, but this medium we utilize for being close to the people we appreciate. We love our Antrax friends, but there are people who ask for jobs. To our people we have enough jobs around the world in service to CDS [Cartel de Sinaloa] to only people from Antrax, and no one else. We vacation a lot, and this is the medium that we utilize to remain close to you all that we like. Have an excellent afternoon, and send me a message if you have a problem.”*

FB028 provides another example of how members of the sample communicated through Facebook. FB028 is a male who claims to be a member of CDS and who is also affiliated with Viruz de Antrax. He currently resides in Sinaloa and has five associates – FB006, FB007, FB011, JFB001, and JFB007. Although his eigenvector score is not in the top 15 within the sample, he is connected to

very central individuals like FB011 and FB006. FB028 seemingly uses Facebook as a tool to coordinate operations in real-time. He posts about coordinating shipments arriving from Colombia as well as coordinating escorts and security for the shipments on the highway. He provides updates of movements and locations and seeks updates on locations and movements of rival DTOs. He even provided some insight on a tactic used to transport a shipment and avoid opposition and/or detection: His people posed as a Mexican Marine convoy. The following posts (translated to English) were made by FB028 in November 2014:

FB028: *“We left Sinaloa, in a cheap truck-we were going to beat the shit of some narcos in Michoacan-it was an adjustment of accounts in the style of Sinaloa who managed it-they believe themselves firm/tough-once we arrive [Uruapan] we will quickly put them in the ground.”*

FB028: *“JR’s we have the presence of 28/89 “ZTA” in the Sinaloa-my people already have them-they were on course on 55 north through the freeway 77 K S-they were to detour through the 93/89-I will send them an alert that we continue on the 85-we are going to transfer to 12/36/36...”*

FB028: *“The gang really charged up-taking care of the mountain range with the medium sized AK-47-always really ready-waiting for 12/78...gang is pending 7-7...”*

FB028 – *“GN [likely Gente Nueva], GAA [cell], GB [cell] and A.AC [cell] are prepared for November. there will be a ghost operative implemented. There’s an important 4-59 [likely an escort] in Sinaloa....pure people of high class/influence will be present. Security by air and land.”*

FB028 – *“We keep cleaning Baja California of the Zetas. Here is proof of it. Me the 7-7 [code name] and my C.D.S. [Sinaloa Cartel], GN [Gente Nueva], and the Antrax, we don’t charge taxes/tolls. I send you this brief statement; to the people of those establishments that pay taxes/tolls, will be qualified as Zetas. We don’t kidnap or steal. We don’t extortionate and we don’t rape like the dogs the Zetas. This statement goes for Z-65 [Zeta cartel code name]; look here bastard don’t send __ to throw the heads of my people in Sinaloa. If you have balls, come throw them personally yourself and you’ll bump into me and I’m going to teach you how to work in the Sinaloa. Style. This goes for you Z-65 and your dogs the Zetas. Sincerely 7-7, El Jr [Alias] from C.D.S. [Sinaloa Cartel]. I don’t go around with bullshit.”*

Others – *“Here we are, at the order Sir.”*

FB028 – *“To the fullest friend/subordinate Garciaawesome to the fight friend/subordinate. Prepare yourself to receive orders 4 52- [possibly people listening in on the communication] 1036 [likely -appointment exact hour/time] MZ [very likely Mayo Zambada] JR [alias,] 7-7 [code name].”*

Others 1 – *“Ready 10-4 [Roger/confirmed] and a 111 [unknown but appears to be a greeting or shout out] to all the comrades/subordinates that are out fighting.”*

JFB006 provides a final example of how Facebook is used by alleged cartel/DTO members in the sample. JFB006 is ranked 30th in the sample in terms of eigenvector centrality and has four associates: FB0012, FB015, FB018, and FB022. At first glance, he might not appear to be central to this network; however, his communications on Facebook suggest otherwise. He is a male living somewhere in Guadalajara. He refers to himself as the “Jefe de Jefes” and is affiliated with Viruz de Antrax. He uses Facebook to communicate real-time movements, track the opposition, and provide updates to his unit. Below are a few examples of his communications:

JFB006 – “I want maximum alert-convoy of four SUVs-An offering-the female dog of the Zetas is leading the convoy-Locate the point in which the convoy is traveling X street to Jalisco-I have no locations-I need all the point people/hawks and zone bosses activated and working immediately-I do not want you in Jalisco-my armament ready-I will be out to check everything-Sincerely Commander.”

JFB006 – “I want real information, I’m getting rumors that the Zetas are by Tala [City in Mexico] and around the area contracting and killing whoever. My team is gathering intelligence, but the dogs [Zetas] are smelling them out. I’m occupying ‘Gente Nueva’ just decide and know why you are going. It’s for Jalisco... Come into file here [Fall in].”

JFB006 – “My Antrax hawks... report yourselves and say who wants to be part of my group. Let’s see who has them [balls] to prove themselves, but you have to do what is ordered without questioning orders, and respect civilians and children, we take care of them. I have only 20 spaces in Tala [City in Mexico] and surrounding lands, where Zetas are present and killing kids in discos [dance club]. Who is interested in jamming them with bullets and knives?”

The many Facebook posts that we observed during the course of the data collection period provide compelling evidence that Mexica cartel members and affiliated cartel/DTO members regularly use Facebook for a variety of purposes. This social medium is used as a platform to boast of accomplishments, assert power, and threaten rivals. In that sense, it serves its intended purpose of promoting social connectedness and group cohesion. Beyond that, those in the sample who identified themselves as commanders or other types of leaders in their organizations used Facebook to plan, communicate, and provide direction to their subordinates. They frequently used code words, phrases, or numbers in an effort to conceal from outsiders the meaning of their posts, and they did this again and again over the course of 4 months of data collection. Again, this suggests that the Facebook activity we observed was genuine and reflected the contemporaneous communications of cartel/DTO members who made use of a common social media platform to further their criminal enterprise.

5 Discussion and Conclusion

This study sought to advance our understanding of how TCOs and DTOs may be using social media to communicate and further their criminal activities. We employed an open-source, intelligence-driven methodology to identify and explore the nature and extent of social media use by individuals who claim affiliation with TCOs/DTOs, and in particular, Mexican drug cartels and their affiliated gangs. We then used social network analytic techniques to identify the relationships among the sample of 75 people included in the study and the groups with which they claimed affiliation. Finally, we employed an open-coding, qualitative analysis strategy to examine how members in the sample communicated with each other and the dominant themes in their communications.

The sample that we identified and observed was not necessarily representative of cartel activity on Facebook. Rather, it was a convenience sample used to explore the efficacy of using publicly-facing Facebook pages for identifying and observing the online behavior of self-identified members of Mexican drug trafficking organizations. Additional research in this area is needed to further understand the behavior of cartel members on social media and to validate their use of these platforms to further their criminal activities.

With these limitations in mind, our results provide evidence that Mexican cartel members are actively using Facebook to communicate and carry out the business of their organizations. While our research protocol did not permit us to independently verify the identities and affiliations of those in the sample, the Facebook data themselves suggest that the persons we followed for more than 120 days were most likely the genuine article. They used words, phrases, jargon, and geographic references (often in code) suggestive of insider knowledge of cartel operations. In addition, their self-described group affiliations and the connections (or sometimes lack thereof) between groups align with what is currently known about cartel factions in Mexico from media reports both in Mexico and the United States. The Zetas, for example, were completely unaffiliated with the Sinaloa Cartel and its associated gangs, which is precisely what one would expect to find using more direct intelligence gathering methods.

These findings provide at least tentative validation of the utility of using open-source social media platforms to examine the social structure and operations of Mexican drug cartels. This has implications for researchers who seek to study the cartels from a social discourse and social-structural perspective, and it has implications for law enforcement and intelligence professionals who seek to understand, track, and ultimately disrupt the illicit activities of the cartels. The methodology we used was relatively low-cost and low-risk and could be adapted for a variety of research and intelligence-gathering purposes.

The Department of Homeland Security's fiscal years 2014–2018 strategic plan is built on the foundation of a multi-layered risk-based security approach that aims at reducing vulnerabilities. The department has made an analytical agenda the centerpiece of their strategic plan. The aim of the analytical agenda is to improve data collection and analysis capabilities in order to increase the capacity to consistently assess strategic and external risk to the United States (USDHS 2014). Analytic processes that aid in supporting analytically-informed decision-making across DHS missions seem to be highly valued within the homeland security enterprise. Although the idea of “Big data” is the big prize that the department seeks, this research project did not intend to address “Big data” issues.

The results of this research project tell us that transnational criminal organizations in Mexico utilize, with uncanny openness, social media platforms to conduct illicit activity. The implication for homeland security enterprise intelligence professionals is that social media platforms have the potential to assist in uncovering patterns and faint signals of risk through enhanced data integration and analysis. In other words, there is the possibility that this type of research can aid in the development of a tool that has multi-layer characteristics for data collection and analysis. As stated previously this research project did not solve or uncover ‘big data’ issues but it did provide an insight into a growing niche of the criminal enterprise.

Historically, Homeland Security Investigators have not utilized open source social media platforms as a primary queuing system to understand transnational criminal organizations in developing a criminal case (White 2011). The results of this research project indicate that there is an opportunity to reverse the typical model of investigating transnational criminal organizations. This type of work has the possibility to increase efficiencies in identifying and understanding the hierarchal structure of criminal organizations. Furthermore, a peripheral outcome of this research project seems to suggest that by beginning with social media platforms Homeland Security Investigators have the potential to improve the decision-making process on where to direct their resources. This becomes important when the aim is to reduce risk by developing strategies that refine and focus targeting efforts to mitigate threats to the homeland.

These findings also have implications for state and local law enforcement and fall in line with a relatively recent movement among these agencies toward the utilization of social media. A 2015 survey conducted by the International Association of Chiefs of Police (IACP) found that 96% of responding agencies reported using social media in some capacity (IACP N.D.). More specifically, almost 90% of agencies reported using social media to support investigations and 75% reported using it for intelligence activity. These efforts increase the capacity of law enforcement agencies to collect evidence, locate suspects, and monitor

and identify criminal networks (COPS Office 2013). The most common focus of these efforts has been cyberbullying and recruitment toward violent extremism (IACP 2010, 2014). The findings from the present study illustrate that presence of TCOs and DTOs on social media is another realm of organized criminal activity on the Internet that can be exploited to gain intelligence gathered through open source data collection, which is critical for state and local law enforcement agencies that are typically under resourced for intelligence collection efforts relative to their federal counterparts.

While these findings highlight the potential utility for social media as an open-source intelligence tool to monitor TCOs/DTOs for the Homeland Security enterprise that includes state and local law enforcement, they are also accompanied by practical challenges for implementation. Like other new technological areas in the intelligence sphere, developing a social media intelligence capacity will require the hiring and training of skilled personnel, which may be difficult in resource challenged state and local agencies. A more plausible model for these agencies to utilize this capacity may lie in collaboration with their state and local intelligence fusion centers who have developed this intelligence capacity. Even when these personnel capacity issues are addressed, it also has to be recognized that this intelligence source is not a panacea for developing a means to accurately monitor the activity of TCOs/DTOs. Noting the potential issues of false information in social media sources, law enforcement investigators working in this area stress the importance of verifying and authenticating data through suspect confessions, witness statements, IP address authentication, and other techniques (Keenen et al. 2013). Such efforts may be difficult for law enforcement and security agencies in the case TCOs and DTOs members who are engaged in activities outside the United States. An additional important consideration paralleling these verification and authentication protocols is also the development of proper policies and procedures on social media intelligence data collection that operate within legal standards (Global Justice Information Sharing Initiative 2013).

Finally, this study also has implications for conducting research on criminal activity using social media platforms. When law enforcement and intelligence agencies are utilizing social media for open source data collection, the privacy considerations do not have the same relevance as they do in the research community. In essence, in the law enforcement and intelligence context, the collection of social media data by means that thwart user privacy efforts is equivalent to conducting an undercover operation within certain procedural limits. However, collecting data in a research context requires more sensitivity to the requirements of informed consent, boundaries to collection in relation to privacy settings, and anonymity (Zimmer 2010). Careful consideration was given to these issues in the present study, resulting in the decision to only use public data not behind

- International Association of Chiefs of Police (IACP). N.D. "International Association of Chiefs of Police 2015 Social Media Survey." Accessed November 10, 2015. <http://www.iacp-socialmedia.org/Portals/1/documents/FULL%202015%20Social%20Media%20Survey%20Results.pdf>.
- International Association of Chiefs of Police (IACP) (2010) *Social Media*. Alexandria, VA: Author.
- International Association of Chiefs of Police (IACP) (2014) *Online Radicalization to Violent Extremism: Awareness Brief*. Washington, DC: Office of Community Oriented Policing Services.
- Keenen, Vernon M., Dawn Diedrich, and Bradly Martin (2013) "Developing Policy on Using Social Media for Intelligence and Investigations," *Police Chief*. Accessed November 12, 2015. http://www.policchiefmagazine.org/magazine/index.cfm?fuseaction=display_arch&article_id=2951&issue_id=62013.
- King, Jonathan, Carol E. Walpole, and Kristi Lamon (2007) "Surf and Turf Wars Online: Growing Implications of Internet Gang Violence," *Journal of Adolescent Health*, 41:66–68.
- Knoke, David and Song Yang (2008) *Social Network Analysis*, 2nd ed. Thousand Oaks, CA: Sage.
- McCusker, Rob (2006) "Transnational Organised Cyber Crime: Distinguishing Threat from Reality," *Crime, Law and Social Change*, 46(55):257.
- Minogue, Nicholas (2000) "Transnational Organized Crime in the United States." PhD dissertation, American University. <http://catalog.wrlc.org/cgi-bin/Pwebrecon.cgi?BBID=3770065>.
- Morrison, Shona (2002) "Approaching Organised Crime: Where are we now and where are we going?" *Trends and Issues in Crime and Criminal Justice*, 231:1–6.
- Morselli, Carlo (2010) "Gangs and Social Networking," *Organized Crime Research Brief*, 13:1–2.
- Morselli, Carlo and David Decary-Hetu (2013) "Crime Facilitation Purposes of Social Networking Sites: A Review and Analysis of the 'Cyberbanging' Phenomenon," *Small Wars & Insurgencies*, 24:152–170.
- Office of Community Oriented Policing Services (2013) *Social Media and Tactical Considerations for Law Enforcement*. Washington, DC: Author.
- Patton, Desmond (2015) *Gang Violence, Crime and Substance Use of Twitter: A Snapshot of Gang Communications in Detroit*. San Antonio, TX: Presentation at the Society for Social Work and Research: The Social and Behavioral Importance of Increased Longevity, January 2015.
- Pyrooz, David, Scott H. Decker, and Richard K. Moule Jr (2015) "Criminal and Routine Activities in Online Settings: Gangs, Offenders, and the Internet," *Justice Quarterly*, 32(3):471–499.
- Sela-Shayovits, Revital (2012) "Gangs and the Web: Gang Members' Online Behavior," *Journal of Contemporary Criminal Justice*, 28(4):389–405.
- Scott, John (2013) *Social Network Analysis*, 3rd ed. Thousand Oaks, CA: Sage.
- "Sinaloa Cartel's Top Enforcer 'Chino Antrax' Comes Clean: Kingpin Who Bragged of His Bling Lifestyle on Instagram Pleads Guilty to Major US Drug Smuggling Racket." *Daily Mail*. Accessed October 14, 2015. <http://www.dailymail.co.uk/news/article-3090402/Sinaloa-cartel-s-Chino-Antrax-pleads-guilty-drugs-charges-San-Diego.html>.
- Small, Kevone and Bruce Taylor (2005) "State and Local Law Enforcement Response to Transnational Crime." Accessed October 5, 2015. <https://www.ncjrs.gov/pdffiles1/nij/grants/209521.pdf>.
- Steele, Robert David (2007) "Open Source Intelligence." In: (Loch K. Johnson, ed.) *Handbook of Intelligence Studies*. London: Routledge, pp. 129–147.
- U.S. Department of Homeland Security (USDHS) (2014) "Fiscal Years 2014–2018 Strategic Plan." U.S. Department of Homeland Security. <http://www.dhs.gov/sites/default/files/publications/FY14-18%20Strategic%20Plan.PDF>.

- U.S. Department of Justice (USDOJ) (2008) "Overview of the Law Enforcement Strategy to Combat International Organized Crime." Accessed April 23. <http://www.justice.gov/sites/default/files/ag/legacy/2008/04/23/ioc-strategy-public-overview.pdf>.
- U.S. Department of Justice (USDOJ) (2010) "National Drug Threat Assessment." Accessed July 15. <https://www.justice.gov/archive/ndic/pubs38/38661/38661p.pdf>.
- White, Jonathan (2011) *Terrorism and Homeland Security*. Boston, MA: Cengage Learning.
- Wijeratne, Sanjaya, Derek Doran, Amet Sheth, and Jack L. Dustin (2015) "Analyzing the Social Media Footprint of Street Gangs." Paper presented at the IEEE International Conference: Intelligence and Security Informatics, Baltimore, MD, 2015.
- Wilson, Robert E, Samuel D. Gosling, and Lindsay T. Graham. "A review of Facebook research in the social sciences," *Perspectives on Psychology Science*, 7:203–220.
- Womer, Sarah and Robert J. Bunker (2010) "Surnenos Gangs and Mexican Cartel Use of Social Networking Sites," *Small Wars and Insurgencies*, 21(1):81–94.
- Zetas-Insight Crime: Investigation and Analysis of Organized Crime. Accessed October 16, 2015. <http://www.insightcrime.org/mexico-organized-crime-news/zetas-profile>.
- Zimmer, Michael (2010) "But the data is already public: on the ethics of research in Facebook," *Ethics and Information Technology*, 12:313–325.