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Working From the Outside In:

Describing the Criminogenic Social Network of a Firearm Offender

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The Crime Reduction Research Program

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The CRRP is a research grant program administered and funded by the Province of British Columbia in collaboration with the Royal Canadian Mounted Police (RCMP). The CRRP is focused on investing in independent research to inform priority policing operations, policies, and programs related to public safety in British Columbia. In doing so, the CRRP also aims to foster greater collaboration between government, law enforcement, and academic experts in the field of policing and public safety.

Eligible research topics are identified on an annual basis by the BC Ministry of Public Safety & Solicitor General and the RCMP based on current and emerging provincial priorities. All grants are awarded on a merit basis by the CRRP Working Group.

Disclaimer

Executive Summary

Overview

A recent scoping review revealed that Canadian research has produced just 34 peer-reviewed empirical studies on firearms in the last 20 years (Ferguson & Koziarski, 2019). Of these studies, only two focused on the illegal acquisition of firearms (Morselli, 2002, 2012). Morselli's research established that offenders typically accessed firearms illegally through informal networks (e.g., friends, friends of friends) rather than through more organized underground markets. Morselli thus called for greater attention to the social networks of firearm purchasers and dealers. The current study builds on this work by directly measuring the criminogenic social network of a suspected firearms trafficker.

Problem Area

Morselli's observations were based on interviews with offenders who had reported gaining access to firearms. What remains less clear is what these informal social channels look like and how police can use these channels to identify priority targets. Studies have repeatedly identified social networks as important to gun trafficking (e.g., Cook et al., 2014, 2015; Hureau & Braga, 2018; Morselli, 2002, 2012), however, they have not actually used social network analysis (SNA) to gain a better understanding of these social networks. Are firearm traffickers central members of criminogenic networks?

Solution

This report provides a contemporary comparison to Morselli's research on the social networks of offenders who acquired firearms illegally. SNA is used to map the criminogenic social network of John Doe, who engaged in drug trafficking, a homicide offense, and incurred approximately a dozen charges for firearm offenses, including the illegal storage of multiple guns, leading to suspicions of firearm trafficking. He is a member of a well-known international crime group from East Asia and is associated with a gang operating primarily in the Lower Mainland of British Columbia. Analyses in the current study combined self-report interview data with correctional data to map the risk factors and criminogenic social network of John Doe, his peers, and a second firearm trafficker.

Key Findings

On the surface, John Doe's criminogenic social network was unremarkable in terms of the number of different ties he had to other offenders. However, it was *who* John Doe was connected to that mattered most. A two-step network that coded the ego networks of eight offenders to whom John Doe was connected to revealed that (a) he was tied to chronic, serious, and violent offenders who were typically involved in their own firearm offenses and homicide offenses and (b) that John Doe was a central player in this network, occupying a position as a broker. His network position may have been part of a purposeful strategy to be just two handshakes away from a wide pool of criminal accomplices, without being directly identified as having connections to these persons. Firearm

traffickers and others involved in serious offenses therefore may be those who avoid criminogenic interactions with street-level offenders but are characterized by an ego network involving connections to the most central members of a mid-level organized crime group. A comparison with a convicted firearm trafficker, Richard Roe, revealed differences in network characteristics, implying that there is not just one "type" of criminogenic social network for those involved in firearm offenses.

Conclusions and Next Steps

The research on firearm trafficking in Canada is in its infancy, and the current report is only a small step in contributing to the knowledge-based regarding the criminogenic social networks of firearm offenders. Three main conclusions are drawn from this report: (1) investigating potential firearm offenders requires looking beyond a person's immediate network, (2) network interventions based around removing those who purchase firearms (as opposed to selling them) will likely be ineffective given the shape of the networks of firearm sellers, and (3) social network data will be more effective as a supplement to intelligence data as opposed to its use in isolation of other sources of information.

Acronyms and Glossary of Key Terms

Alter: An actor who is part of the ego network of the person under investigation. The alter shares a direct tie with the ego/seed.

BC: British Columbia

Betweenness Centrality: Referred to colloquially as bridge centrality, refers to the number of times an actor falls along the shortest path length between two otherwise unconnected actors.

CCC: Criminal Code of Canada

CORNET: Corrections Network

Criminal Career: Describes a person's pattern of offending from first to last offense. Is different from a career criminal or someone whose primary means of income is achieved through crime.

Criminal Social Capital: The criminogenic resources (e.g., access to lucrative crime opportunities) that are gained through social relations.

CSC: Correctional Service of Canada

Closeness Centrality: At the individual-level, it represents the shortest distance a person must travel to reach all actors within their network. Lower levels of closeness centrality imply a shorter distance/greater level of embeddedness within a network.

Criminogenic Social Network: A network specifically measuring ties to others involved in criminal behavior. Differs from the broader "social network" that can include friendship, family, and work ties to persons not involved in crime. The analyses in the current report did not include an examination of non-criminal social ties.

Degree Centrality: The number of different network ties of a particular offender.

Density: The proportion of all possible ties within a network that are formed.

Edge: A social tie between two actors in a network.

Ego: The person whose immediate social network is being coded.

Ego Network: The personal network of a specific offender under investigation.

Geodesic Distance: Refers to the average shortest distance a given individual within a network must travel to reach all other actors in the network. Effectively indicates the number of handshakes away the average person is from all other actors within a network. Like closeness centrality but useful for describing the aggregate properties of a network.

Heavying: Prison-based slang referring to the use of bullying or intimidation tactics to influence other inmates or the operations of the jail.

ISVYOS: Incarcerated Serious and Violent Young Offender Study

K-File: A domestic violent offense perpetrated against a family member or intimate partner.

M: Mean

MCFD: Ministry of Children and Family Development

***n*:** Denotes the sample size.

Network Efficiency: Network efficiency is associated with more success in criminal behavior (e.g., increased earnings; Morselli, 2012). Network efficiency represents the number of alters an individual has, minus the average degree centrality of alters in their network, divided by the number of alters in the ego's network. A perfectly efficient network looks like a star.

Seed: Term used to describe someone whose ego network was coded as part of the examination of a larger network.

SD: Standard Deviation

SNA: Social Network analysis represents a series of theoretical perspectives and analytic strategies designed to directly measure and understand the social context that a person is embedded within.

Straw Purchase: Acquiring a gun illegally through an intermediary who purchases the gun from a licensed business or other legitimate source.

Structural Holes: When alters within an ego network are unconnected, they have access to different flows of information. Structural holes reflect an opportunity to broker the flow of information between people.

Triadic Closure: Describes the probability that a connection exists between B-C if connections also exist between A-B and A-C.

USD: United States Dollars

Introduction

As evidenced by a series of police warnings, address gun-related violence in British Columbia is a major policy and public safety issue (Weichel, 2021; Public Safety & Solicitor General, 2021a, 2021b). Task forces have been developed to better understand the acquisition of illegal firearms (e.g., Rideout, 2017). Important findings have emerged regarding methods of acquiring firearms (e.g., straw purchasers), variability in firearm types (e.g., 3d printing and ghost firearms; Chan, 2021), and tactical responses like Bar Watch to address firearm violence in British Columbia (BC). The *Firearm Violence Prevention Act* (Bill 4) was proposed to strengthen penalties for the possession, storage, and transportation of firearms (Rideout, 2017; Public Safety & Solicitor General, 2021b). Still, empirical research is lacking regarding how firearm traffickers within BC operate.

This research report describes the background characteristics and social network of a high-level associate of a well-known gang in BC who was suspected of firearm trafficking. John Doe was suspected of helping supply firearms and tools/electronics to help this gang perpetrate violence against rival gang members in BC. Throughout this report, the offender is referred to as John Doe. John Doe is a member of an Asian-based organized crime group and has engaged in crime in BC for more than two decades. In the process of searching his residence as part of the investigation of a homicide, police found a cache of various automatic firearms. Such firearms are prohibited in Canada per s. 84(1) of the Canadian *Criminal Code* (CCC) and cannot be sold legally, even by licensed firearm dealers. Therefore, it is unlikely that John Doe acquired them through a straw purchaser. Importantly, a report issued by the Ministry of Public Safety showed that in the previous few years, most firearms seized by police came from within Canada (Rideout, 2017). It seems unlikely this was the case for the firearms that John Doe possessed.

The purpose of this report is to add to the robustness of local responses to firearm violence by providing a better understanding of the persons involved in firearm trafficking and their social network. Answering questions about the personal characteristics and social network of a potential firearm trafficker[1] helps address the need for law enforcement to "identify and exploit vulnerabilities within the operations of organized crime" (Rideout, 2017, p. 23). One way to exploit vulnerability within organized crime operations is by using social network analysis (SNA) to identify 'key players' the organization's criminogenic network (Bouchard, 2020). SNA has proven effective in assisting BC's Combined Forces Special Enforcement Unit (CFSEU) in identifying prominent and violent investigation targets within the Brothers Keepers gang (Harwood, 2021). SNA is not a replacement for traditional investigative techniques, but can, for example, help confirm information provided by a confidential informant or narrow down a list of targets in a drug trafficking network (Bouchard & Konarski, 2013).

[1] John Doe was not convicted of the Canadian *Criminal Code* s.100 offense of possession for purpose of weapons trafficking. However, police investigations and information from other sources identified this person as involved in procuring items for gang members and helping to facilitate the perpetration of serious offenses.

This report is divided into six sections. Section 1 describes what is known (and not known) about firearm trafficking and why local/Canadian research may be necessary for developing evidence-based intervention and suppression strategies. Section 2 describes SNA and how it can be used to address questions about firearm trafficking in BC. Section 3 describes the data collection process for examining a case study of a suspected firearm trafficker within BC. Section 4 uses a life history calendar approach to summarize John Doe's developmental history. Section 5 provides a description of John Doe's social network, the social network of key offenders to whom he was connected, and a comparison of John Doe's network with the network of a convicted firearm trafficker. Section 6 summarizes key findings and describes policy implications stemming from the results of the analyses in this report.

Section I: What is Known about the Illegal Acquisition of Firearms?

An important justification for learning about firearm acquisition is with respect to how firearms influence the perpetration of violent offending. Specifically, the influence of firearms on mortality does not primarily come from persons who want to commit homicide now having an efficient means of doing so. Rather, firearms influence spikes in homicide rates because persons who share a mutual conflict get into an argument and the fight escalates to the point that a firearm is drawn and used. Firearms are not considered to make homicide easier in scenarios characteristic of first/second degree murder. Instead, manslaughter becomes a more likely outcome for people who otherwise would be involved in a typical assault (Braga et al., 2021).

Most research on firearm trafficking is from the United States. A 1995 survey of over 7,000 persons arrested in the United States identified that those who reported accessing firearms illegally found the process easy and minimally time consuming. Acquiring firearms illegally was facilitated by drug dealing, gang activity, and a lifestyle of repeated interactions with other offenders (Decker et al., 1997). Research on how gang members acquire guns in the United States includes Cook et al.'s (2014) study of firearms seized by police in Chicago, Illinois. For guns that could be traced (e.g., readable serial number), gang members tended to use guns that were purchased 10 years prior. Similar findings were reported in a study of gang members from Boston (Hureau & Braga, 2018). Most gang members do not buy their guns from someone who specializes in the illegal sale firearms. Instead, an intermediary helps transfer the gun from a licensed dealer into the hands of gang members. This process is described as a straw purchase. Other methods include acquiring firearms that cannot be linked to a licensed dealer (e.g., obliterated serial number). Guns confiscated from gang members were more likely to be acquired in this manner compared to guns confiscated from non-gang members. Only 12% of offenders in Cook et al.'s (2014) study reported purchasing guns directly from a licensed dealer. In terms of the transaction process, most offenders reported acquiring their firearm from their family and criminogenic social networks.

Qualitative survey data from Chicago and Boston confirmed that firearms were more likely to be acquired through informal social networks. Trust was a major factor and knowing the right person was essential in the illegal acquisition of firearms (Cook et al., 2015). Offenders noted that it was too risky to sell guns to strangers and buy guns from strangers. Trust is also important because of the danger of receiving a gun that was used in a prior crime that could then be pinned on the new holder of the gun (Cook et al., 2015). Expert knowledge of firearms did not appear important to facilitating access. In Cook et al.'s (2015) sample from Chicago, selling guns was not especially lucrative. Prices did not exceed $3,000 per gun and rarely did sellers possess more than a couple guns at a time. Social networks were also critical for the dissemination of firearms in Boston (Hureau & Braga, 2018). Firearm traffickers included a group of college students who reviewed out-of-state for sale ads, purchased guns from private owners, and then sold these firearms to friends and acquaintances for an approximate profit of $200–$400 USD (Hureau & Braga, 2018). The sale of these firearms represented a markup of about 200% over costs from a federally licensed business (Hureau & Braga, 2018).

Limitations of research from the United States include imprecise methods of determining a person's gang involvement and the lack of information on the nature of a person's social network. There are also cultural, political, and legal differences between the United States and Canada that may create issues with generalizing firearm research across countries. State-to-state variations in gun laws (e.g., licensing requirements) mean that it can often be advantageous to cross a border, such as from Illinois to Indiana, to facilitate the purchase of a firearm (Cook et al., 2015). Such differences do not exist between, for example, BC and Alberta. In the United States it is easier to acquire firearms *legally* (Angus Reid, 1991; Statistics Canada, 2020). Firearm traffickers in the United States therefore must ensure that their product is readily available and at a competitive price. A trafficker in Boston described purchasing his automatic firearms from a single dealer at a gun convention hosted by the National Rifle Association (Hureau & Braga, 2018). Such opportunities are not available in Canada and thus the social networks of firearm traffickers in Canada might look different from those in the United States. If guns are harder to come by in Canada, firearm trafficking may be more lucrative than in the United States where illegal guns were sold for as little as $100 (Cooke et al., 2015). However, gun violence is also rising in Canada (Raycraft, 2021; Statistics Canada, 2020), which elevates the importance of understanding those who possess, distribute, and use firearms. Police agencies believe that the use of straw purchasers to acquire firearms increased during the Canada-US border closure due to the COVID-19 pandemic (Bolan, 2021), which may also factor into differences in firearm trafficking between nations.

There is minimal empirical research on firearm trafficking in Canada. The activities of gun traffickers are difficult to observe and therefore rarely studied (Cook et al., 2015). A recent scoping review revealed that in the last 20 years, Canadian research has produced just 34 peer-reviewed empirical studies that relate to firearms (Ferguson & Koziarski, 2019). About 90% of these studies focused on changes in legislation and firearm-related suicide.

Only two of the 34 studies investigated how individuals acquired illicit firearms (Morselli, 2002, 2012).

Carlo Morselli's two studies, conducted a decade apart, provided two key insights. First, criminal social capital facilitated the illegal acquisition of firearms. Offenders acquired guns through their connections to crime groups and gangs (Morselli, 2012). Second, these connections did not always represent relationships between close friends or individuals who were part of the same gang. Individuals selling firearms illegally are not necessarily selling to individuals in their close social circle, but the transfer of firearms nevertheless is usually between individuals who know each other (Morselli, 2002). Firearm trafficking was rarely conducted by large criminal organizations specializing in this type of offense. Instead, firearm traffickers functioned as brokers by using their ties to important offenders (e.g., gang members, offenders with unique skills or access) to connect them to other offenders. The opportunity to sell firearms requires first having informal channels. Thus, it is likely that firearm traffickers engage in other forms of offending to build their criminal social capital. These other types of crime, which often involve co-offenders or work with criminal organizations (e.g., drug trafficking), create the informal channels that create opportunities to sell firearms.

It has been 10 years since the last empirical study on firearm trafficking in Canada, but Morselli's (2002, 2012) findings provide a clear framework for conducting related research. Specifically, it is necessary to recognize that:

1. Firearm trafficking is a social phenomenon.
2. The exchange of firearms comes from informal channels.
3. Most offenders who sell firearms do not "specialize" in the sale of firearms.
4. The social interaction that comes from other criminal behavior creates informal channels for selling firearms.
5. The exchange of firearms for money is risky, not just because of the penalty associated with the offense, but because it attracts persons who are seeking to engage in violence. Trust is therefore a critical component.

The Canadian research landscape is limited in both number of studies and scope of research when it comes to firearms. It is necessary to develop a program of research that assists in developing evidence-based policies. Understanding a rare phenomenon requires small and careful steps. Using existing theories and methods can help direct methodological decisions and interpretations of findings to avoid potential pitfalls. SNA is one approach that can help structure the analysis and interpretation of firearm trafficking data.

Section II: Social Network Analysis

Explanations of crime typically focus on individual characteristics like gender, gang involvement, and substance use. These types of explanations ignore the interdependence of individuals within groups. This has important implications for policy because trying to change individual characteristics (e.g., help an individual change from gang member to former gang member) may not be enough if the person is embedded within a social environment that favors participating in crime (McGloin & Kirk, 2010). It is thus important to respond to both individual-level risk factors and a person's broader social network. Social networks can constrain or enhance criminal behavior (McGloin & Kirk, 2010). For John Doe, this may mean that their ability to engage in firearm trafficking is not simply a matter of being a gang member. The persons they are connected to, and whether these relationships facilitate involvement in drug and firearm trafficking, should be addressed as part of strategies for reducing gun/gang violence.

Social networks refer to connections between persons or groups, including friendship ties, criminal peer ties, and conflict ties (Bouchard & Malm, 2016). Most network theories focus on the formation of ties between actors and how such ties provide benefits. For example, ties to a greater number of different actors may be an indicator of a person's social capital (Borgatti & Lopez-Kidwell, 2014). Patterns of interactions between people, and the type of interaction associated with these people, are of particular interest when examining social networks. The mapping of relationships helps more directly measure a person's social world, as opposed to making assumptions that certain individual-level characteristics (e.g., age, gender, ethnicity, gang status) dictate what a person's network might look like. In other words, SNA measures, rather than assumes, network structure (Knoke & Yang, 2008). In a criminological context, SNA can be used to measure criminal social capital. Having more ties to more offenders helps expand a person's pool of potential accomplices for certain crimes (McGloin & Kirk, 2010; Tremblay, 1993).

SNA represents a set of theories and analytic strategies to map, describe, and explain the social structure of individuals and criminal groups. Social networks can be mapped for any person; being a member of an organized crime group is not necessary for SNA to be effective. In fact, SNA is useful for delineating the boundaries of group structures, such as who is, and who is not, a member of a particular gang or crime group (Bouchard, 2020; Bouchard & Malm, 2016; McGloin & Kirk, 2010). Actors exist in a networked world in which their transactions cannot be considered independent; the nature of their social network can constrain criminal behavior or provide opportunities for criminal behavior depending on the shape of their network (Bouchard & Malm, 2016). Social networks can be inspected to understand who is more likely to engage in a particular kind of offense (e.g., McCuish et al., 2015) or fall victim to a particular type of offense (e.g., Papachristos et al., 2015).

The Fundamentals of Social Network Analysis

The fundamental unit of analysis in SNA are nodes and the edges that connect them. Nodes refer to actors, whether it be a group or an individual, within a particular network.

Edges refer to whether there is a social tie (e.g., co-offending tie) exists between nodes. Figure 1 shows a hypothetical network of ten members of a street gang. Each node (circle) represents a member of the gang. Each edge (line) represents a co-offending tie between two nodes.

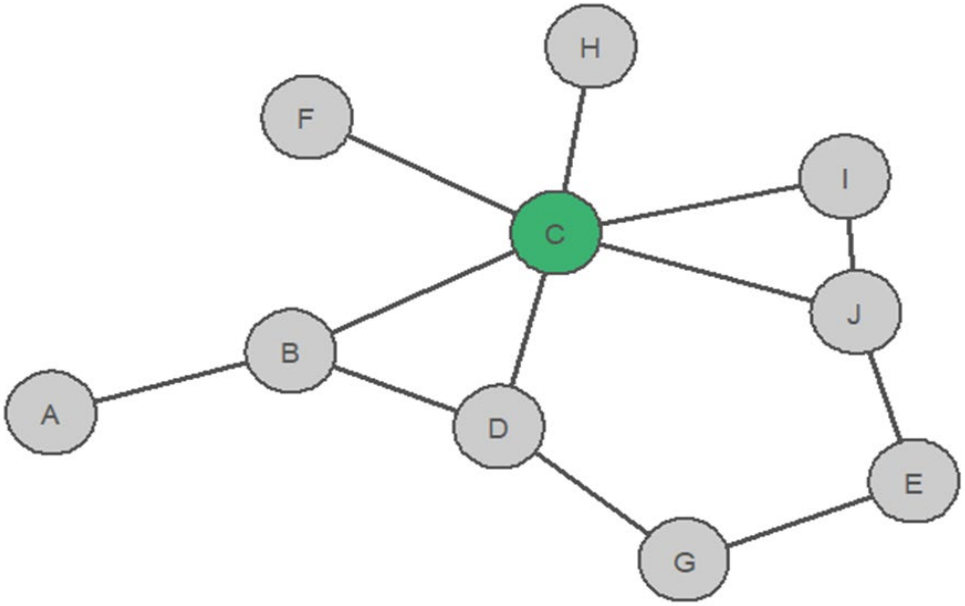

Figure 1. Hypothetical co-offending network of a street gang. Each node (circle) reflects an individual actor in the network and each edge (line) reflects a co-offending tie between nodes.

From this network, different metrics can be used to measure the properties of the overall network and characteristics of specific persons in the network. Regarding the overall network, metrics such as density are informative of a network's cohesiveness. Density is calculated as the proportion of possible connections that are formed in the network. With 10 nodes in Figure 1, each can form nine possible ties (k = 90). With 11 total ties in the network, the density value equals 0.12. A denser network suggests a much more integrated and cohesive gang (McGloin & Kirk, 2012), whereas a sparser network could suggest the presence of key brokers who create connections between otherwise unconnected actors. A denser network is more likely to have triadic closure. Triadic closure represents the probability that a connection exists between B-C if connections also exist between A-B and A-C. In Figure 1, an example of triadic closure can be seen between nodes "C", "I", and "J". An example of the absence of triadic closure can be seen between nodes "C", "F", and "H". Another indicator of the overall network structure is geodesic distance, which refers to the average shortest distance an individual within the network must travel to reach all other actors in the network. This measure of social distance indicates the number of edges away individuals are from all other actors within a network.

Regarding characteristics of specific individuals in the network, degree, betweenness, and closeness centrality are three metrics informative of a person's connectivity to others.

Degree centrality represents the total number of ties that an ego has to others in their ego network[2]. For example, with co-offending ties to six other nodes, "Node C" has the highest level of degree centrality in the network in Figure 1. Betweenness centrality measures an individual's level of brokerage, or their capacity to function as bridges between actors who are otherwise unconnected[3]. In this case, "Node C" is highest in betweenness centrality as they routinely function as an intermediary between nodes that are not connected (e.g., they fall on the shortest path length between "Node D" and "Node H"). Closeness centrality functions as an individual-level measure of geodesic distance and is informative of the level of network embeddedness of an individual (Borgatti et al., 2002). Similarly, egonet density (rather than network density) reflects the proportion of actors in a person's ego network who are connected to each other.

These different indices can help identify which actors are key players in a criminogenic network. For example, can firearm traffickers be identified based on their level of degree or betweenness centrality? A firearm trafficker may position themselves in a network so that they are not directly connected to other offenders. This will help them avoid police detection while remaining in close social distance to lucrative crime opportunities. Structural holes theory (Burt, 1992) helps to measure the lack of redundancy in a person's network; if individuals are tied to persons who are not tied to others, it gives them a competitive edge that enhances personal opportunities ("structural holes"). Redundant contacts are those that lead to the same people and information benefits. Fewer redundant contacts mean opportunities to link disconnected others (e.g., broker firearm trafficking opportunities). Network efficiency is associated with more success in criminal behavior (e.g., increased earnings; Morselli, 2012). Network efficiency represents the number of alters an individual has, minus the average degree centrality of alters in their network, divided by the number of alters in the ego's network.

When interest is in one specific offender, such as John Doe in the current report, the mapping of their network is referred to as their ego network. In an ego network, all actors who the ego (e.g., John Doe) is connected to are referred to as "alters" (Borgatti et al., 2013). The ego network also includes ties among alters. This allows for an inspection of the nature of John Doe's positioning or embeddedness within their own network and the nature of their interrelationships with other actors (Hanneman & Riddle, 2005).

Social Networks and Offending Outcomes

Social network characteristics are informative of whether a person's criminogenic network influences their involvement in criminal behavior, vice-versa, or both. McCuish et al. (2015) showed that involvement in a homicide offense could be a catalyst for increasing an offender's degree centrality (e.g., increasing criminal social capital) and also that those

[2] An ego network is the personal network of a specific person. It looks at the number of persons to whom they have a direct social tie.

[3] In formal terms, betweenness centrality represents the number of instances in which a node falls along the shortest path length between two unconnected nodes.

who were more central gang members were more likely to be recruited to perpetrate a homicide offense. With these results in mind, it is possible that John Doe's involvement in certain offenses influenced the nature of their criminogenic social network (and vice-versa) and that those who were connected to John Doe were associated with more serious patterns of offending than other offenders.

Report Aims

Morselli's (2002, 2012) first key insight in his research on firearms was that firearm access is facilitated by criminal social capital, rather than vice-versa. Considering this, the first two aims of this report focused on John Doe's ego network. **The first aim of this report** was to establish whether John Doe's firearm trafficking was facilitated by their criminogenic connections. This was done by comparing his criminogenic network *before* versus *after* his involvement in suspected firearm trafficking. Are there any network warning signs that may help investigators identify risk for firearm offending? **The second aim of this report** was to describe the characteristics of the offenders who appeared in John Doe's ego network. Who was John Doe connected with, and might this provide insight into why and how they came in possession of multiple firearms? Can investigators use a person's criminal embeddedness to identify their likelihood of firearm offending? Morselli's second key insight was that firearm acquisition developed from informal channels. Accordingly, **the third aim of this report** was to investigate John Doe's position within a network that included his ego network plus the ego networks of eight members of the ISVYOS who shared a connection to John Doe. Part of this aim involved investigating (1) whether John Doe was a central player in his own network and (2) whether the offending behaviors of John Doe's larger network were more severe compared to other offenders from the ISVYOS. Can investigators use a person's association with a firearm trafficker as evidence of that person's embeddedness in a serious criminal lifestyle? To assist with generalizability, **the fourth aim of this report** was to investigate whether John Doe's network resembled the network of another firearm trafficker in terms of size and offending behavior. Are different criminogenic network investigative strategies required for different firearm trafficker?

Section III: Method

Sample

The data in this report come from the Incarcerated Serious and Violent Young Offender Study (ISVYOS). The ISVYOS includes 1,620 individuals from BC who were incarcerated in adolescence and had criminal history data available. Among this group included John Doe, a high-profile gang member involved in firearm offenses, included the suspected trafficking of firearms. He is part of an organized group characterized by elevated levels of sophistication, coordination, and influence over drug markets in BC that often allowed them to elude prosecution (Rideout, 2017). A network-based snowball sampling technique

was used, where offenders in John Doe's network who were ISVYOS participants were also included in the sample in this report. In total, this study constructed ego networks for John Doe, his eight alters who were also participants in the ISVYOS, a second firearm offender, Richard Roe, who was recently convicted of firearm trafficking.

Procedures

The ISVYOS conducted interviews with incarcerated youth and collected file-based information on risk factors associated with the continuation of this activity into adulthood. To recruit participants, informed consent was provided by the BC Ministry of Children and Family Development (MCFD). This allowed the research team to approach youth in custody centers throughout BC. Youth were approached on their living unit and asked whether they would like to participate in the study. To obtain assent, participants were read and given a copy of an information sheet explaining the purpose of the study, how information would be collected (e.g., interview and file information), that they could withdraw at any time, and that information would be kept confidential unless the participant threatened to hurt themselves or someone else.

John Doe was interviewed by members of the ISVYOS in the late 1990s at age 18. At the time of the data collection for this report, he was 41 years old, meaning that 24 years of data were available for analyses. To better understand John Doe and his involvement in firearm offenses, data were collected from four sources: (1) self-report information when John Doe was interviewed in adolescence, (2) risk assessment and other data provided by BC Corrections spanning adolescence and adulthood, (3) criminal history data spanning adolescence and adulthood, and (4) social network data pertaining to John Doe, his alters who were also members of the ISVYOS (n = 8), and another firearm offender, Richard Roe[4].

Measures

Structured Interview. Research assistants conducted a structured interview with John Doe when he was incarcerated in a youth custody facility. Questions pertained to demographic characteristics, family history, school history, relationships with peers, substance use, and self-reported offending.

Risk Assessment and Intelligence Data. This report used data from CORNET to better understand John Doe's response to the justice system in adolescence and adulthood. Risk assessments completed by probation officers provided information regarding John Doe's behavior, attitudes, and social roles as an adult. Justice system professionals also completed log entries, including when John Doe was in the community and in provincial custody centers. Coding these logs helped identify how John Doe behaved in prison and in the community.

[4] Ethics agreements precluded the examination of the networks of John Doe's connections who were not members of the ISVYOS.

Criminal History Data. CORNET provided information regarding justice system involvement within the province of BC for John Doe, his eight ISVYOS alters, and Richard Roe. Data were coded from age 12 until their age at the most recent criminal history coding (M = 35.67; SD = 3.57). Criminal history data were coded to identify quantitative indicators of offending severity (e.g., number of total convictions, number of violent convictions, number of days incarcerated) and qualitative indicators of offending severity (e.g., homicide offenses, firearm offenses, federal custody sentences).

Social Network Data. Social network data were collected for John Doe, all alters from John Doe's network who were also participants in the ISVYOS, and Richard Roe. Richard Roe was not directly connected to John Doe but was convicted of firearms trafficking and provided an opportunity to compare the networks of two different persons involved in firearm offenses. Each participant represented an ego and ties were coded between egos and alters and between the alters for each ego. The network procedures involved using a computerized software system, the Corrections Network (CORNET), to code network ties. Ties were coded by reviewing all available information on CORNET, including daily logs completed by criminal justice professionals. Logs included correctional officer reports about the behavior of egos, institutional incident reports, case management reports, risk assessments, emails between criminal justice system colleagues regarding the status of the ego, ego complaint forms, court-ordered no-contact orders, and pre-sentence reports, among other sources. Ties were coded from a person's first entry on CORNET until the end of the most recent wave of data collection in February of 2022.

Ties between offenders were coded into one of three categories: co-offending, conflict, or a social tie with another criminogenic actor). Co-offending ties included criminal offenses but also non-criminal offenses that resulted in a charge or official warning (e.g., tampering with prison cells, assaults on inmates, contraband). Social ties were recorded for all interactions that were unrelated to offending but were also not involving conflict (e.g., an ego and alter attending a probation office appointment together, two individuals noted to be spending time "heavying" other persons in custody). Conflict ties included instances in which there was a conflict between the ego and their alter. This included mutual conflict or instances in which there was a clear victim and a clear aggressor (e.g., threatening to assault another inmate). The location of the tie was coded to distinguish whether the connection occurred in the community or in custody. Density, triadic closure, and geodesic distance were used to measure characteristics of the overall network. Degree centrality, betweenness centrality, closeness centrality, egonet density, and network efficiency were used to measure the positioning of ISVYOS participants.

Analytic Strategy

The first step in the analytic strategy involved contextualizing the background of John Doe by describing, over time, his demographic characteristics, family life, individual-level risk factors, criminal behavior, and police and correctional intelligence information about criminal activity. This part of the analytic strategy describes John Doe's gang involvement,

the types of offenses he engaged in, and how his risk factor profile compared to other ISVYOS participants.

The second step in the analytic strategy involved three main analyses of social networks. The first analysis reflected the ego network of John Doe. John Doe's network was inspected to distinguish between ties that were formed *prior* to his involvement in suspected firearm trafficking and ties that emerged *after* his involvement in firearm trafficking. This helped answer whether firearms trafficking propelled his criminogenic network or whether his criminogenic network facilitated his involvement with firearms. John Doe's network was also inspected to describe the characteristics of those he to whom he was connected. For example, was he primarily co-offending with the alters in his network, were these alters involved in chronic/serious offenses, and were they gang involved? The second analysis situated John Doe within his broader social network by examining the ego networks of eight of his alters who were also members of the ISVYOS. This allowed for the inspection of who John Doe was just two handshakes away from. The third analysis compared John Doe's ego network structure to Richard Roe's ego network. ISVYOS participants in both ego networks were identified and compared to examine whether John Doe and Richard Roe were connected to similar types of offenders.

Section IV: Who is John Doe?

In preparing this case study, to protect John Doe's identity, reporting guidelines recommended by Drotar et al. (1995) were followed. These guidelines adhere to standards for qualitative research more generally (e.g., American Educational Research Association, 2006). A summary of John Doe's developmental history is provided in Table 1.

Table 1. John Doe's life history calendar.

	Childhood (Ages 0–16)	Adolescence (Ages 12–17)	Early Adulthood (Ages 18–23)	Adulthood (Ages 24+)
Demographic Characteristics	East Asian Immigrated at age 5	Non-Citizen	Two children Not married Non-Citizen	Three children Not married Non-Citizen
Family Characteristics	Parents together	Parents apart No longer seeing father	Mother unemployed No longer seeing father	Father to twins Not living with mother of his children Third child with different partner Complained about inability to pay mortgage
Individual-Level Characteristics	Enrolled in school No evidence of drug use No mental health concerns	Expelled (fighting) Suspected alcohol use No mental health concerns	No evidence of drug use Unemployed/owns small business No mental health concerns	No evidence of drug use Unemployed/owns small business No mental health concerns
Criminal & Antisocial Behavior	No major school misbehavior	B&E, Armed Robbery Five total convictions Never incarcerated	Incarcerated for offenses committed in adolescence No new *official* involvement in criminal behavior	Drug Trafficking Possession of Firearms Manslaughter investigation
Police & Correctional Intelligence[†]	Not available	Not available	Member of well-known gang originating in Asia with ties to Canada Associating with well-known gang members in Vancouver-area	Repeatedly surveilled at casinos Removed from restaurants/clubs Targeted by Gang Task Force

[†] Based only on police information relayed by probation officers. PRIME and other police sources were not available in this study.

Demographic Characteristics

John Doe was born in the late 1970s and was in his early forties at the time of this writing. He immigrated to the Vancouver area from a country in South-East Asia when he was approximately 5 years old. He is currently awaiting deportation, or possibly has been deported already, due to his involvement in a series of violent offenses spread across two decades. He was interviewed when he was 18 years old while serving a sentence for a violent offense at the Willingdon Youth Detention Centre in Burnaby British Columbia.

Family

Prior to entering custody at age 18, John Doe was living on his own rather than with family. He reported being raised by both biological parents, which was rare for the ISVYOS sample, where slightly less than a third of participants reported being raised by both biological parents. He reported having one younger brother, four younger sisters, and one older sister. He described his relationship with his siblings as positive. He reported never getting into trouble at home for misbehavior. For the ISVYOS sample, participants averaged getting into trouble for an average of nine distinct types of behavioral problems (e.g., fighting with siblings, coming home late, not obeying house rules). There are two possibilities for John Doe's low level of behavioral problems. The first is that he simply did not engage in misbehavior. The second is that his parents were lenient or neglectful and did not punish him for misbehavior. John Doe reported leaving home to live somewhere else on three separate occasions, the first coming at age 14, suggesting that his home life was not always stable. His mother was unemployed. At age 18, John Doe was no longer aware of his father's whereabouts and whether he was employed. When asked about parenting strategies, he reported that because he lived on his own, his parents did not know about his daily activities and social life.

By his mid-thirties, he appeared to have positive family relationships. His probation officer rated him as an "A" regarding both family relationships and intimate partner relationships. Only 9.0% of ISVYOS participants received an "A" rating on family relationships and only 7.3% of ISVYOS participants received an "A" rating on intimate partner relationships. Overall, John Doe's apparent positive relationships with family in adolescence continued into mature stages of adulthood. It was also possible that John Doe was able to manipulate his probation officer into thinking his family life was more positive than reality.

Individual-Level Characteristics

At the time of his interview at age 18, John Doe was not attending school due to his expulsion in grade 11 for assaulting a student. Otherwise, he reported rarely being in trouble at school. He reported four different behavioral problems at school, well below the average for ISVYOS participants (M = 8.32; SD = 4.45). This may be partly because John Doe skipped school regularly and thus did not have the opportunity to engage in misbehavior within the classroom. He did not report using drugs, which was especially uncommon as about 95% of ISVYOS participants reported marijuana use. He denied using alcohol, which

95% of ISVYOS participants reported using. He reported rarely getting into fights; by contrast, about 55% of ISVYOS participants reported getting into physical fights on at least a monthly basis. He reported his first consensual sexual experience at age 16, which was slightly older than the average reported for the ISVYOS sample (*M* = 14.48; *SD* = 1.57). He reported no concerns regarding his mental health and had not been seen by a mental health practitioner during his period of incarceration at the Willingdon Youth Detention Centre. John Doe was interviewed by a trained ISVYOS research assistant for the purpose of scoring the Psychopathy Checklist: Youth Version (Forth et al., 2003). His total score was 14, which was about one standard deviation lower than the average for the ISVYOS sample (*M* = 21.78; *SD* = 6.64).

Although John Doe's risk factor profile was less serious compared to other ISVYOS participants, his interview was noteworthy in that he reported having 35 friends from school. This was a higher number than what was reported by about 85% of the ISVYOS sample and twice as high as the mean for the sample (*M* = 15.55; *SD* = 29.95). He also reported working 4-6 months of legitimate employment but did not enjoy it. By his mid-30s, he gave the appearance of a positive lifestyle. His probation officer ranked him on a series of different indicators, including academic/vocational skills, employment pattern, financial management, behavioral and emotional stability, substance use, and criminogenic attitude. He received "A" and "B" rankings for each of these indicators, meaning that they were a 'strength' factor or only causing minor impairment in his life. Most ISVYOS participants received either a "C" or "D" rating on these different indicators.

Criminal Career

When John Doe was interviewed for the ISVYOS, he reported that he was incarcerated for a robbery using a weapon. The type of weapon was not identified but it was unlikely that it involved a firearm given there was no additional firearm charge. He reported that money was the only motivation for the offense. He committed this offense with at least one co-offender but refused to discuss who they were. He also refused to explain how he knew the victim. He reported that he was sober when he committed the offense, whereas 55% of ISVYOS participants noted that they were high or drunk when they perpetrated the offense for which they were incarcerated. He reported that they made plans to commit this offense and that his offenses were planned. In contrast, 78.3% of ISVYOS participants noted that they had no definitive plans to commit their current offense and 61.4% reported that they did not plan their offenses. He acknowledged prior involvement in Assault, Robbery, and Break and Enter offenses. This was a low rate of offending versatility as ISVYOS reported that the number of different offense types perpetrated was, on average, 5.98 (*SD* = 3.42).

The average number of convictions between ages 12-35 for members of the ISVYOS is 26.18 (*SD* = 21.44) and the sample averaged 46.93 months incarcerated (*SD* = 52.03) over this same period. By comparison, John Doe incurred just 11 convictions and 12 months in custody during this period. The lack of time spent in custody by John Doe is especially atypical given that he perpetrated a variety of serious offenses. For example, when he

was 29, he was charged with various firearm offenses, including possessing various loaded firearms. He spent a total of one day in custody. At age 30 he was charged with break and enter and Manslaughter and was remanded for less than two months before being released. The lack of time spent incarcerated and the fact that he was often charged, but rarely convicted, could speak to (a) access to a strong legal team or (b) that he was a witness or confidential informant. At age 35 he was arrested for new firearm offenses and drug trafficking. For these offenses he was remanded and at age 36 received a five-year sentence. He was sent to federal custody and was ordered to be deported. While in federal custody he committed another serious violent offense. This pattern of justice system involvement is atypical. For most ISVYOS participants, crime peaks in adolescence or early adulthood and offending beyond the mid-30s is rare.

Police/Corrections Intel and Evidence of Firearm Trafficking

Firearm trafficking is covered by s. 100 of the CCC. Although John Doe was not convicted of firearm trafficking, the circumstances surrounding his firearm charges support the conclusion that the firearms in his possession were not for personal use. Indeed, it is not entirely unusual for those suspected of firearms trafficking to be charged with a lesser included offense (Balzer, 2021). When John Doe was 29, he was charged with three firearm offenses. At age 35, he was charged with multiple new firearm offenses, one count of possession for the purposes of trafficking, and one count of trafficking in controlled substance. He was convicted of the two drug trafficking charges and one of the firearm charges and given a federal sentence. Multiple firearms were found in his apartment in a duffel bag along with various drugs and drug trafficking paraphernalia. It was believed that these firearms were not for personal use. In support of John Doe's embeddedness within trafficking of drugs and weapons, John Doe was a known member of a prominent gang in East Asia with ties to the Lower Mainland. He was the subject of a 3-year police investigation into drug trafficking and other illicit activity. Beginning as early as age 29, he was regularly removed from bars/night clubs/casinos by police officers. He complained to his probation office about harassment from police. He was evasive with his probation officer and refused to provide a home address and complained about how everyone believed him to be a gang member. He reported that he owned a small business that police were trying to shut down. When incarcerated, he was noted to regularly play cards with peers at the "heavy" table, meaning he existed at the top of the inmate social hierarchy. While in custody there was evidence that he set up another inmate to be assaulted because he did not want that inmate on his unit. Another inmate engaged in self-harm so that he could be removed from John Doe's unit.

Section V: Report Aims

Report Aim #1: John Doe's Criminal Social Capital and Firearms Offenses

Figure 2 shows John Doe's ego network. Dotted lines represent social ties that came *after* firearm offense charges. Solid lines represent social ties that came *prior* to firearm

offending charges. In total, John Doe had ties to 54 persons. Only four of these ties came after his firearm offenses. This supports the notion that criminal social capital facilitates involvement in firearm offenses (Morselli, 2002). Twenty of his ties were the result of co-offenses or gang-related associations (purple edges), all of which preceded his firearm offenses. John Doe also had 26 social ties (blue edges) that preceded his firearm offenses. Thus, among his ties that formed prior to his firearm offenses, 90% helped generate criminal social capital. To this point, the star-shaped nature of John Doe's network suggests that it is highly efficient, which is an indicator of criminal achievement (Morselli, 2012). John Doe's four conflict ties (gray edges) included one tie that related to the perpetration of a homicide offense. The other three ties came after his firearm charges and occurred while in prison. These ties represented John Doe yelling, shouting, and heavying other inmates. This included a conflict with a member of a rival gang.

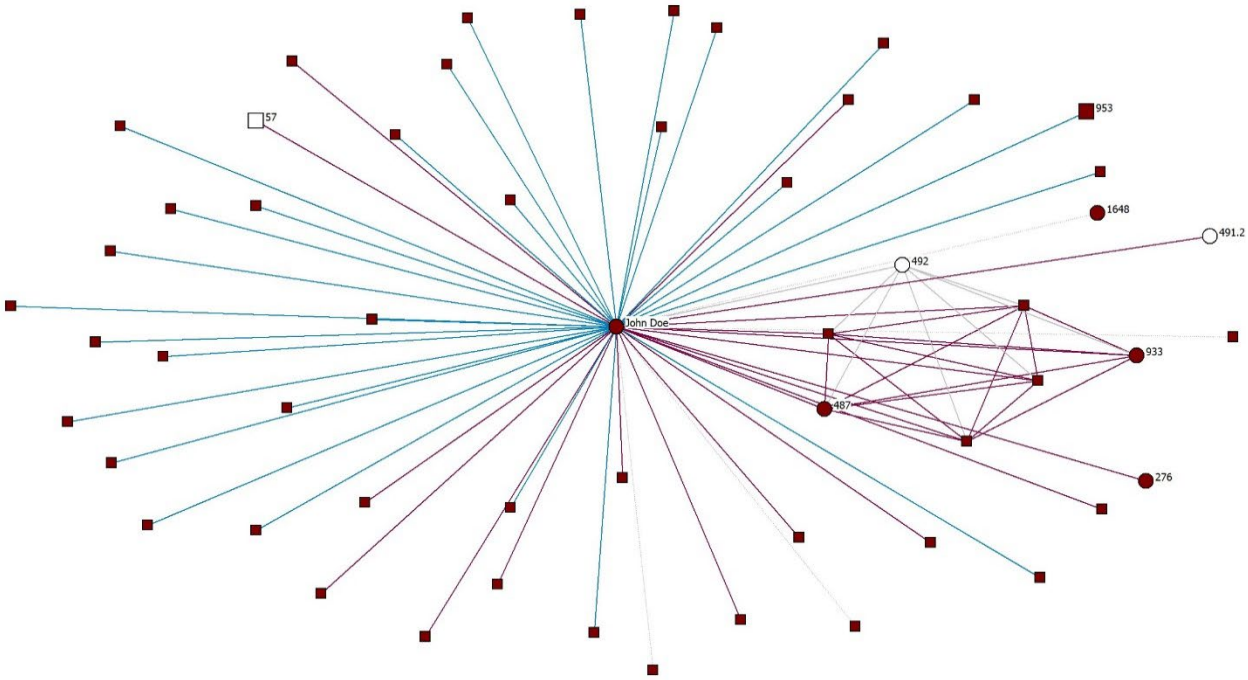

Figure 2. John Doe's ego network. Larger nodes with labels are ISVYOS participants. Circular nodes indicate involvement whether ISVYOS participant perpetrated homicide or firearm offenses. White nodes represent deceased ISVYOS participants. Purple edges represent co-offending or gang ties. Blue edges represent social ties. Gray edges represent conflict ties. Lined edges formed pre-firearm trafficking. Dotted edges formed post-firearm trafficking.

Report Aim #2: Who Is in John Doe's Network?

Eight of John Doe's ties were to other members of the ISVYOS. As shown in Figure 2, these nodes are larger size and have a numeric label to facilitate easy identification in the network. John Doe connected to six of the eight offenders through gang affiliation. One of his conflict ties was the result of perpetrating a homicide offense against "node 492". This was the densest part of the network and indicated that John Doe and six others engaged in this offense. The remaining tie ("node 1648") was the result of a conflict in prison. White

nodes identify which of John Doe's eight alters from the ISVYOS are deceased. Three of John Doe's eight ties were deceased; all three were victims of targeted gang homicides. Circular nodes identify which of the eight alters perpetrated either a firearm offense or a homicide offense. Square nodes for alters who were not ISVYOS participants does not necessarily mean that they did not engage in a firearm or homicide offense, only that this information was unknown. Six of the eight ISVYOS participants John Doe shared a network tie with had committed a homicide offense or a firearm offense. To put these numbers in context, just 9% of ISVYOS participants are deceased and only 30.6% had committed either a firearm offense or a homicide offense. Aside from the co-offenders in the homicide offense (which occurred *prior* to the firearm charges), John Doe's network was sparse. Only 1.4% of possible ties were formed in this ego network.

Missing from the examination of John Doe's ego network is whether this network is different from the networks of other offenders. The next set of analyses examined the ego networks of the other eight ISVYOS participants to better understand whether there was anything unique about John Doe's network that might be useful for understanding his pathway to firearms possession.

Report Aim #3: John Doe's Broader Social Network

Figure 3 shows the combination of John Doe's ego network and the ego networks of the eight ISVYOS members who were alters in John Doe's ego network. Table 2 summarizes key statistics for the overall network. John Doe is at the center of this network, but his ego network is not especially large, especially compared to "node 487" (connected to 391 alters), "node 933" (connected to 143 alters), and "node1648" (248 alters). Altogether, the network in Figure 3 includes 481 alters, meaning that the average ego network for the nine offenders included 53.44 alters. Recall than John Doe's ego network included 54 alters, meaning that his network was only average in size for this subsample.

In total, the nine seeds combined for 884 ties. Half of these ties stemmed from prison-based social connections. Network density was .004, meaning that only .4% of all possible ties were formed. This is about 10 times less dense than John Doe's ego network, which was expected because larger networks tend to be less dense. Triadic closer was 0.284, indicating that if the connections A-B and A-C exist, there is an approximately 30% chance that a connection also exists between B-C. Triadic closure was higher in prisons compared to communities and was higher in co-offending networks compared to social networks and conflict networks. Geodesic distance is the number of relations in the shortest possible walk from one actor to another. On average, a given node in the network was just 2.90 path lengths away from all other nodes in the network. As a concrete example, "node 53" (see right side of Figure 3) is three path lengths away from "node 491.2" (center of Figure 3). Specifically, "node 53"→ "node 276"→ John Doe → "node 491.2". Geodesic distance was shorter in community networks compared to prison networks and shortest in conflict networks compared to other tie-types.

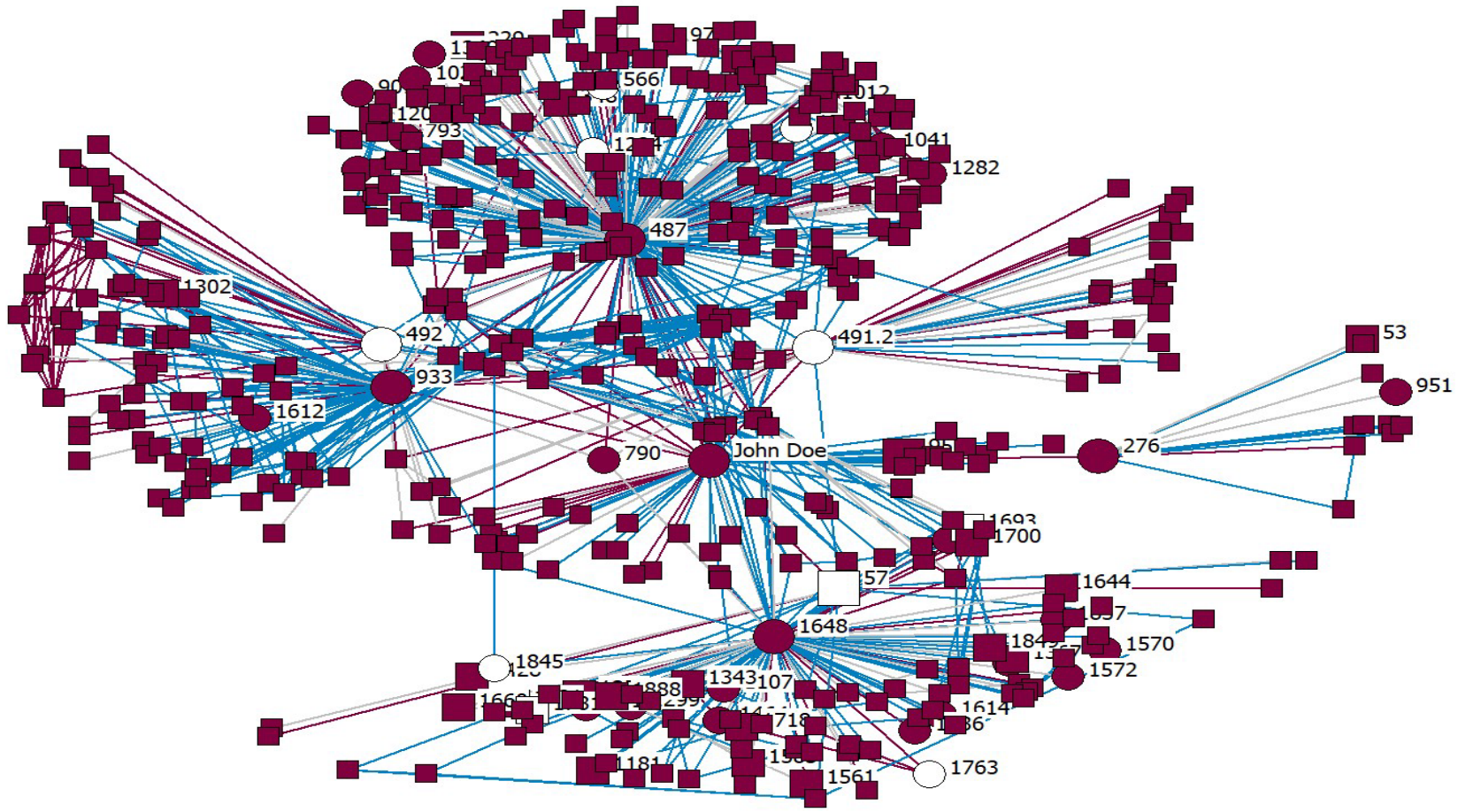

Figure 3. The ego networks of John Doe and his eight ISVYOS alters. Largest nodes are the ISVYOS seeds, medium nodes are other ISVYOS members, smallest nodes are non-ISVYOS alters. Red dotted circles used to help identify the nine seeds. Circular nodes indicate involvement whether ISVYOS participant perpetrated homicide or firearm offenses. White nodes represent deceased ISVYOS participants. Purple edges represent co-offending or gang ties. Blue edges represent social ties. Gray edges represent conflict ties.

Table 1. The ego network of John Doe and his eight ISVYOS alters.

	Number of ties[1]	Network density	Triadic closure	Average geodesic distance
Total Network	884	0.004	0.284	2.9
Community Network	238	0.001	0.358	2.261
Prison Network	663	0.003	0.437	2.375
Co-Offending Network	150	0.001	0.537	1.784
Criminogenic Social Network	174	0.002	0.499	2.261
Conflict Network	179	0.001	0.026	1.345

[1] The sum of community/prison ties and the sum of tie-types exceeds the number of total ties because of instances in which two or more individuals were connected in both prison/community or where they shared multiple tie-types.

Figure 4 divides networks according to tie location and tie-type. Table 2 summarizes the overall characteristics of these networks. John Doe was more active in the community than in custody. However, John Doe also spent time in federal penitentiaries, including penitentiaries outside the province, and thus there is the possibility of underestimating the size of his network because network data from these institutions were unavailable. That said, “node 487”, “node 933”, “node 491.2”, and “node 492” spent time in federal penitentiaries and yet had larger networks than John Doe. When it came to criminogenic social ties, John Doe’s network lacked density, suggesting that he typically did not interact with his alters in groups. This may reflect a purposeful strategy to avoid large groups or to avoid giving his social ties the opportunity to meet and collaborate with one another. This lack of density allows John Doe to control the flow of information and possible lucrative crime opportunities.

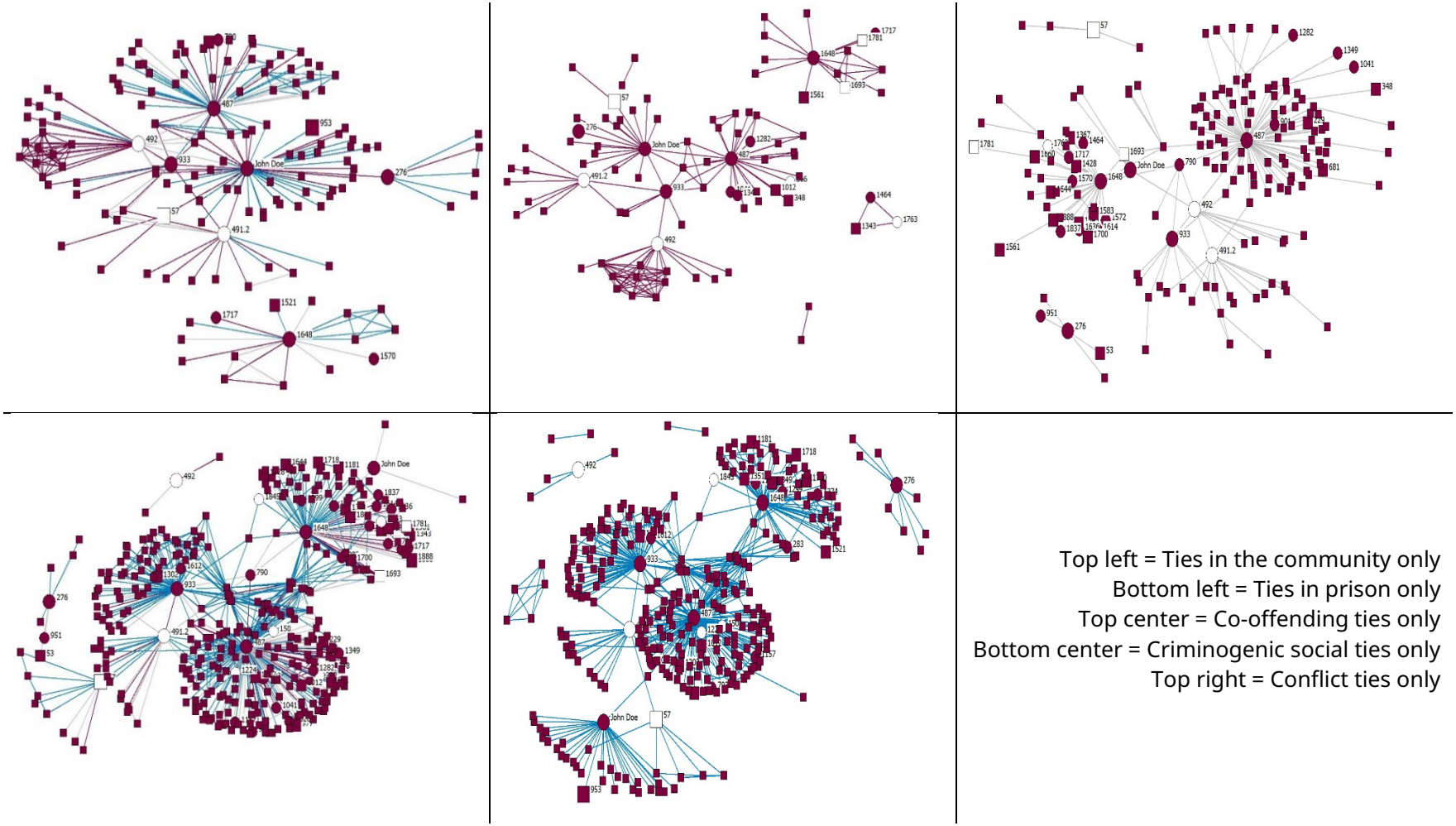

Figure 4. The ego networks of John Doe and his eight ISVYOS alters across distinct locations and tie-types. Largest nodes are the ISVYOS seeds, medium nodes are other ISVYOS members, smallest nodes are non-ISVYOS alters. Circular nodes indicate involvement whether ISVYOS participant perpetrated homicide or firearm offenses. White nodes represent deceased ISVYOS participants.

In terms of network centrality indices (see Table 3 for a summary), considering all criminogenic network ties, “node 487” was the most central actor. “Node 487” was formerly involved in two homicide offenses and was an enforcer within the gang that John Doe collaborated with. Three other alters in the ego network of “node 487” were deceased, indicating that associating with this person was especially risky. “Node 487’s” ties primarily came from social interactions and conflict in prison. Unlike “node 487”, John Doe was particularly central when it came to community-based ties and co-offending ties. “Node 933” was the leader of John Doe’s gang and appeared particularly central regardless of tie location and tie-type. The holding of similar positions but in different social contexts may reflect John Doe, “node 487”, and “node 933” having different responsibilities within the gang’s network. For example, enforcement and intimidation may be particularly important in a prison setting, but prison may be less conducive to the types of lucrative crime opportunities engaged in by John Doe. As a leader, “node 933” may need to have a better understanding of all aspects of gang activity, which explains why he was a central figure regardless of tie location and tie-type.

Finally, network efficiency, which provides an indication of structural holes, is an indicator of opportunity for lucrative crime (Morselli, 2012). Table 3 shows that a notable characteristic of John Doe was that he had especially high network efficiency, especially in the community and when concerning co-offending ties. This means that he was not especially dependent on others for opportunities for criminal exchanges, whether it be firearms, drugs, or other illegal goods.

Table 2. Network centrality of John Doe and his eight ISVYOS alters[†].

	John Doe	"node 57"	"node 276"	"node 487"	"node 491.2"	"node 492"	node "933"	"node 953"	"node 1648"
Full Network[††]									
Degree Centrality	.141	.029	.049	.800	.100	.053	.292	.002	.507
Betweenness Centrality	.273	.036	.045	.650	.112	.071	.228	.000	.312
Closeness Centrality	926	1363	1392	848	1062	1090	1007	1414	1191
Egonet Average Density	.019	.045	.030	.006	.025	.147	.023	.000	.007
Network Efficiency	.987	.925	.972	.991	.962	.866	.979	-	.989
Prison Network									
Degree Centrality	.008	.022	.012	.654	.067	.004	.249	.000	.440
Betweenness Centrality	.000	.024	.000	.386	.074	.000	.150	.000	.194
Closeness Centrality	2137	2023	3387	1507	1679	3411	1637	3423	1781
Egonet Average Density	.000	.056	.000	.007	.020	.000	.019	.000	.008
Network Efficiency	.360	.904	-	.989	.971	-	.979	-	.986
Community Network									
Degree Centrality	.133	.006	.037	.145	.037	.049	.047	.002	.067
Betweenness Centrality	.043	.002	.005	.035	.009	.016	.008	.000	.001
Closeness Centrality	2014	2136	2130	2030	2113	2056	2059	2140	2385
Egonet Average Density	.011	.000	.133	.020	.077	.125	.189	.000	.043
Network Efficiency	.986	1.000	.924	.979	.924	.843	.871	-	.961
Co-Offending Network									
Degree Centrality	.070	.004	.002	.061	.025	.029	.029	.000	.027
Betweenness Centrality	.009	.001	.000	.010	.004	.006	.008	.000	.001
Closeness Centrality	2655	2720	2722	2656	2688	2695	2654	2934	2869
Egonet Average Density	.021	.000	.000	.034	.067	.198	.222	.000	.045
Network Efficiency	.973	1.000	-	.961	.963	.657	.840	-	.917
Social Network									
Degree Centrality	.061	.016	.039	.560	.049	.008	.247	.002	.409
Betweenness Centrality	.069	.013	.000	.293	.045	.000	.117	.000	.125
Closeness Centrality	2333	2340	3375	1835	2044	3405	1945	2639	2121
Egonet Average Density	.000	.133	.071	.012	.023	.000	.021	.000	.013
Network Efficiency	1.000	.802	.947	.982	.963	1.000	.977	-	.983
Conflict Network									
Degree Centrality	.010	.008	.008	.178	.031	.016	.020	.000	.072
Betweenness Centrality	.004	.000	.000	.087	.017	.011	.011	.000	.040
Closeness Centrality	2655	2720	2722	2656	2688	2695	2654	2934	2869
Egonet Average Density	.000	.000	.000	.000	.000	.000	.000	.000	.002

† Normalized centrality measures used except for when measuring closeness centrality as interest was in connection to the entire network.

[††] Gold shading indicates highest rank, silver shading indicates second highest, bronze shading indicates third highest.

Figure 3 shows that, in addition to John Doe and his ISVYOS alters, there were 50 other ISVYOS participants in the network. To supplement the network characteristics shown in Table 3 and Figure 4, additional analyses inspected whether John Doe's two-step network[5] engaged in more frequent and serious offending compared to the remainder of the ISVYOS sample. In other words, was being no more than two handshakes away from John Doe a sign that a person would be at a heightened risk of serious/violent offenses? Table 4 shows that being two handshakes away from a suspected firearm trafficker was associated with an increased risk of mortality, an increased risk of involvement in firearm offenses, homicide offenses, and receiving a federal custody sentence. Further, ISVYOS participant in John Doe's two-step network averaged approximately eight more convictions and more than twice the amount of time incarcerated compared to other ISVYOS participants. In sum, John Doe was in close proximity to individuals involved in especially serious offenses, including homicide and firearm offenses, who were more likely to be deceased, and who were more likely to be frequent offenders.

Table 3. Comparing John Doe's two step network to the remaining ISVYOS participants.

	John Doe's Two-Step Network (*n* = 59) *% / Mean*	**Remainder of ISVYOS Sample (*n* = 1641)** *% / Mean*
Demographic Characteristics		
Ethnicity		
Indigenous	27.1%	30.2%
White	47.5%	55.0%
Non-Indigenous Minority	25.4%	14.8%
Age at Coding	30.98	31.68
Deceased	16.9%	8.8%
Criminal History[†]		
Homicide Offense	20.3%	8.6%
Firearm Offense	54.2%	25.0%
Federal Custody	40.7%	17.2%
Total Convictions Ages 12-29	30.43	22.85
Days Incarcerated Ages 12-29	2247	1036

Report Aim #4: Comparing the Networks of Two Firearms Traffickers

ISVYOS data collection identified a second firearm trafficker, referred to in this report as Richard Roe. Richard Roe is an Indigenous male gang member in his late twenties. In the last few years, he switched between rival gangs within the Lower Mainland. Recently, he received conspiracy to commit murder charges and convictions for firearm trafficking and drug trafficking. He has engaged in a variety of offenses, including intimate partner violence. Richard Roe's ego network was coded as part of a separate project but is included in this report and compared to the criminogenic network of John Doe (see Figure 5). The two ego networks were bridged together by "node 1648". While in custody,

[5] His two-step network refers to the ISVYOS members to whom he had a direct connection and those from whom he was just two paths away.

correctional officers observed “node 1648” and John Doe engage in a shouting match on the unit they both lived on. Approximately 5 years later, “node 1648” and Richard Roe were charged with attempted murder. It was this offense that led to Richard Roe receiving a firearm trafficking conviction (“node 1648” was not convicted of firearm trafficking). One interpretation of this intertwined relationship is that the conflict between “node 1648” and John Doe was linked to “node 1648” being friends with Richard Roe, and Richard Roe and John Doe may be competing over access to firearms customers. A simpler and more plausible explanation is that this connection was random and typified a common scenario in which persons incarcerated together experience a mutual conflict.

An examination of Figure 5 shows that Richard Roe’s criminogenic network was much larger than John Doe’s. Richard Roe has 348 ties to 108 different alters compared to just 54 different alters for John Doe. Richard Roe had higher degree, betweenness, and closeness centrality. Richard Roe’s network was also denser than John Doe’s network. However, most of Richard Roe’s ties are criminogenic social ties that he formed with other offenders while in prison. When it came to their community networks, John Doe had higher degree, betweenness, and closeness centrality. Their community networks were similar in terms of structural holes, which network efficiency values of .984 (John Doe) and .985 (Richard Roe). We know from the previous section aim that John Doe’s network was highly efficient once accounting for the ego networks of ISVYOS alters, which once again reiterates why it is important to take a broader perspective that captures the two-step networks of key offenders. Accordingly, caution is recommended when interpreting this finding because this report did not compare the two-step networks of both offenders.

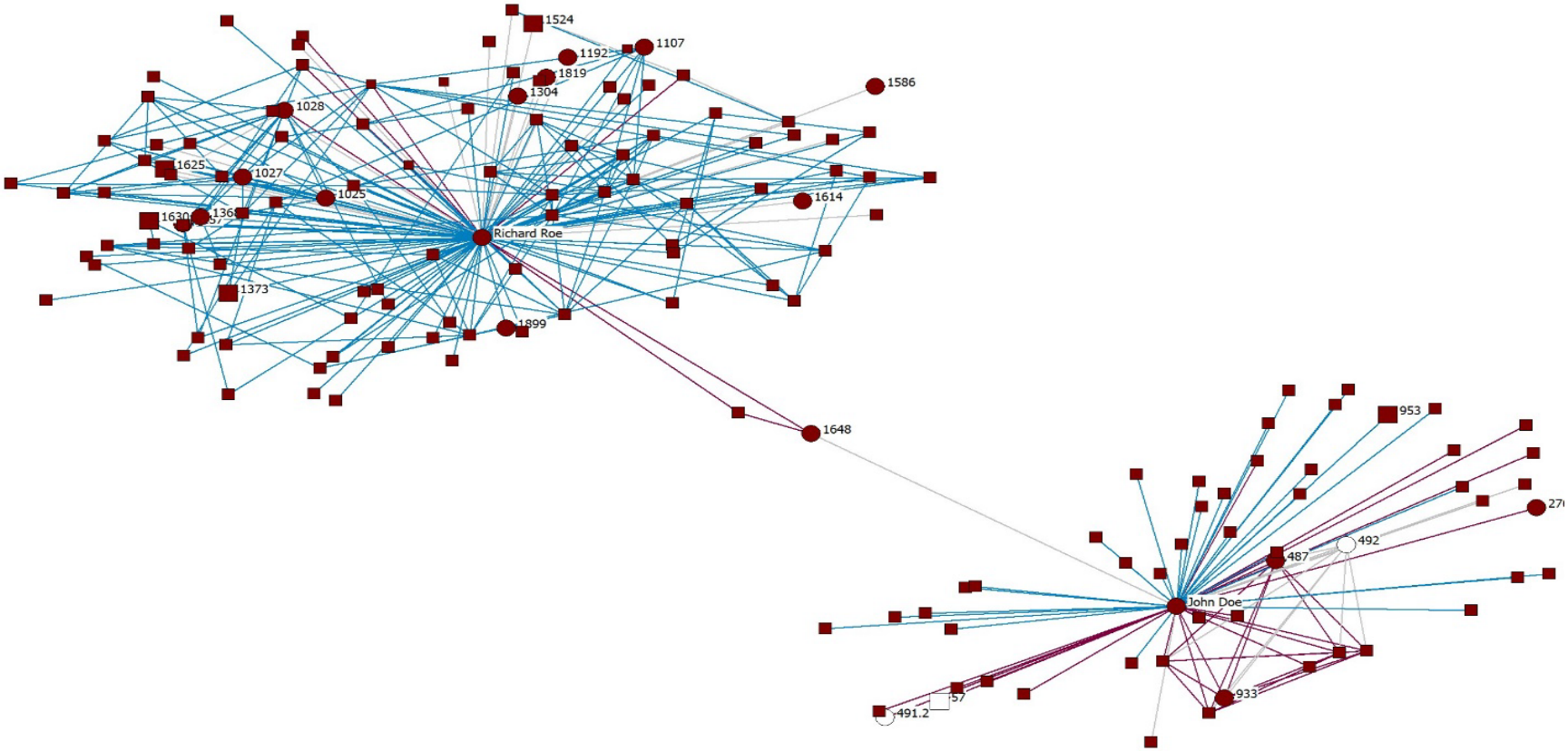

Figure 5. Comparing John Doe's ego network (bottom right) to Richard Roe's ego network (top left). Larger nodes with labels indicate ISVYOS participants. Circular nodes indicate involvement whether ISVYOS participant perpetrated homicide or firearm offenses. Purple edges represent co-offending or gang ties. Blue edges represent social ties. Gray edges represent conflict ties.

The modeling of Richard Roe's ego network showed that he was connected with 17 members of the ISVYOS (see Figure 5). To get a better sense of the severity of Richard Roe's network, John Doe's network, and the remainder of the ISVYOS sample, a series of comparisons were made regarding demographic characteristics and offending (see Table 5). Unlike John Doe's network, none of the ISVYOS participants in Richard Roe's ego network were deceased at the time of the writing of this report. Richard Roe's network was more ethnically diverse compared to John Doe's network. John Doe and his immediate alters and Richard Roe and his immediate alters engaged in especially more serious offenses compared to the remaining ISVYOS subsample. Thirteen of the 17 ISVYOS participants in Richard Roe's network were involved in a homicide offense or firearm offense (76.5%), which was twice as high when compared to all other ISVYOS participants but similar to John Doe's network (66.7%). They both had alters who spent substantially more time in custody than the IVSYOS sample. However, offenders in Richard Roe's network were more frequently involved in offending compared to both John Doe's network and the remaining members of the ISVYOS sample.

Table 4. Comparing John Doe and Richard Roe's ego networks.[†]

	John Doe (*n* = 9) % / *Mean*	**Richard Roe (*n* = 17)** % / *Mean*	**ISVYOS Subsample (*n* = 1,674)** % / *Mean*
Demographic Characteristics			
Ethnicity			
Indigenous	0%	29.4%	30.2%
White	22.2%	64.7%	54.8%
Non-Indigenous Minority	77.8%	5.9%	15.0%
Age at Coding	35.67	28.53	31.67
Deceased	33.3%	0.0%	9.0%
Criminal History[‡]			
Homicide Offense	66.7%	11.8%	8.7%
Firearm Offense	66.7%	70.6%	25.4%
Federal Custody	66.7%	17.6%	17.8%
Total Convictions Ages 12-29	12.71	45.25	22.98
Days Incarcerated Ages 12-29	1601	2716	1056

[†]Networks include each ego and their ISVYOS alters. 1648 appeared in John Doe's network before Richard Roe's network, and so 1648 was only included in John Doe's network.

Section VI: Conclusion

Studies on firearms are overwhelmingly from the United States. Local studies on firearm offending are important because the opportunities, benefits, and methods of firearm trafficking may differ between Canada and the United States (Morselli, 2002, 2012). As a small step towards contributing to the Canadian literature on individuals involved in firearm trafficking and buying, which to this point has included only two empirical studies (Ferguson & Koziarski, 2019), this study used data from the ISVYOS, a longitudinal study of offenders in BC, to describe the characteristics of John Doe. John Doe was charged with multiple firearm offenses at age 29 and age 35. Multiple firearms were found in his apartment in a duffel bag along with various drugs and drug trafficking paraphernalia. In adolescence, his parents lived together, they were not impoverished, and his family did not appear to be involved in substance abuse or suffer from mental health problems. However, it was suspected that John Doe had family members who were gang involved. John Doe did not use drugs, did not suffer from mental health problems, and relative to other ISVYOS members, his involvement in criminal behavior was not especially frequent. As an adult, he had three children from two different partners and reported being unemployed and at times owning various small businesses. The paradox of John Doe not having an especially serious risk factor profile yet being involved in serious and violent offenses for two decades (and longer if not for his planned deportation) speaks to the complexity of identifying high-level targets in the Lower Mainland gang context. The traditional criminogenic risk factor profile may not apply to these persons and thus novel approaches that look beyond traditional individual-level and family-level risk factors may be necessary.

Given Morselli's (2002, 2012) emphasis on drug trafficking as an offense requiring criminal social capital, SNA may be especially important for investigating firearm trafficking. This report answered four questions related to John Doe's criminal social network:

1. Did these connections facilitate firearm offending, or result because of firearm offending?
2. Who are the people to whom John Doe is connected?
3. How is John Doe situated within the broader network of his peers?
4. Does John Doe's ego network resemble the ego network of Richard Roe, a convicted firearm trafficker?

John Doe, Criminal Social Capital, and Firearm Offending

Consistent with Morselli's research (2002, 2012), findings from this report support the assertion that criminal social capital is important for firearm offending because most of John Doe's criminogenic connections emerged prior to his involvement in firearm offenses. Criminal social capital may be especially important in a Canadian context, where guns are less readily available than in the United States (Morselli, 2002). As evidence of John Doe's criminal social capital, only 7.4% of his criminogenic ties (k = 4) reflected conflict

with others. Three of these ties occurred in prison after his involvement in firearm trafficking. The other conflict tie supported his criminal social capital because it involved perpetrating a homicide offense with several other co-offenders who were gang involved. John Doe was recruited for this offense by "node 933". This offense connected him with several other offenders, thus increasing his criminal social capital. Although not directly addressed in this report, these connections may have facilitated additional lucrative crime opportunities like firearms trafficking because firearms trafficking commonly occurs through "weak ties" (e.g., friends of friends; Morselli, 2002, 2012).

Within criminal networks, those who are high in betweenness centrality but low in degree centrality are considered in an advantageous position because they balance efficiency and security. Specifically, their high betweenness centrality allows them to reach other parts of the network efficiently yet their low degree centrality improves their security by helping them evade detection by police officers (Morselli et al., 2007). Thus, if betweenness centrality is high, it is important to not immediately rule out someone as a 'key player' if their degree centrality is low, as this may be a concerted effort on the part of the offender to avoid detection.

Who are the People to Whom John Doe is Connected?

John Doe's 54 criminogenic connections measured across more than two decades was average compared to observations from prior research using ISVYOS participants (e.g., Corrado et al., 2019) and other offenders included in this report. John Doe's network was noteworthy because the persons to who he was connected to were involved in particularly serious offenses and a high-risk lifestyle. John Doe was connected to eight ISVYOS participants, three of whom were murdered and six of whom were involved in a homicide/firearm offense. Only one of John Doe's connections to ISVYOS participants was alive and not involved in a firearm/homicide offense. Two of these eight ISVYOS participants ("node 492" and "node 1648") connected to John Doe through conflict ("node 492" was the victim of a homicide that John Doe was involved in). The rest shared gang, co-offending, or social ties. In fact, those who John Doe was connected to were key members of a well-known gang within the Lower Mainland. John Doe was involved in a homicide with this group primarily due to his connection with "node 933" (see Figure 3), who was especially prominent within this gang. Thus, in support of the previous section on criminal social capital, John Doe connections spoke to his level of embeddedness in serious gang activity. However, to discover this, it was necessary to pair quantitative network tie information produced from SNA with qualitative data that contextualized the nature of John Doe's criminogenic ties.

John Doe's Peer Network

It was important to code not just qualitative data regarding offenders within John Doe's network but also the ego networks of those who were tied to John Doe. Failure to do so would have underestimated the severity of John Doe's criminogenic network. Although the size of John Doe's immediate network was not noteworthy, he was connected to ISVYOS

participants with particularly large networks. Specifically, "node 487", "node 933", and "node 1648" had networks 3-6 times larger than John Doe's network. These key players, especially "node 487" and "node 933", that gave John Doe access to a wide range of potential criminal accomplices. Indeed, although John Doe's network was average in size, his closeness centrality value was largest for the sample. This meant he could efficiently reach hundreds of other offenders within his alters' ego networks. Morselli (2012) reported that most persons who acquired firearms were not actively looking for them (e.g., they were approached with an opportunity). If this same scenario applies to John Doe, it reiterates why being in a position of closeness was important. He is able to reach a lot of people, but the decision to reach such persons is his. Therefore, he can contact persons he trusts, and trust is a critical component to the illegal sale of firearms (Cook et al., 2015). "Node 487's" role as enforcer and "node 933's" leadership role within the gang John Doe operated in gave him the leverage to engage in his firearm offenses. Most importantly, Table 4 compared the offenders in John Doe's two-step network to all other offenders in the ISVYOS and it was clear that John Doe was connected to an especially serious group of offenders, whether directly or indirectly. The same was true when looking at the network of Richard Roe, another firearm trafficker (see Table 5). These findings align with Morselli's (2002) interview with an offender who talked about acquiring firearms:

> *"I wasn't into the network of people that would know where to go [to get a gun]. But as I became more involved—let's say as my crimes started going up—I started meeting the kind of people who would have access" (p. 262).*

This quote speaks to the importance of criminal social capital, which was much higher for persons connected to John Doe compared to the remainder of ISVYOS participants. Further, the fact that those who were tied to John Doe and Richard Roe were more involved in serious and chronic offending speaks to the fact that offenders who gained access to John Doe and Richard Roe also improved their access to persons with firearms.

Similarities and Differences across Firearm Offenders

The main similarity between John Doe's ego network and Richard Roe's ego network was the severity of the offending patterns of their alters. This helps generalize the findings from the above section beyond just John Doe. The prevalence of firearm or homicide offending was about 2.5 times higher within Richard Roe and John Doe's networks compared to the remaining members of the ISVYOS sample. This finding reiterates the importance of criminal social capital as a facilitator of firearm trafficking and access to firearms.

When examining all criminogenic network ties, Richard Roe had twice as many connections as John Doe (54 versus 108). The comparison of the two networks revealed why the "from the outside in" approach of coding two-step networks is necessary. On the surface, Roe's much larger network may be used to, for example, to justify excluding John Doe as a key target for investigations. However, coding the two-step network of John Doe

revealed that his personal ego network underestimated his level of connectivity and importance in the broader criminal network of a well-known gang in BC. A smaller ego network therefore should not immediately discount the possibility that an individual is involved in firearm offenses. Another way to avoid discounting someone because of their smaller ego network is by looking at structural holes. Despite the difference in network size, John Doe's criminogenic social network was equally highly efficient when compared to Richard Roe's. In accordance with Burt's (1992) structural holes theory and Morselli's perspectives on criminal achievement, this means they were better able to access lucrative crime opportunities through the presence of non-redundant ties.

Policy Implications and Next Steps

The policy implications discussed here are based on a sole case study. Law enforcement officials must consider the generalizability of the current findings to their own investigation. As mentioned, research on the acquisition of firearms in Canada is in its infancy (Ferguson & Koziarski, 2019) and small steps with modest assertions are necessary to avoid making sweeping changes to policies and practices based on research that does not fully reflect the landscape of firearm acquisitions in Canada. This section focused on three policy implications: (1) how to look for, and what to look for, when attempting to disrupt the illegal sale of firearms, (2) why network interventions may be effective, and (3) how to use SNA effectively.

The Importance of Criminal Social Capital. Both John Doe and Richard Roe had higher levels of criminal social capital than their peers, but for distinct reasons (see Figure 5). For John Doe, although his network was not especially large, his immediate network included gang leaders and enforcers with especially large networks, which allowed him to be close to a wide range of offenders. Richard Roe had double John Doe's connections. Thus, there appeared to be different routes for obtaining criminal social capital, but criminal social capital mattered. From a policy perspective, the relevant question is how to identify which offenders have high criminal social capital. SNA is one tool that can be used in conjunction with other strategies to identify high criminal social capital. In Richard Roe's case, criminal social capital was measured simply through observing, recording, and analyzing their immediate criminogenic network (i.e., their ego network). Richard Roe is someone who could be identified as an important target simply through general surveillance because he shows up in different situations with many different people. This is not the case for John Doe. John Doe engaged in a homicide offense, drug trafficking, and suspected firearms trafficking. He would be a high priority target for police agencies. Yet, reviewing surveillance data to gather information about John Doe's direct network would not reveal anything particularly exceptional.

As the title of this report suggests, identifying someone like John Doe requires "working from the outside in" by identifying especially well-known gang members with large networks (e.g., "node 487" and "node 933") and then identifying which offenders share attachments to these and other key players in the gang's network. This would help identify offenders like John Doe, who was almost exclusively tied to high-risk offenders involved in

homicide offenses, shootings, and were the targets of gang hits. This approach to measuring criminal social capital requires identifying when certain offenders seem to associate almost exclusively with other key players but also have a highly efficient network (i.e., structural holes) and high closeness and betweenness centrality. It is necessary for all these criteria to be met because there may be other offenders who associate with key players because they are street-level offenders or others who are required to report to, and act on behalf of, key players. These street-level offenders will have low betweenness centrality and low network efficiency. Investigations of firearm trafficking should therefore look for offenders who are in open networks.

What separates John Doe's network from the network of a street-level offender is that he also had ties to persons who were unconnected to the key players. In other words, John Doe could act as a bridge between key players and other offenders (i.e., high betweenness centrality, closeness centrality; see Table 3); he was not solely dependent on others for access to information of opportunities for offending. Someone who is connected to key players only because they are taking orders from such persons is more likely to have a closed network, which lacks structural holes (Burt, 1992). In this scenario, the hypothetical offender, unlike John Doe, does not have the opportunity to connect key players to other offenders. The opposite of a closed network is an open network. John Doe's network was highly efficient, meaning there were many structural holes. John Doe's open network means that removing individual consumers from his network would not dramatically impact lucrative crime opportunities, such as firearm and drug trafficking. Accordingly, disrupting John Doe's offending by incarcerating other persons in his network may not be fruitful because his alters do not appear interconnected (i.e., low density). Thus, the removal of specific alters who might purchase a firearm from John Doe would be unlikely to disrupt his criminogenic network. Using evidence of criminal social capital may help supplement investigation decisions by identifying persons who are more critical to the flow of lucrative crime opportunities.

Disrupting Illegal Acquisition of Firearms. This report was not focused on the nature of specific firearm transactions and how they occur (e.g., geographic location, type of firearm, cost of transaction) because data to answer such questions were not available. However, the importance of social networks and criminal social capital aligns with Morselli's (2002) description of the firearm transaction process. Morselli (2002) emphasized that policies around controlling firearm markets through regulation and permit acquisition may simply influence attempts to circumvent such policies by going through social networks which leads to the firearm problem expanding through less detectable networks. One way to counteract this is through understanding a person's social networks and how this may facilitate firearm buying/selling. Since people rarely buy and sell firearms to persons whom they do not know (Cook et al., 2015), an understanding of social networks is critical for identifying potential buyers/sellers.

Both John Doe and Richard Roe had a high ratio of social ties in their criminogenic social network (e.g., as opposed to conflict ties). This reiterates Morselli's (2012) point that illegal firearm acquisition tends to occur through informal friendship/peer channels and

therefore investigators may have success disrupting firearm trafficking by identifying persons who socialize with known offenders in a manner that creates high closeness centrality and network efficiency. “Node 487”, for example, played a different role as enforcer, and therefore his network looked quantitatively different (e.g., more ties) and qualitatively different (e.g., high proportion of conflict ties) compared to John Doe. Morselli’s interviews with firearm purchasers revealed the opportunistic nature of transactions. Persons acquire firearms illegally because they happen to know a person who can get them a firearm. They do not necessarily have an underground-economy source that they know solely for the purpose of acquiring firearms. Instead, they acquire their firearms through a social tie who happens to have firearms available. For John Doe and Richard Roe, having the social ties to be exposed to such opportunities is important, and one way to facilitate this is by being reachable, which is directly measured by closeness centrality. Thus, **from an intervention perspective, a key might be to eliminate social opportunities by using no contact orders, not just in instances where persons have co-offended together, to try to deter connections.**

Morselli’s (2002) interviews with those who acquired firearms also revealed that sellers did not always actively look to buy and sell firearms. Instead, those who sold firearms tended to have disposable income that facilitated their ability to acquire firearms and then trade or sell them to persons in their network. Thus, friends or acquaintances initiated the transaction. Regarding the person he purchased a firearm from, one offender noted “he had money, you know, and the contacts as well. So he always had weapons and stuff” (Morselli, 2002, p. 263). John Doe’s gang member status and involvement in drug trafficking may have helped him acquire a cache of firearms that he could then make available to others for profit or favor. Thus, preventative strategies for firearm trafficking can include disrupting other types of lucrative crime opportunities (e.g., drug trafficking) that may create opportunities for the exchange of other illicit goods.

Using SNA Effectively. What does SNA offer that cannot be obtained from the use of traditional surveillance methods? SNA is useful for approaching the mapping of social ties systematically and objectively evaluating an offender’s importance in criminal networks. SNA should be used to assist, rather than replace, other investigative strategies. One way to use SNA effectively is to look beyond community-based criminogenic networks. For Richard Roe especially, many of his criminogenic social connections were formed while he was in custody. When looking at Figure 3 that depicted the ego networks of John Doe and the eight ISVYOS alters, most network ties (except for John Doe’s ties) were prison-based social ties. This reiterated the hypothesis that prisons serve as schools of crime (Ouss, 2011) and might help provide the criminal social capital that facilitates firearm trafficking and other serious offenses. Police do not typically have the option to surveil persons while incarcerated, which may leave important gaps in their knowledge regarding criminogenic contacts. Coordinating with prison officials may be critical for gathering intelligence. Police agencies focused on surveillance in the community will miss key connections that may give important insight into criminal social capital.

If SNA is used by police agencies, it is important to combine quantitative indices of social network data with qualitative intelligence data to better understand criminal social capital. On the surface, John Doe's criminal network was not remarkable in terms of the number of ties. However, a closer look at the qualitative nature of his ties made it clear he had an elevated level of criminal social capital. Further, focusing not just on an individual's ego network, but a two-step network that includes the ego networks of a person's alters is critical for learning about persons they are just two handshakes away from. Given the number of deceased offenders in John Doe's network, it seems important to know who may be in danger, even if not directly connected to these key players. In effect, if SNA is used properly, even if it does not reveal information about who engages in firearm trafficking, other important information may be uncovered, such as persons who should be the subject of a duty to warn because of their risk of being murdered given their connection to persons like John Doe.

Limitations

This report described one person suspected of firearm trafficking and the intention of this report was not to make broader statements about the *average* firearm trafficker in British Columbia. The data in this study were not suitable for understanding how John Doe acquired his firearms (e.g., through a business and straw purchasers). ISVYOS research assistants did not ask John Doe questions about acquiring or selling firearms. However, this is unlikely to change the main conclusion of this report, which is that criminal social capital is an important precursor to firearm trafficking. This does not mean that everyone with criminal social capital engages in FA trafficking, but the two cases in this study, taken together with past research (Morselli, 2002, 2012) indicate that firearm traffickers tend to have higher criminal social capital than other offenders.

Although there are issues with generalizing beyond a case study, part of the reason this report focused on a case study was because of how rare firearms trafficking convictions were in the ISVYOS sample. Of the 1,719 persons in the sample, only one was convicted of firearm trafficking (Richard Roe) and one other (John Doe) was suspected by law enforcement to be involved in firearm trafficking. Although about 25% of the ISVYOS sample was involved in firearm possession, firearm trafficking appears less common, or at least more difficult to detect.

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