



Utilizing Social Network Analysis to Reduce Violent Crime





Introductions

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Objectives of This Webinar



- Explore how Social Network Analysis (SNA) can be used to understand and guide gun violence prevention efforts
- Address the basics of SNA, with the aim of providing a foundation for understanding how mapping human social networks can be used to better address violent crime
- Address the key concepts and the basic data and computing requirements for effective social network analysis
- Focus on the use of law enforcement agency record information to examine social ties, such as when suspects are arrested together or are linked together for having been mentioned in the same field interview stop

Webinar Facilitators



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Today's Speakers



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What Is SNA?

What Is SNA?



- Analysis of social relationships
 - Beyond individual attributes
 - Map relationships between individuals
- Information and goods flow between people, so the structure of relations matters
- Through SNA, we can identify important individuals based on their social position

What It Is Not

- Social Network Analysis is not social networking
- It is not Twitter or Facebook
 - How are they different?
 - How are they similar?



Differences Between SNA and Link Analysis



- One-to-one relationships
- Layout optimization
- Importance based on network position

Research on SNA in the Criminal Justice Field



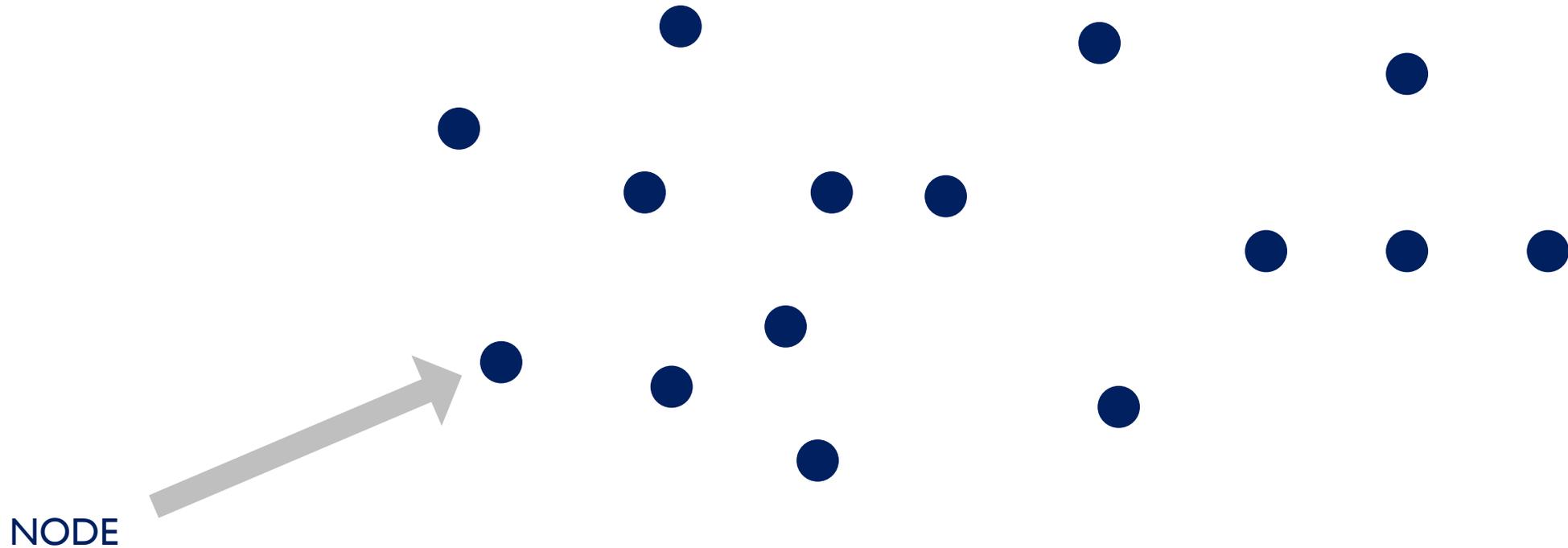
- Delinquent peers—one of the strongest predictors of crime (Warr)
- Violence is concentrated among networks of people (Papachristos)
- The closer you are socially to violence, the more likely you are to become a victim (Papachristos)
- Position is important within the network (Morselli, McGloin)
- Examples
 - Drug trafficking
 - Terrorist networks
 - Street gangs



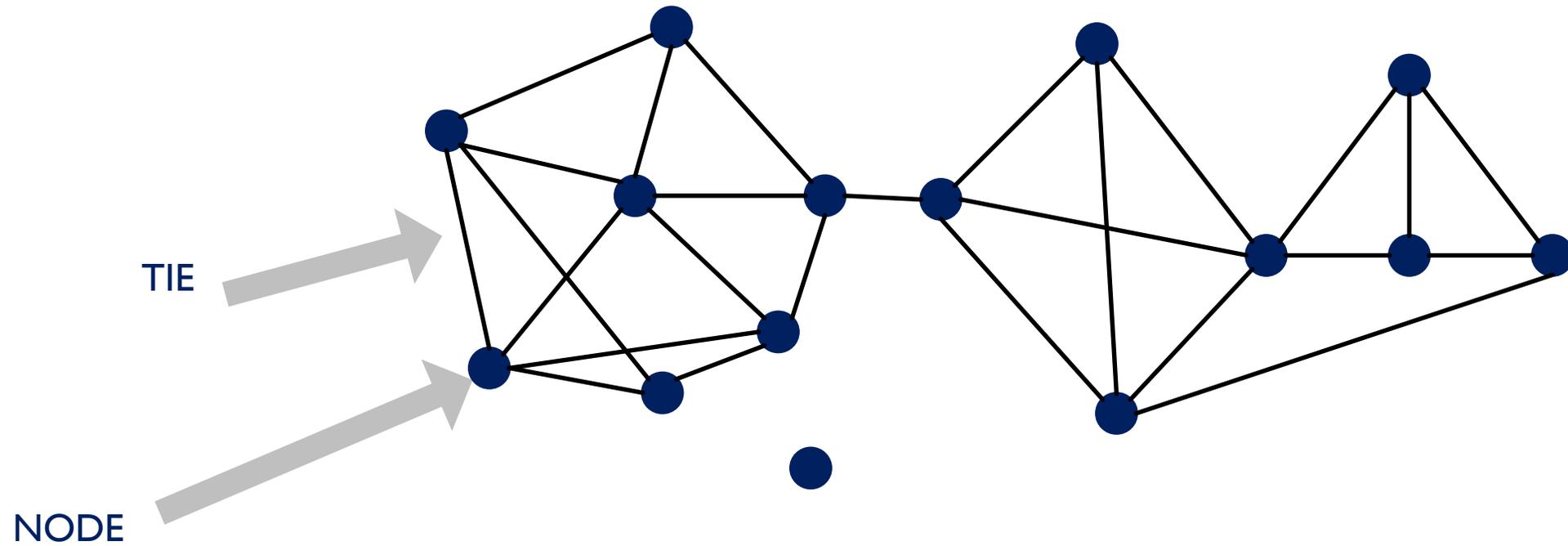
SNA Terminology

SNA Terminology

- SNA, for example



SNA Sociogram



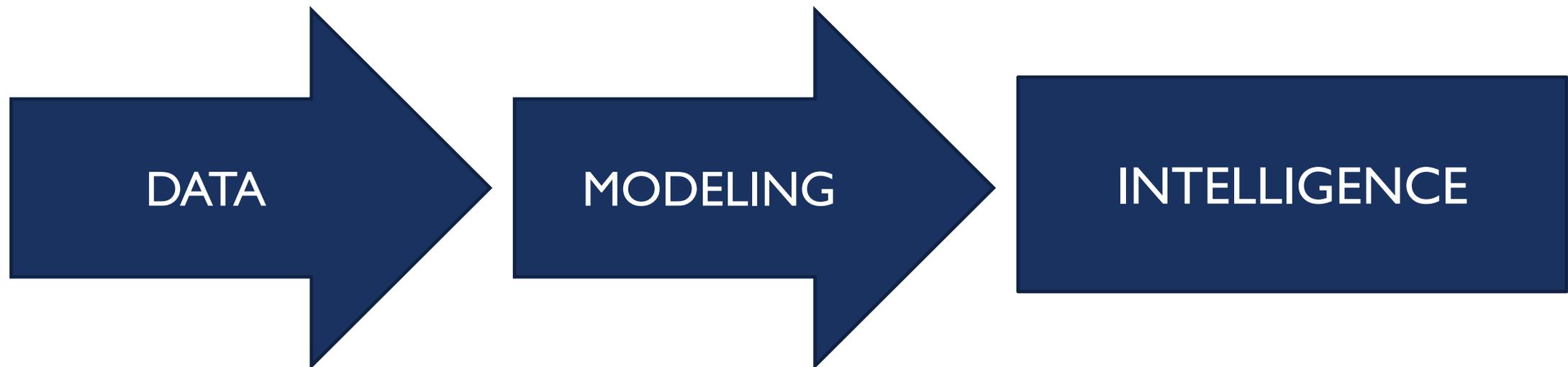


Network Data

Types of Network Data—What's the Point?



- Converting data into intelligence



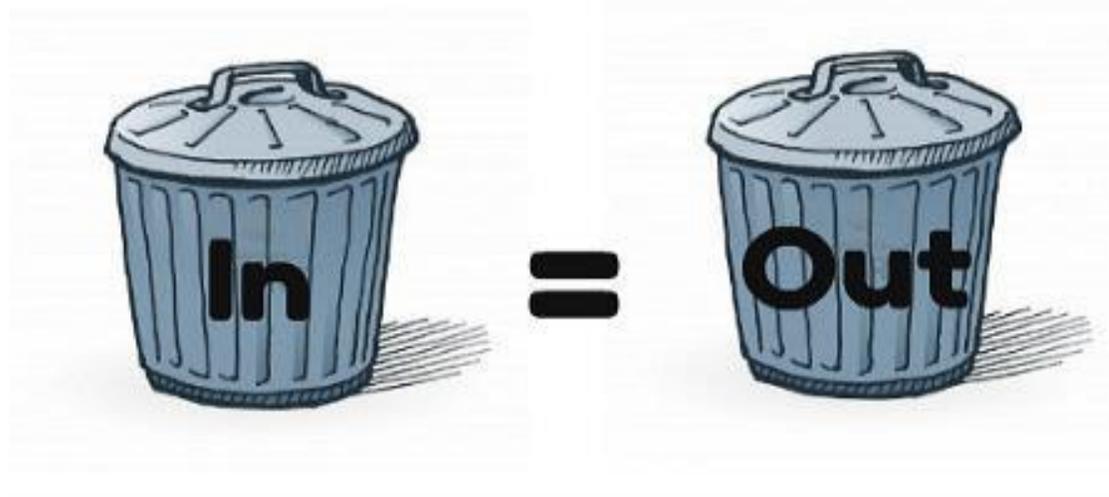
Data (Input)



- Information that connects or informs the relationship between 2+ people
 - Field interview forms
 - Arrest reports
 - Car/traffic stops
 - “Street intel”
 - Gang intelligence reports
 - National Integrated Ballistic Information Network
 - Interviews, informants, or other case information
 - Group audits

Data (A Word of Caution)

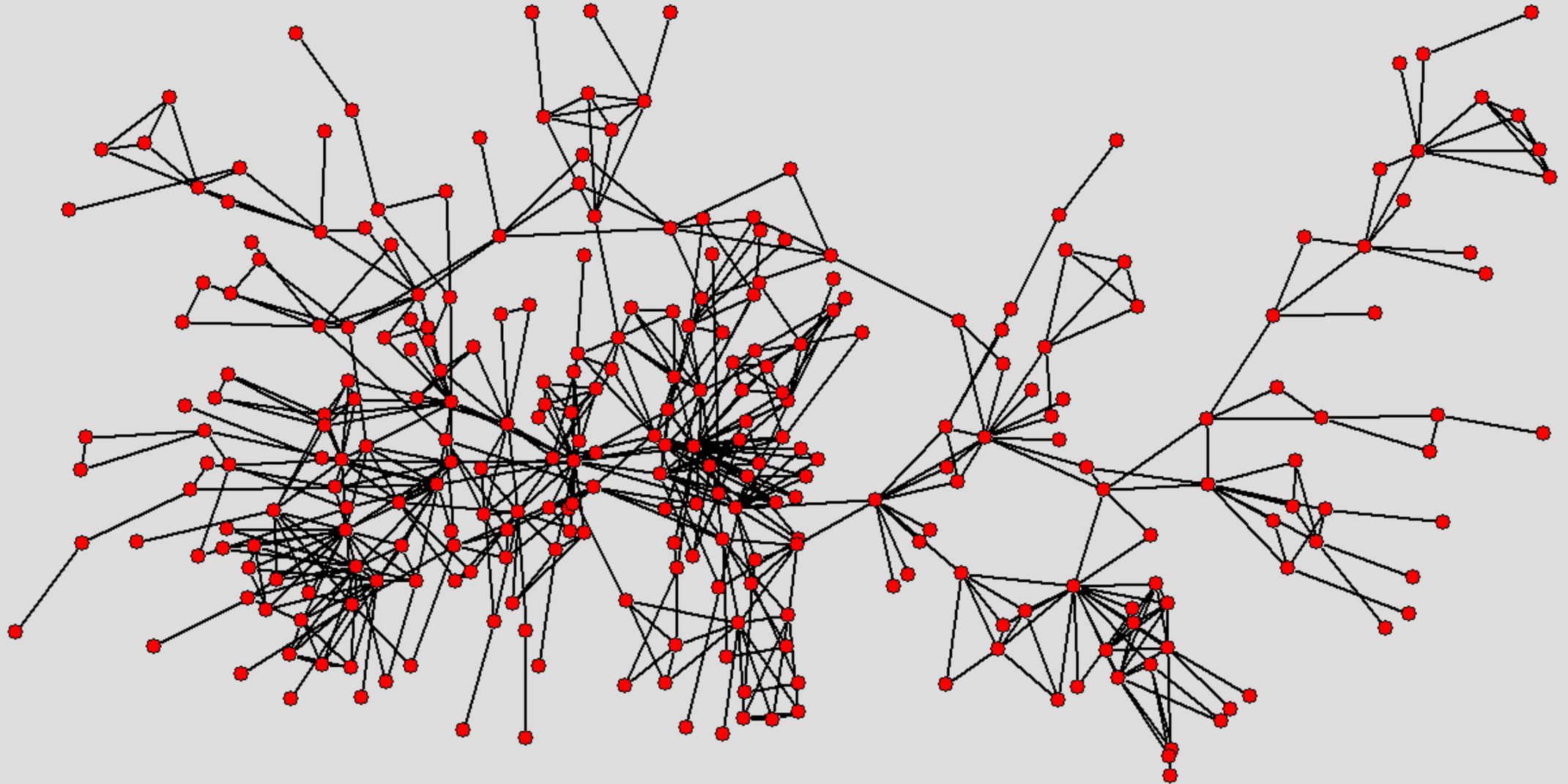
- Intelligence will only be as good as the data used
- Flawed, incomplete, stale, cursory data yield similar output





Visualizing a Network

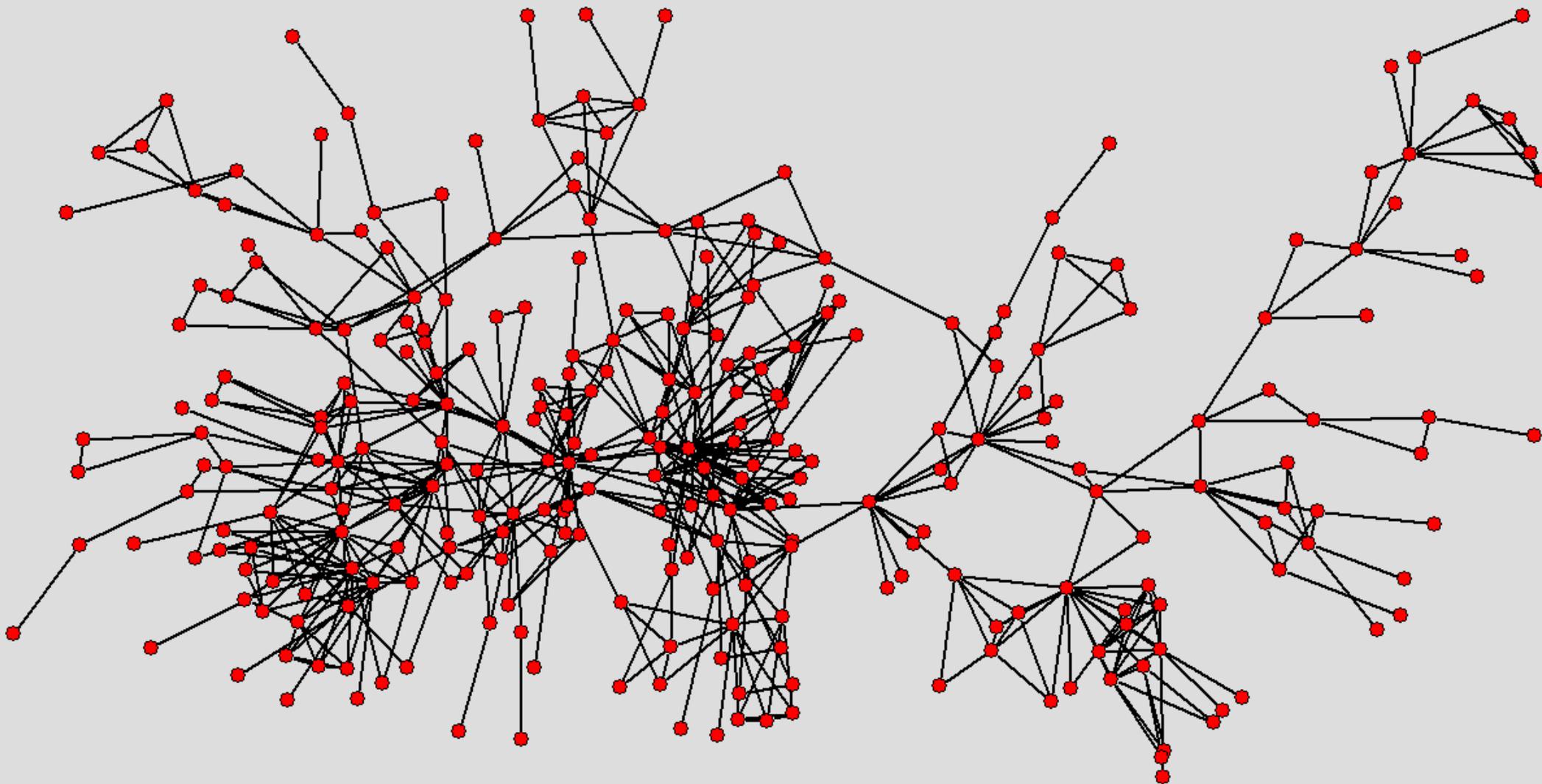
Network of gang members and associates (n = 288)





Key Players

Network of gang members and associates (n = 288)



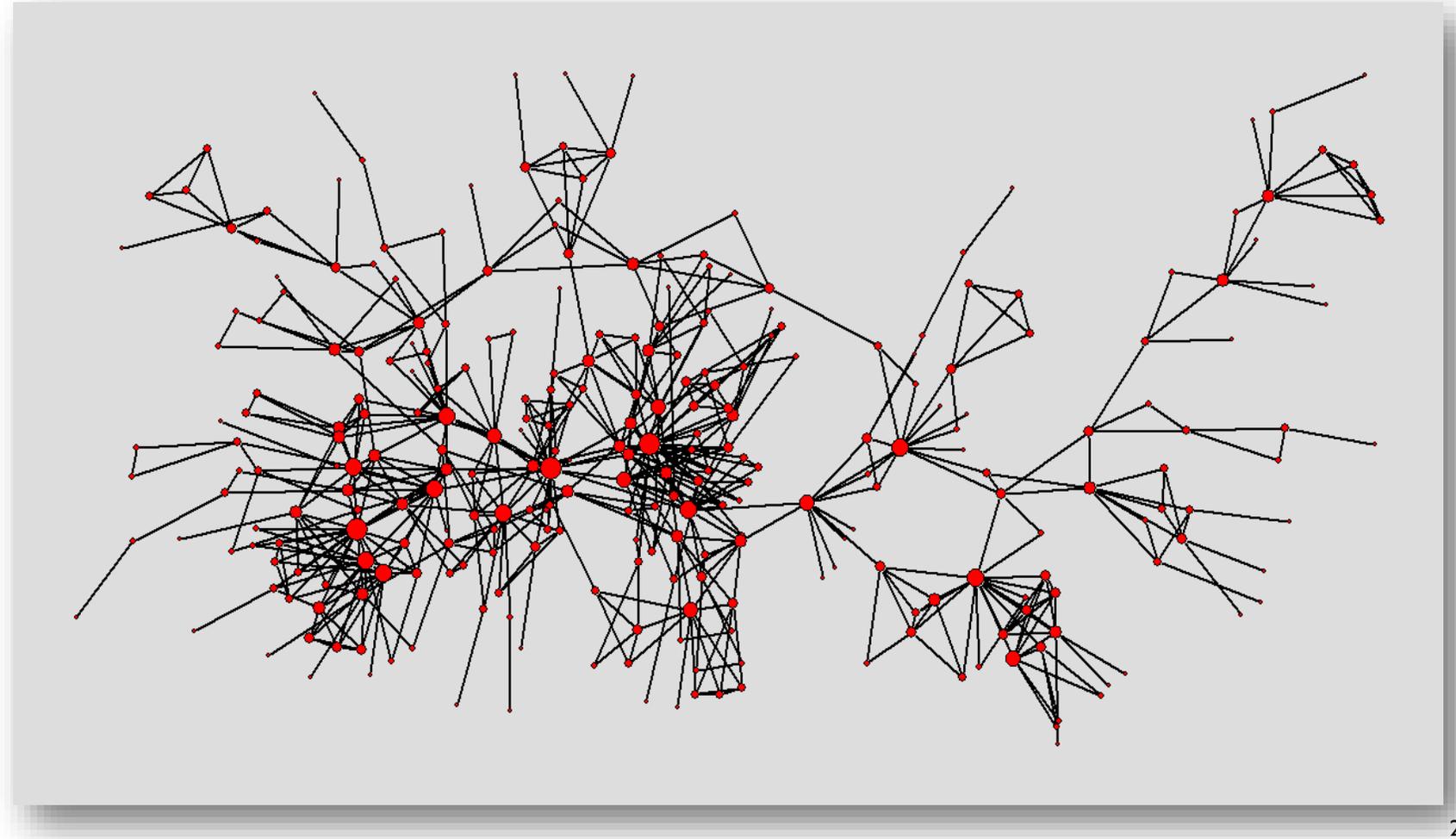
Who Is the Most Central in the Network?



- Degree centrality
- Betweenness centrality

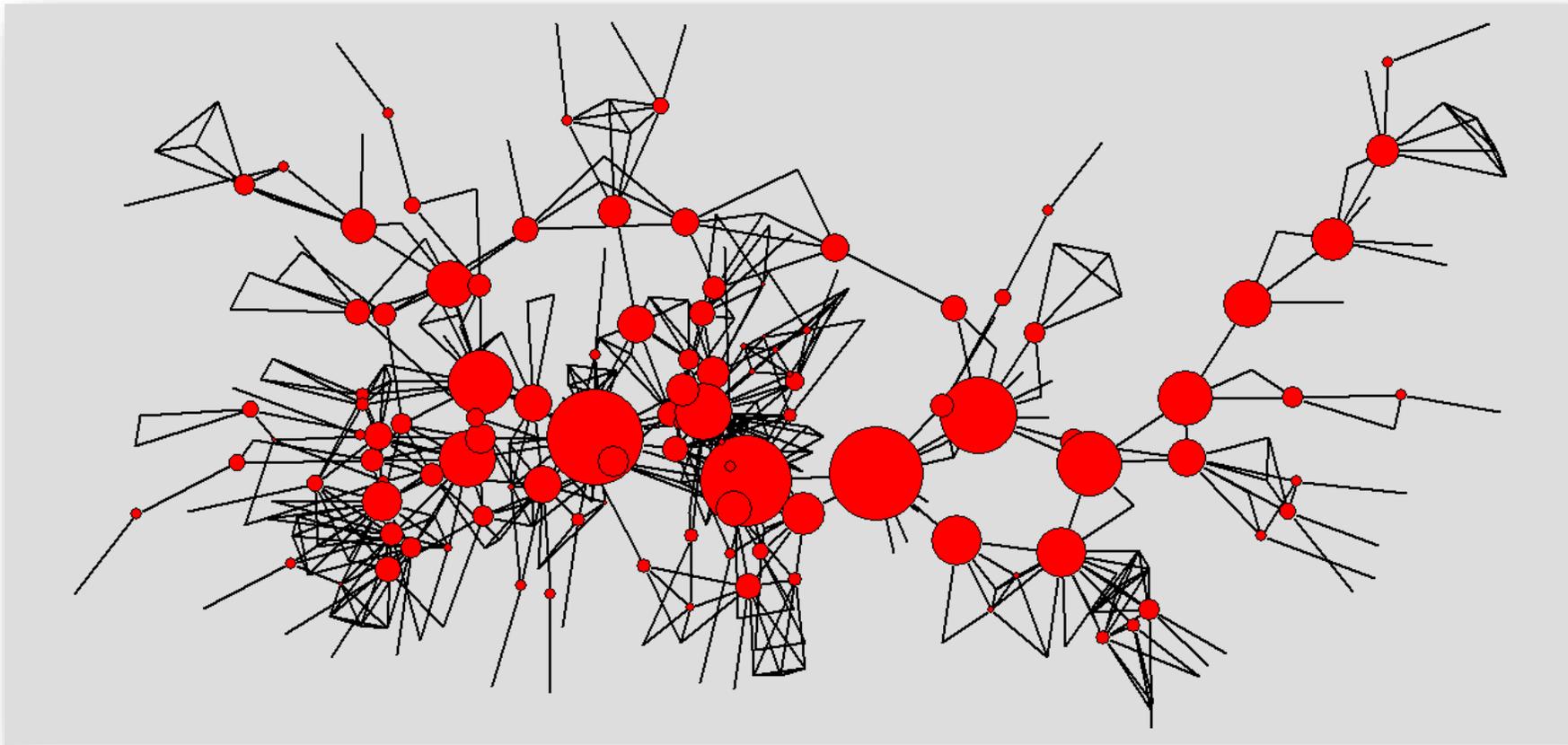
Degree Centrality

- The number of ties a node has in the network
- Degree centrality suggests that those who have the most ties are the most central to the network



Betweenness Centrality

- Those who are the intersection on many paths between others



Official Data Does Not Replace Human Intelligence



- Metrics are NOT a direct indication of a person’s “importance.” If the ties are arrest, for example, it just means the person is “active,” not necessarily that the person is a “leader”
- You have to remember the data! **If these were wire-tap data, for example, you might see that someone else is important**
- All of these degree measures are often highly “correlated.” Only rarely do you see someone high in one measure and low in another
- Metrics should be used in conjunction with “real” intel and field information. **I do not encourage anyone to just get a degree number and “go to work”—bad idea**

Summary



- SNA...
 - Is the analysis of relationships
 - Can help us visualize social structures for strategic crime interventions and prevention
 - Network structure and network position matter. All networks and positions are not equal
 - Networks are a starting point for intervention



Using SNA for Violence Reduction: The Kansas City Experience

Kansas City, Missouri



Kansas City Demographics



- Population 464,310
 - 59% white
 - 29% black
- Metropolitan population 2.35 million
- 315 square miles, same land size as comparable cities of Atlanta, St. Louis, Minneapolis, and Cincinnati combined (335)
 - Atlanta—132 miles²
 - Cincinnati—79 miles²
 - Minneapolis—58 miles²
 - St. Louis—66 miles²
- Four counties—Jackson, Clay, Cass, Platte
- Central transportation corridor, interstate highways, rails, river

Kansas City Crime



- Historically, one of the top **10** most violent cities in the United States
- Averages **106** homicides per year
- Averages **3,484** aggravated assaults per year
- Crime typically contained within urban core
- 13 square miles of 315 account for **47%** of all homicides

	Murders/100k	Agg. Assaults/100k
Kansas City	22.9	755
Jacksonville, FL	8.3	381.4
Seattle	6.2	229.4
Chicago	15.9	458.9
Boston	6.2	306.4

Kansas City No Violence Alliance (KC NoVA)



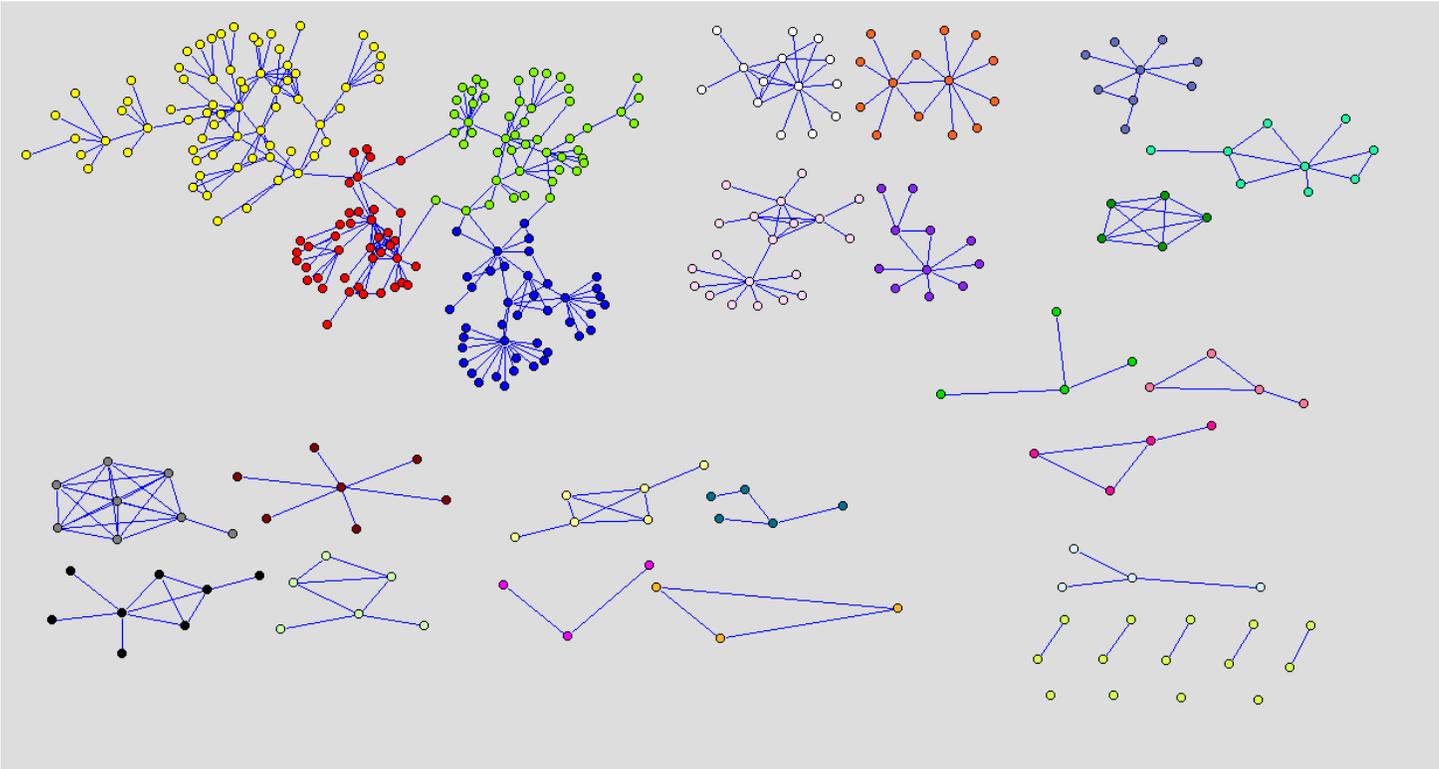
- Established June of 2012
- New mind-set for Kansas City—reduce violent crime
- New agency heads “the perfect storm”
 - KCPD
 - Prosecutors—federal and state
 - ATF needing violence reduction mantra
 - New mayor
 - UMKC partnership developing
 - “Focused deterrence” chosen
- KCPD project manager selected

The Goal of KC NoVA

- Reduce homicides and aggravated assault
 - 2012—108 homicides
 - 2011—109 homicides
 - 106.3 annual average
 - 3,484 annual average for aggravated assaults



KC NoVA—First Steps



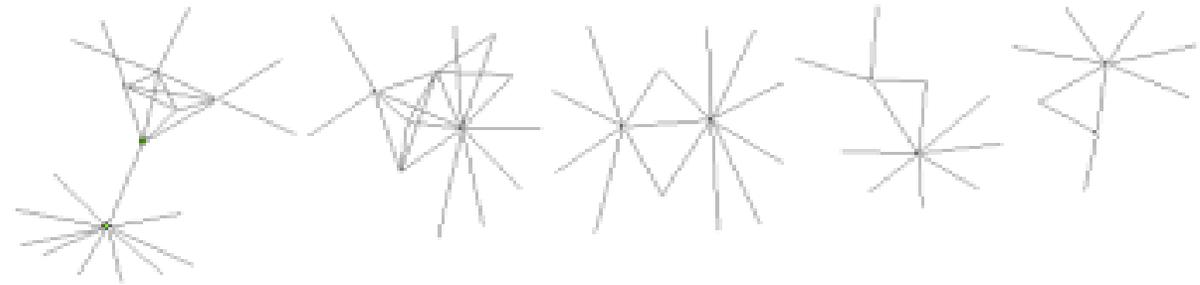
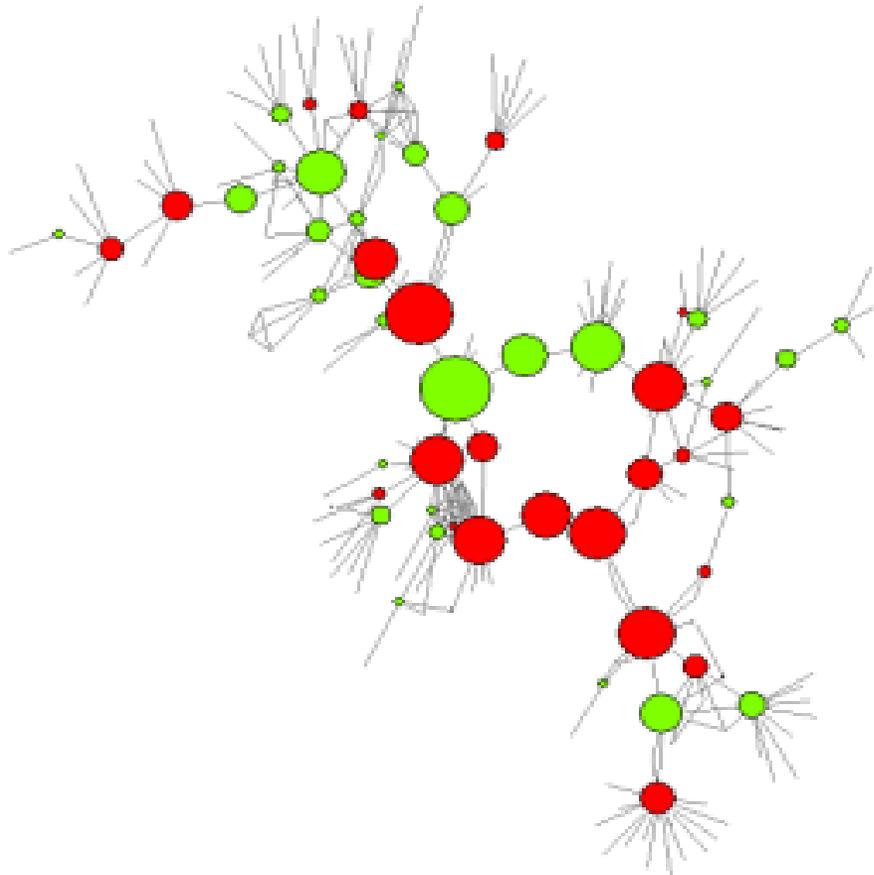
- Dime block gang network
- Developed by UMKC and Detective Cramblit
- Process took two months
- Silos of intelligence
- IT Barriers/Crystal Reports
- Product delivered December 2012

Dime Block Intelligence



- 360 members in group
- 202 in largest connected group
- 60 currently were on probation/parole
- 32 pending cases were in Jackson County processes
- 126 members had active warrants
- 22 warrants were felony
- One killed in December 2012 shoot-out
- Four indictments for murder in group January 2012

Dime Block Betweenness Centrality (Warrant)



Demonstration Crackdown— Operation Clean Sweep



- January 2013, KC incurred 15 homicides in first four weeks
- Operation Clean Sweep organized to introduce NoVA formally to the public and the targeted criminal element
- Conducted January 28, 29, and 30, 2013

Demonstration Crackdown— Operation Clean Sweep

- Enforcement arm included over 125 KCPD, ATF, FBI, U.S. Marshalls, Postal Inspectors
- 47 warrants cleared
- 15 new federal, state charges filed
- 91 residences checked or knock-and-talked



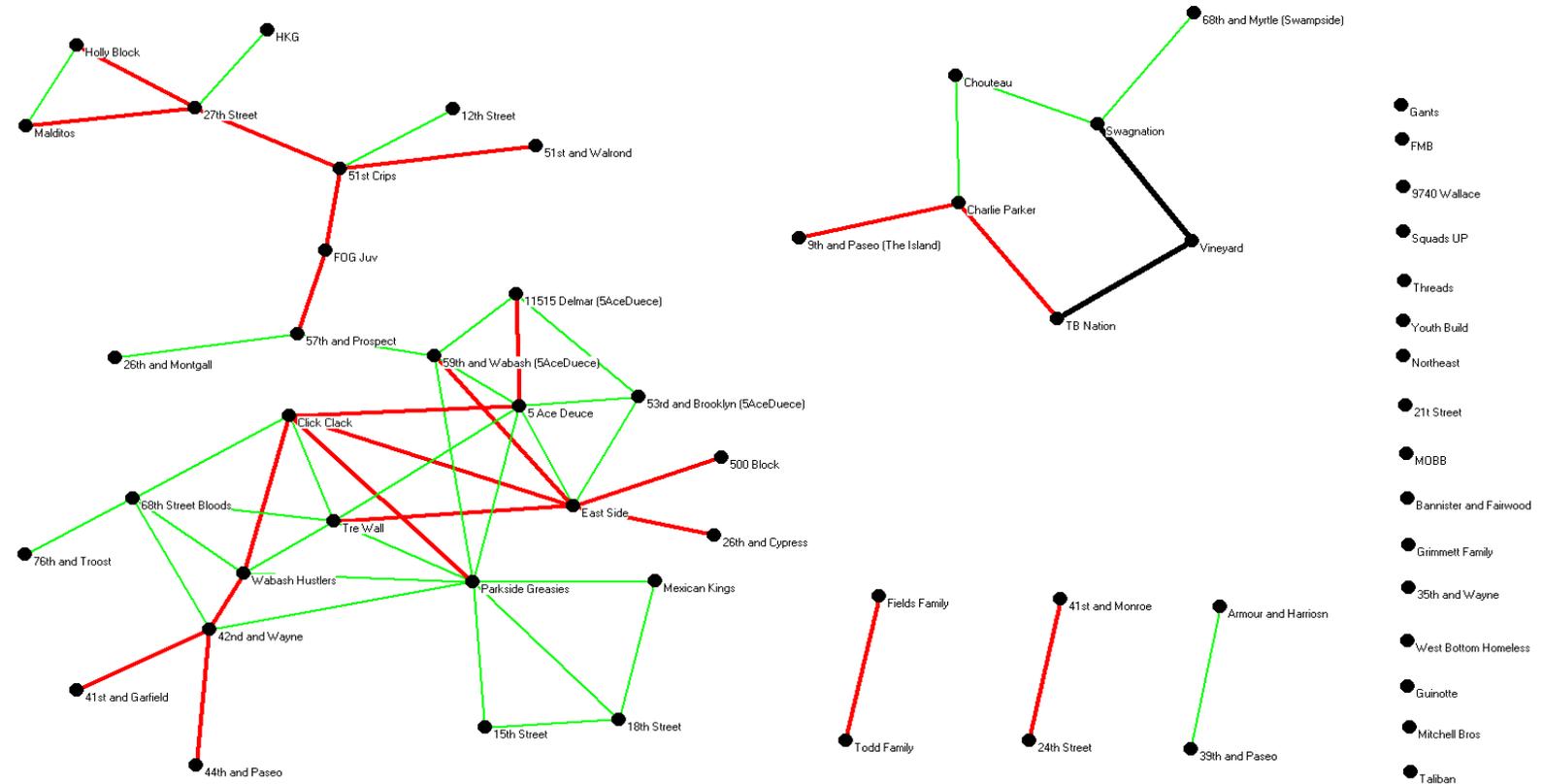
September 2014 Group Audit—4 Results



- 57 department members—line-level officers
- 66 violent groups identified
- These groups had a total of 832 members
 - 47.5% of the groups were considered extremely violent
 - 13% of the groups were considered highly organized

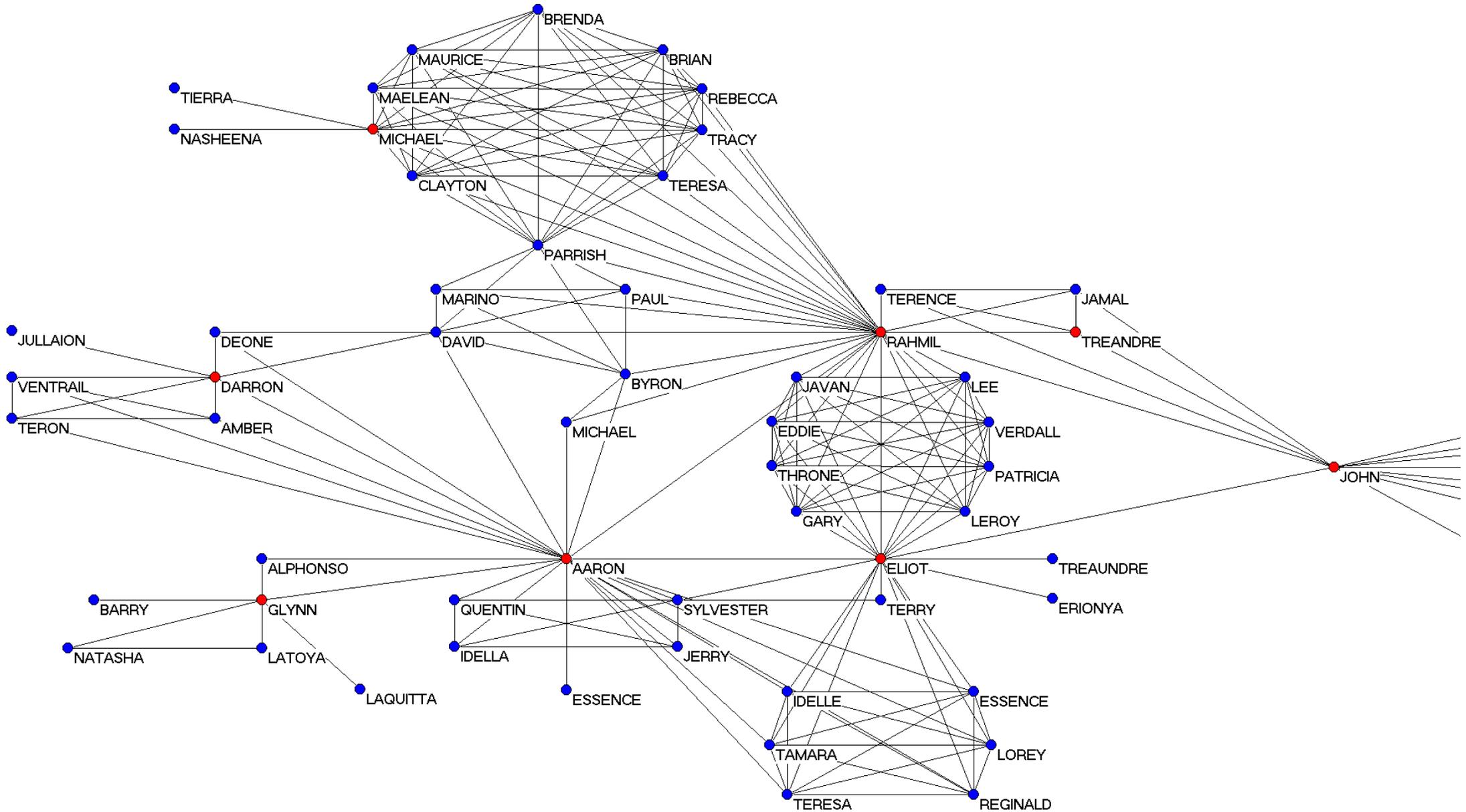
Group Social Structures

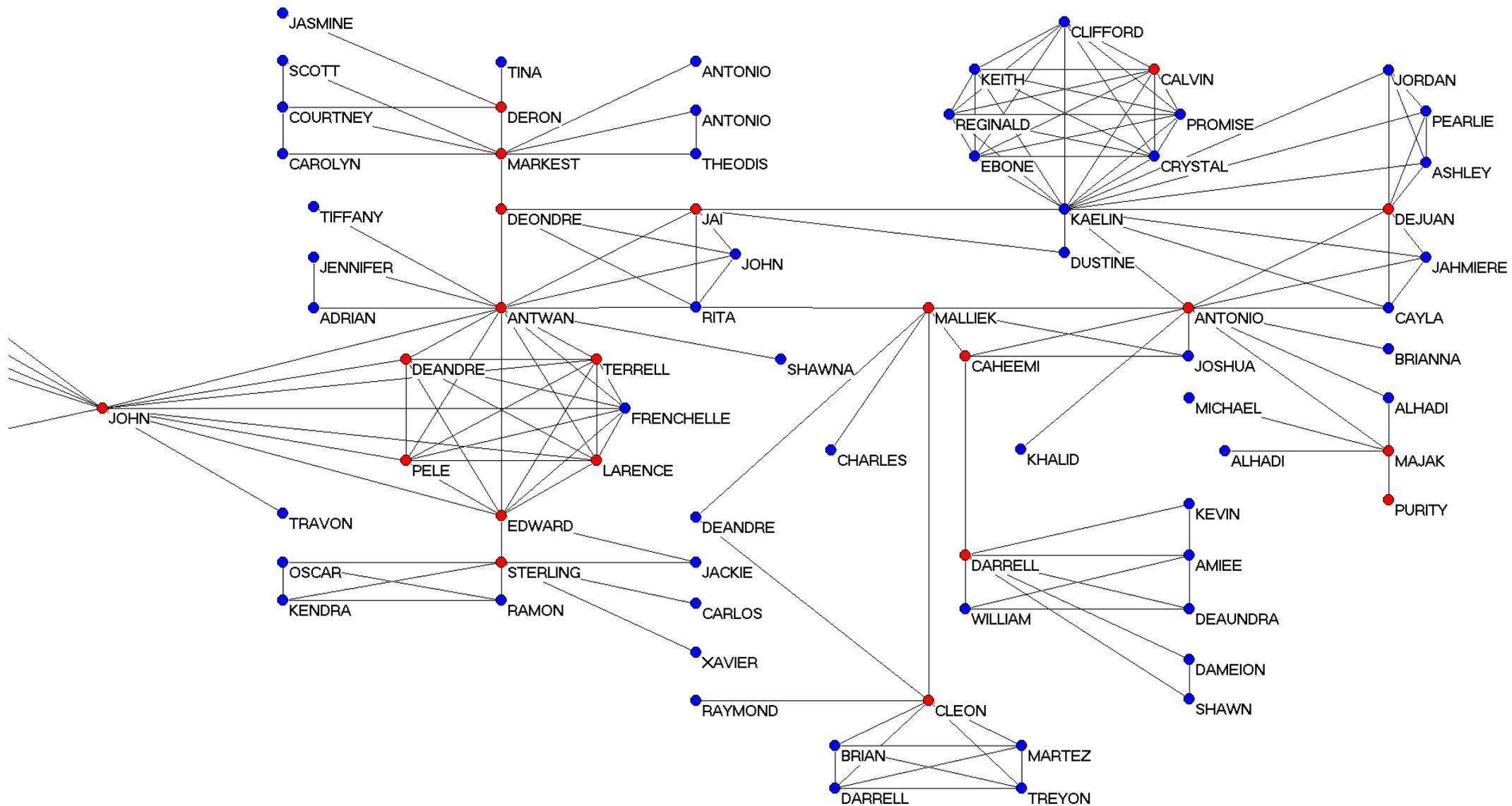
- Determine social structure of all “groups” involved in violence
- A group is any social structure of individuals connected by relationships and not necessarily designated as a “gang”

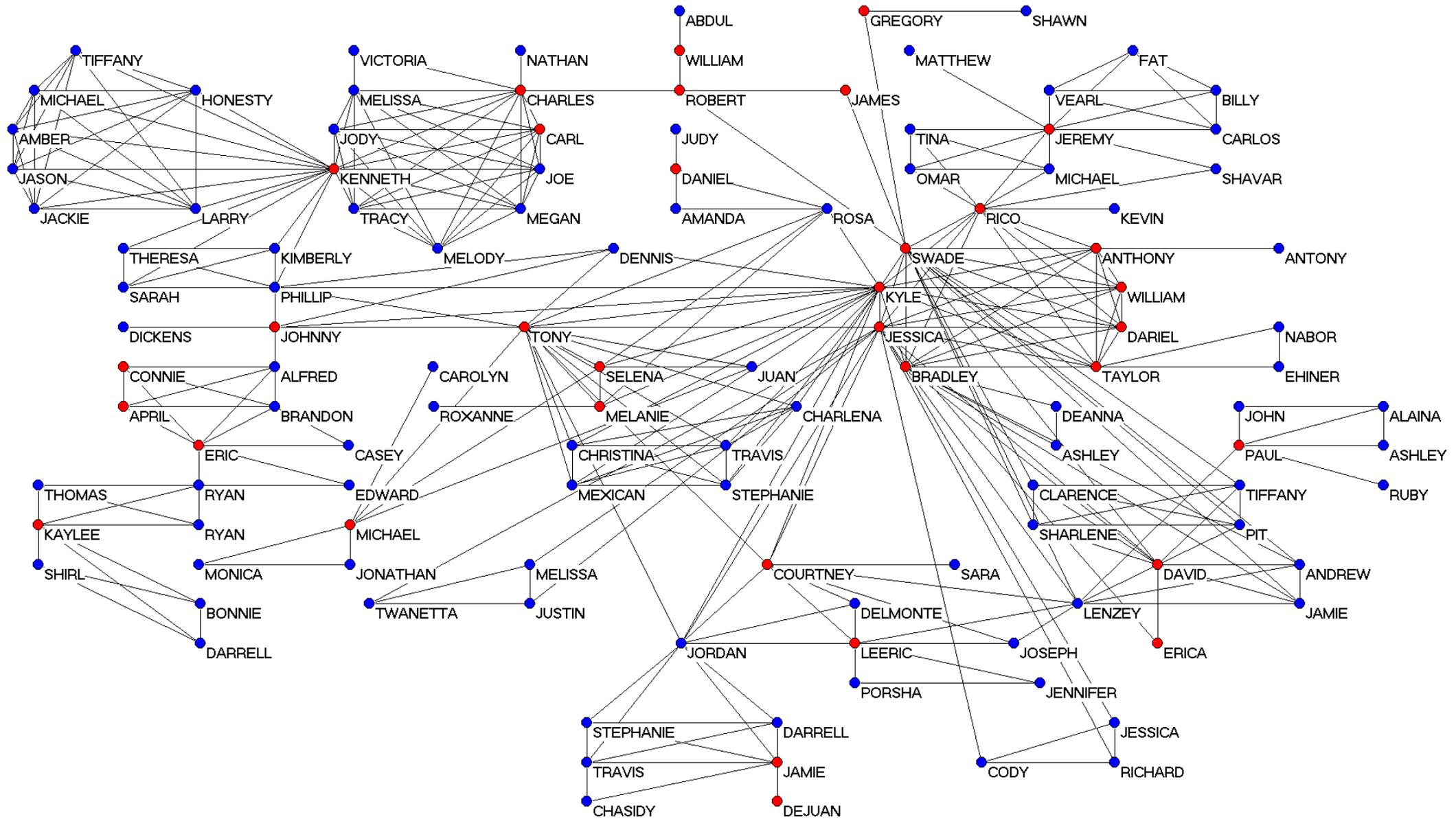




Group Audit Sociograms







Group Interventions



- Conduct notifications via “call-in” to key individuals of all groups, putting them “on notice” that violence will not be tolerated and has severe consequences to the first group that commits a murder
- Offer social services support, such as “life skills, substance abuse, anger management, education, employment preparation etc.”
- Follow up with severe enforcement on first group that commits a murder utilizing the full strength of the NoVA collaborative
- Repeat group intervention process a minimum of four times per year, each time educating the groups of the consequences of violence and what has happened to others who committed violence before them

Selection for Call-Ins



- 66 groups identified through group audit
- 2 individuals selected from each group
- Consideration given to those holding “betweenness centrality”
- Consideration given to individuals on probation and parole

- The next **group-related** homicide
- The **most violent group**
- Will receive **special attention** from this law enforcement partnership

107th and Blue Ridge Group

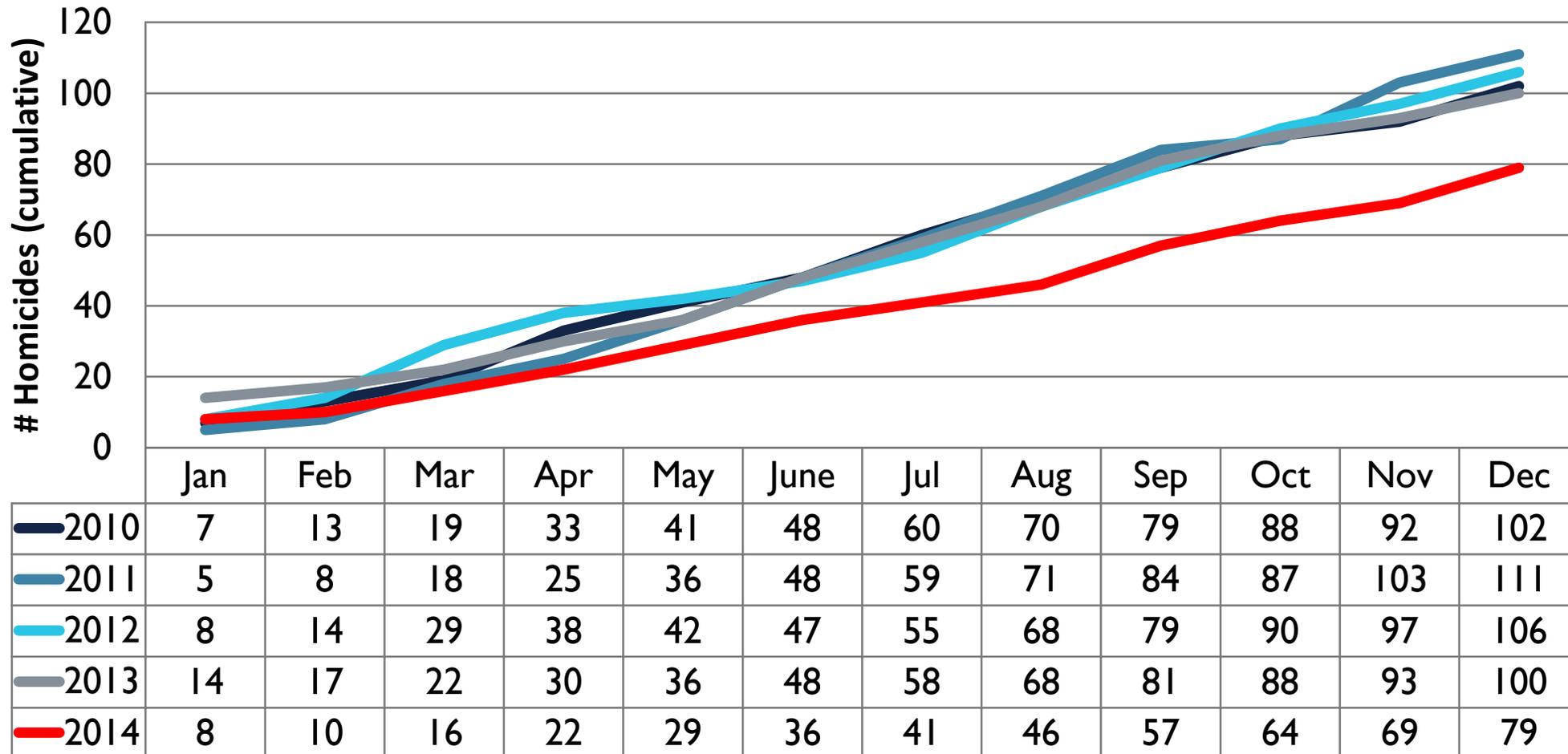


Law enforcement directly focused on this group because **they were involved in the first group-related homicide** after October 2014 call-in

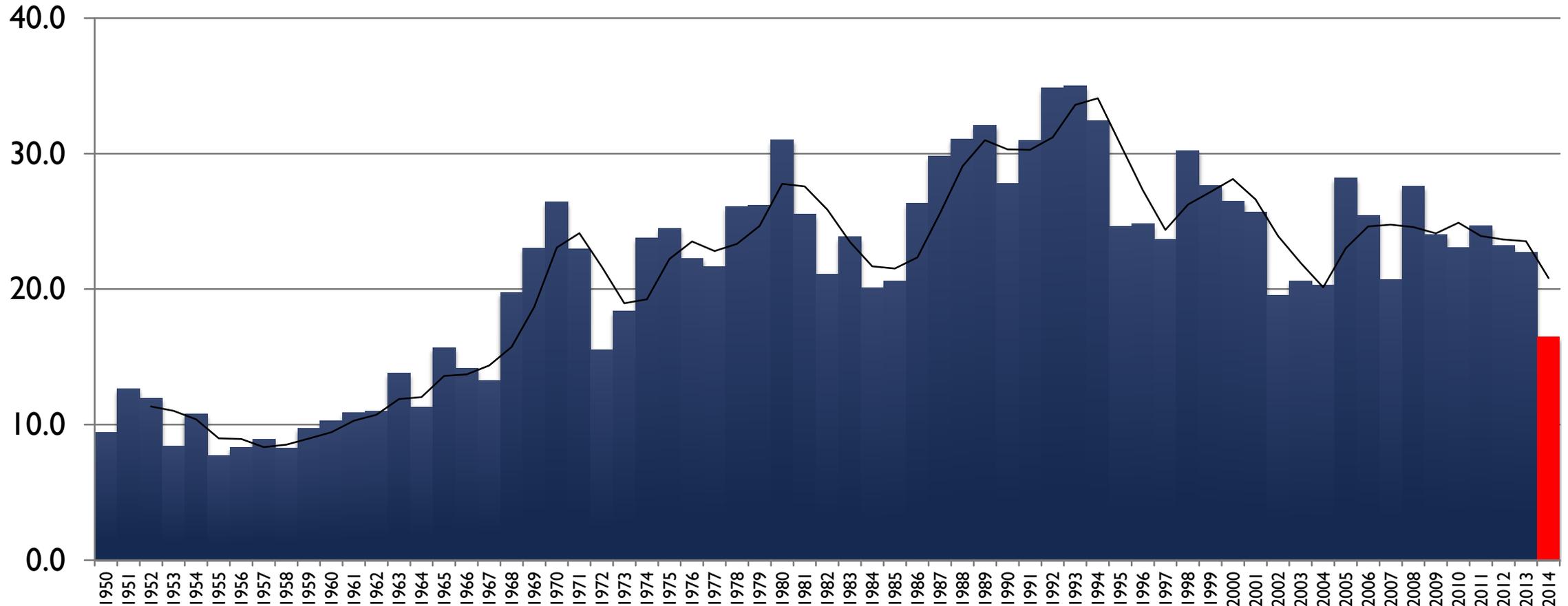
Angel Hooper, Victim



Kansas City Monthly Homicides (Cumulative Per Month)



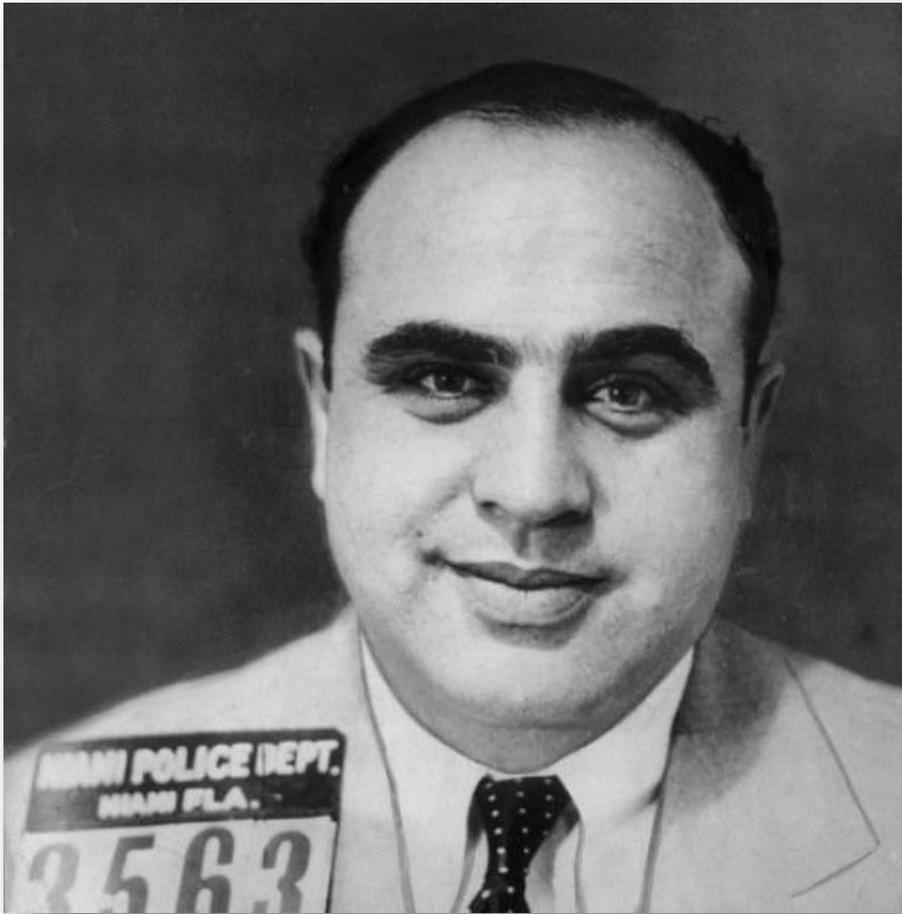
Kansas City Homicides Rate/100k—1950 to 2014



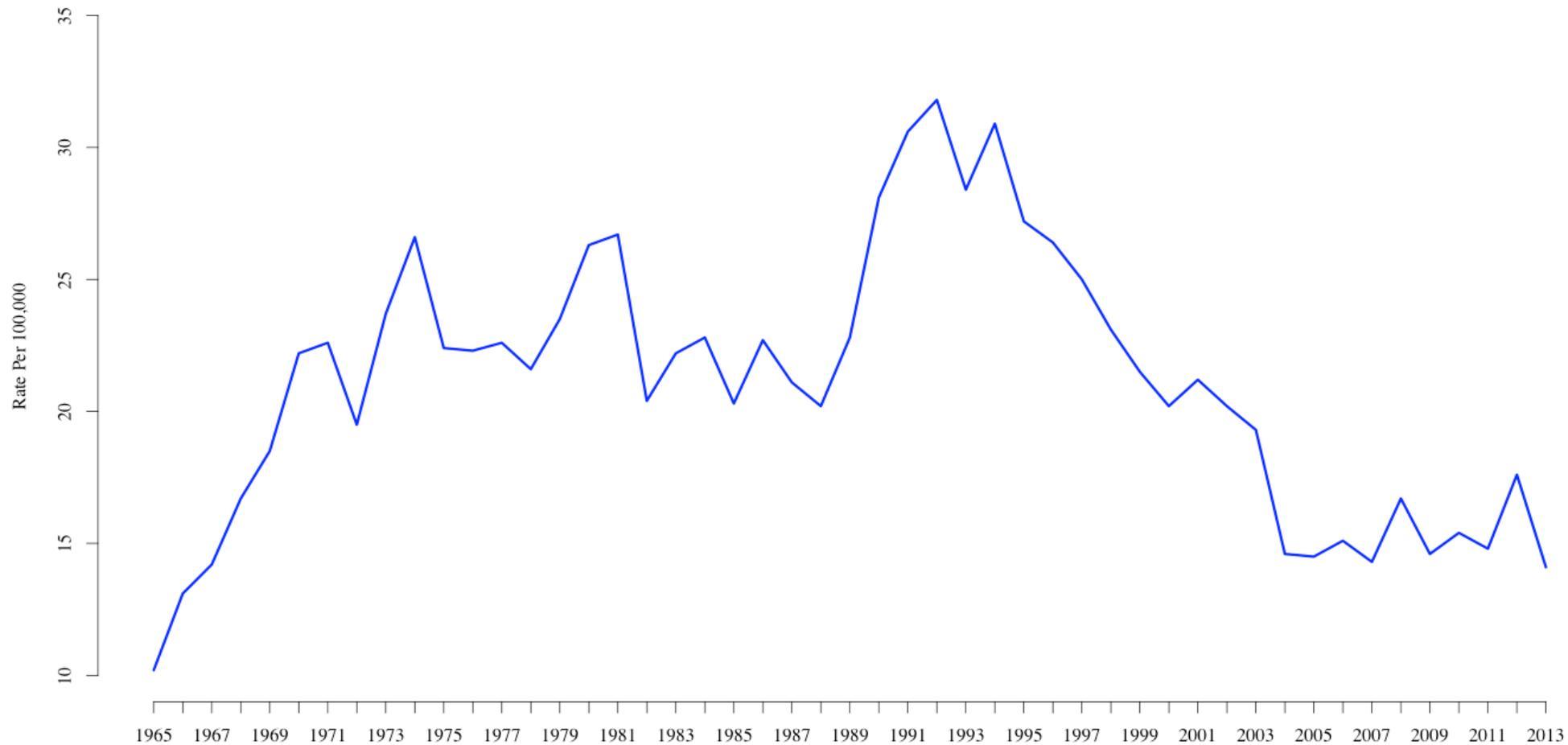


Using SNA for Violence Reduction: The Chicago Experience

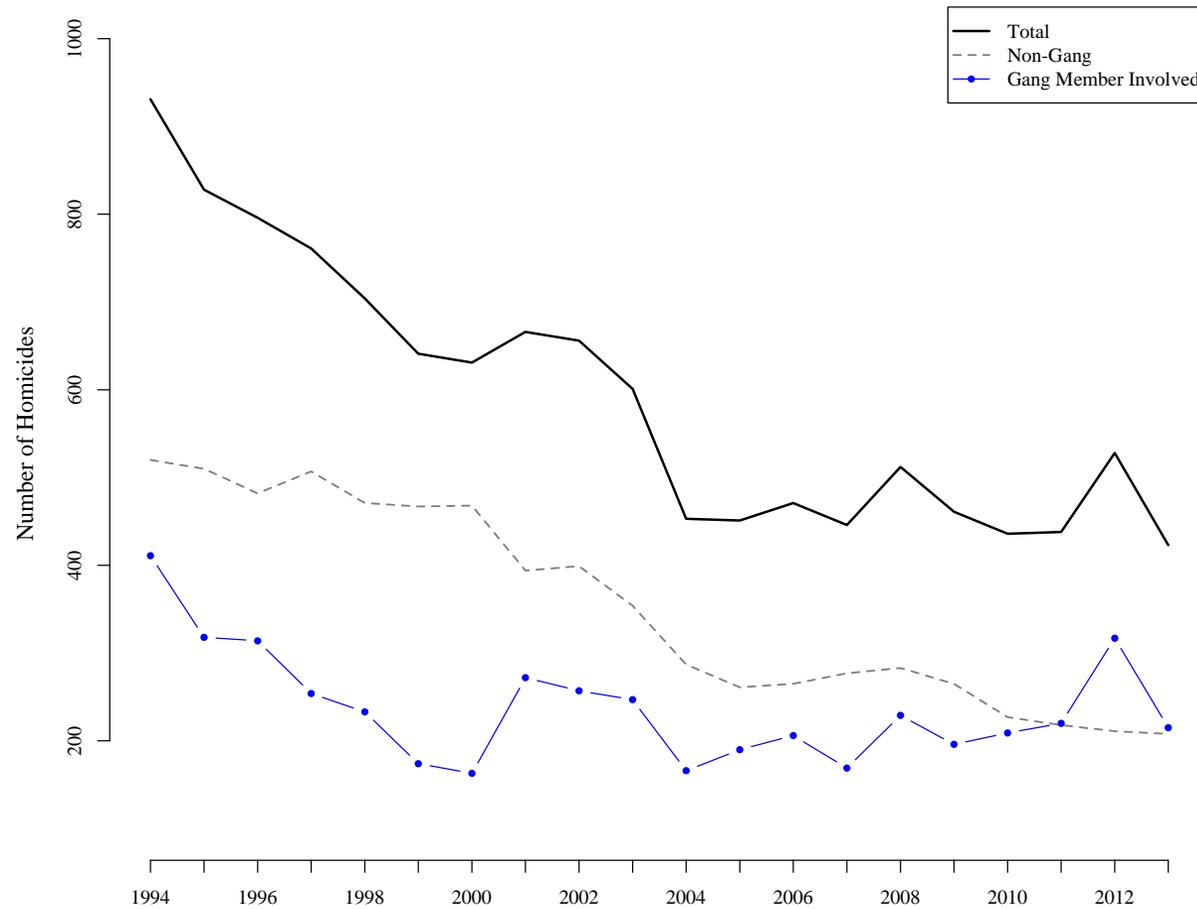
Chicago, Illinois



Homicide Rates in Chicago, 1965 to 2013



Gang Homicides



Group Violence Reduction Strategy (VRS)



- Started in August 2010
- Focused on gang member-involved shootings
- Originally in 2 (out of 25) police districts; expanded thereafter
- First task was to conduct “gang audits” in all police districts

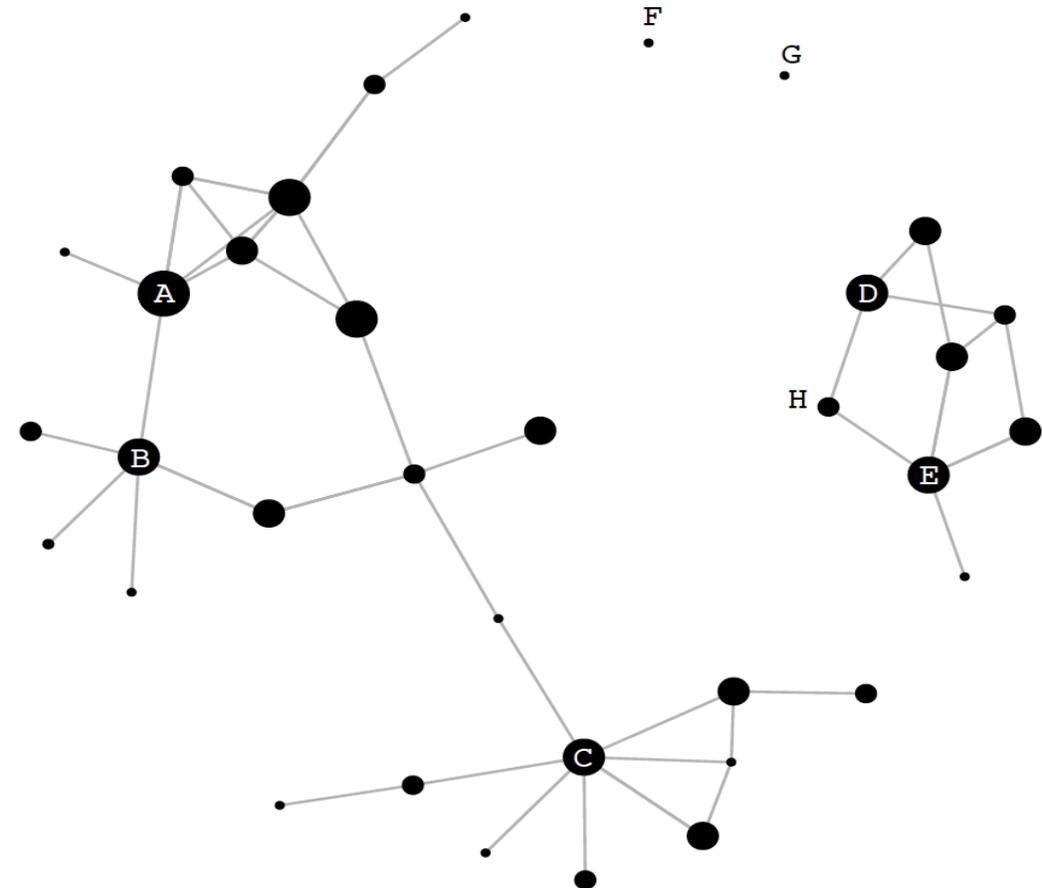
Lessons From Gang Audits



- Old gang “nation” systems largely out of date/falling apart
- Identified > 800 smaller gang “factions”
 - Smaller in size
 - More geographically centered
 - Still claim larger allegiance, but often cross traditional group boundaries

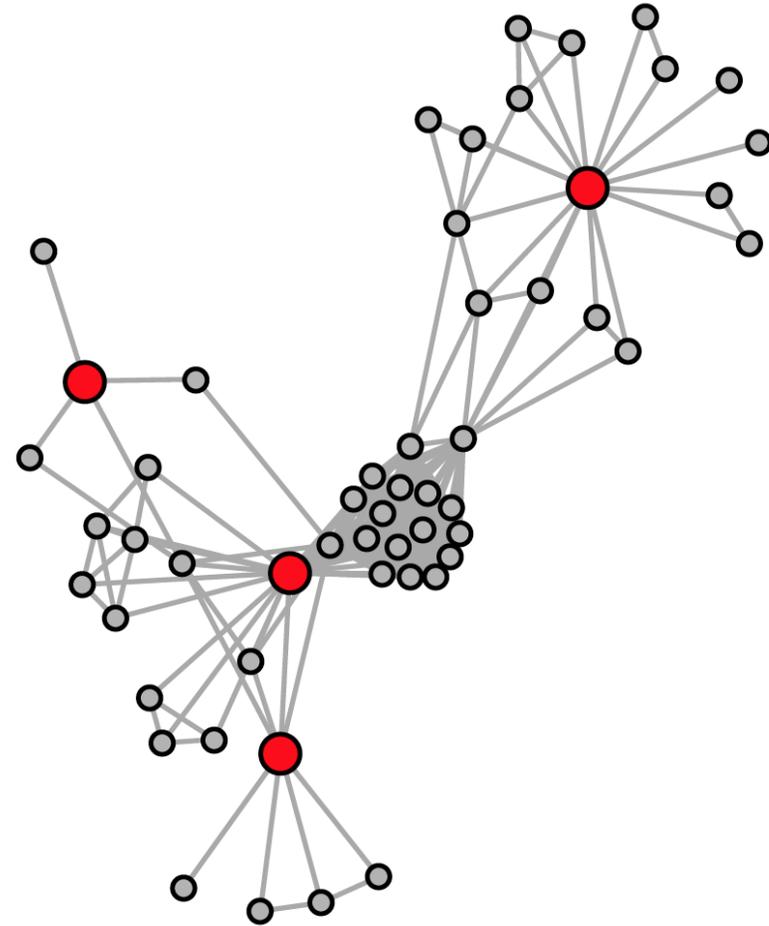
Call-In Approach

- (I) Use audits to identify most “active” factions
- Example—conflict network (nodes = factions) in one police district



Call-In Approach

- (2) Identify “important/influential” individuals within the faction
- Example—co-offending network (nodes = factions) for **one** faction

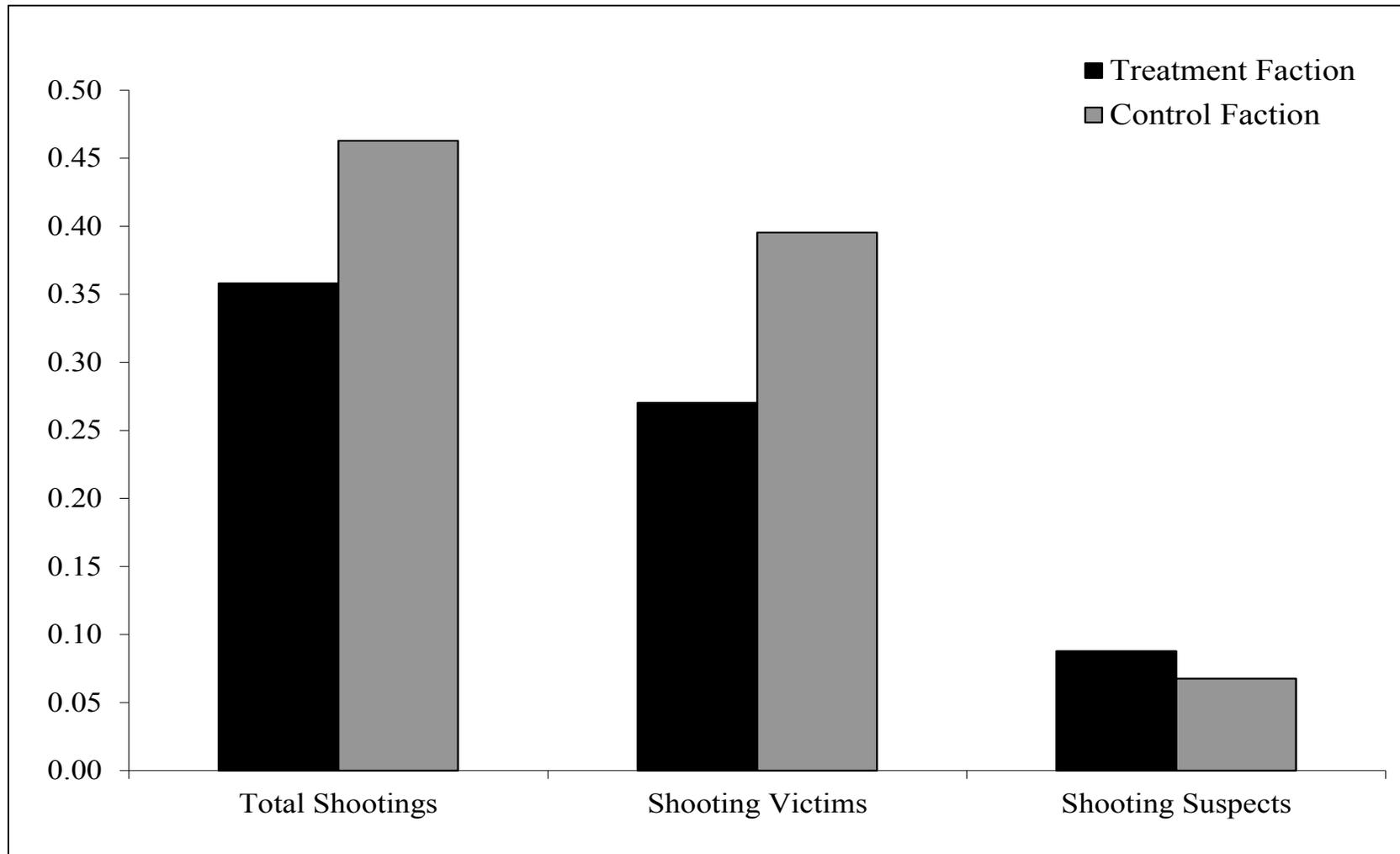


Call-In Results



- Between August 2010 and April 2014, called in $n = 149$ different factions
- Evaluation looked at 12-month post-call-in shooting behavior vs. 12 months prior
- Compared treatment groups vs. matched control groups
- Results find:
 - 23% reduction in overall shootings
 - 32% reduction in victimization

Summary of Results





Challenges of Using SNA in Law Enforcement

What do these pictures have in common?



9/11

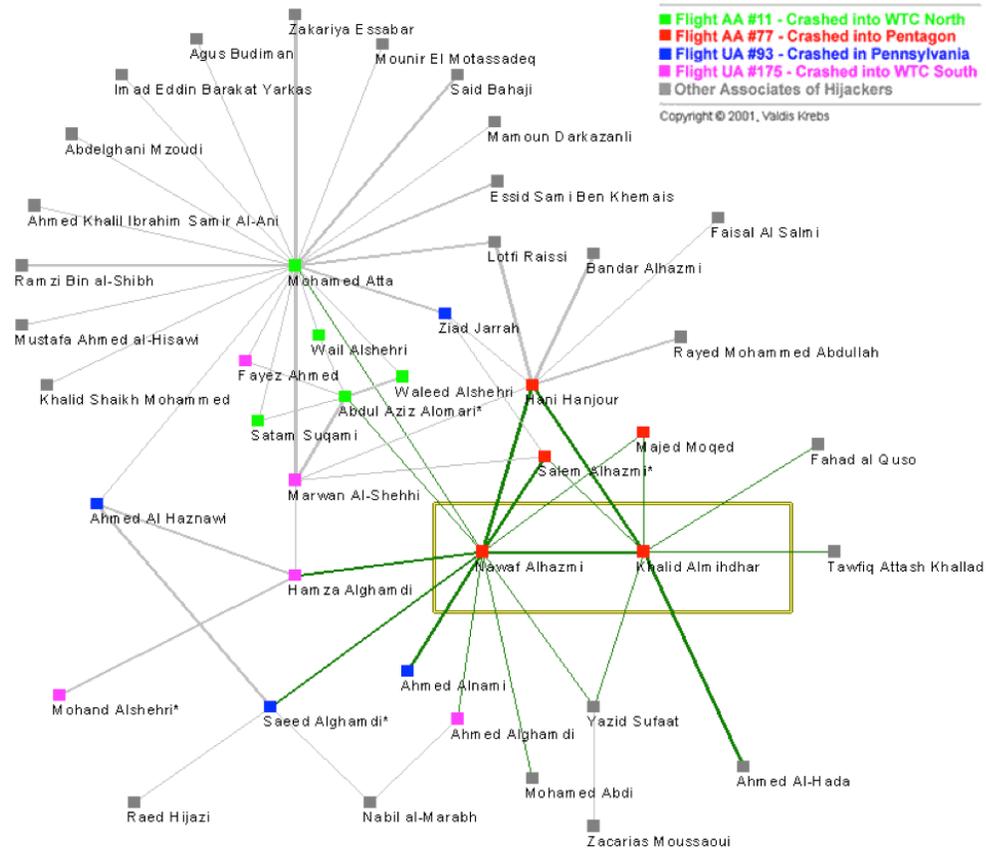


Figure 3 - All 2 step links from two known suspects

Barriers to Furthering SNA

- Physical separation of investigative elements
 - Covert locations tend to be huge silos
- SNA dismissed by “tech-challenged” personnel
 - First SNA models may hit the trash if training not conducted
- Paper files contain large amounts of relational and node data
 - Gang files, DIRs
- Human knowledge of relationships not documented
 - Patrol elements fail to complete FIFs
- Investigative elements unwilling to talk or grant access to files
 - Our case will be compromised (case unsolvable, crime continues)



Officer Safety Issues



- SNA has outlined numerous undercover and long-term federal investigations
- Units were not adhering to “deconfliction” practices dictated by policy
- SNA charts need to be kept out of public view and in secure environments

Command and Line Element Misconceptions



- Social Network Analysis is mistaken for social media analysis
 - You guys are doing a great job with that “Facebook stuff”
- The “You can’t have this—where did you get this?” directive
 - All of our initial SNA data came from LE records management systems everyone has access to, not confidential documents
- SNA will contain all walks of life, not just criminal elements
 - “Their data is horrible; they have a security guard mapped out”
- The “Let’s go arrest everyone” mentality
 - SNA must be a tool to drive smart and impactful crime reduction operations

Probable Cause and Reasonable Suspicion

- The United States Constitution is still in effect when using SNA
- Being identified in a social structure does not transition to “probable cause or reasonable suspicion”



Prosecutors and Discovery



- SNA should be considered “raw intelligence”
- SNA should never be referred to in investigative or public access documents
- The process of preparing networks should always be accomplished with information that we legally have access to in the course of our duties
- SNA in the LE realm should never be utilized for personal or political gain

Future



- SNA can be used to implement “directed patrol” measures for patrol elements. This gives agencies a core focus to drive operations utilizing limited resources. This type of intelligence-led policing also eliminates “fishing” or “sweeps” in neighborhoods where community trust lags
- Customized outreach beyond traditional enforcement measures

Summary

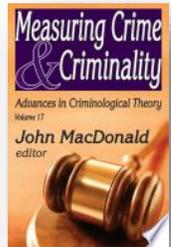


- The practical utility of SNA
- What SNA is not
- The “perfect storm”
- Lots of data—little intel
- Implementing SNA creates work, which leads to improvements in violence reduction
- Validate the networks produced from data
- SNA resources available

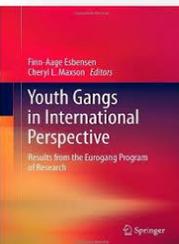
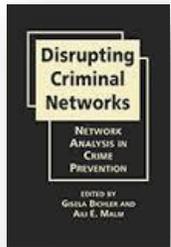
Question-and-Answer Session



Resources



- “The Coming of a Networked Criminology?” by Andrew V. Papachristos, Ph.D. (in *Measuring Crime and Criminality: Advances in Criminological Theory*, edited by John MacDonald)
- “Research in Brief: Incorporating Social Network Analysis Into Policing,” by Dr. Andrew Fox and Dr. Kenneth Novak, University of Missouri—Kansas City; Joe McHale, Captain, and Andries Zylstra, Detective, Kansas City, Missouri, Police Department
- *Disrupting Criminal Networks: Network Analysis in Crime Prevention*, by Gisela Bichler and Aili E. Malm
- “Gang Organization, Offending, and Victimization: A Cross-National Analysis,” by David C. Pyrooz, Andrew M. Fox, Charles M. Katz, and Scott H. Decker



More Information



- For follow-up questions related to the SNA Webinar, please contact Dr. Chip Coldren, (708) 804-1001 or coldrej@cna.org

- For questions related to the VRN program, please contact:

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