

Using Data and Analytics to Identify Prolific Violent Offenders: Lessons Learned from the Cuyahoga County (OH) Prosecutor's Office's Crime Strategies Unit


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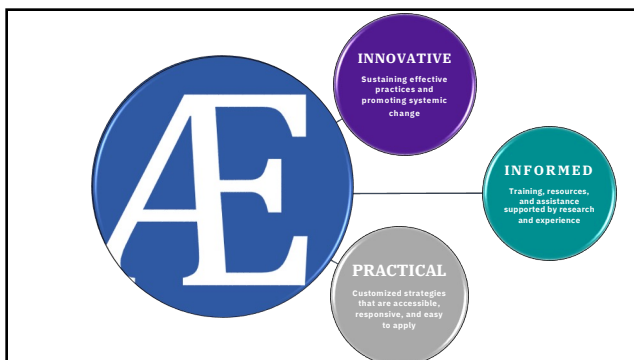
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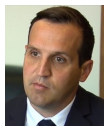
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Collaboration



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Learning Objectives

- Understand the process of identifying prolific offenders through an incident database and social network analyses;
- Develop and implement a standardized, data-driven set of criteria to prioritize investigations and prosecutions; and
- Utilize technology to map violent offenders and incident locations to better inform the response to violent crime.

Hopefully, get you started, or at least thinking about, how to leverage data you have or could have for data-driven prioritization of cases.

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Crime Strategies Unit Cuyahoga County Prosecutor's Office (CCPO)

- **CCPO:** largest prosecutor's office in Ohio, works with over 56 police municipalities and other law enforcement agencies to prosecute felony-level crimes.
- **Crime Strategies Unit:** specialized investigative unit formed in 2015 to *coordinate* law enforcement efforts in the County in implementing **violent crime reduction strategies**.
- **Key purpose:** *liaison* to reduce miscommunication, fill information gaps, and facilitate intelligence flow. Coordinating efforts concentrate primarily on:
 - summarizing **violent and gun incidents** for a number of jurisdictions (**incident data**),
 - disseminating **summaries** to various agencies,
 - analyzing the incidents for **connections, leads, and crime patterns**,
 - hosting **regular meetings** with local, state, and federal law enforcement representatives to share information on violent crimes and offenders, and
 - **coordinating multiple agencies' investigations** into violent and/or gun crimes.

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Incident Data + NIBIN Data

Incident database + other intel sources = rich details




National Integrated Ballistic Information Network (NIBIN)

- Evidence from firearm test fires and shell casings
- Link and prevent firearm-related violent crime
- Maintained by the Bureau of Alcohol Tobacco Firearms and Explosives (ATF)



CSU also reviews NIBIN leads weekly+

- If NIBIN intel proves valuable for a particular case or suspect, CSU makes a note for tracking purposes
- Adds linkages: *person, place, weapon*



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Study Purpose

Q: Who are "prolific offenders"?
A: Those committing most of the violent crime

Ask #1: Identify "Prolific Offenders" in Cuyahoga County based on available data and not just criminal histories

- How to make sense of mounds of unstructured data?
- Needed to be evidence-based (or evidence-supported).
- Aligns with new [DOJ-approved, 10 essential actions to reduce community gun violence](#)

Ask #2: Identify key people *and* places driving the violence (social network)


Purpose: Triage cases for prosecution more effectively and efficiently.
Should be handled by specialized unit or general felony unit?

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Incident Data

Developed and maintained by CSU:

Incident reports for violent and/or gun crimes from the Cleveland Division of Police, Cuyahoga Metropolitan Housing Authority Police Department, Garfield Heights Police Department, & Maple Heights Police Department (less extent)




- 94% of incidents from Cleveland PD
- Data were (nearly) daily entered into the Incident database by CSU crime analysts (summarized). (Now, automated process from Cleveland to CSU.)



Reviews: *assaults, burglaries, homicides, robberies, shooting offenses, weapon violations, & carjackings*

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Data Collection



Incident reports vary greatly from report to report.

Coding scheme and codebook developed specifically for the database by CSU.

Results: **recategorization of crime classification** for consistency.

Additional info collected: address, information on primary suspect and victim (if known), type of weapon involved, and summary narrative written by CSU crime analysts

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Majority of incident reports do NOT have named suspects (61%)

Incident Database

33,242 violent incidents from Jan 2016 to July 2021

Of incidents with **unnamed** suspects, the **most frequent crimes** are:

- **street robbery (n = 4,848)**
- **shooting offenses (not into habitation) (n = 4,201)**
- shooting into habitation (n = 2,452)
- commercial robbery (n = 1,606)
- carjacking (n = 1,565)
- physical assault (n = 1,437)
- stolen vehicle (n = 845)
- homicide (n = 540)
- acquaintance robbery (n = 513)

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Majority of incident reports do NOT have named suspects (61%)

Incident Database, cont'd

33,242 violent incidents from Jan 2016 to Jul 2021

Types of weapons connected to incidents with **unnamed** suspects included:

- **firearm (n = 13,101)**
- hands, fists, and feet (n = 3,051)
- unknown weapon (n = 1,477)
- Knife/stabbing instrument (n = 719)
- blunt object (n= 392)
- car (n = 295)
- other, missing, or threat of a weapon comprised the remaining percentage (n = 2594)

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Identifying the Most Prolific Offenders

Aims and Objectives






Also: what can be learned from incident data?

Database comprised of *incidents*. We sought to identify the higher-risk *individuals*.

Person-based: criteria based primarily on the characteristics of the *incidents* instead of the characteristics of the individuals.

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Objective: Develop and implement a ranking/standardized data-driven **set of criteria** for prioritizing the investigation and prosecution of cases with the following parameters. Criteria need be:

	Practical	based on data contained in or could be merged with the database (data on linkages from incident data)
	Manageable	a relatively small number of individuals (in order to prioritize)
	Comprehensive	information that was readily available for all or most of the incidents
	Statistically variable and correlated	criteria needed sufficient statistical variation (e.g., not all individuals could be in one category) but also be interconnected with the other criteria
	Sustainable	criteria needed to be developed so CSU could maintain a "live" scoring system and update the list in real-time

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Criteria serve as a *proof of concept* (framework) by which CSU can readily:

- Run queries on those connected to large number of crimes
- Identify most prolific offenders via analysis of CSU databases
- Rank those individuals *by threat level*, and
- Conduct social network and spatial analyses to help identify and visualize linkages

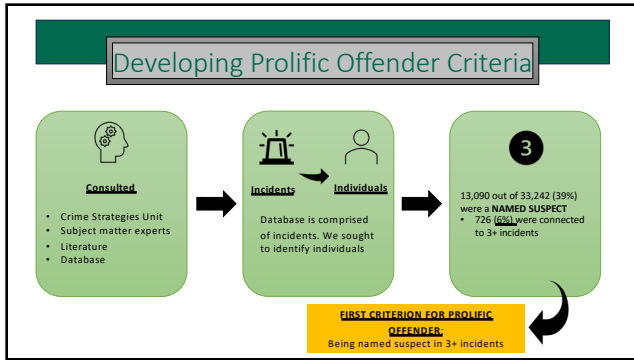
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Of note, several commonly used criteria to identify prolific offenders were **not** used (e.g., Fox, Allen, & Toth, 2022), i.e., **criminal histories** and **gang affiliation** were not included criteria because this information is not readily available to the unit in a database format.

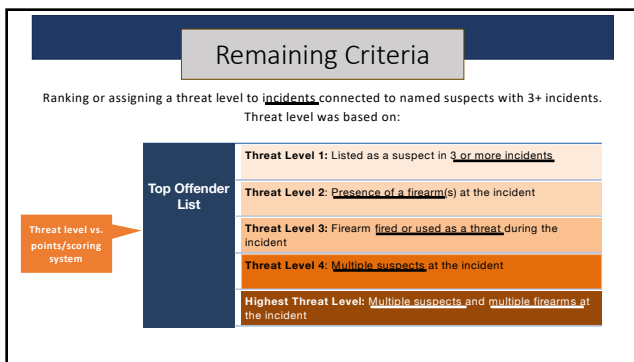
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Court assessments not useful for our purposes because not comprehensive nor statistically variable.

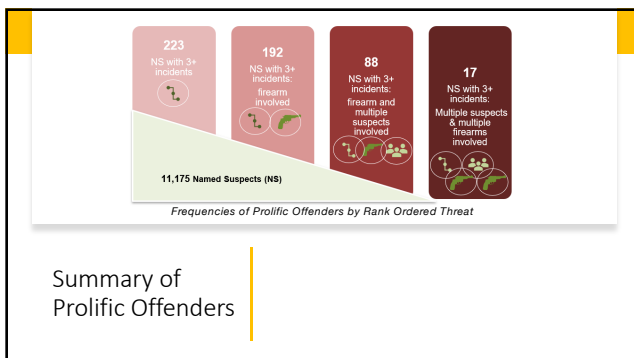
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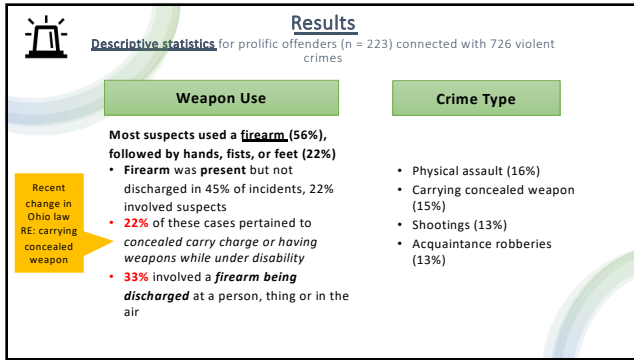
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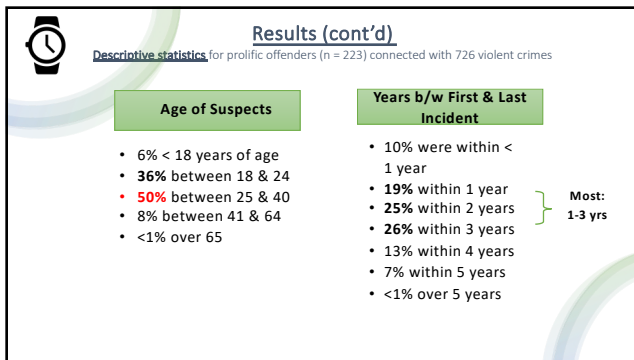
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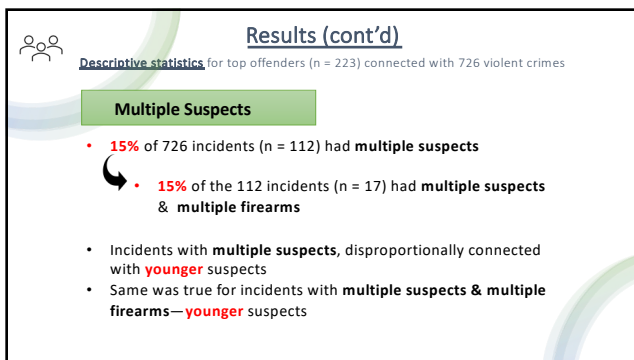
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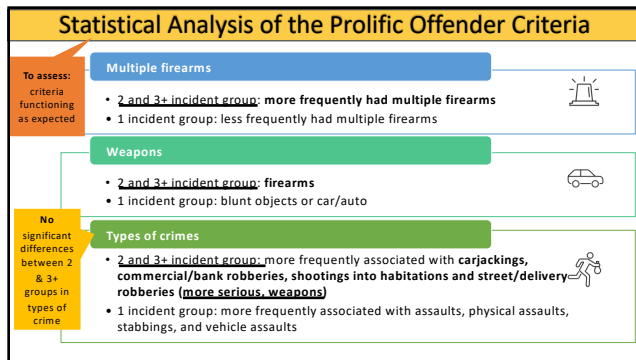
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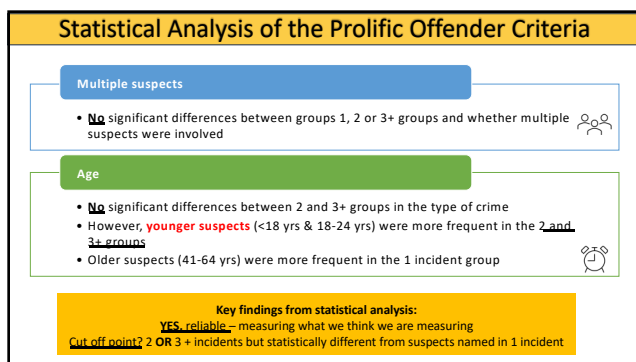
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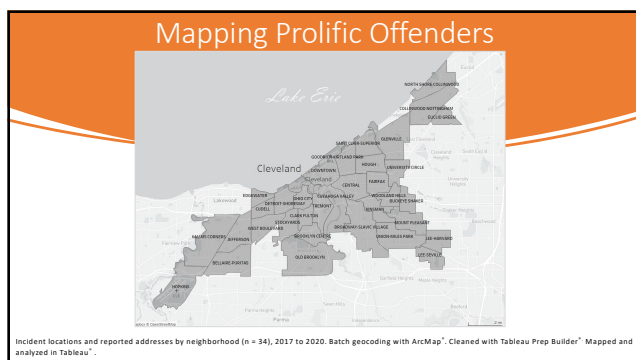
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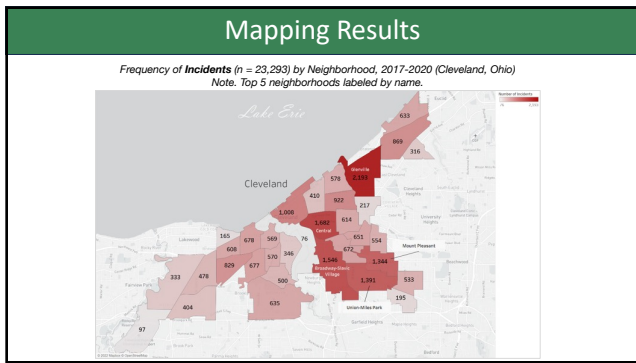
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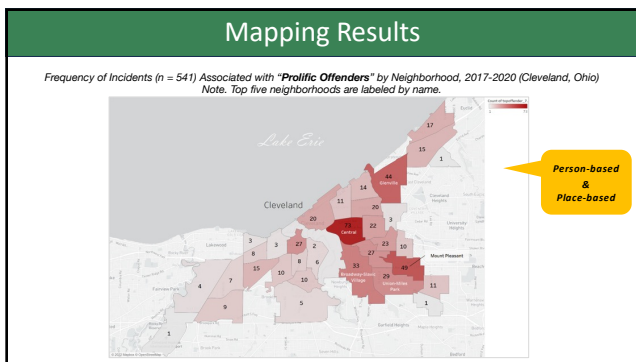
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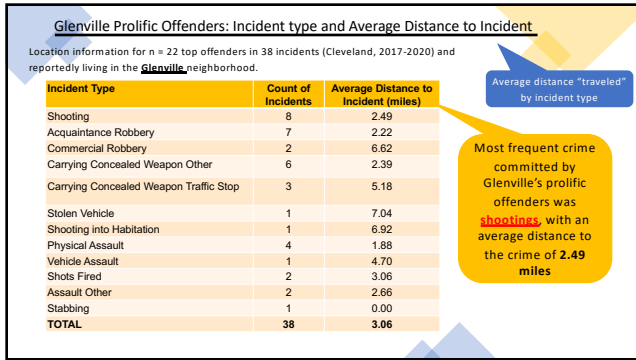
Deeper dive
 2 of the 34 neighborhoods:
Glenville and Central

(mapped reported addresses of suspects identified as prolific offenders and associated crimes for suspects living in the top 2 incident neighborhoods—Glenville and Central)

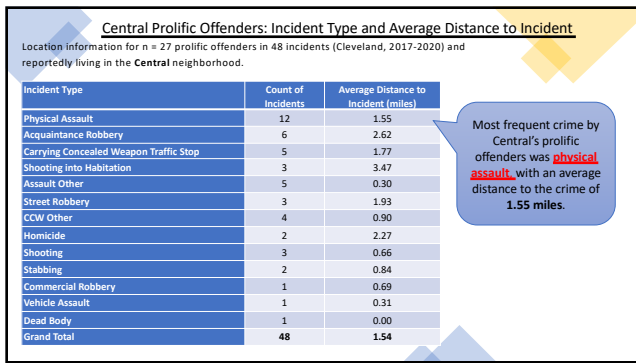
Example: Mapping Suspect Residence & Location of Crime

- Database includes suspect addresses when reported by police
- Incorporating where suspects live in relation to the crimes they commit can improve policing, investigative, and intelligence efforts.

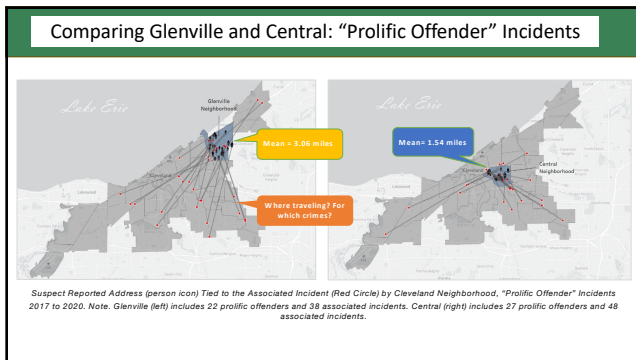
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Incident Type	Central Incident Count	Glenville Incident Count
Shooting	291	433
Physical Assault	259	247
Street Robbery	214	256
Carrying Concealed Weapon Other	153	121
Shooting into Habitation	137	270
Acquaintance Robbery	104	128
CCW Traffic Stop	101	83
Stabbing	79	74
Commercial Robbery	61	107
Carjacking	60	113
Assault Other	53	74
Vehicle Assault	43	72
Shots Fired	33	56
Homicide	27	57
Other Weapons	26	32
Stolen Vehicle	22	41
Delivery Robbery	9	9
Home Invasion	4	14
Weapon at School	2	1
Sexual Assault	2	3
Dead Body	2	3
Grand Total	1682	2192

Incident Counts, Top Two Cleveland Neighborhoods from 2017 to 2020

Glenville did experience much higher numbers of violent crimes from 2017-2020. (But Glenville has 2x the population of Central).

RE: shooting, shooting into a habitation, shots fired

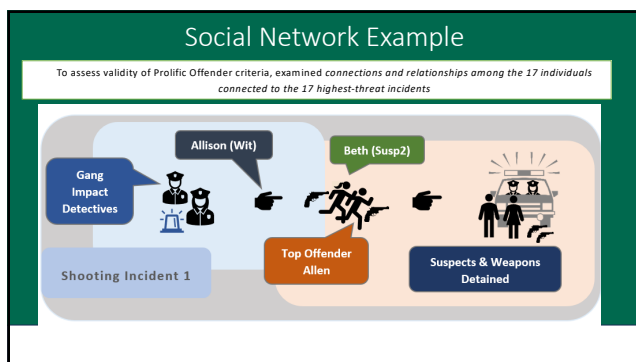
Glenville, n = 759

Central, n = 461

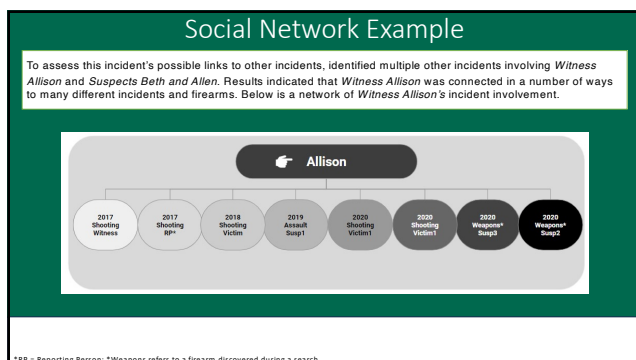
~40% lower shooting incidents in Central

Preliminary findings emphasize the need to further "dig in"

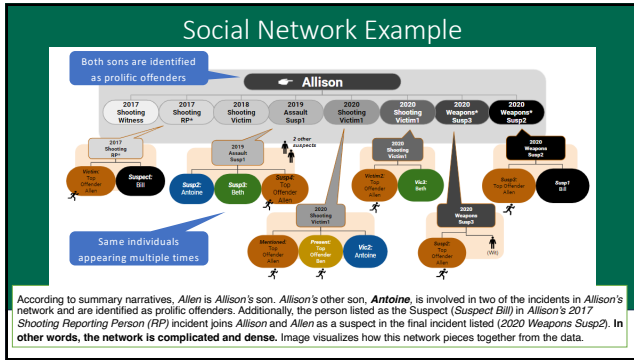
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Social Network Takeaways

The social network findings reveal: **prolific offender under highest threat level incident, Allen** was using **firearms** and **strongly networked with Allison and Beth**.

With further investigation, **Allen and Allison are related**, but they have been involved in **multiple incidents with Antoine (also family), Bill, Ben, and Beth**.

Data from the incident reports provide important **potential linkages of individuals to each other across different crime scenes**, providing **qualitative details of who is connected and how they are connected to crimes**.

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Prolific Offenders: Where are the n = 223 now?

As of February 2, 2024 (~5.5 years total observation, 2.5 years post-observation):



	All persons n (%)	31 and over* n (%)	30 and under* n (%)	24 and under* n (%)
Incarcerated/under supervision	93 (42%)	29 (31%)	64 (50%)	39 (54%)
Currently in prison	76	21	55	34
(Convicted of a homicide)	(15)	(2)	(13)	(6)
On parole or judicial release	17	8	9	5
Deceased, killed in a homicide	5 (2%)	1	4	4
Killed in a homicide or under supervision	98 (44%)	30 (32%)	68 (53%)	43 (60%)
Total	223	95	128	72

*Age at the end of the observation period (July 2021)

Youngest age groups

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Limitations

-  Prolific offender criteria are based on *identified* suspects
-  Original software platform for database, not ideal; with IPS funds, now tracking SQL server

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Full report available by request

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