

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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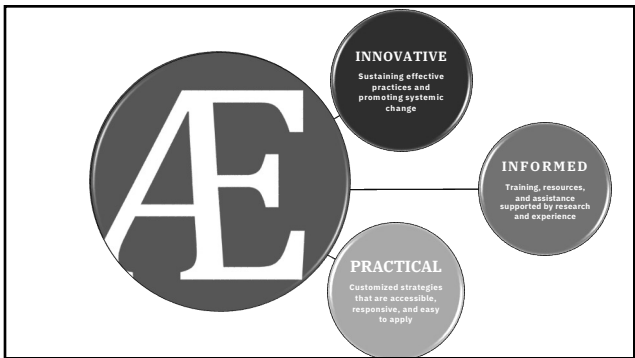
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Collaboration



Criminology
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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.

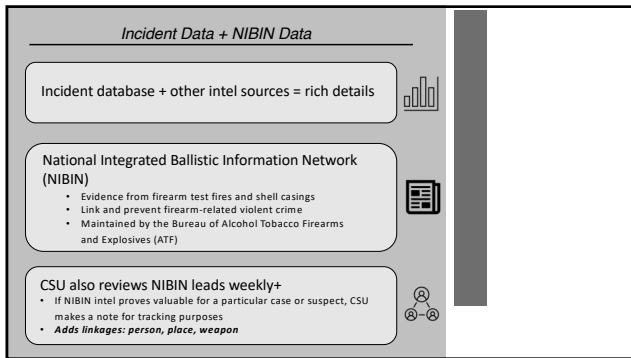
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Crime Strategies Unit Cuyahoga County Prosecutor's Office (CCPO)

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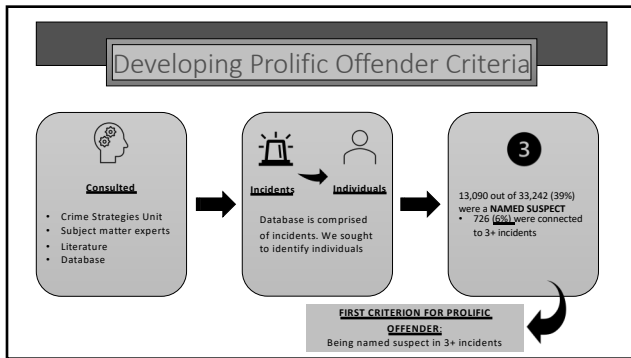
Criteria serve as a *proof of concept* (framework) by which CSU can readily:

- 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

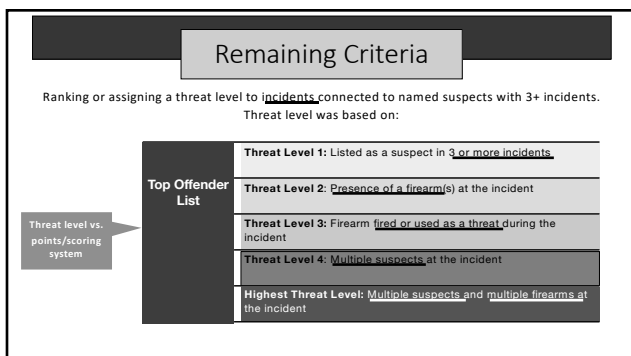
Of note, several commonly used criteria to identify prolific offenders were **not** used (e.g., Fox, Allen, & Toth, 2022), i.e., **criminal histories and gang affiliation** were not included criteria because this information is not readily available to the unit in a database format.

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

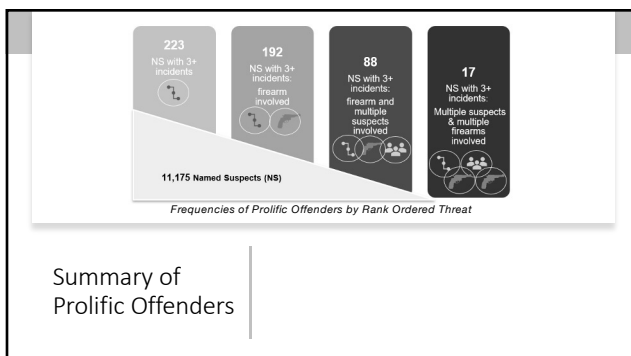
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Results

Descriptive statistics for prolific offenders (n = 223) connected with 726 violent crimes

Weapon Use

Most suspects used a **firearm** (56%), followed by **hands, fists, or feet** (22%)


- Firearm was **present** but not discharged in 45% of incidents, 22% involved suspects
- 22%** of these cases pertained to *concealed carry charge or having weapons while under disability*
- 33%** involved a **firearm being discharged** at a person, thing or in the air

Crime Type

- Physical assault (16%)
- Carrying concealed weapon (15%)
- Shootings (13%)
- Acquaintance robberies (13%)

Recent change in Ohio law RE: carrying concealed weapon

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Results (cont'd)

Descriptive statistics for prolific offenders (n = 223) connected with 726 violent crimes

Age of Suspects


- 6% < 18 years of age
- 36%** between 18 & 24
- 50%** between 25 & 40
- 8% between 41 & 64
- <1% over 65

Years b/w First & Last Incident

- 10% were within < 1 year
- 19% within 1 year
- 25% within 2 years
- 26% within 3 years
- 13% within 4 years
- 7% within 5 years
- <1% over 5 years

} Most: 1-3 yrs

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Results (cont'd)

Descriptive statistics for top offenders (n = 223) connected with 726 violent crimes

Multiple Suspects

- 15% of 726 incidents (n = 112) had **multiple suspects**
 - 15% of the 112 incidents (n = 17) had **multiple suspects & multiple firearms**
- Incidents with **multiple suspects**, disproportionately connected with **younger** suspects
- Same was true for incidents with **multiple suspects & multiple firearms**—**younger** suspects

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Statistical Analysis of the Prolific Offender Criteria

To assess: criteria functioning as expected

Multiple firearms

- 2 and 3+ incident group: more frequently had multiple firearms
- 1 incident group: less frequently had multiple firearms

No significant differences between 2 & 3+ groups in types of crime

Weapons

- 2 and 3+ incident group: firearms
- 1 incident group: blunt objects or car/auto

Types of crimes

- 2 and 3+ incident group: more frequently associated with carjackings, commercial/bank robberies, shootings into habitations and street/delivery robberies (**more serious weapons**)
- 1 incident group: more frequently associated with assaults, physical assaults, stabbings, and vehicle assaults

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Statistical Analysis of the Prolific Offender Criteria

Multiple suspects

- No significant differences between groups 1, 2 or 3+ groups and whether multiple suspects were involved

Age

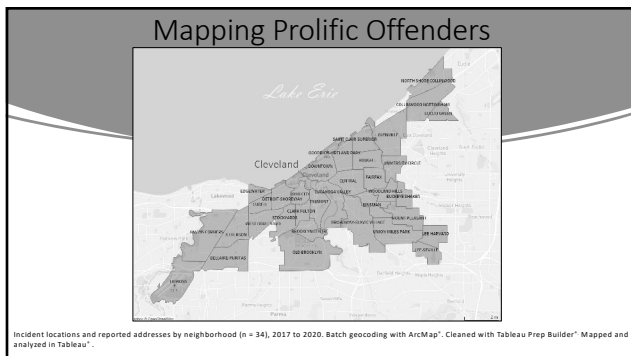
- No significant differences between 2 and 3+ groups in the type of crime
- However, younger suspects (<18 yrs & 18-24 yrs) were more frequent in the 2 and 3+ groups
- Older suspects (41-64 yrs) were more frequent in the 1 incident group

Key findings from statistical analysis:

YES, reliable – measuring what we think we are measuring

Cut off point 2 OR 3+ incidents but statistically different from suspects named in 1 incident

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Mapping Results

Frequency of **Incidents** ($n = 23,293$) by Neighborhood, 2017-2020 (Cleveland, Ohio)
Note. Top 5 neighborhoods labeled by name.

The map displays the frequency of incidents across various neighborhoods in Cleveland, Ohio. The top 5 neighborhoods are labeled by name: Shaker Square, University Heights, University City, East Cleveland, and East Shaker. Other labeled neighborhoods include 633, 603, 316, 571, 435, 632, 654, 217, 1,008, 1,262, 74, 1,290, 349, 678, 345, 605, 323, 478, 404, 97, 635, 500, 437, 1,566, 472, 554, 1,344, 1,791, 531, 319, and 635. The map also shows Lake Erie to the north and various surrounding areas like Lakewood, Parma Heights, and Shaker Square.

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Mapping Results

Frequency of Incidents (n = 541) Associated with **"*Profilic Offenders*"** by Neighborhood, 2017-2020 (Cleveland, Ohio)

Note. Top five neighborhoods are labeled by name.


Person-based & Place-based

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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).

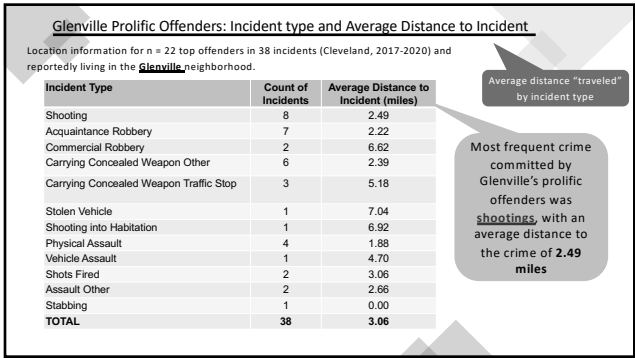


Example:

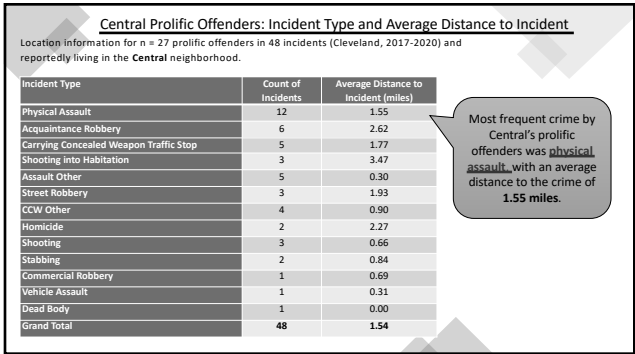
Mapping Suspect Residence & Location of Crime

- 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.

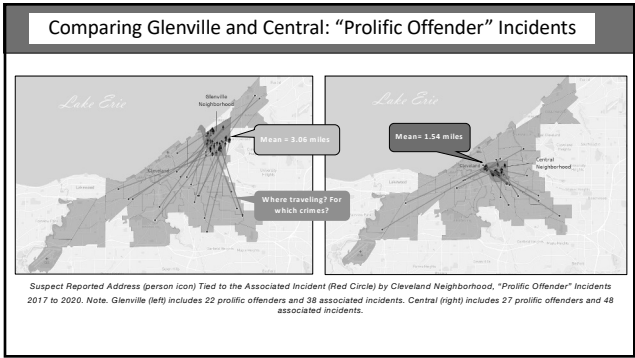
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Incident Type	Central Incident Count	Glenville Incident Count
Shooting	291	433
Physical Assault	259	247
Street Robbery	214	256
Carrying Concealed Weapon Other	153	121
Shooting into Habitation	137	270
Acquaintance Robbery	104	126
CCW Traffic Stop	101	83
Slabbing	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

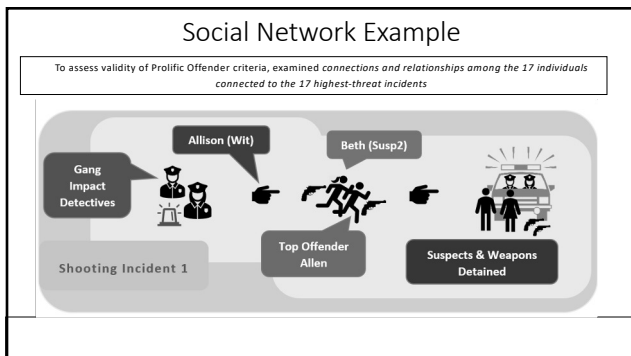
Incident Counts, Top Two Cleveland Neighborhoods from 2017 to 2020

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

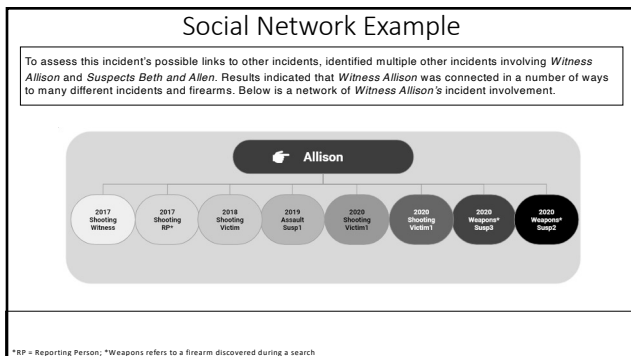
RE: shooting, shooting into a habitation, shots fired
Glenville, n = 759
Central, n = 461
~40% lower shooting incidents in Central

Preliminary findings emphasize the need to further "dig in"

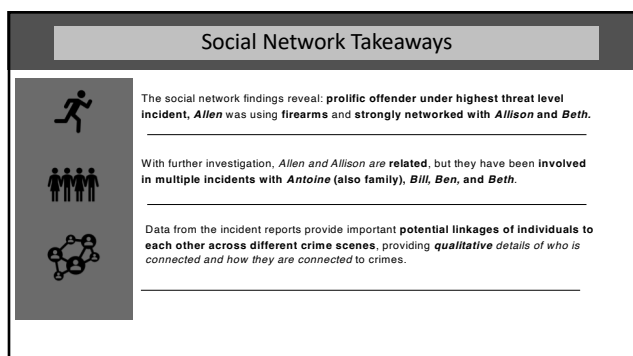
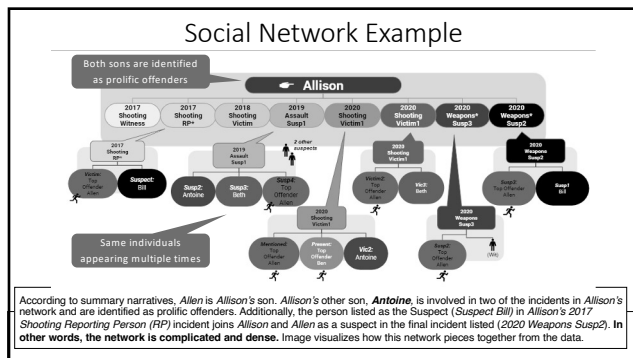
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Prolific Offenders: Where are the n = 223 now?


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%)
<i>Currently in prison</i>	76	21	55	34
(Convicted of a homicide)	(15)	(2)	(13)	(6)
<i>On parole or judicial release</i>	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

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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References

Fox, B., Allen, S. F., & Toth, A. (2022). Evaluating the impact of Project Safe Neighborhoods (PSN) initiative on violence and gun crime in Tampa: does it work and does it last?. *Journal of experimental criminology*, 18(3), 543-567.

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