

MAXIMIZING DATA FOR PROBLEM SOLVING

Innovations Suite Fellows Academy
March 2021

WHY TAKE A PROBLEM SOLVING APPROACH?

Offenders rarely
caught

High-intensity
enforcement not
sustainable

Criminal Justice
system
overburdened

Most of what
police are expected
to address isn't
crime

Residents care
most about non-
crime issues

SARA PROBLEM SOLVING PROCESS

Scanning

Identifying

- Neighborhood crime
- Disorder
- Fear

Analysis

Understanding

- Conditions that give rise to these problems

Response

Developing and
Implementing

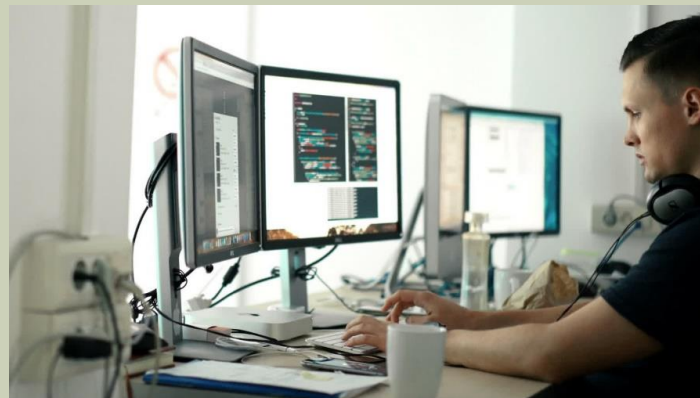
- Long-term solutions
- Tailored to relieve problems

Assessment

Evaluating

- Effectiveness of solutions to problem
- Problem solving process

WHO SHOULD BE DOING PROBLEM SOLVING?



WHAT IS PROBLEM ANALYSIS?

- Approach/method/process
- Uses formal criminology theory, research methods, comprehensive data collection and analysis procedures
- Systematic way to:
 - conduct in-depth examination of,
 - develop informed responses to, and
 - evaluate crime and disorder problems.



DATA IS CRITICAL TO GOOD ANALYSIS



THE CRIME TRIANGLE



Crime occurs when:

- a likely offender and
- a suitable target
- come together in time and place
- without a capable guardian present

(Routine Activity Theory, Cohen and Felson)

IDENTIFYING THE PROBLEM ASKING THE RIGHT QUESTIONS

- Be very crime specific
- Why?
 - To correct and identify the underlying problem
 - To ask the right analysis questions
 - To have the most appropriate response strategies
- Focus on your specific real problem, not just generic explanations of crime
- Don't settle for UCR categories

UCR Categories

ASKING THE RIGHT QUESTIONS

- What are the incident characteristics?
- Who are the victims and offenders?
- What are the locations and times of the incidents?
- Who is responsible for...
 - managing the locations where the incidents occur
 - protecting the victims
 - handling the offenders



WHAT DATA SHOULD WE USE?

- **Criminal Justice Agencies**
 - Police
 - Prosecutor's Office
 - Probation/Parole
 - Jail
- **Non-CJ governmental agencies**
 - Auditor/ Tax/ Property
 - Code
 - Health
- **Community and business-related organizations**
 - Community surveys and assessments
 - Business-related associations

HOW DO WE COLLECT DATA THAT'S NOT IN A SYSTEM?

**Visual
assessments**

**Environment-
al surveys**

Maps

Time graphs

Photos/videos

**Intelligence
info**

**Police
interviews**

Police records

**Stakeholder
cavass**

**Neighborhood
surveys**

**Business
surveys**

**Student
surveys**

**School
personnel
surveys**

Parent surveys

**Offender
interviews**

**Victim
interviews**

COLLECTING DATA: SURVEYS, INTERVIEWS & OBSERVATIONS

Environmental/Site Surveys

- What factors around the location may contribute to the problem?
- What are the security features? Lighting? Access?
- What about the location makes it different from nearby locations?

Interviews/Focus Groups

- How are you affected by the problem? What harms result?
- What role can you play in resolving the problem?
- What are the consequences or outcomes of the problem?

Observations

- When is the problem occurring?
- Who is involved? Who does it affect?
- What are the behaviors of the victims and suspects?
- What is missing from the “typical” setting?

TYPES OF ANALYSIS

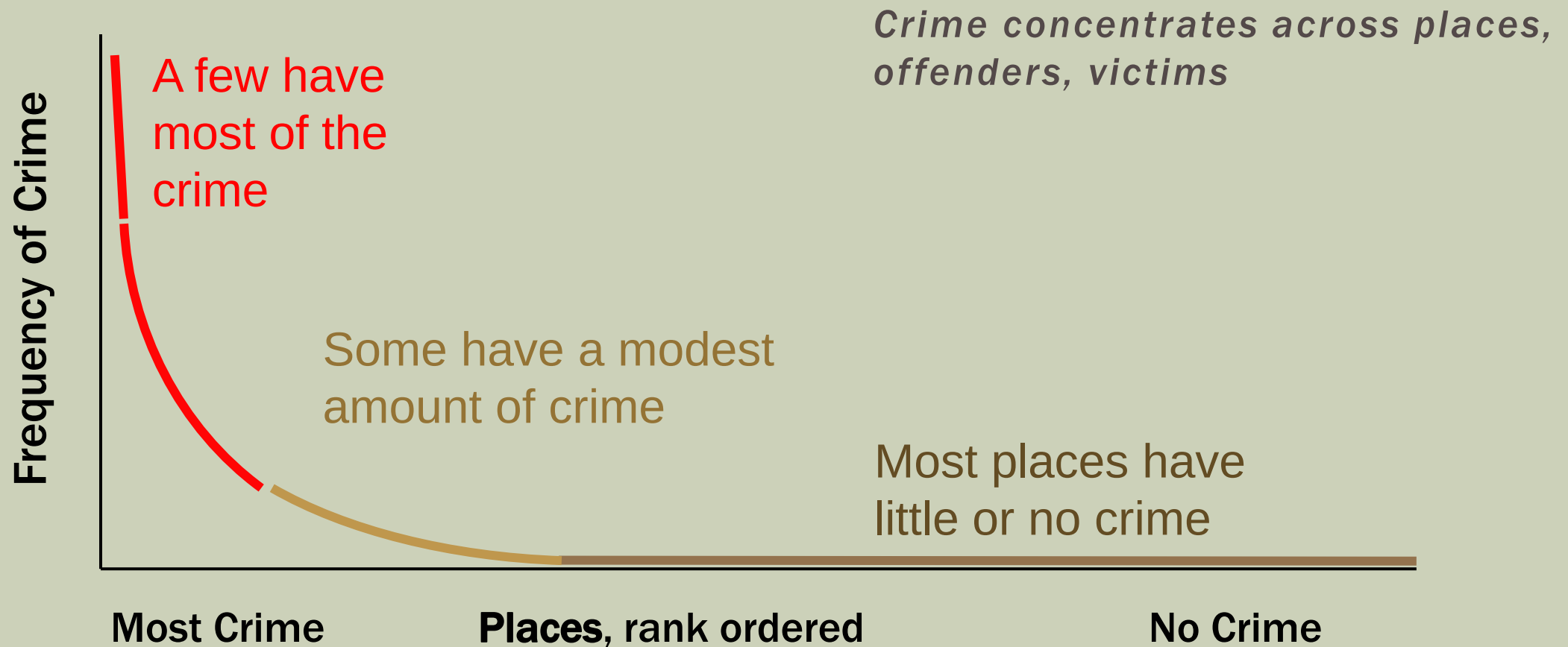
**Incident
analysis**

**Spatial
analysis**

**Offender
analysis**

**Victim
analysis**

ANALYSIS: 80-20 RULE



CALCULATING THE 80-20 RULE

	Address	No. Robberies	% Robberies	Cum. % Robberies	% Addresses (N=106)	Cum. % Addresses
1	134 E Main St	25	9.2%	9.23%	0.9%	0.9%
2	254 S Clover Av	17	6.3%	15.50%	0.9%	1.9%
3	8012 N Grand Blvd	15	5.5%	21.03%	0.9%	2.8%
4	8210 N Grand Blvd	10	3.7%	24.72%	0.9%	3.8%
5	1430 E Main St	9	3.3%	28.04%	0.9%	4.7%
6	365 W Haverty Rd	9	3.3%	31.37%	0.9%	5.7%
7	3401 N Staple Dr	8	3.0%	34.32%	0.9%	6.6%
8	210 S Daisy Rd	7	2.6%	36.90%	0.9%	7.6%
9	4598 N Roan Rd	5	1.9%	38.75%	0.9%	8.5%
10	132 E Main St	5	1.9%	40.59%	0.9%	9.4%
	Addresses with 4 (5)	20	7.4%	47.97%	4.7%	14.2%
	Addresses with 3 (15)	45	16.6%	64.58%	14.2%	28.3%
	Addresses with 2 (20)	40	14.8%	79.34%	18.9%	47.2%
	Addresses with 1 (56)	56	20.7%	100%	52.8%	100%
	Total	271	100%		100%	

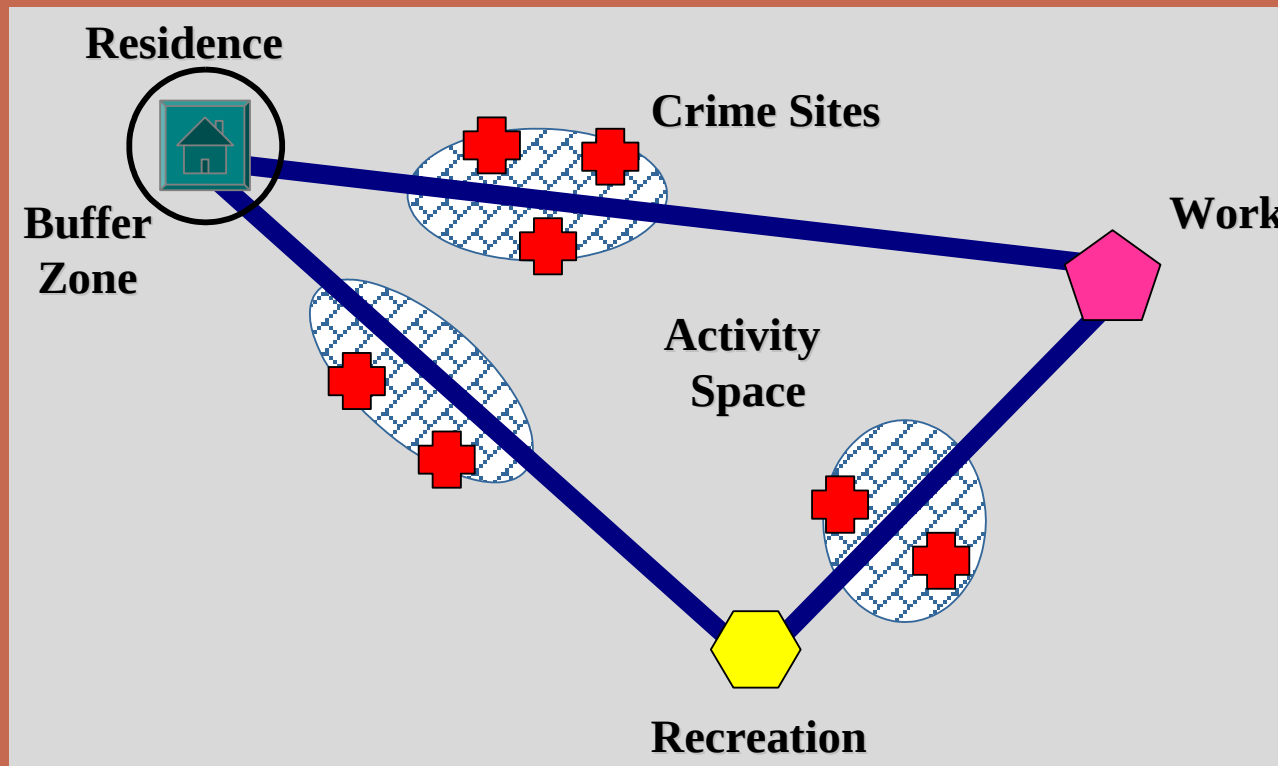
FIREARM VIOLENCE IN INDIANAPOLIS

Number of firearm violence incidents per street segment

# of Firearm Violence Incidents 2014-16 (n=1,142)	# of street segments	% of Street segments
>4	14	0.03
3	31	0.1
2	109	0.2
1	775	1.4
0	52,993	98.3
Total	53,922	100

(Magee 2018)

CRIME PATTERN THEORY

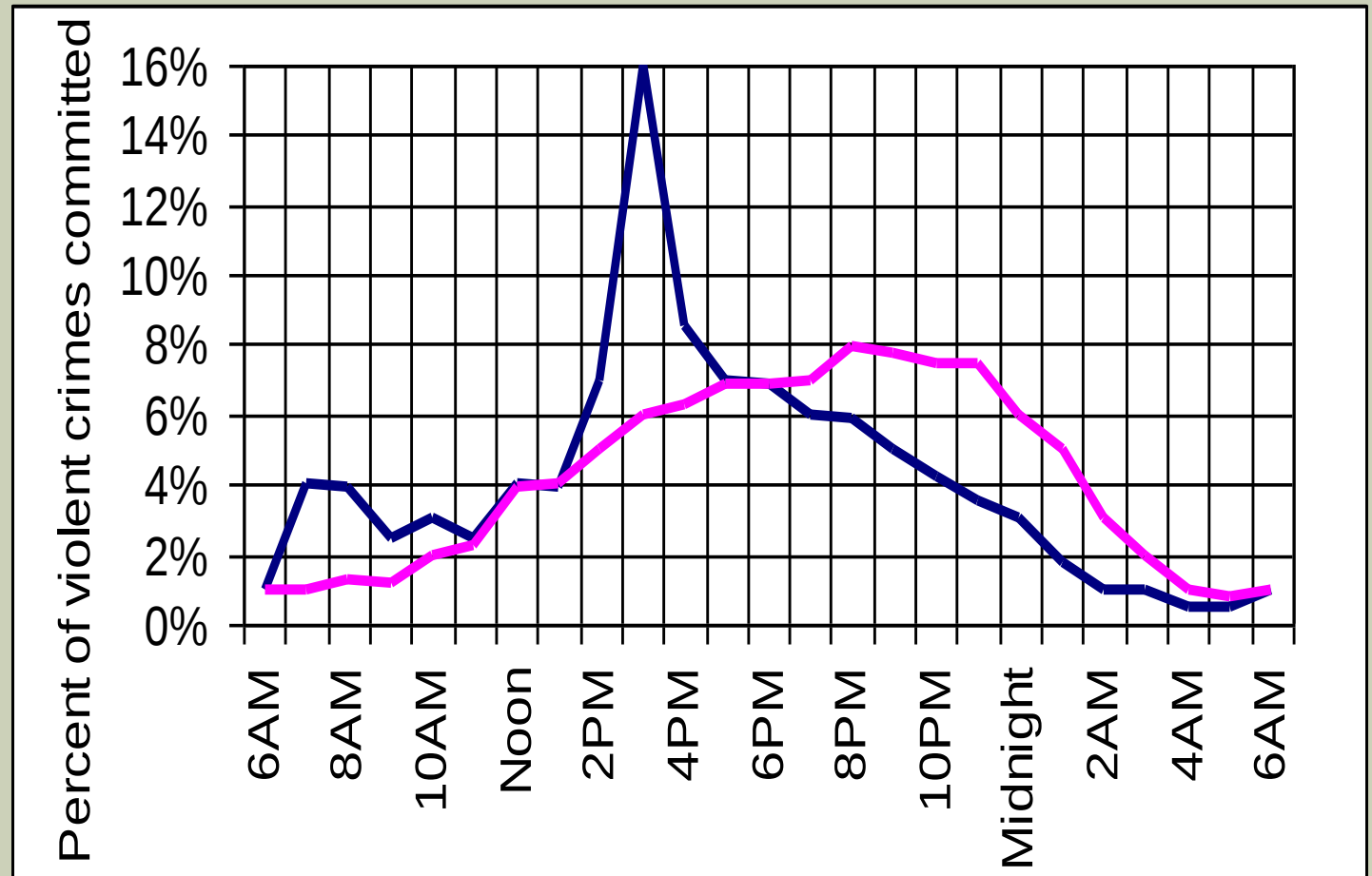


(Brantingham & Brantingham)

- Crime Pattern Theory
 - Nodes
 - Paths
 - Edges
- Journey to crime
 - Ways that offenders find suitable targets
 - Personal knowledge of victim
 - Work
 - Overlapping “activity spaces”
- Offenders – local vs. not local

ANALYSIS: PAY ATTENTION TO RHYTHMS

- Helps identify activity cycles that may be contributing to the problem
 - Weekday versus weekend
 - Time of day
 - Special “events”



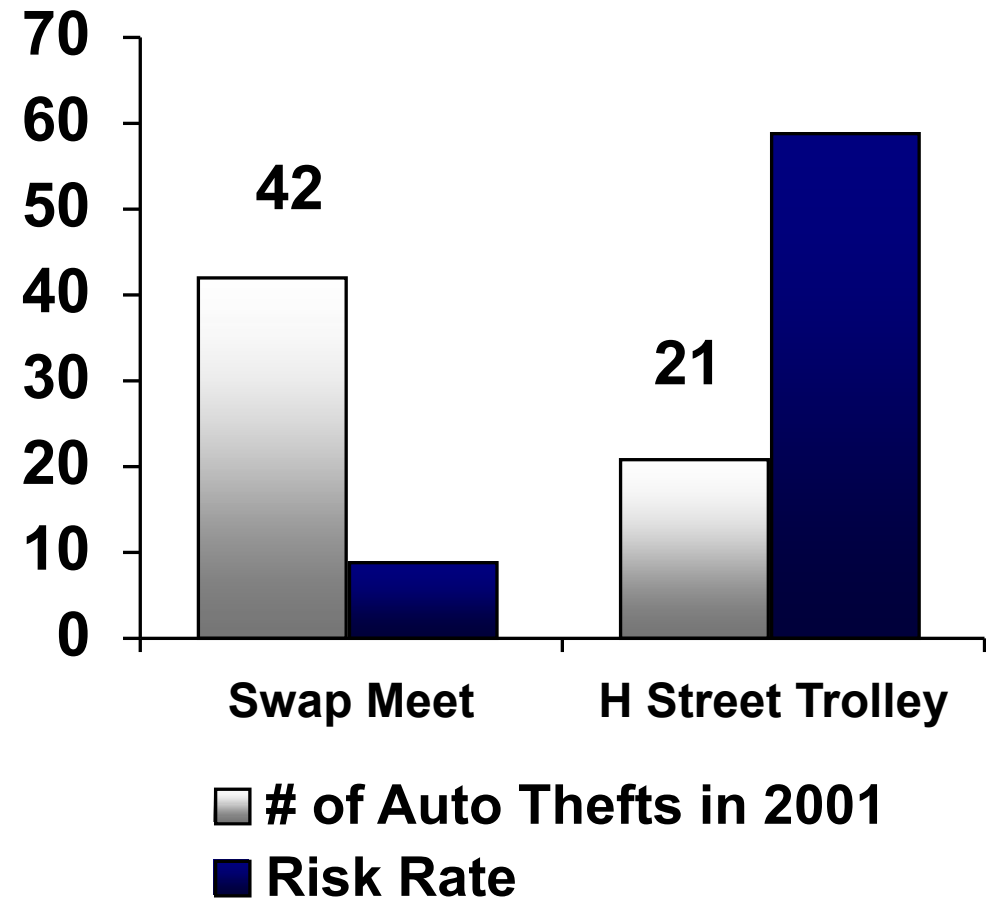
ANALYSIS: USING RATES & DENOMINATORS

- Examining rates helps to understand if the number of targets contributes to the problem
- Rates describe the number of crimes/incidents per target at risk, during a time period
- Calculating rates
 - Be careful of the denominator!
- Emphasis on high numbers or rates?

ANALYSIS: USING RATES & DENOMINATORS

- Which lot is riskier to park in?
- **Swap meet**
 - Huge (2,500 spaces)
 - Open only 2 days a week
 - Park time: 1.5 hours
 - 42 thefts in 2001

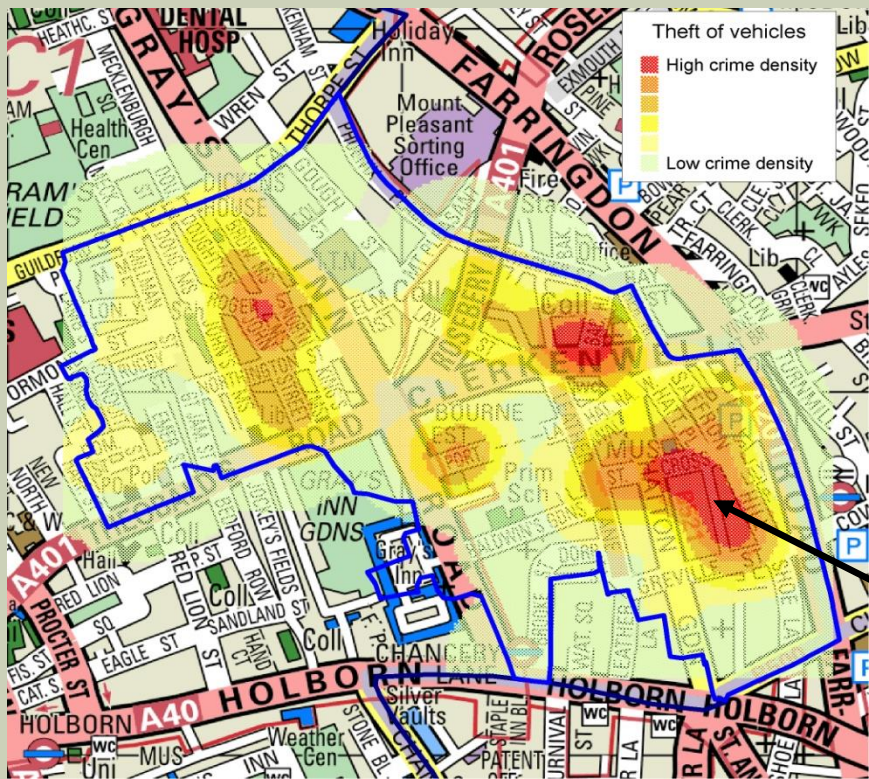
OR
- **H Street Trolley**
 - Tiny (300 spaces)
 - Open 7 days a week
 - Park time: 8 hours
 - 21 thefts in 2001



ANALYSIS: FIND THE “HOT” PLACES

- Defining your hot “spot”
 - Specific location (address, intersection, etc.)
 - Street block/segment
 - Area (neighborhood, “blob”, etc.)
- Going beyond hot spot maps
 - Analyzing within hot spots
 - Using them effectively

CLERKENWELL HOTSPOT



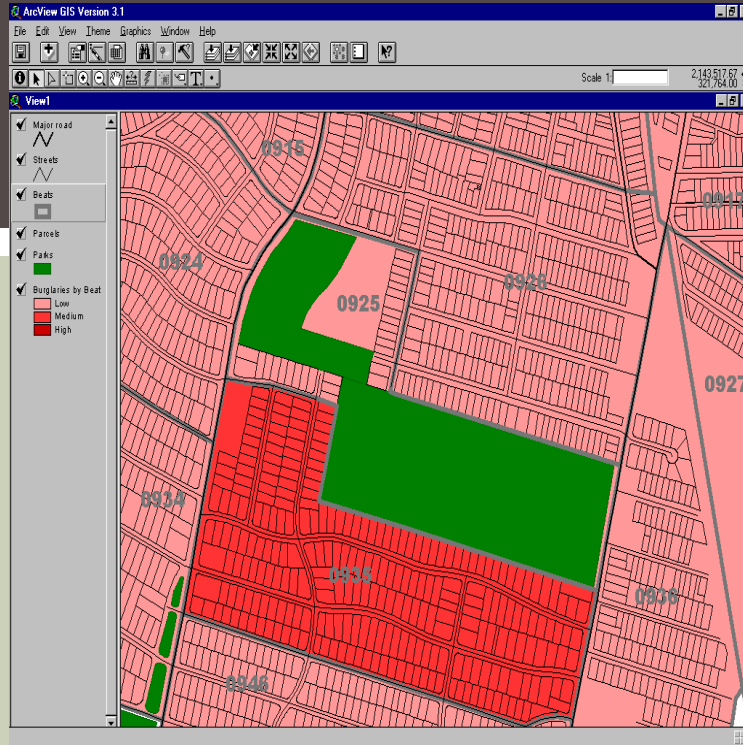
From wheredunit to whodunnit

Vehicle type	Camden	Clerkenwell (n)	Clerkenwell(%)
Car	51%	41	18%
Sports or convertible	3%	5	2%
Scooter or moped	26%	95	42%
Motor cycle	13%	70	31%
Van	5%	3	1%
Other	2.0%	10	4%
Not known	0.5%	0	0%



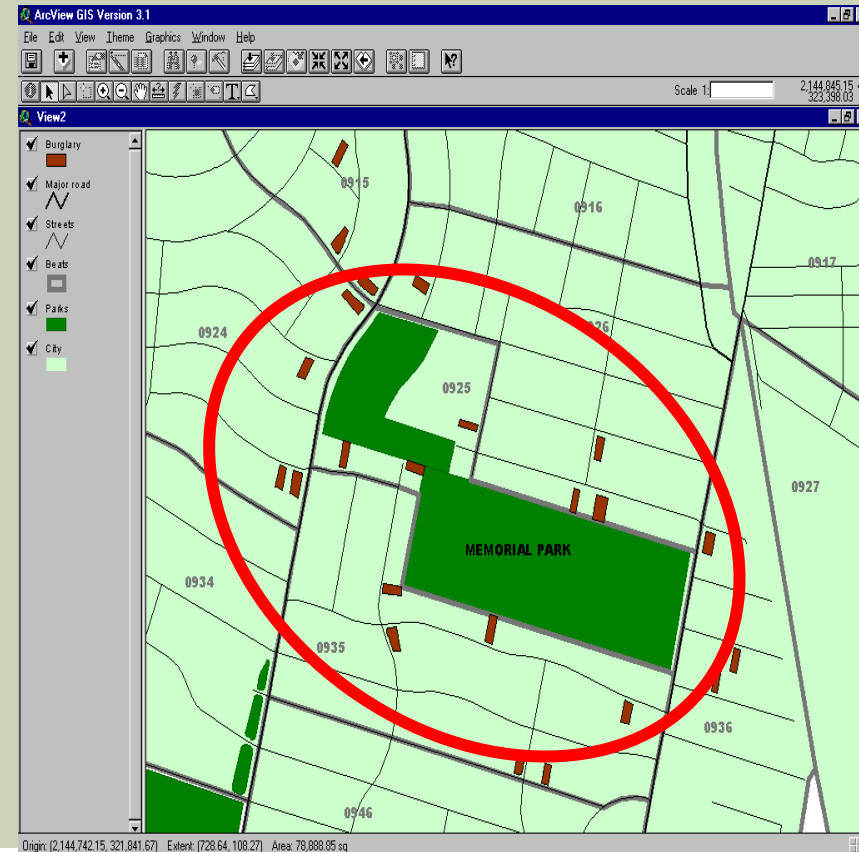
Thanks to Spencer Chainey from the Jill Dando Institute for this slide.

ANALYSIS: REVEALING A PATTERN



← *Area stats miss the concentration of events around the park*

Crime locations coupled with data about the environment identify a problem and offer an explanation →

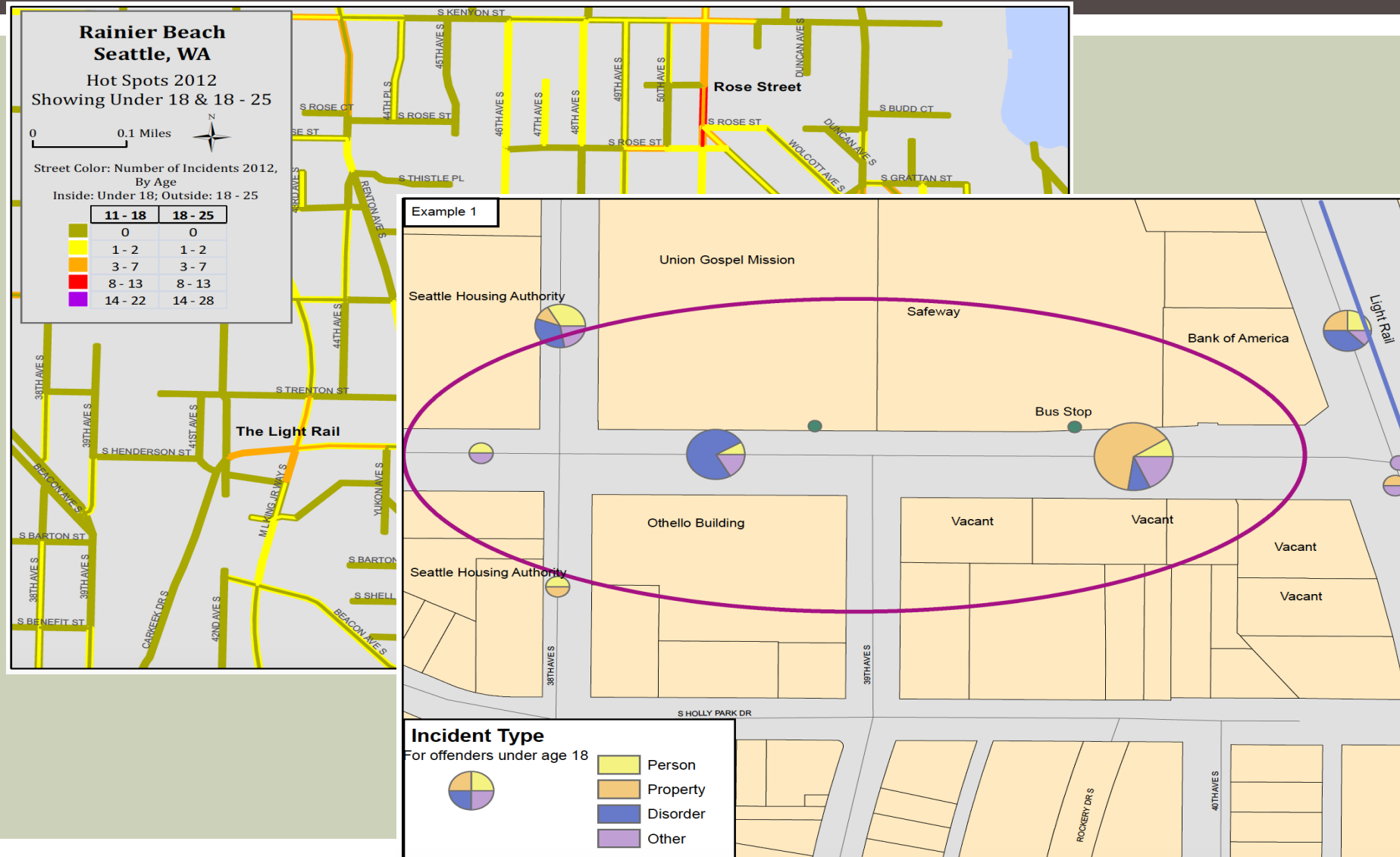


Ashland/Cherryland Drug Reports
Jan 2015-Mar 2017
Hot Area

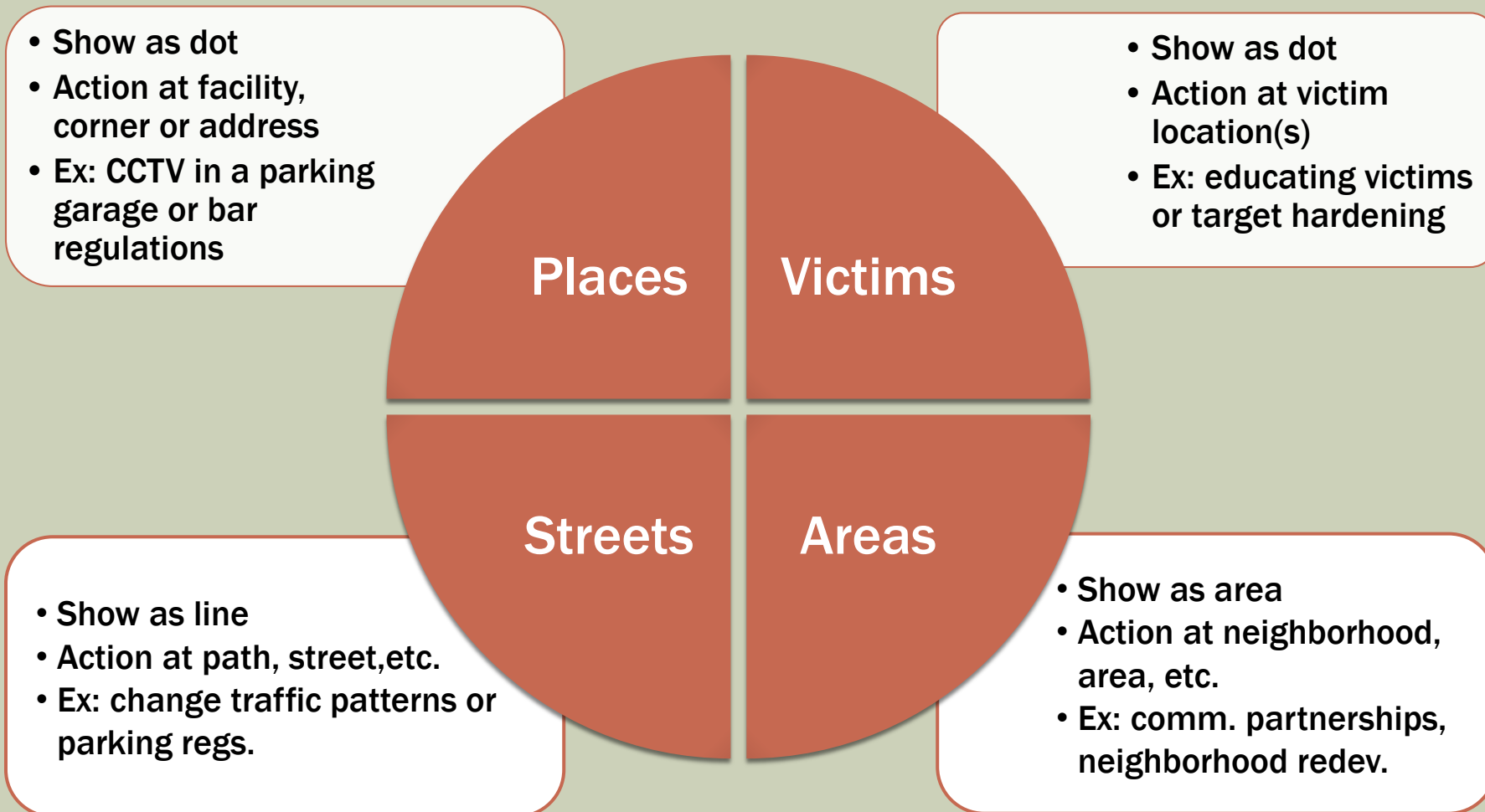


ANALYZING
“HOT”
PLACES

ANALYZING “HOT” PLACES



ANALYSIS: DIAGNOSE YOUR HOT SPOT



Sherman, L., Gartin, P., & Buerger, M. (1989). Hot spots of predatory crime: Routine activities and the criminology of place. *Criminology*, 27:27-55.

ANALYSIS: PUTTING THE CRIME IN CONTEXT

- What might be related to the crime pattern/problem?
 - Highways/major routes
 - Methadone clinics
 - Public transportation
 - Budget motels
 - Public housing
 - Schools
 - Gang territories

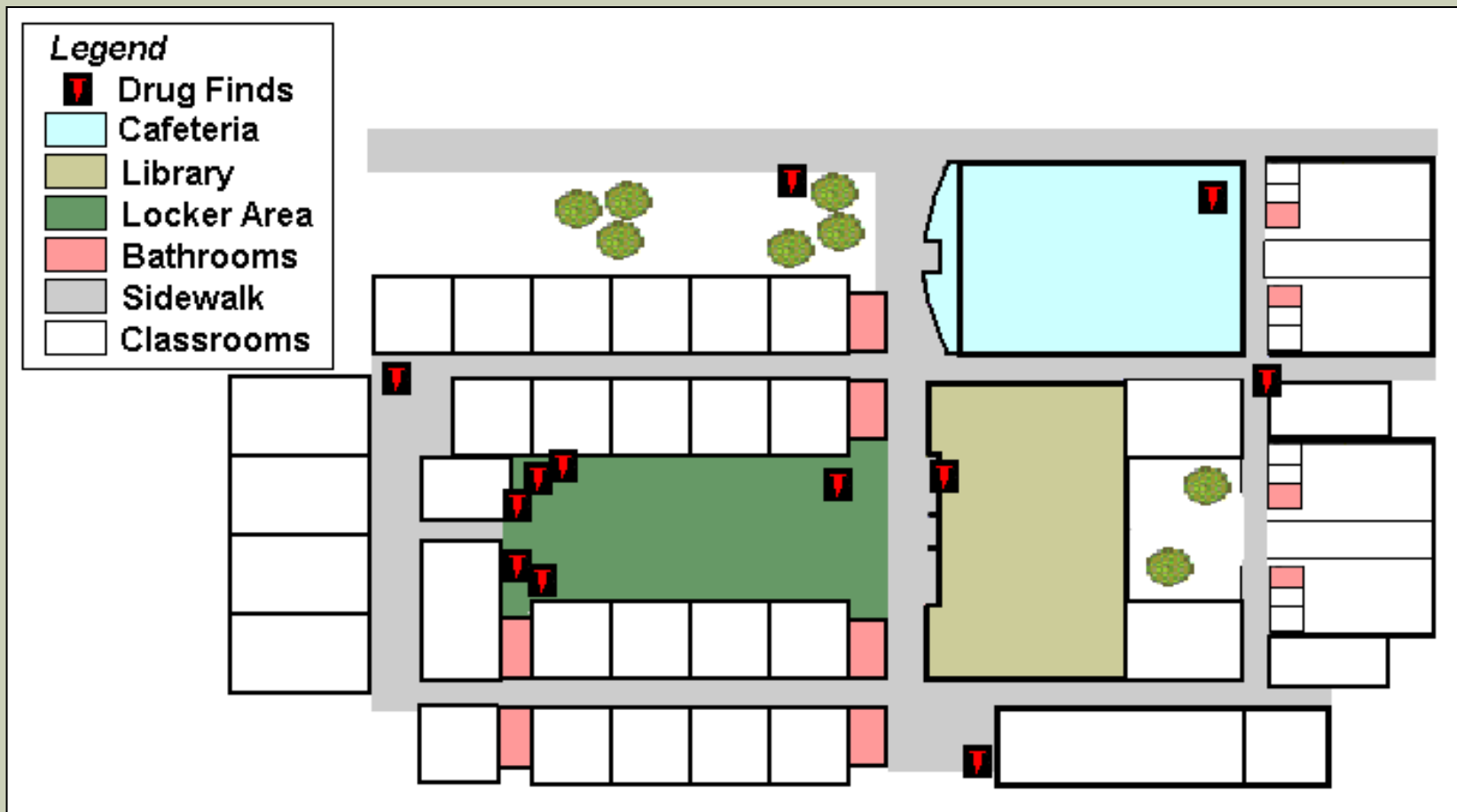


ANALYSIS: USING HIGH-DEFINITION MAPS

- To understand why a particular building is having a crime problem, the crimes need to be divided into specific categories and their locations *within* the building need to be mapped.
- When this would be important?
 - Apartment complex
 - Shopping Mall
 - Parking Structure
 - Park

ANALYSIS: PUTTING THE CRIME IN CONTEXT

Drugs on a school campus



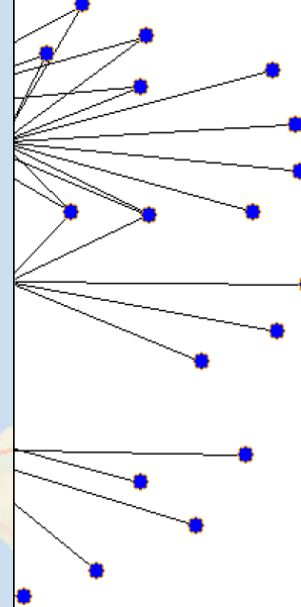
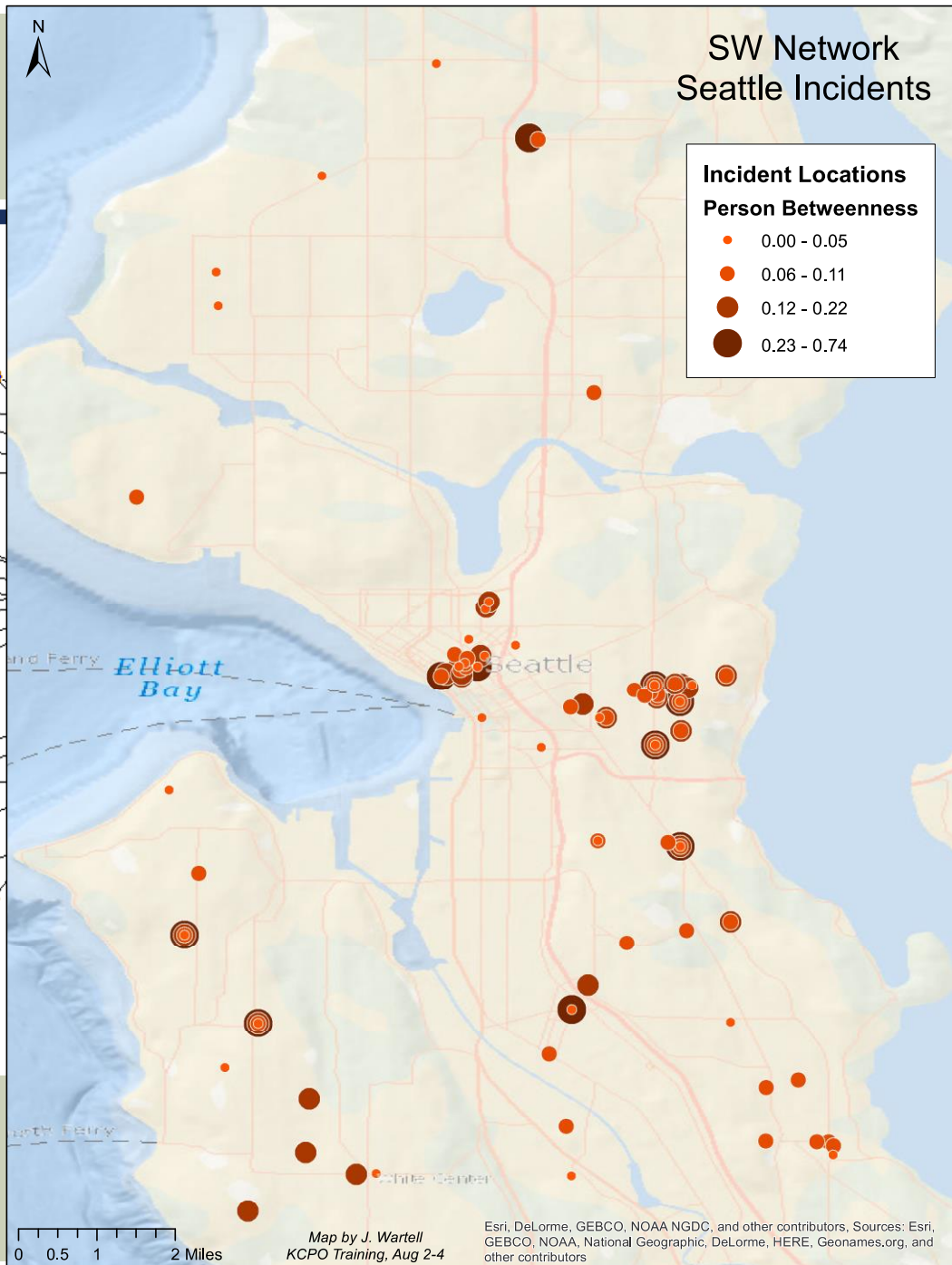
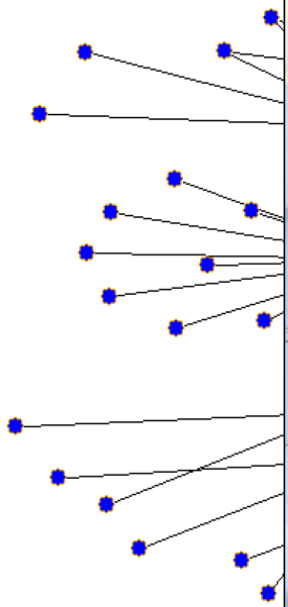
ANALYSIS: USING SURVEY DATA

*Identifying
crime
locations with
a victim
survey*

Figure 1: Temple University Police Department
Assaults
1997-1998



23 People
72 Incidents



ANALYSIS: SOCIAL NETWORK ANALYSIS

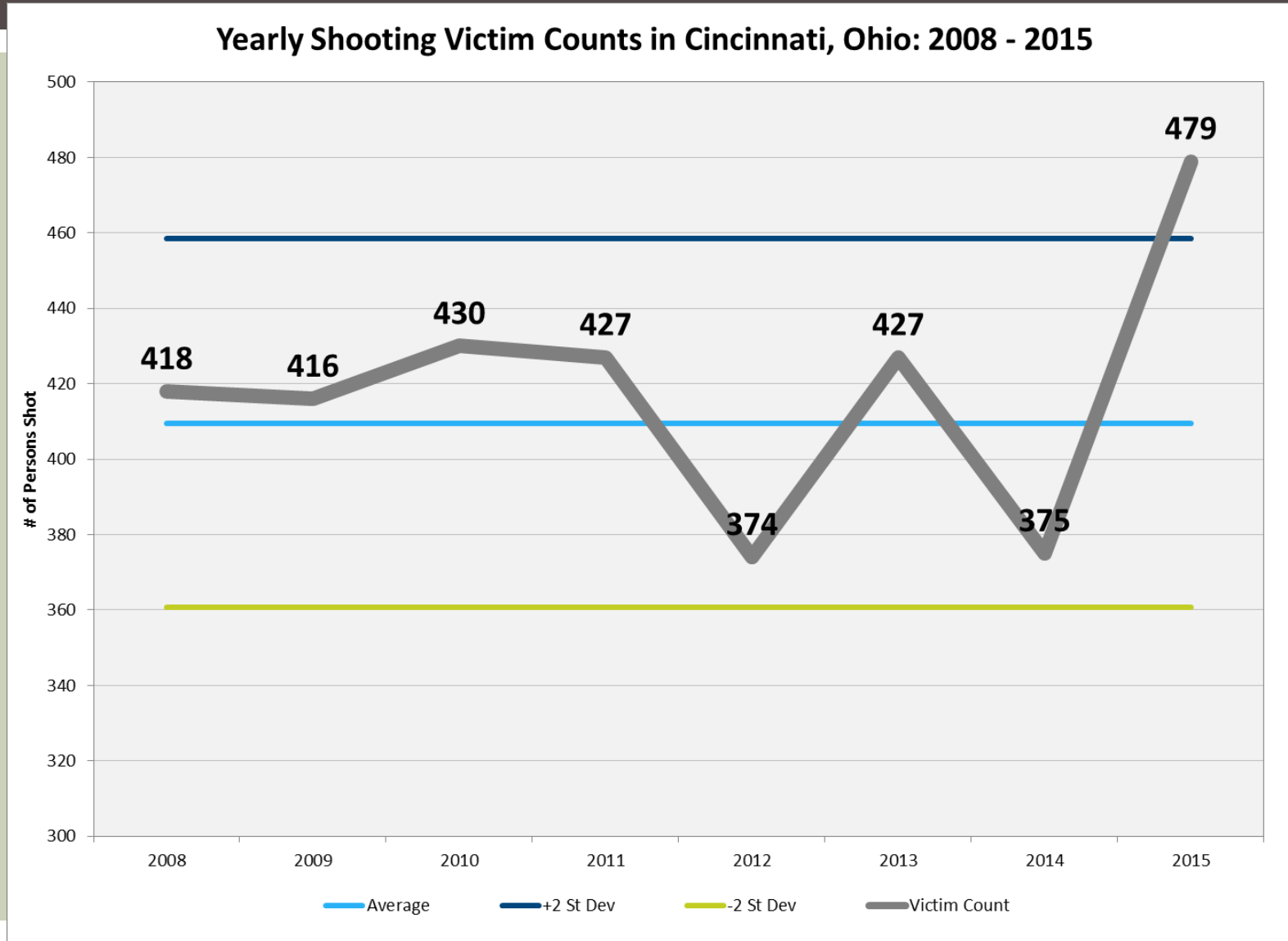
BJA Resource:

<https://www.nationalpublicsafetypartnership.org/Documents/VRN%20Social%20Network%20Analysis%20Presentation%20July%2021%202015.pdf>

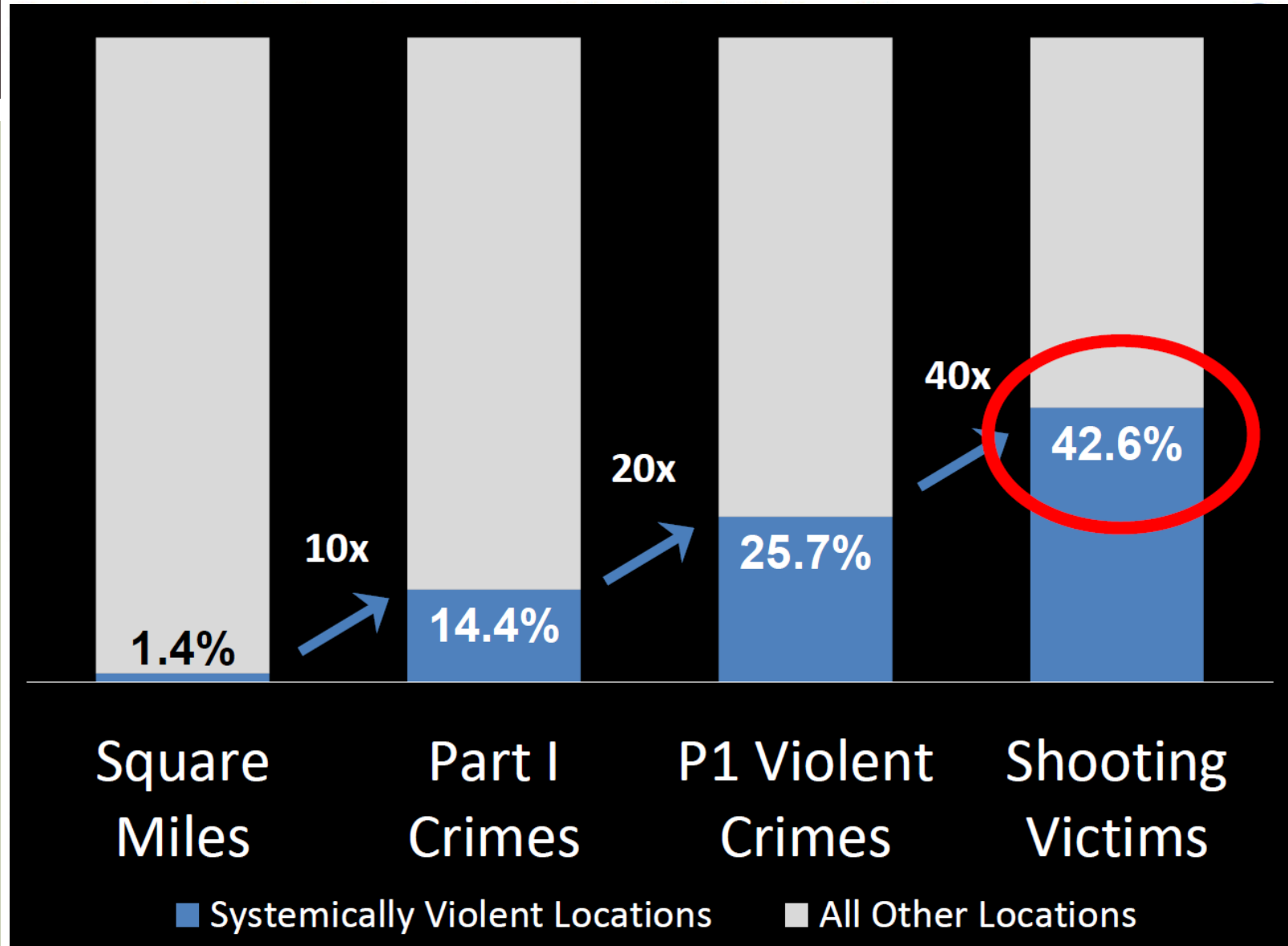
PLACE-BASED INVESTIGATIONS OF VIOLENT OFFENDER TERRITORIES (P.I.V.O.T.)

Cincinnati
(Ohio) Police
Department
Blake
Christenson

PIVOT: PROBLEM IDENTIFICATION



PIVOT: PROBLEM IDENTIFICATION

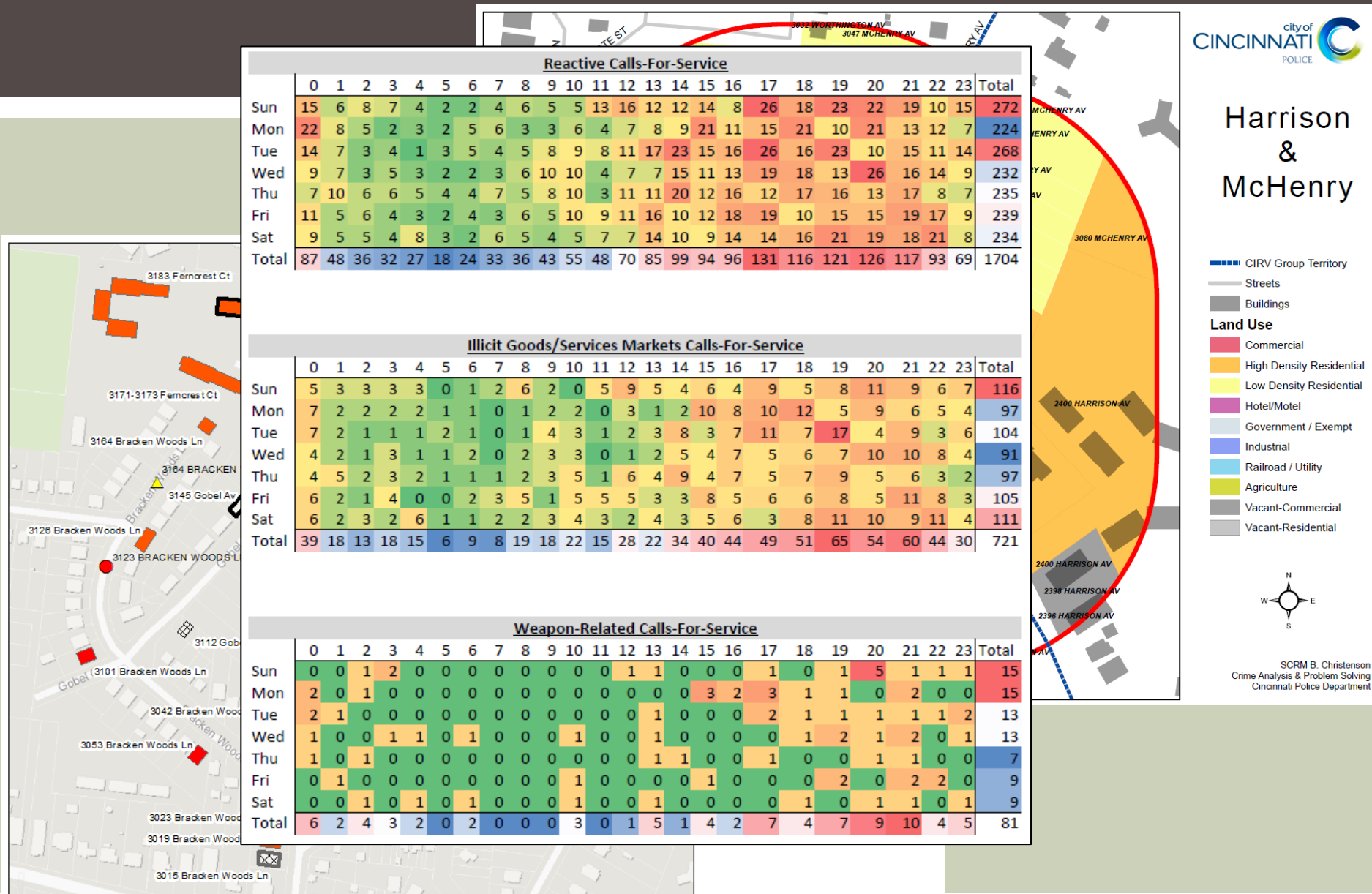


Data prepared on: 5/26/2017

0 0.5 1 2 3 4 Miles

Prepared by: SCRM B. Christenson

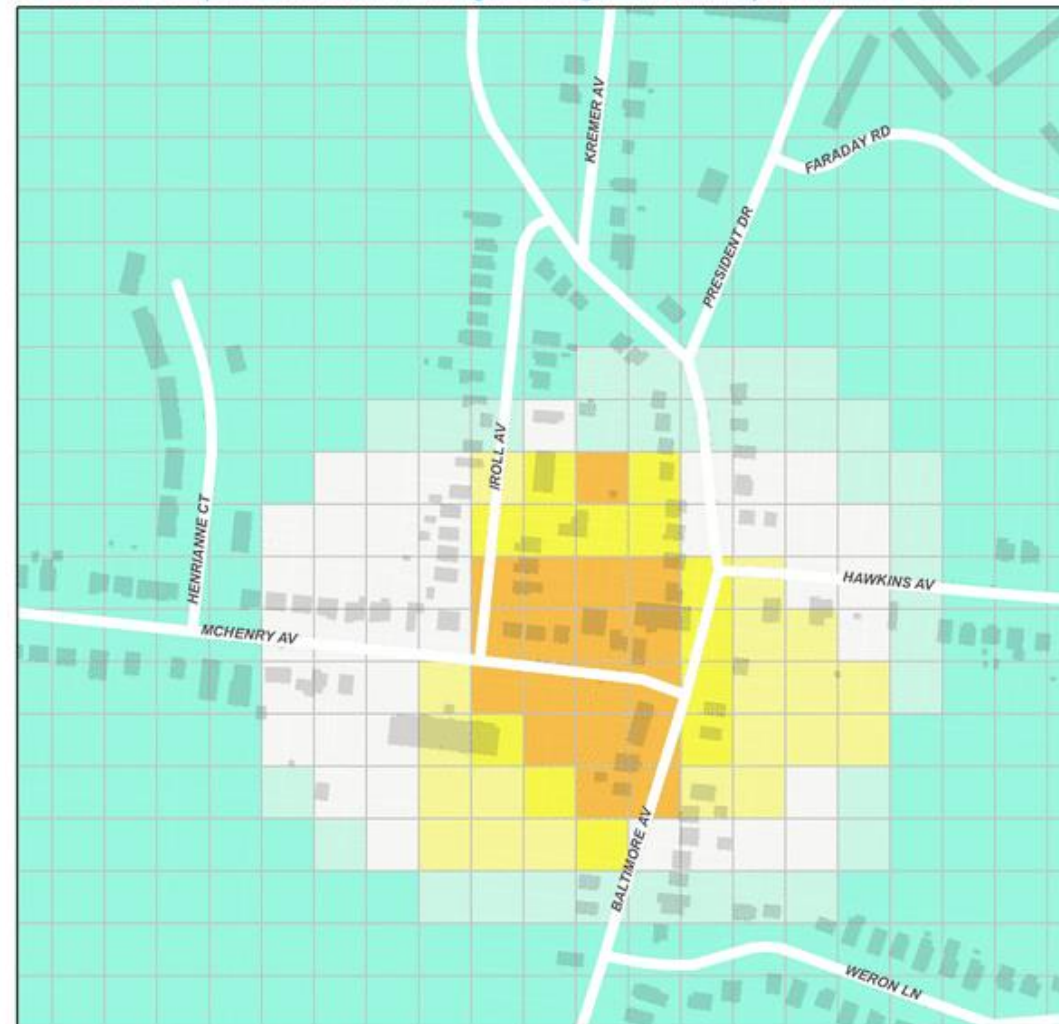
PIVOT: PRE-PROJECT ANALYSIS



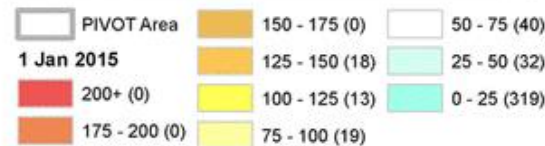
Baltimore/McHenry Violence Scores January 1, 2015



*Violence Score is a composite metric derived from shootings, robberies, gun offenses, and weapon-related calls-for-service



0 0.045 0.09 0.18 Miles



Data prepared on: 9/21/2017

Prepared by: SCRM B. Christenson

POST-PROJECT ANALYSIS

<https://www.cincinnati-oh.gov/police/community-involvement/pivot/>

<https://popcenter.asu.edu/sites/default/files/17-15.pdf>

AFTER ANALYSIS... THEN WHAT?

- ✓ Be sure to finish your analysis before implementing strategies!
- ✓ Research potential strategies
 - ❖ What have other police departments/communities done?
 - ❖ What evidence-based responses apply to your specific situation?
- ✓ Familiarize your team with situational crime prevention techniques

SITUATIONAL CRIME PREVENTION: OPPORTUNITY BLOCKING

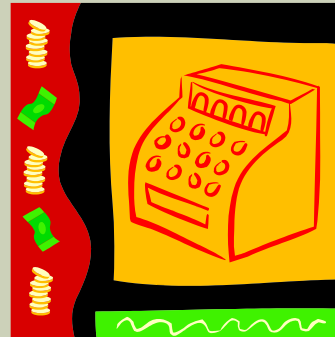
Increasing
Perceived
Risk



Increasing
Perceived
Effort



Decreasing
Perceived
Reward



Removing
Excuses

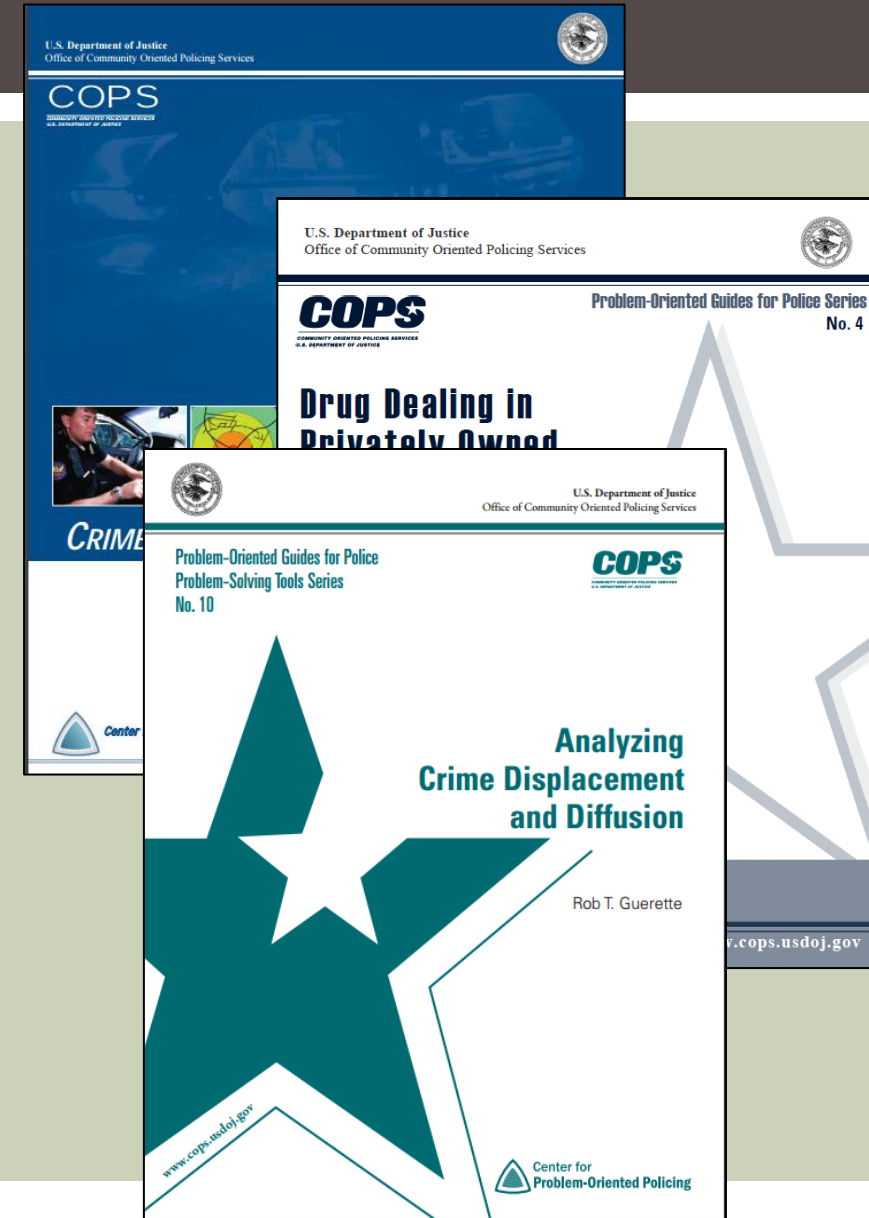


Reducing
Provo-
cations



RESOURCES TO SUPPORT ANALYSIS

- Center for Problem Oriented Policing <https://popcenter.asu.edu/>
- <https://popcenter.asu.edu/content/crime-analysis-problem-solvers-60-small-steps>
- <https://popcenter.asu.edu/sites/default/files/library/reading/PDFs/Intell-Analysis-for-ProbSolvers.pdf>
- <https://popcenter.asu.edu/pop-guides>





RESOURCES FOR FURTHER LEARNING

- Center for Problem-Oriented Policing: <https://popcenter.org/>
- Jill Dando Institute of Crime Science: <https://www.ucl.ac.uk/jill-dando-institute/>
- UK What Works Centre: <https://whatworks.college.police.uk/>
- LISC Safe Neighborhoods: <https://www.lisc.org/our-initiatives/safety-justice>
 - https://www.lisc.org/media/filer_public/c4/8d/c48daae3-bfe5-4497-9491-ff51cb569bde/bcji_crime_analysis_for_non_criminal_justice_researchers_fundamentals_d2.pdf
- Simon Fraser Institute for Canadian Urban Research Studies: <https://www.sfu.ca/icurs.html>
- Article about Community Engagement (key to successful problem solving): <https://shelterforce.org/2021/02/25/centering-equitable-practice-in-community-engagement/>

THANK YOU.

QUESTIONS? COMMENTS?

Julie Wartell

julie.wartell@att.net