Environmental criminology, problem-oriented policing and crime mapping

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Workshop Themes

1. GIS and Crime Mapping cannot make their full contribution to understanding and reducing crime unless they are informed by theory – technique is not enough

2. Environmental criminology provides many useful theories and concepts to guide crime analysis and crime mapping

A map without theory
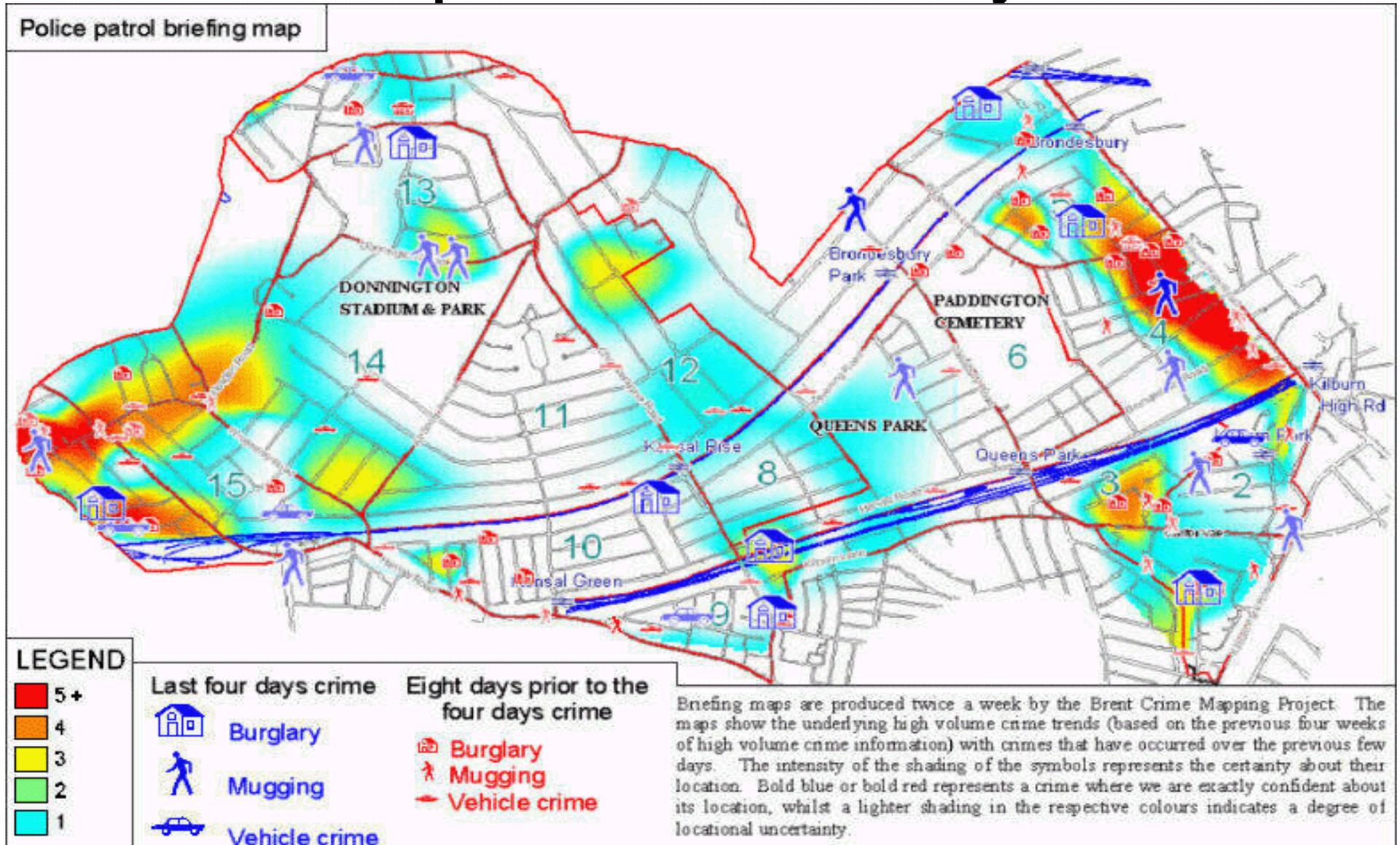
The workshop will cover:

- Basics of problem-oriented policing (POP)
- Why environmental criminology (EC) is needed for crime mapping and POP
- Basic theories and concepts of environmental criminology
- Workshop exercise to apply environmental criminology to problem-oriented policing and crime mapping
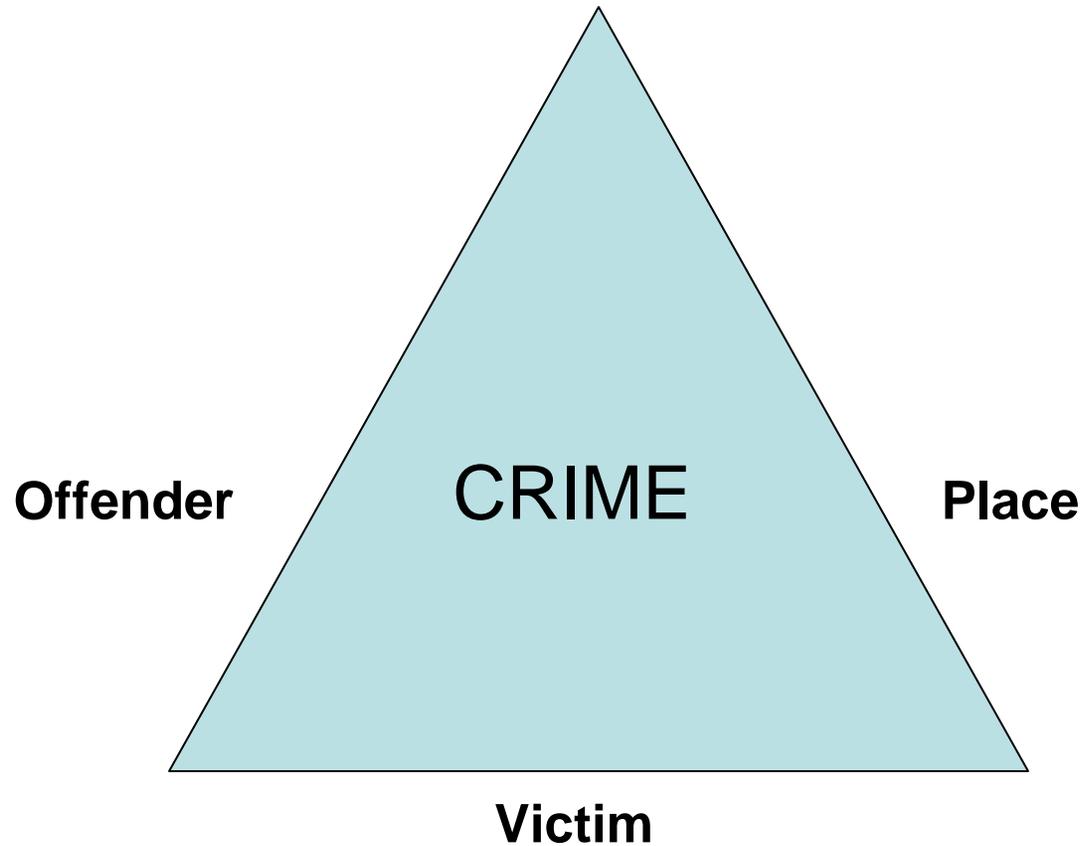
Problem-oriented policing

- Goldstein's thesis:
  - Focus on highly specific problems
  - Address the causes
- Two important concepts:
  - SARA (Scanning, Analysis, Response, Assessment)
  - Crime triangle (offender, victim, place)

THE SARA PROBLEM-SOLVING PROCESS

Basic Crime Triangle

Offender   CRIME   **Place**

Victim
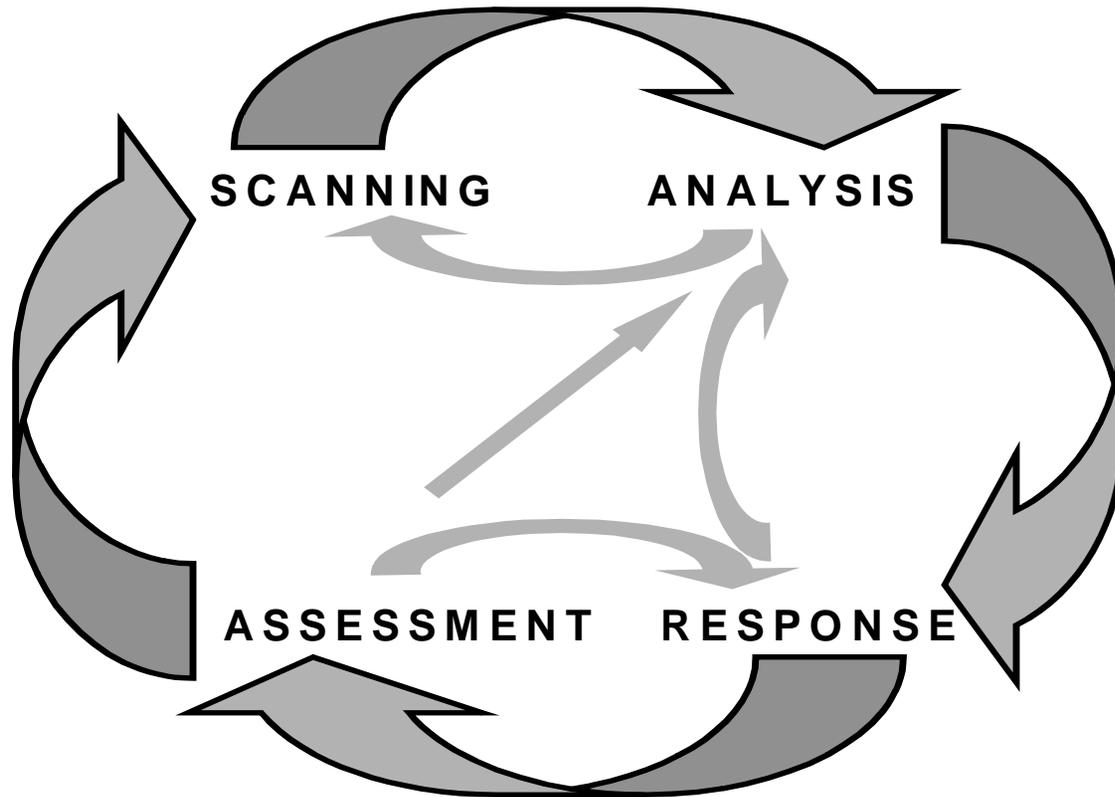
Problem-oriented policing

- Many successes
  - Goldstein awards
  - Popcenter.org
  - Guides
- But need for environmental criminology
- This is not studying crimes against the environment
- It is studying the influence of situational factors and the immediate environment in crime.

Definition of environmental criminology

"Environmental criminologists set out to use the geographic information in concert with the sociological imagination to describe, understand, and control criminal events" (Brantingham and Brantingham, 1981, p.21).

Environmental criminology is focused on:

- Explaining occurrence of crime not development of criminality
- Temporal and geographical patterns of crime – highly suited to mapping
- Highly specific categories of crime
- How offenders commit crime (modus operandi)
- Situational factors in crime causation
- Reducing opportunities for crime not changing "root" causes

Three main theories

- Routine activity theory (Cohen and Felson)
- Crime pattern theory (Brantinghams)
- Rational choice perspective (Clarke and Cornish)
- Different but complementary

Shared assumptions

- Explain crime not criminality ("crime" theories, not criminality theories)
- Crime is the result of an interaction between disposition and situation
- Opportunity is important ("opportunity theories")

How the three theories differ:

- *Routine activity theory* deals with the ways that opportunities arise (and decline) as a result of societal change (eg burglary increase in 1960/70s)
- *Crime pattern theory* deals with the way that offenders seek and find opportunities for crime in the course of their everyday lives
- *Rational choice perspective* deals with the ways that criminal decisions are made

Three different levels of explanation

- *Routine activity theory* - Macro, societal level
- *Crime pattern theory* - Meso, neighborhood level
- *Rational choice perspective* – Micro, individual level
- Each theory is therefore focused on different questions

Questions for routine activity theory (Marcus Felson and Lawrence Cohen)

- How do crime opportunities arise in society?
- How does social and technological change lead to increases or reductions in opportunity?
- What determines the distribution of opportunities in time and space?

Crime Pattern Theory
(Patricia and Paul Brantingham)

- How do offenders discover opportunities?

- Do they mostly stumble on them or do they search for opportunities and create them?

- How do they evaluate opportunities and choose to act upon them?

# Rational Choice Perspective (Cornish and Clarke)

- What influences offenders' decisions?
- Are criminal decisions different from other ones?
- Are they best described as rational or pathological?
- How do offenders deal with conscience and social disapproval?

Three basic elements of Routine activity theory

Convergence in time and space of:

- likely offender,

- suitable target (eg unlocked car)

- in absence of capable guardian (eg police, burglar alarm, neighbor)

Modified Crime Triangle
(Using routine activity theory)
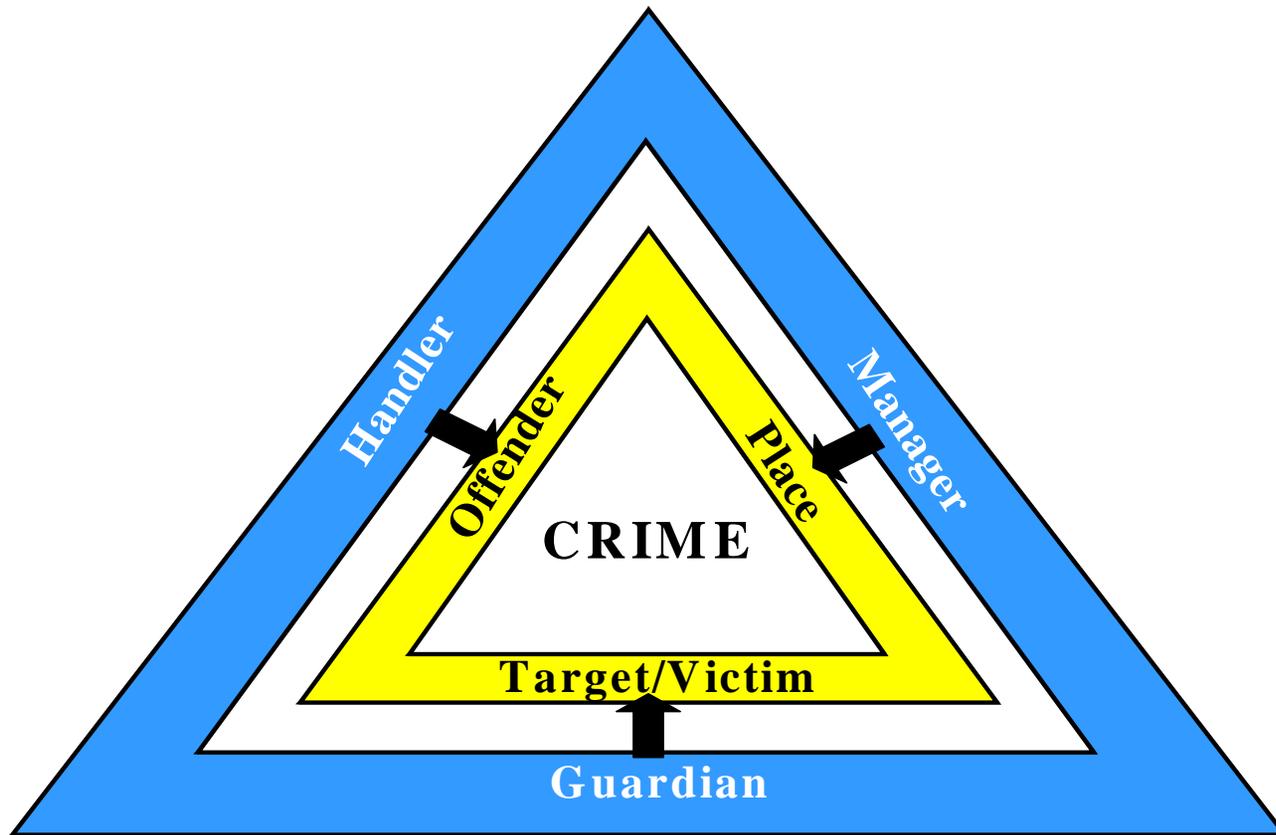
Characteristics of Suitable Targets

- VIVA (FELSON)
- CRAVED (CLARKE)
- EVIL DONE (CLARKE AND NEWMAN

VIVA

- Valuable
- Inertia
- Visible
- Accessible

Attributes of target choice (Clarke) CRAVED model

- Concealable
- Removable
- Accessible
- Valuable
- Enjoyable
- Disposable

EVIL DONE

- **E**xposed
- **V**ital
- **I**conic
- **L**egitimate
- **D**estructible
- **O**ccupied
- **N**ear
- **E**asy

Main features of crime pattern theory

- Activity space
- Paths, nodes and edges
- Journey to crime
- These concepts are the basis of geographic profiling

Activity space

Brantingham and Brantingham (1981) argue that target selection is largely dependent on routine pathways used by offenders to move between their normal, daily activity nodes; crimes are most likely to occur where the awareness space of the offender transects with suitable targets.

Activity space

- <u>Nodes</u> those places routinely visited during their daily patterns of work and leisure people commit offenses close to the central places
- <u>Paths</u> determine where people go and what they learn about the city. Criminal events cluster near major traffic arteries and near major intersections between arteries
- <u>Edges are the</u> boundaries of areas where people live, work, shop or seek entertainment.

Brantingham Crime Pattern Theory

Residence

Crime Sites

Buffer
Zone

Work

Activity
Space

Target Areas

Recreation
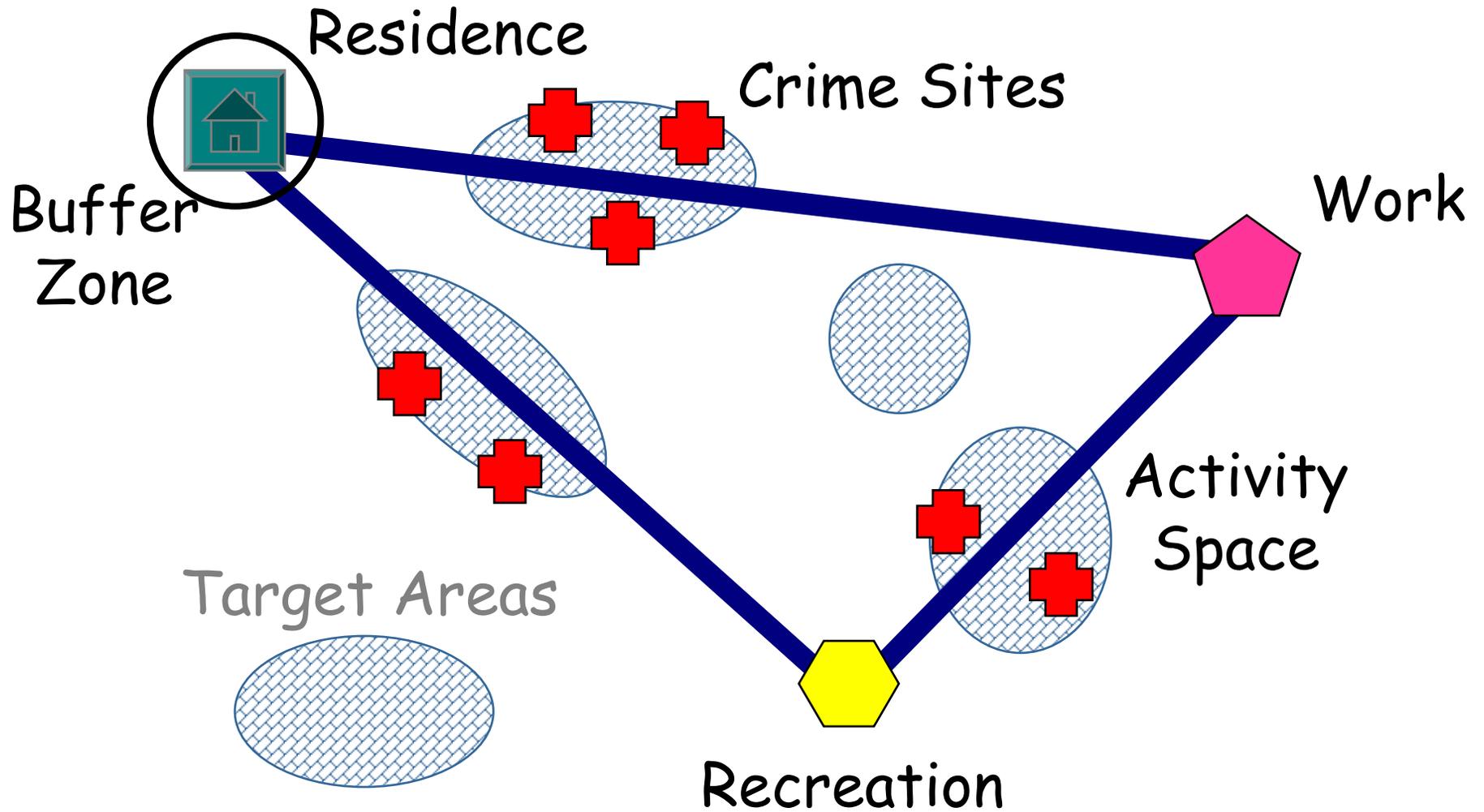
Journey to Crime

- Offenders commit most of their crimes close to home
- For example, in the UK about half of all crime trips are less than one mile
- Juvenile offenders stay closest to home
- Access to cars and public transport lengthens journeys

Journey to Crime by Age (258,000 crime trips in one UK police force area)

Average Distance Travelled to Commit Crime by Age
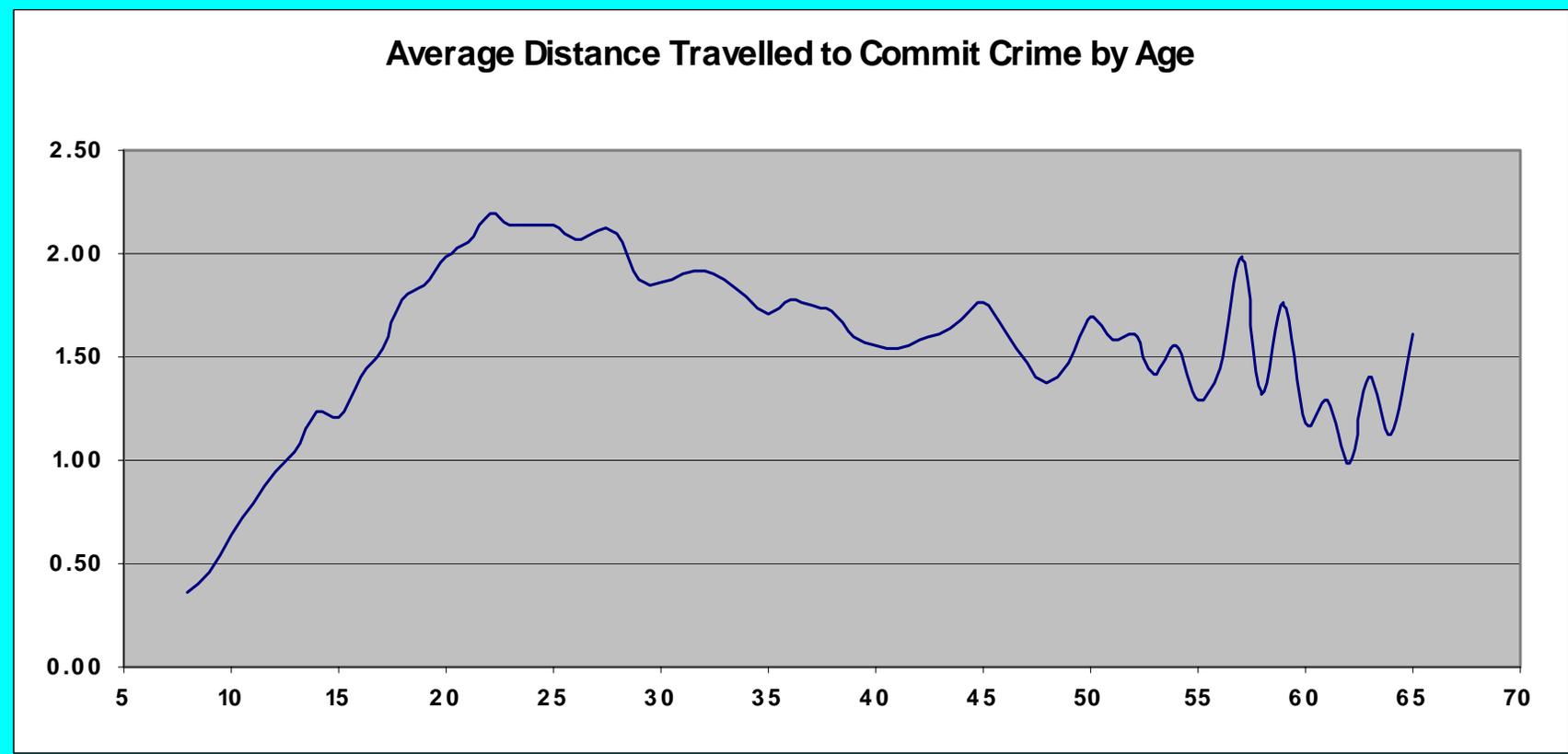
Brantingham's two "hot spot" types

- **Crime generators** are places where large numbers of people go (offenders and others) for reasons unrelated to crime (eg mall or train station)

- **Crime attractors** are places that offenders deliberately choose to go to because of the many criminal opportunities (eg night-life district or drug market)

Crime is concentrated

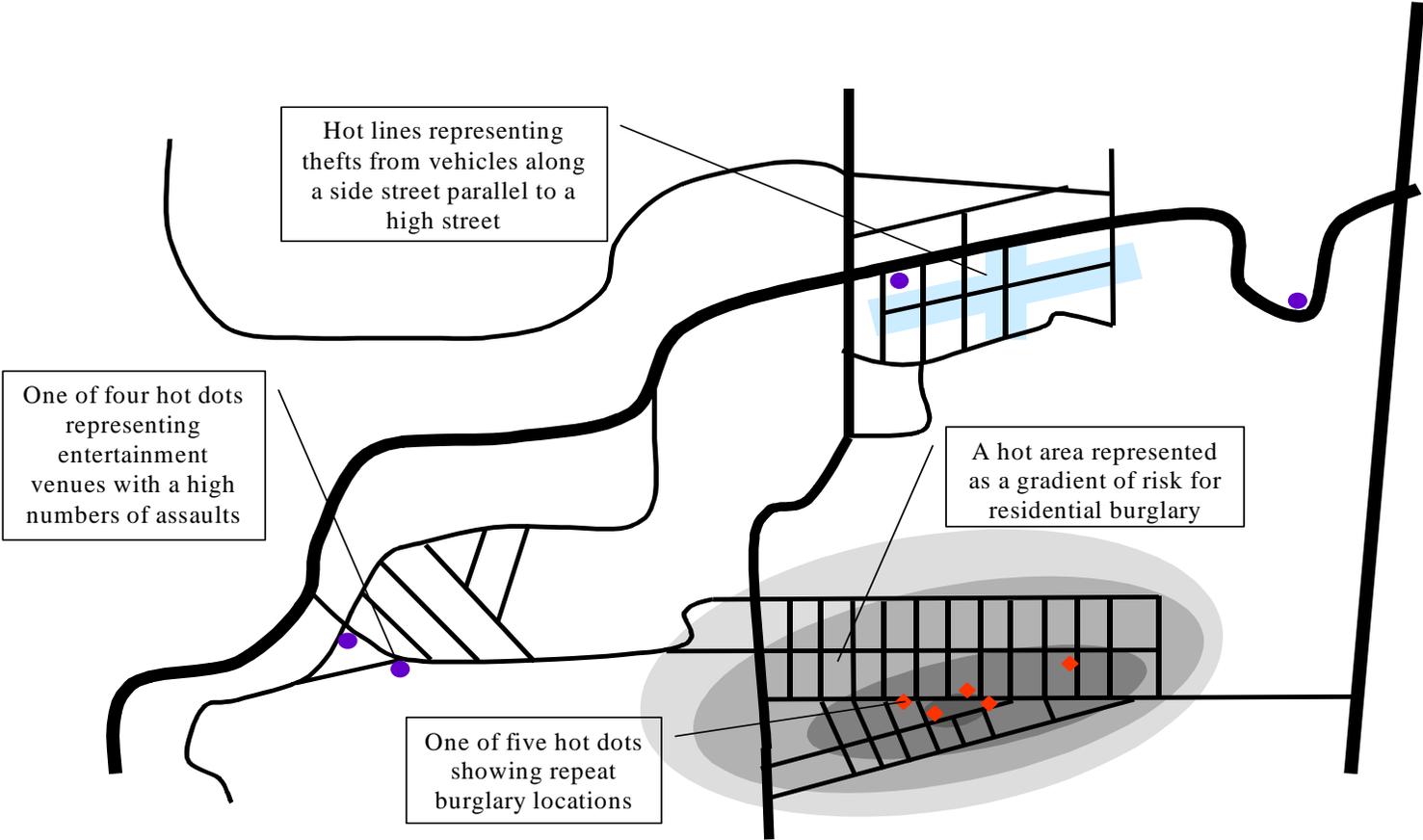Repeat offenders

Wolfgang Philadelphia cohort:

5% of the offenders committed 50 % of crimes

One example of 80/2O rule

More crime concentrations

- Hot spots
- Repeat victims
- Hot products
- Risky facilities

Figure 1: TYPES OF HOTSPOTS

Hot lines representing thefts from vehicles along a side street parallel to a high street

One of four hot dots representing entertainment venues with a high numbers of assaults

A hot area represented as a gradient of risk for residential burglary

One of five hot dots showing repeat burglary locations

Concentration, Mapping and Action			
Concentration	**Hot spots shown as:**	**Action level**	**Action examples**
Places - at specific addresses, corners, or facilities	**Points**	**Facility, corner, address**	**CCTV in a parking deck, changing the way alcohol is served in pubs**
Victims	**Points**	**Victims' addresses**	**Repeat victimisation programs**
Streets - along streets or block faces	**Lines**	**Along paths, streets, and highways**	**Creating cul-de-sacs, changing traffic patterns, altering parking regulation**
Area – neighbourhoods	**Shaded areas**	**Neighbourhoods, regions and other areas**	**Community partnerships, neighbourhood redevelopment**

Repeat Victimization

(Source: British Crime Survey, 1992 all offences)

About 4% of People Experience About 40% Of All Crimes		
Crimes	% Respondents	% of Incidents
0	59.5	0.0
1	20.3	18.7
2	9.0	16.5
3	4.5	12.4
4	2.4	8.8
5+	**4.3**	**43.5**

"Lightning never strikes twice in the same place"

- Well-intentioned police officers sometimes say this to reassure burglary victims that they won't be victimized again. Unfortunately, the research reviewed here shows that it is not true.

Hot Products

- Cash - "mother's milk" of crime
- BCS shows cash, jewelry, electronics targeted in burglary
- Shoplifted items in US: tobacco, liquor, sneakers, brand name jeans, CD/cassettes and cosmetics
- Some cars 30+ more at risk

6 principles of the rational choice perspective

1. Offenders commit crimes to benefit themselves
2. Because of risks and uncertainties, offenders often make poor decisions (**bounded rationality**)
3. Offender decision-making varies considerably with the nature of the crime (**crime specificity**)
4. Decisions about **involvement** in particular kinds of crime are quite different from those relating to a specific criminal **event**.
5. Decisions at the three stages of involvement – initiation, habituation and desistance –are influenced by quite different sets of variables.
6. Event decisions involve a sequence of choices made during preparation, target selection, commission of the act, escape, and aftermath (modus operandi).

Situational Crime Prevention

1. Increase effort
2. Increase risks
3. Reduce rewards
4. Remove excuses
5. Reduce provocations

Displacement:

- Under dispositional theory, displacement is inevitable ("Bad will out")
- Opportunity theory suggests it is not inevitable and most research supports this
- Hesseling's review:
  - 22 out of 55 no displacement
  - 33 some but not complete displacement
  - Also diffusion of benefits

Decreasing chances of spatial displacement

½ mile

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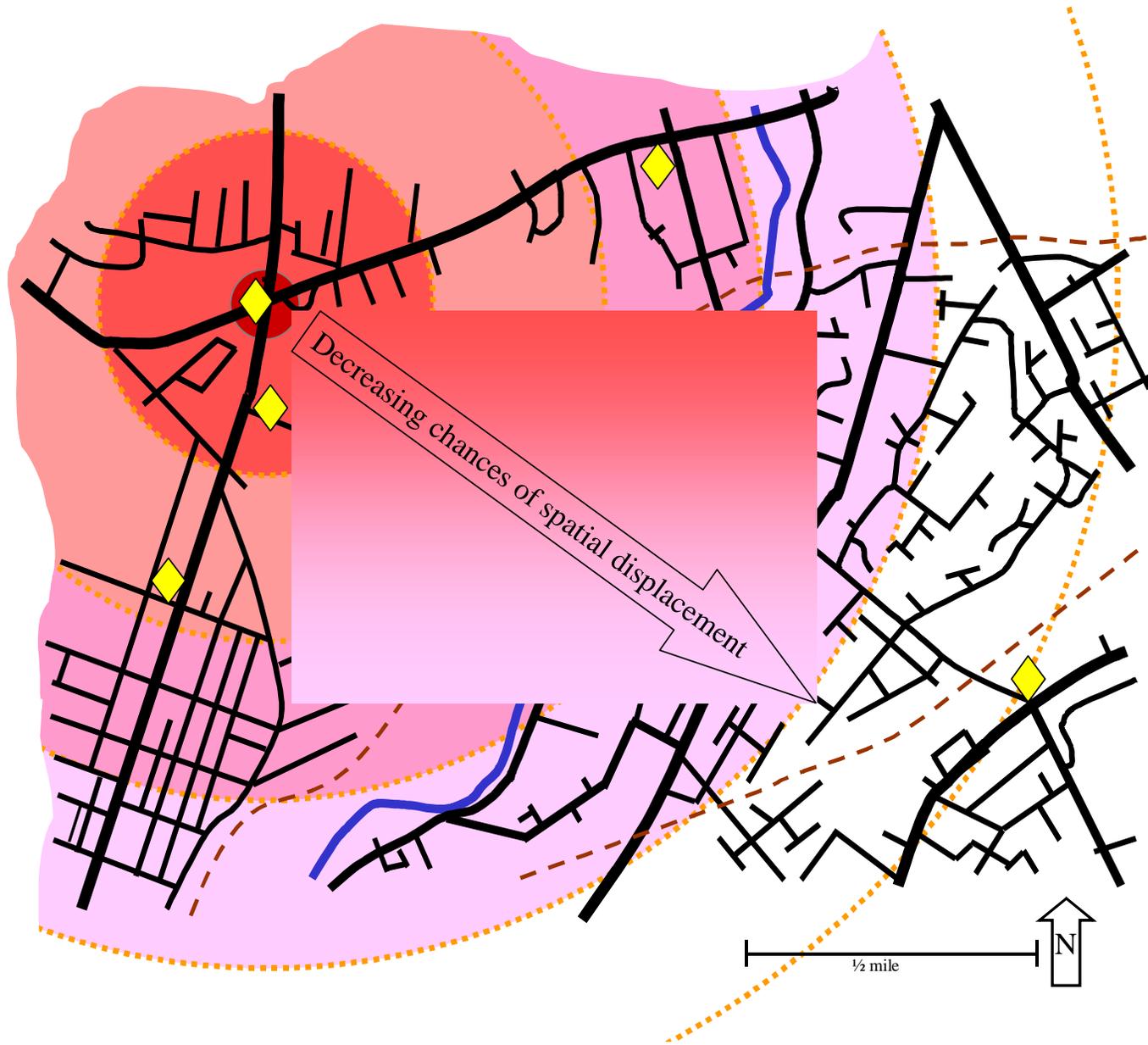
Kinds of Displacement

1. Geographical
2. Temporal
3. Target
4. Method
5. Crime Type
6. (Offender)

    * 1-5 identified by Reppetto

Claims of Displacement Often Evaporate under Closer Scrutiny (Clarke, Codey & Natarajan 1994)

- London Underground modified ticket machines to eliminate 50p slugs
- £ slugs appeared when the 50p ones were eliminated.
- But analysis showed that:
  1. The number of £ slugs (<3,500 per month) was much smaller than the 50p slugs (95,000 per month at their height).
  2. The £ slugs were found in stations not previously affected by 50p slugs.
  3. Any schoolboy could make a 50p slug by wrapping a 10p coin in silver foil. Only people with the right equipment could make £ slugs

Slugs on London Underground

	50p	£1
May 1990	17,066	0
July 1990	30,868	0
Sept 1990	48,402	0
Nov 1990	50,396	0
Jan 1991	56,791	0
Mar 1991	70,983	0
May 1991	93,404	135
July 1991	11,289	246
Sept 1991	0	2248
Nov 1991	0	1031
Feb 1991	0	1616

Slug hot spots on the London Underground, 1990-1991

Legend:
- 50 pence
- 1 £
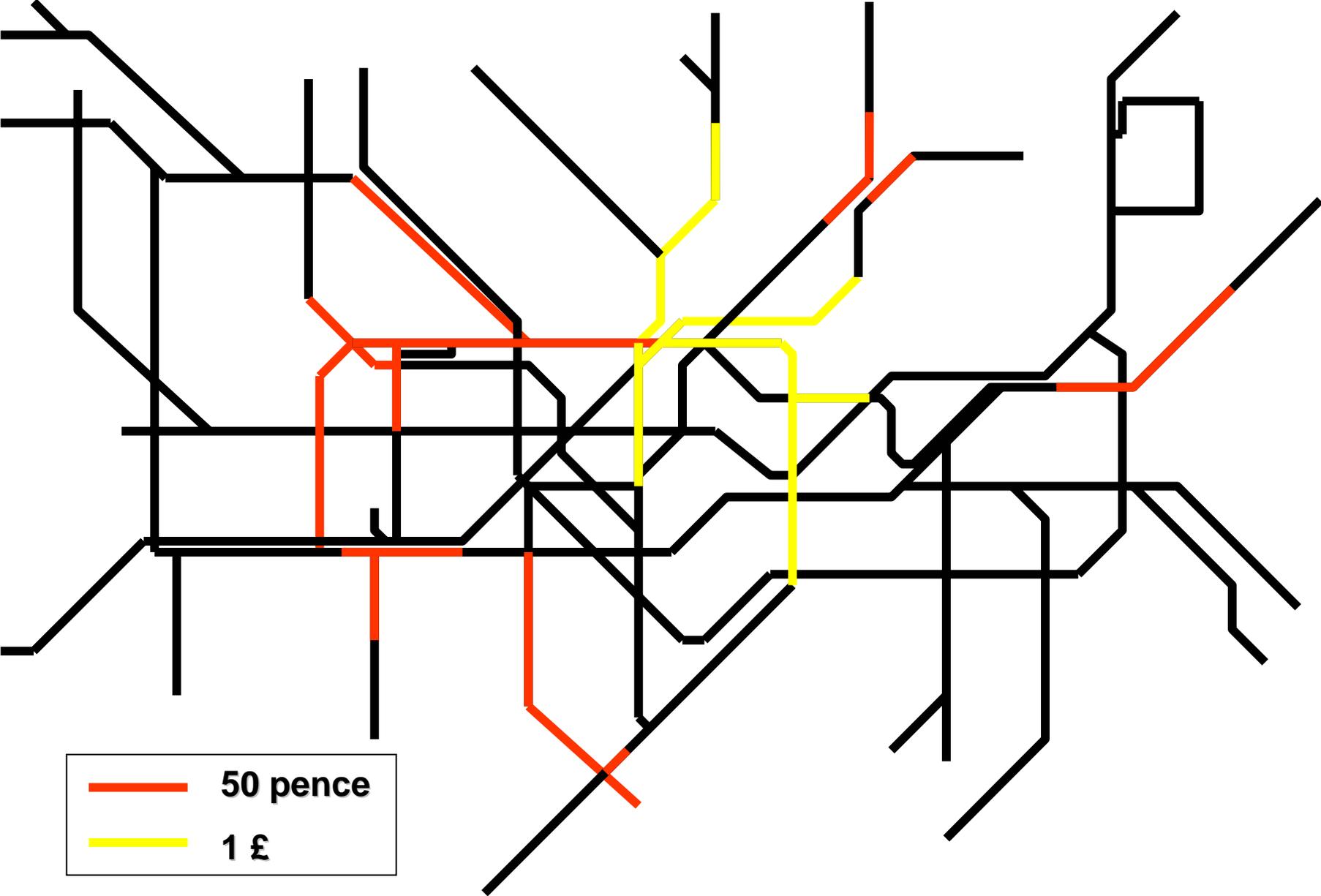
Diffusion of Benefits

Researchers looking for displacement have sometimes found precisely its reverse. Rather than finding that crime has simply been pushed to some other place or time, they have found that crime has been reduced more widely than expected, beyond the intended focus of the measures.

Diffusion of benefits:
CCTV in campus parking lots
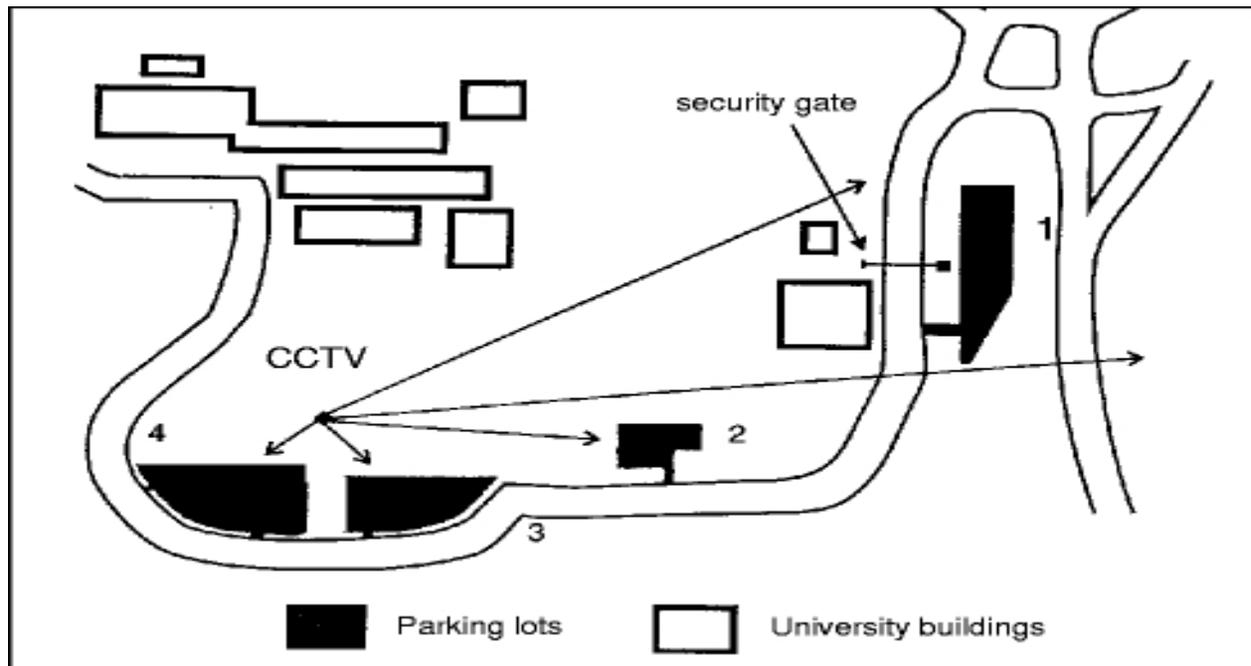
Examples of Mapping applications of hot products

- Stores in a city experiencing robbery
- Stores in a shopping mall with the most shoplifting
- High definition maps of shoplifting hot spots within large stores
- Distribution of risks of robbery at ATM machines

Recovery rates of stolen pick-up trucks in San Diego County 2001
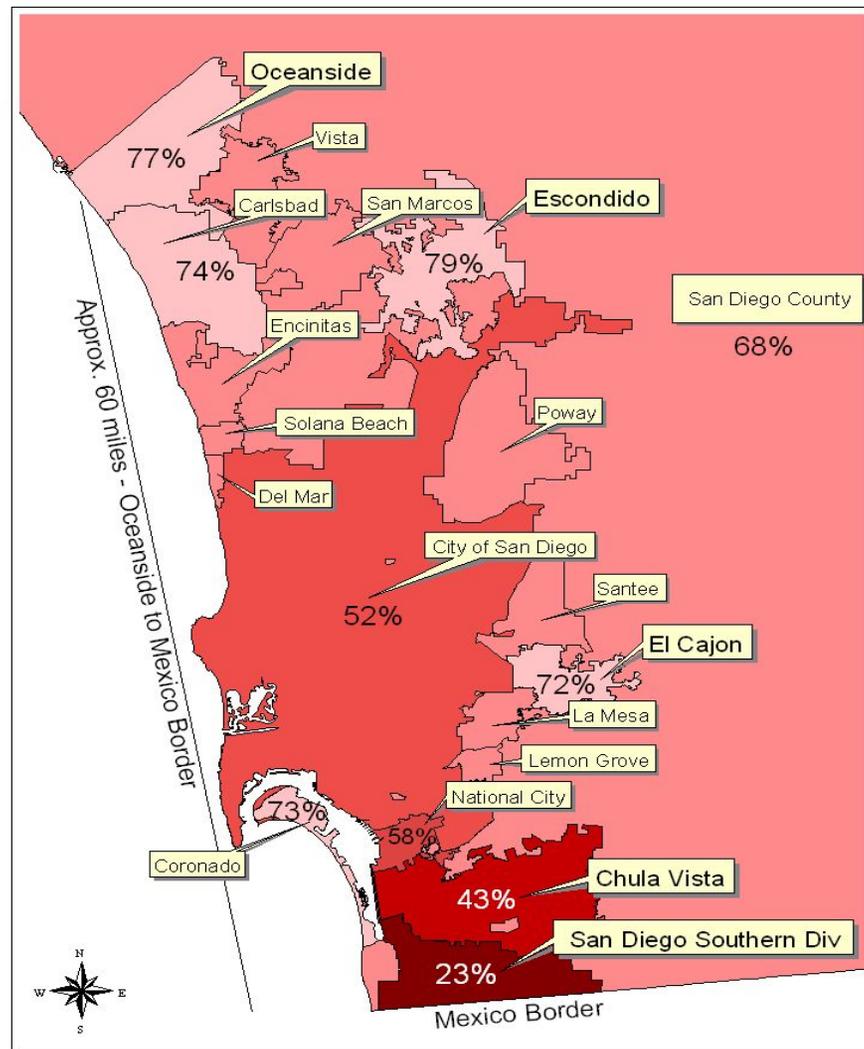
Risky Facilities

In any group of similar facilities or establishments (e.g. bars, banks, schools, convenience stores) a small proportion of the total will account for most of the crime and disorder

20% percent of 78 stores in Danvers, CT, contribute 85% percent of the shoplifting cases (Data courtesy of Christopher Bruce)
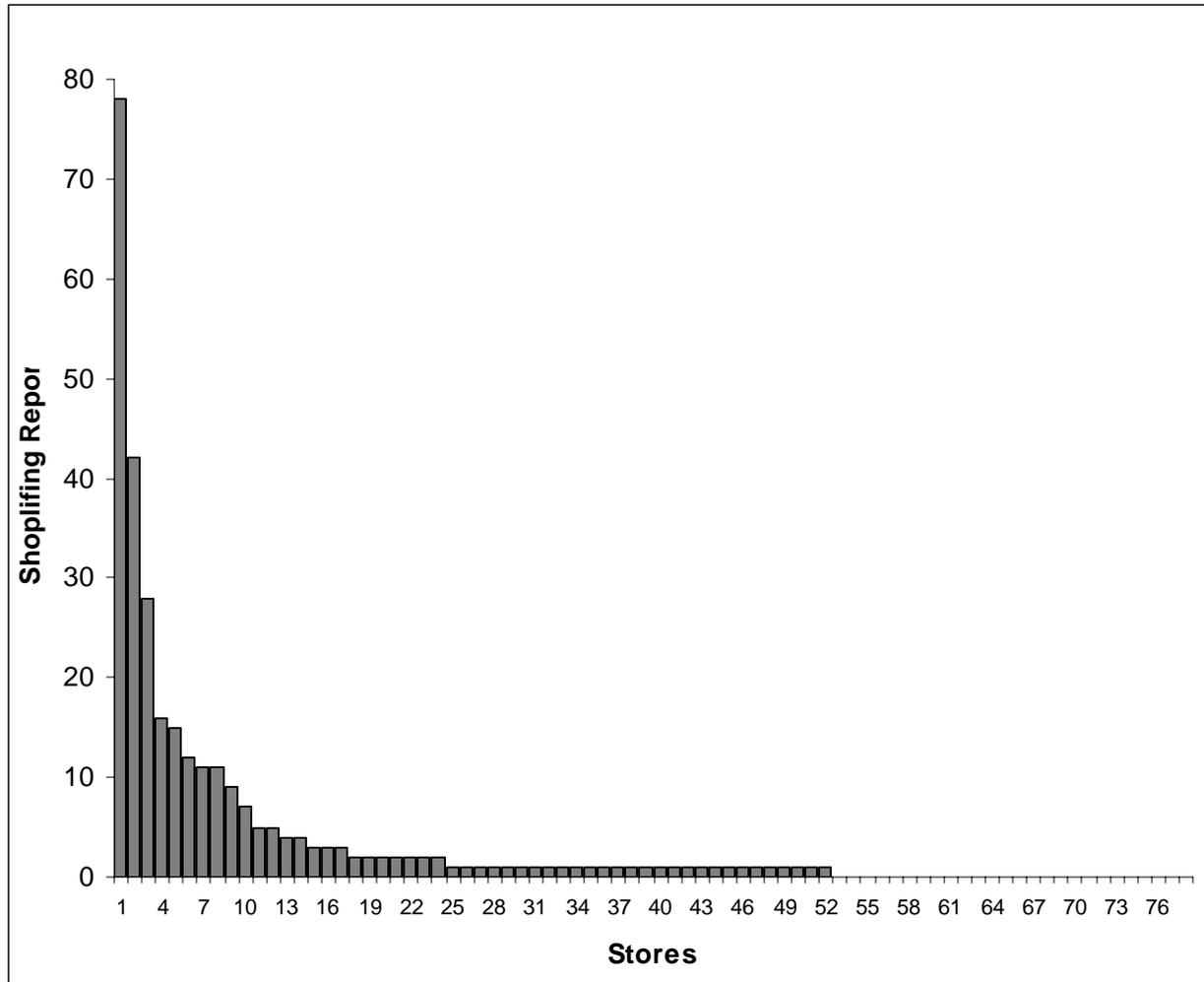
Reasons for risky facilities

Compare high risk with low risk:

- Spurious
  - Size (rates)
  - Reporting practices
- Substantive
  - More likely offenders
  - More suitable targets
  - Design and layout
  - Management practices

Tabulating Temporary Tags

Source: Matt White and Charles Dean (2004).

High Definition Geographic Information System

Crime on Building Floors

Crime Projected on Building Footprint
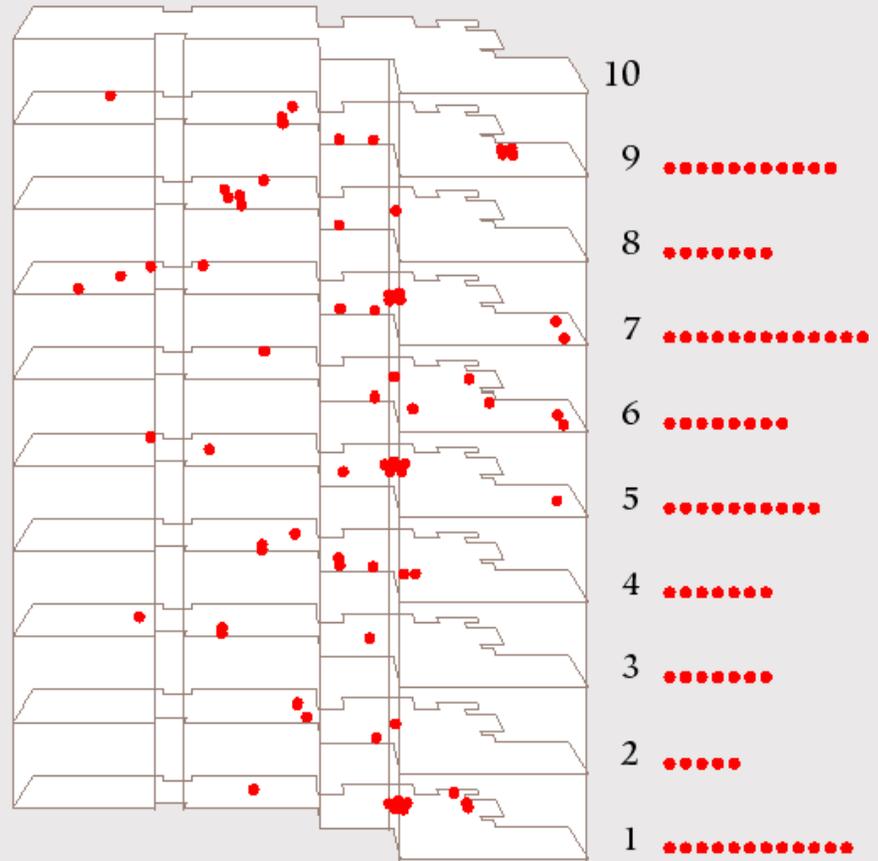
Recent texts dealing with environmental criminology:

- Chainey and Ratcliffe (2005): "GIS and Crime Mapping"

- Rachel Boba (2005): "Crime Analysis and Crime Mapping"

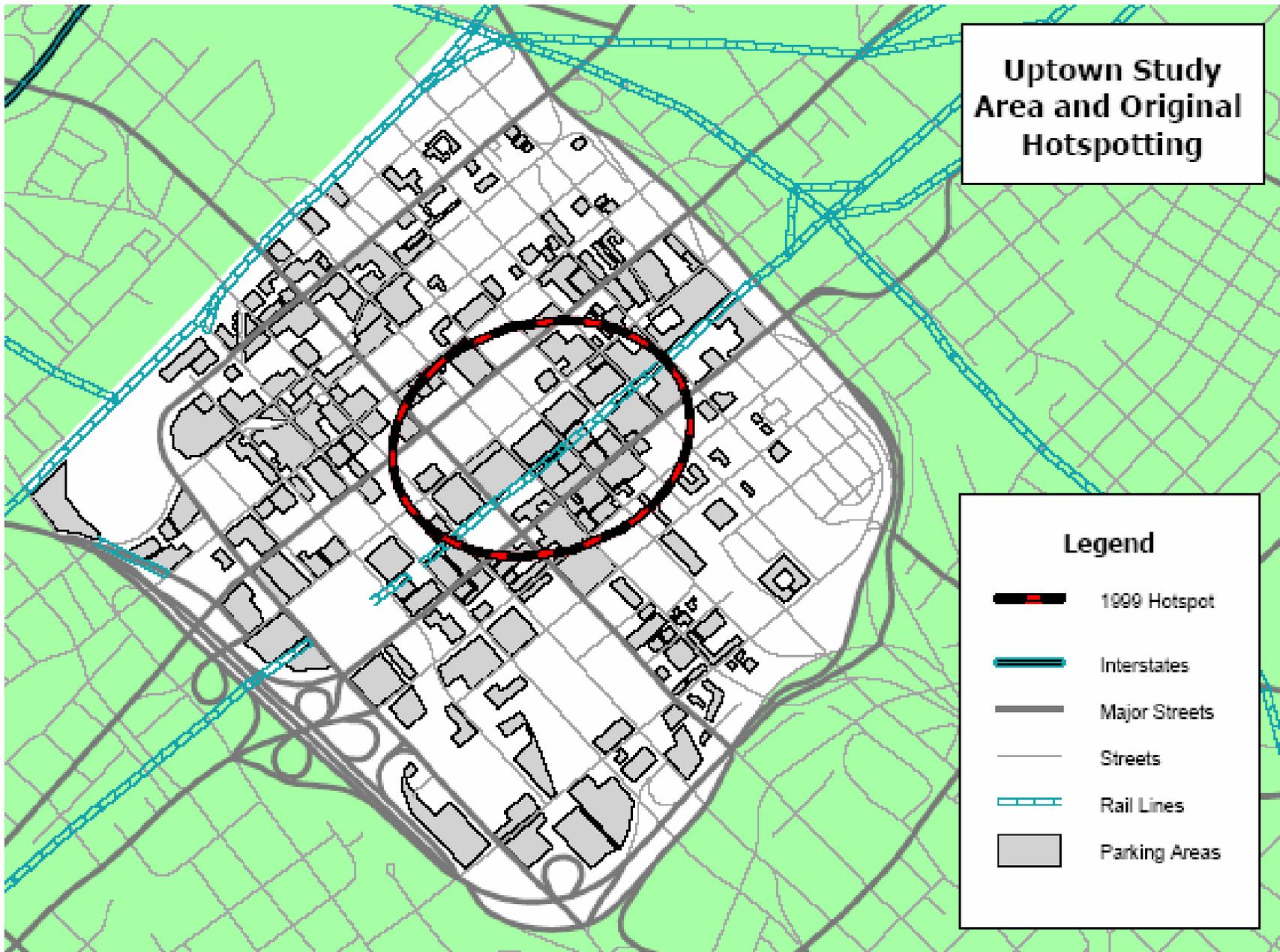- Clarke and Eck (2006): "Become a Problem Solving Crime Analyst"

Example

- Charlotte Study- Clarke and Goldstein

Uptown Charlotte

figure 1.
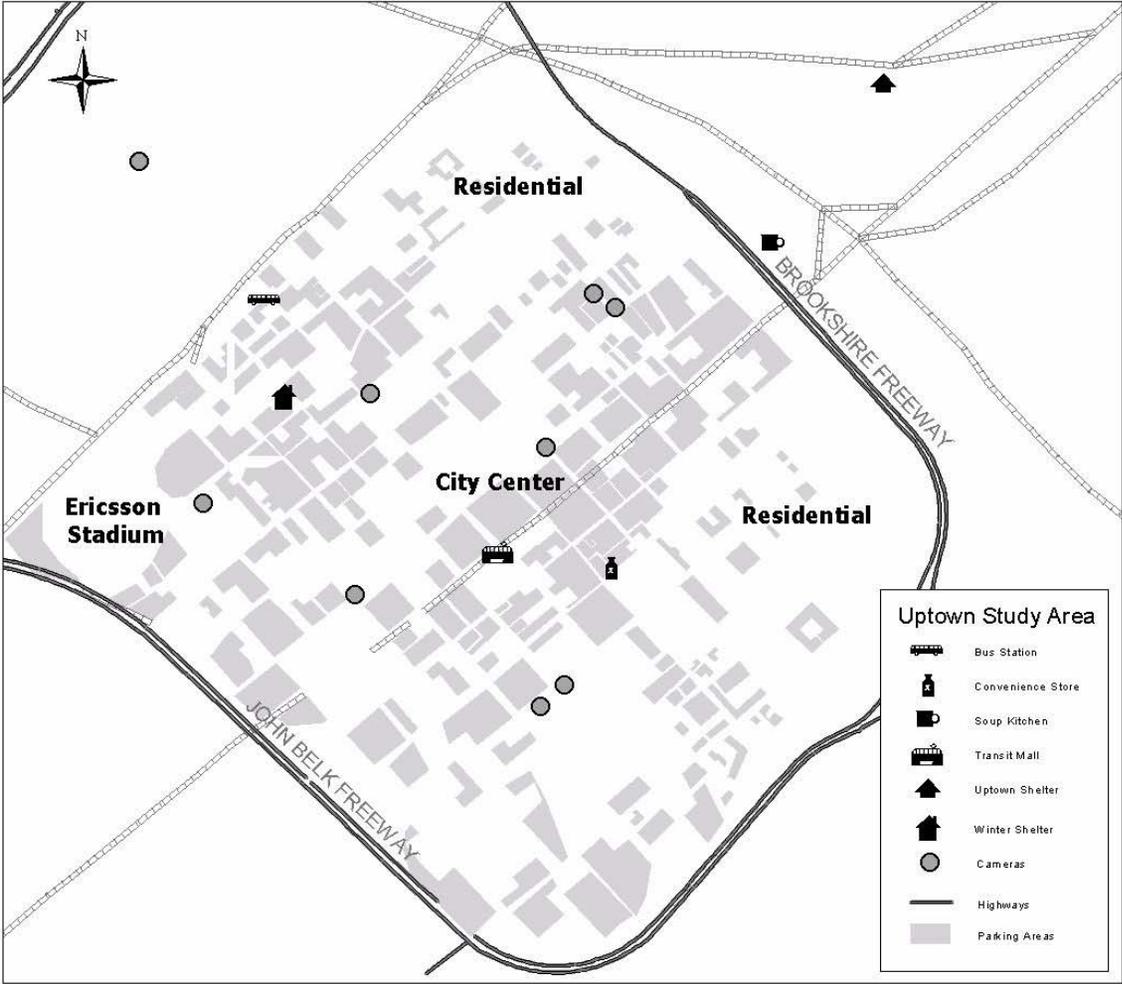
Uptown Study Area and Original Hotspotting

Legend

▬▬	1999 Hotspot
▬▬	Interstates
▬▬	Major Streets
——	Streets
┄┄	Rail Lines
▨	Parking Areas

Decks and Lots

- 83% of LFAs occurred in lots and decks
- 39 decks; 167 lots
- LFAs: decks 93; lots 510 (1999)
- Decks larger: spaces 22,373; Lots 20,201
- Decks 4.1 per 1000
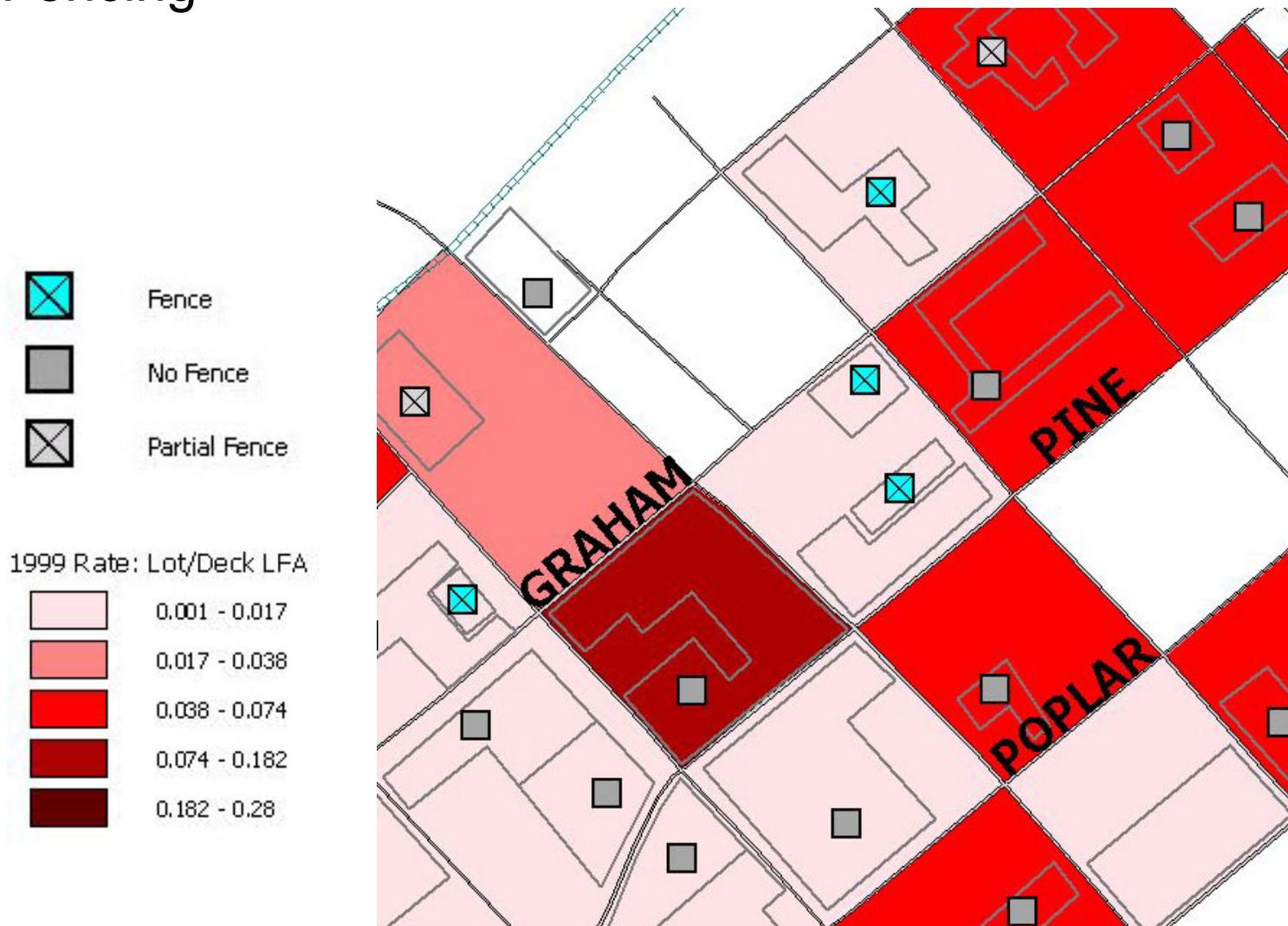- Lots 25.3 per 1000
- Lots about 6 times more at risk

Rates of Larcenies from Autos in Charlotte Uptown
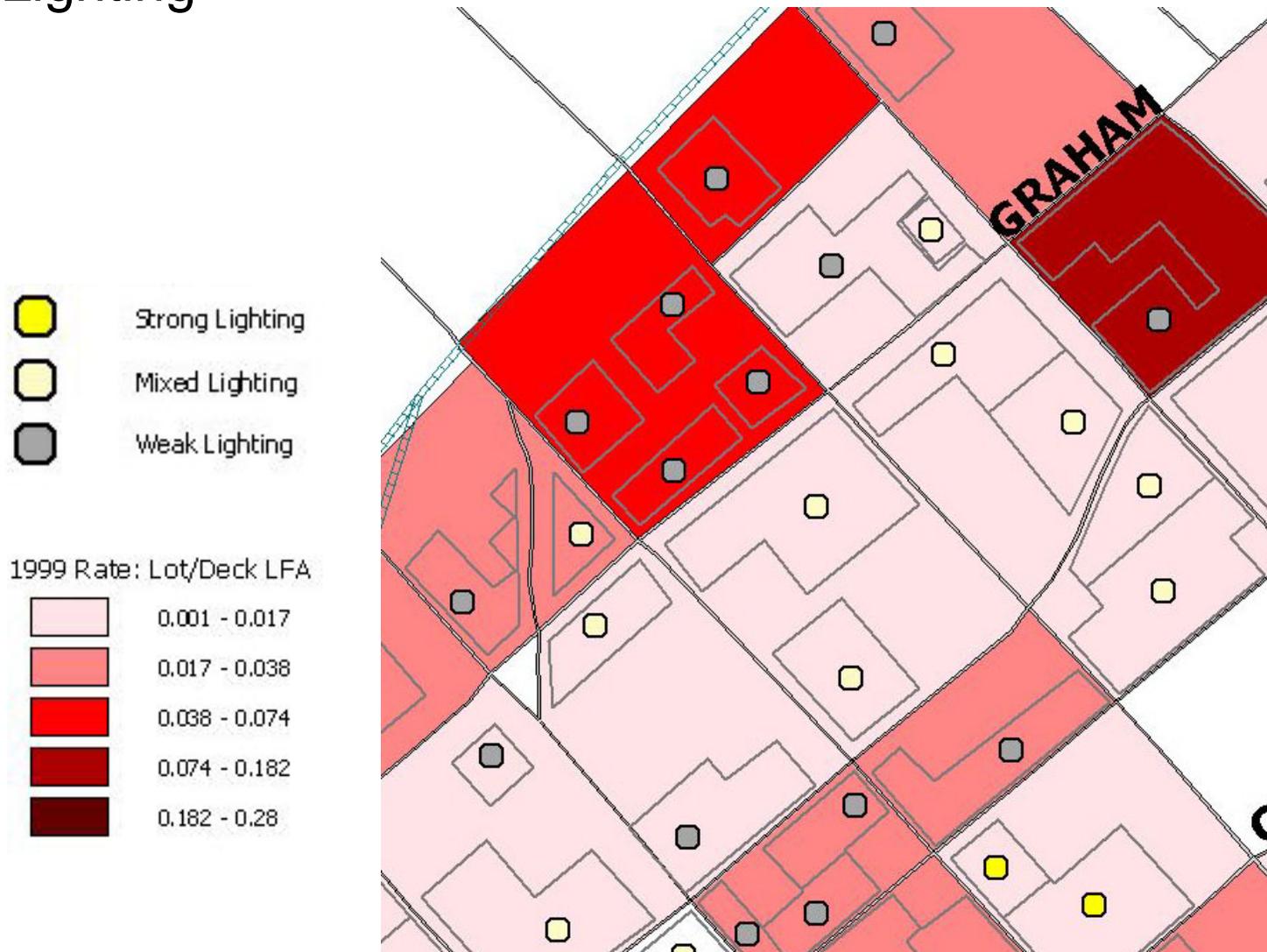

Figure 3.
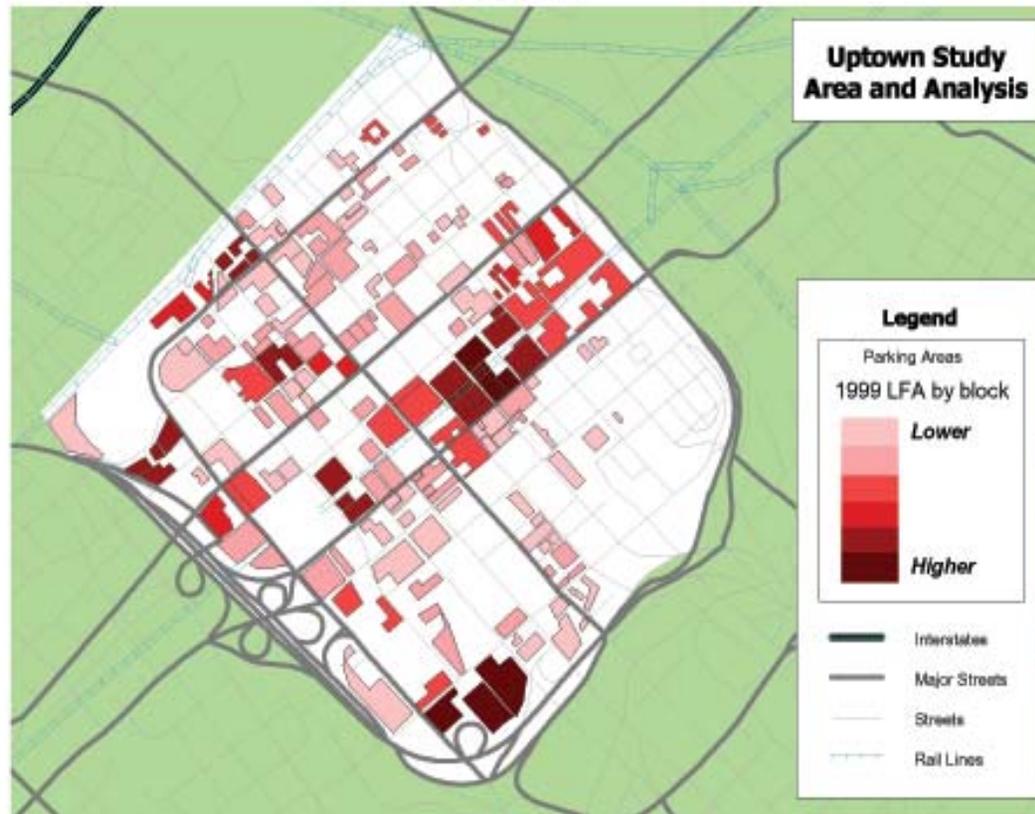
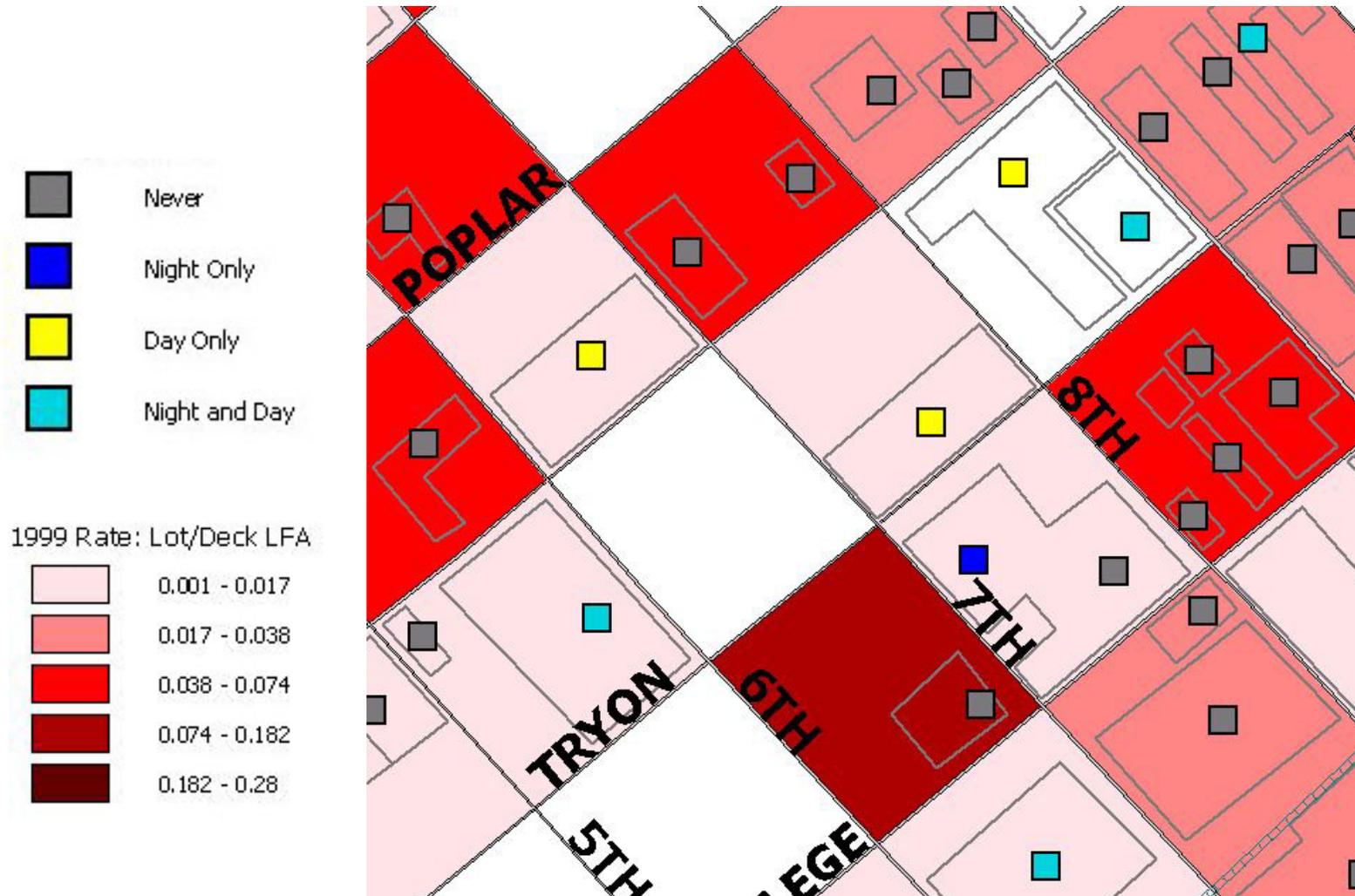# Larcenies from Autos in Charlotte Uptown Parking Lots

- Fencing

Larcenies from Autos in Charlotte Uptown Parking Lots

- Lighting

Larcenies from Autos in Charlotte Uptown Parking Lots

- Attendants

Larcenies from Autos in Charlotte Uptown Parking Lots

- Night Parking