CRIME ANALYST TRAINING

King County Prosecutor’s Office
Police-Prosecution Partnership (3PI)
August 2-4, 2017
OVERVIEW OF CLASS – DAY 1

- 9:30 am – 12:30 pm  Training: CSU team and Crime Analysts
  - Introductions
    - Name, Agency, Experience with SNA, Experience with GIS
  - Mapping techniques
  - Importance of Analysis of Both People and Places (Julie)
  - Overview of what we did in Jackson & Iowa (multi-jurisdictional value of the latter)

- 12:30 - 1:30 pm  LUNCH

- 1:30 – 4:00 pm  Training: CSU team and Crime Analysts
  - Review of SNA Concepts/Techniques (Andrew)
    - Review of updated SNA and how to extract individual agencies
  - What’s already been done with SNA in King County (Andrew facilitate participants)
    - Each describe what they have done since the last training and the challenges they face
  - King County data discussion
    - What do you currently have?
    - What else would be helpful?
    - Where do you go to get it?
OVERVIEW OF CLASS – DAY 2 & 3

- **Day 2**
  - 9:30 am – 12:30 pm *Training: CSU team and Crime Analysts*
    - Hands on learning
    - Getting to know your data (updated SNA data through the end of July 2017)
    - Creating networks
  
  - 12:30 - 1:30 pm *Lunch (on your own)*

  - 1:30 – 4:00 pm *Training: CSU team and Crime Analysts*
    - Creating maps of the networks

- **Day 3**
  - 9:30 am – 1:00 pm *Training: CSU team and Crime Analysts*
    - Presentations by each city
      - Networks
      - Maps
      - Related future analysis
    - Next Steps – where do you go from here (discussion after each city’s presentation as well as regionally)
What is a GIS?

- Geographic Information System - special kind of computer information system
- Uses information about location that can be examined across space and time
- Combines a database and computerized mapping capability

Specifically: a set of computer tools and procedures used by people to collect, manage, analyze, and display information with a location.
GIS Components:

- Hardware
- Software
- Data
- People
- Procedures

Institutional Context

Social & Cultural Context
An Integrator for Effective Public Safety

Offense/Arrest Report (RMS)

911 Call (CAD)

Prosecution (DA/Court System)

Parole/Probation

Community Context
  Businesses
  Schools
  Parks
  Alcohol Establishments
  Bus Stops/Routes

GIS
Other Sources of Geographic Information

GIS as Integrated Technology

Records System

Geographic Information

GIS as Integrated Technology
Historical Overview

• Mapping has long history of use in law enforcement
IMPORTANCE OF GEOGRAPHY

- The four dimensions of crime
  1. Legal (a law must be broken)
  2. Victim (someone or something has to be targeted)
  3. Offender (someone has to do the crime)
  4. Spatial (it has to happen at a place - somewhere, in space and time)

- Crime Analysis Triangle

Future crime is “six times more predictable by the address of the occurrence than by the identity of the offender. Why aren’t we thinking more about wheredunit, rather than just whodunit?” (Larry Sherman, 1995)
Clerkenwell Hotspot

From wheredunit to whodunnit
Clerkenwell Hotspot

From wheredunit to whodunnit
### Clerkenwell Hotspot

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

From wheredunit to whodunnit
Basic GIS Concepts:
Points, Lines and Areas/Polygons

- **Point**
  - Street Light
  - Bus Stop
- **Line**
  - Street
  - River
- **Polygon/Area**
  - Neighborhood
  - Police Beat
Basic GIS Concepts:

How does GIS work?

- Information about your community is entered into a GIS as “layers”
- Each layer represents data of a similar type
- All the data attributes for each feature are stored in the GIS
Basic GIS Concepts:

Overlaying Data:

Any combination of these layers can then be analyzed and/or mapped.
The database could be queried to find out where the robberies occurred on the map.
The data could be mapped by type of crime, date, time or MO.
Area/Choropleth Map

Crime Rates in the US - 2003 vs. Election Results - 2004

Violent crimes per 100,000 people

Murders per 100,000 people

Rapes per 100,000 people

Robberies per 100,000 people

Source: Crime in the United States, 2003, FBI, Uniform Crime Reports
Graduated Symbol Map

Salem Crash Hot Spots
2008-2010

Legend
Crash Locations by Volume
FREQ
- 1 - 3
- 4 - 8
- 9 - 15
- 16 - 23
- 24 - 43

Crash Hot Spots
- Kernel Density (KDE)
- Temple University working with Camden Prosecutor’s Intelligence Analysis Section
- Using Drug Hotspots to target resources
Analyzing “hot” places
Analyzing “hot” places
ANALYZING “HOT” PLACES
THINGS TO CONSIDER WHEN MAPPING CRIME…
Points vs. Rates


Homicides Per Square Mile

- 0.0 to 15.9 (17)
- 16.0 to 34.9 (78)
- 35.0 to 44.9 (10)
- No Homicides (4.7)

Sources: Washington Metropolitan Police Department; 1990 Census of Population and Housing / Author: Dan Fedler
Detroit's hardest hit

Shootings over a two-month period this summer in Detroit varied dramatically by neighborhood & zip code.

KEY
Shootings per 10,000 residents
- Red: Six to eight
- Orange: Four to six
- Yellow: Two to four
- Green: Zero to two

Notes: Population is 2010, from U.S. Census. Shootings are from June 21 to Aug. 21. Overall, there were 3.5 shootings for every 10,000 city residents.
Long, cruel summer

From June 21 to Aug. 21, 38 people were shot and eight died in the northeast corner of Detroit – which saw the most shootings of any ZIP code in the city. Although the 48205 ZIP code has just 6 percent of the city’s residents, it accounted for one-seventh of its murders and more than a tenth of the 303 people shot during that time.

Note: City records indicate a block or an intersection of a shooting, not the specific location on a block.

Source: Detroit police

The Detroit News
Scale Matters

CITY OF SAN DIEGO
Violent Crimes: September, 1999

KEY
Violent Crimes
1
2
3
4-5
6-14
Freeways & Arterials
Neighborhoods

CITY OF SAN DIEGO
Violent Crimes: September, 1999

KEY
Violent Crimes
1
2
3
4-5
6-14
Streets
Neighborhoods
Hot Spots: Choropleth
Hot Spots: Kernel Density

Don’t forget to use the same algorithm & criteria!
ANALYZING PUBLIC SAFETY ISSUES GOES BEYOND MAPPING CRIME DATA
Crime Mapping
Sources of Data

- Criminal Justice
- Other Government
- Community
  - residents
  - businesses
Putting the crime in context

- What’s near the incidents in my crime pattern?
  - Highways/major routes
  - Methadone clinics
  - Public transportation
  - Budget motels
  - Public housing
  - Schools
  - Gang territories
Syracuse BCJI

Westside Neighborhood

Public Housing & Community Assets
Using CPTED for Neighborhood Problem Solving in Cincinnati, OH

Legend:
- Green circle: Jul 97 - Jun 98
- Red square: Jul 98 - Jun 99
- Streets
- Buildings
- Curbs

Legend:
- City Streets
- Buildings
- Curbs

Legend:
- City Streets
- Buildings
- Curbs

Legend:
- City Streets
- Buildings
- Curbs
Auto Thefts and Land Use in San Diego
Closed Circuit TV Coverage Areas

Legend:

- CCTV camera
- CCTV coverage:
  - Identification
  - Recognition
  - Detection
Chicago neighborhood change in homicides and coffee shops, 1991 - 2005

“More Coffee, Less Crime?
Papachristos, et al.
City & Community, Sept. 2011
MAKING MAPS WITH DATA THAT DOESN’T YET EXIST
Digitizing Data: Gang Zones

Gang Injunctions within San Diego County

1. Logan Red Steps
2. Skyline
3. Linda Vista
4. Center Street
5. Varrío Posole Locos
6. Varrío Mesa Locos
7. Varrío San Marcos
8. Diablos - 2007
9. Diablos - 2010
10. Westside - 2007
11. Westside - 2010
12. Nestor
13. Vista Home Boys
14. OTNC
Grant Area

MWB Hotspots

Comparison Hotspots

AUSTIN BCJI
• Temple University
• Outside Assaults
• Victim Survey
• High-definition GIS
A Large Reduction in Campus Crimes
Three dimensional Mapping

Gladfelter Hall
VERTICAL AND HORIZONTAL PATTERN DETECTION

Crime Projected on Building Footprint

Crime on Building Floors

10
9
8
7
6
5
4
3
2
1
Using GIS to Analyze Population and Housing
Sharing maps with the public
GIS Resources

DATA
• http://www.census.gov/geo/maps-data/data/tiger.html
• http://freegisdata.rtwilson.com/
• http://www.google.com/publicdata/directory
• Don’t forget your local Council of Governments, City/County GIS, local or transportation agencies

OTHER
• http://www.google.com/earth/explore/products/desktop.html
• http://www.socialexplorer.com/