BNIA Data Day 2014

Violence Prevention and How We Use Open Data

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Youth Violence Prevention Programs

- **Safe Streets**: Community-based outreach and conflict mediation to prevent shootings
  - Based on the [Cure Violence](#) Model

- **Operation Safe Kids**: Collaboration between the Health Department and Department of Juvenile Services that provides intensive case management to high-risk juveniles from DJS’ Violence Prevention Initiative (VPI)

- **Dating Matters®**: CDC funded research and educational program for teen dating violence being implemented in 12 middle schools in Baltimore City.
How We Use Open Data

- Public Health Surveillance
  - Time and place
    - Program-specific and citywide
    - Distribution and determinants
    - Map risk, incidents, victims, and offenders

- Site selection and grant applications
  - Selection based on specific spatial criteria
    - i.e. Schools within the top 25% of census tracts for percent of people in poverty and violent crime rate
How We Use Open Data

- With confidential data
  - Locations of conflict mediations
  - Clients’ location(s) in relations to other services
  - Clients’ exposure to recent violence
Source: Open Baltimore, Part I Crime Data. Victim-based data for fatal and non-fatal shootings is grouped into incidents by same date, time, and location. Errors in time formats may lead to over counting.
Time

Moving Averages for Number of Homicide Victims (all weapons): 2008 to June 2014

Monthly median = 19 homicide victims
Two-month average for May and June: 21

Month and Year
Shootings begin to pickup in frequency in the mid afternoon, 1-3pm, and steadily increase through evening hours—peaking between 9pm to 2am. About 46 percent of shootings occurred during Friday, Saturday, and Sunday.
Point data:
Violent crimes,
June to Early July 2014

Example of a map given to Park Heights Safe Streets staff
Place

Labeling:
Names of gun offenders

Density of past shootings
or mapping current risks

Source: Open Baltimore, Gun Offenders
Place

Victims of Violent Crime, 2013

Grid/Fishnet (equal area)

Census Tracts with Lower Shooting Rates Near High Areas

Perkins Homes, Public Housing

Cluster analysis

Note: Grids can be created for anything, liquor licenses, etc.
Street Segments

- Points can also be attached to street segments

Sum = 2

Adult drug arrests around Lexington Market (2012)
Joint Effects of Poverty and Race
Using Census Data

5-Year Median Violent Crime Rates (2008-2012)
by Census Tract per 1,000 population

Notes: Poverty and race are markers for many different phenomena. Baltimore City’s population is 63 percent Black (2013). In many census tracts, an absolute or near majority of the population are black. The rates above are not adjusted for other variables.

Percent Below Poverty

- High Poverty (28.1+)
- Mod Poverty (17.8 to 27.5)
- "Low" Poverty (8.7 to 17.7)
- Lowest Poverty (< 8.7)

Percent Black < 31.8

- 95.5 +
- 81.9 to 95.4
- 71.8 to 81.8
- 31.8 to 71.8

Number of Census Tracts

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<tbody>
<tr>
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<tr>
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<tr>
<td>Lowest Poverty</td>
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<tr>
<td>Total</td>
<td>121</td>
<td>138</td>
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Three were excluded: Downtown (401), the Jail (1003), and an area with a negligible population (2506).
More Uses

- Regression – asking why
  - Exploring local variation
- Changes over space and time
- Community asset mapping
- 3D visualizations
- Google Street View
Conclusion

- Everything you saw was created from open data!
- The best analysis starts with a great question
- Remember to try to validate your results:
  - Set aside one year of data (or more)
  - Changes over time, pre-/post-test
  - Having comparison areas
  - Mapping risk vs. incidents
Extra Slides
Crime and Risk-Related Data on Open Baltimore

- Part I Victim-based crimes
- Part I and II Adult arrests
- Calls for Service/911
- Gun offenders
- Police cameras
- Weekly COMSTAT report
- Categorical Police Use of Force
- Police post and district boundaries
- Liquor stores, vacants, ...
Part I Crime Data
- Victim-based: each record is a victim
- (Weighted incident data)

Preserving coordinates’ precision
- In ArcMap, use string functions to extract the coordinates or Convert Coordinate Notation

Run basic frequencies on a few variables
- Year, month, and geographic unit
- Compare with published estimates
Free and Open Source GIS and Tools

- **QGIS**
  - A desktop GIS

- **GeoDA**
  - Spatial data analysis including regression
  - [http://geodacenter.asu.edu/projects/opengeoda](http://geodacenter.asu.edu/projects/opengeoda)

- **CrimeStat IV**
  - Spatial and temporal analysis of crime-related data

- **GWR4**
  - Regression modeling, non-linear models
  - [http://www.st-andrews.ac.uk/geoinformatics/gwr/gwr-software/](http://www.st-andrews.ac.uk/geoinformatics/gwr/gwr-software/)

- **SaTScan**
  - Spatial, temporal, and space-time scan statistics
  - [http://www.satscan.org/](http://www.satscan.org/)