BNIA Data Day 2014

Violence Prevention and How We Use Open Data

Presenter: Jonathan Gross, MPH, CPH, Certificate in GIS
Epidemiologist, Office of Youth Violence Prevention
Baltimore City Health Department
jonathan.gross@baltimorecity.gov
P: 443-984-3566

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.

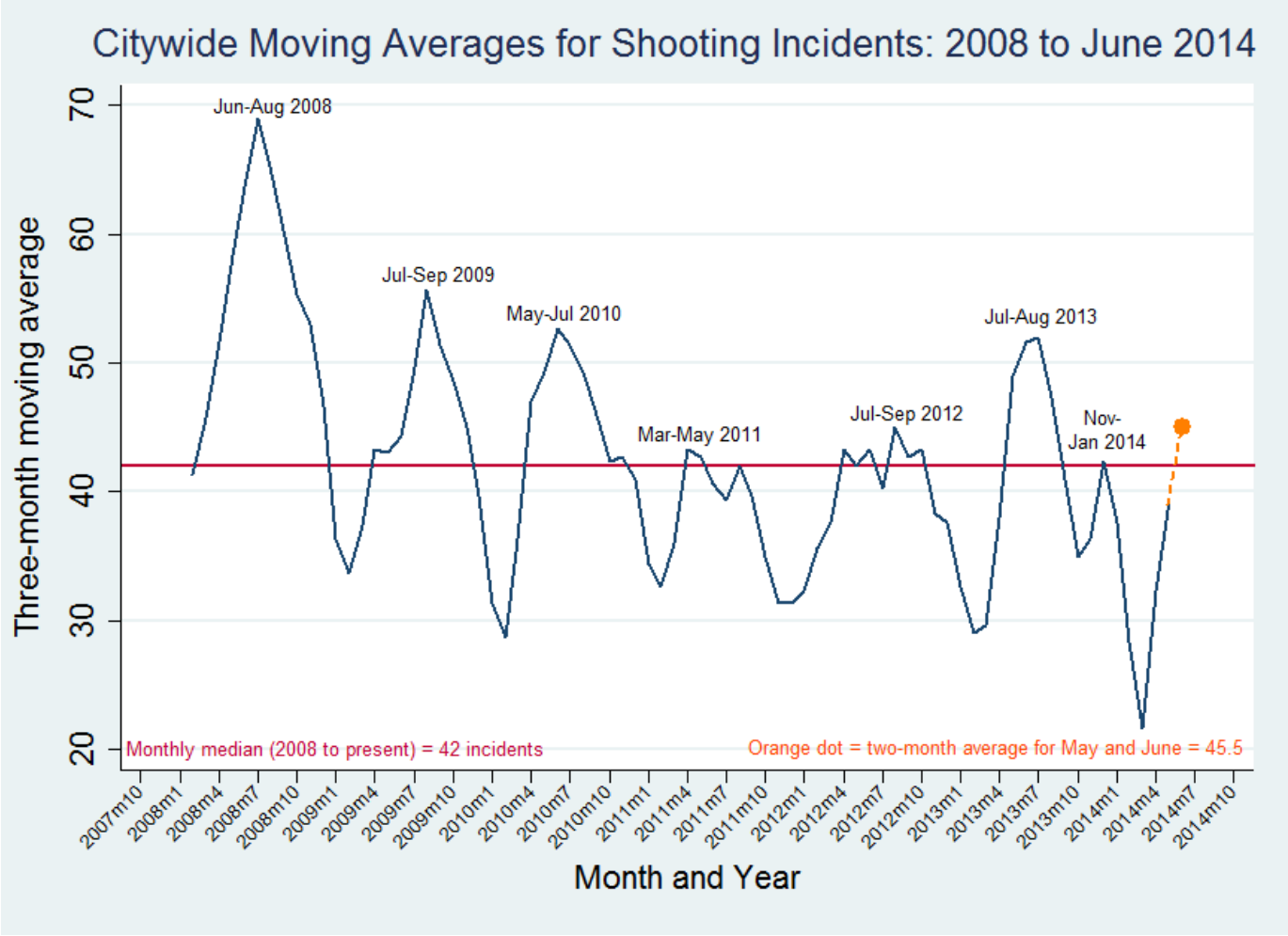
How We Use Open Data

- 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

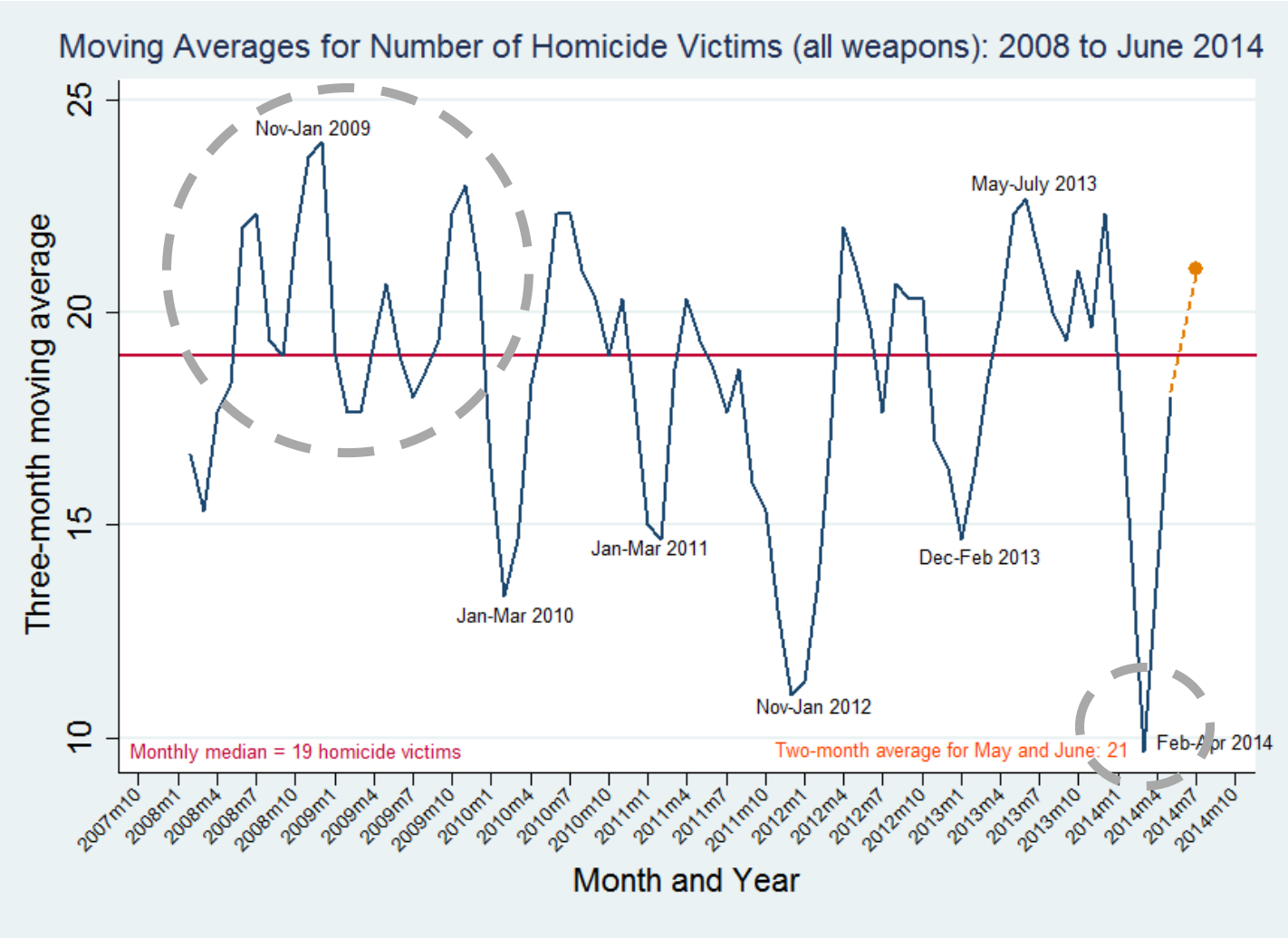
- With confidential data
  - Locations of conflict mediations
  - Clients' location(s) in relations to other services
  - Clients' exposure to recent violence

Time



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
Three-month moving average
10
15
20
25
Nov-Jan 2009
Jan-Mar 2010
Jan-Mar 2011
Nov-Jan 2012
Dec-Feb 2013
May-July 2013
Feb-Apr 2014
Monthly median = 19 homicide victims
Two-month average for May and June: 21
2007m10
2008m1
2008m4
2008m7
2008m10
2009m1
2009m4
2009m7
2009m10
2010m1
2010m4
2010m7
2010m10
2011m1
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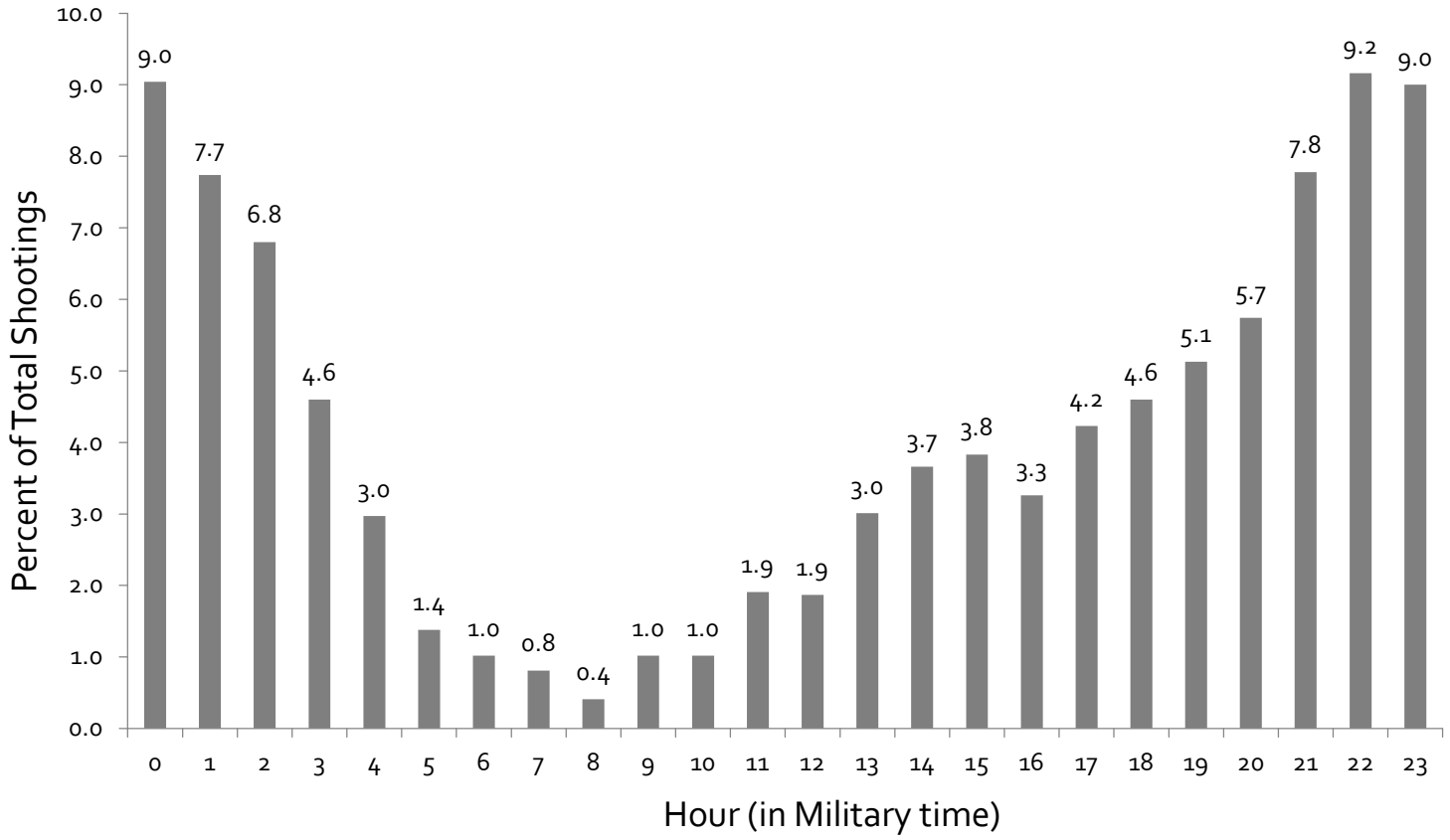
2011m10
2012m1
2012m4
2012m7
2012m10
2013m1
2013m4
2013m7
2013m10
2014m1
2014m4
2014m7
2014m10
Month and Year

Time of day

Percent of Total Shootings by Hour, 2009-2013

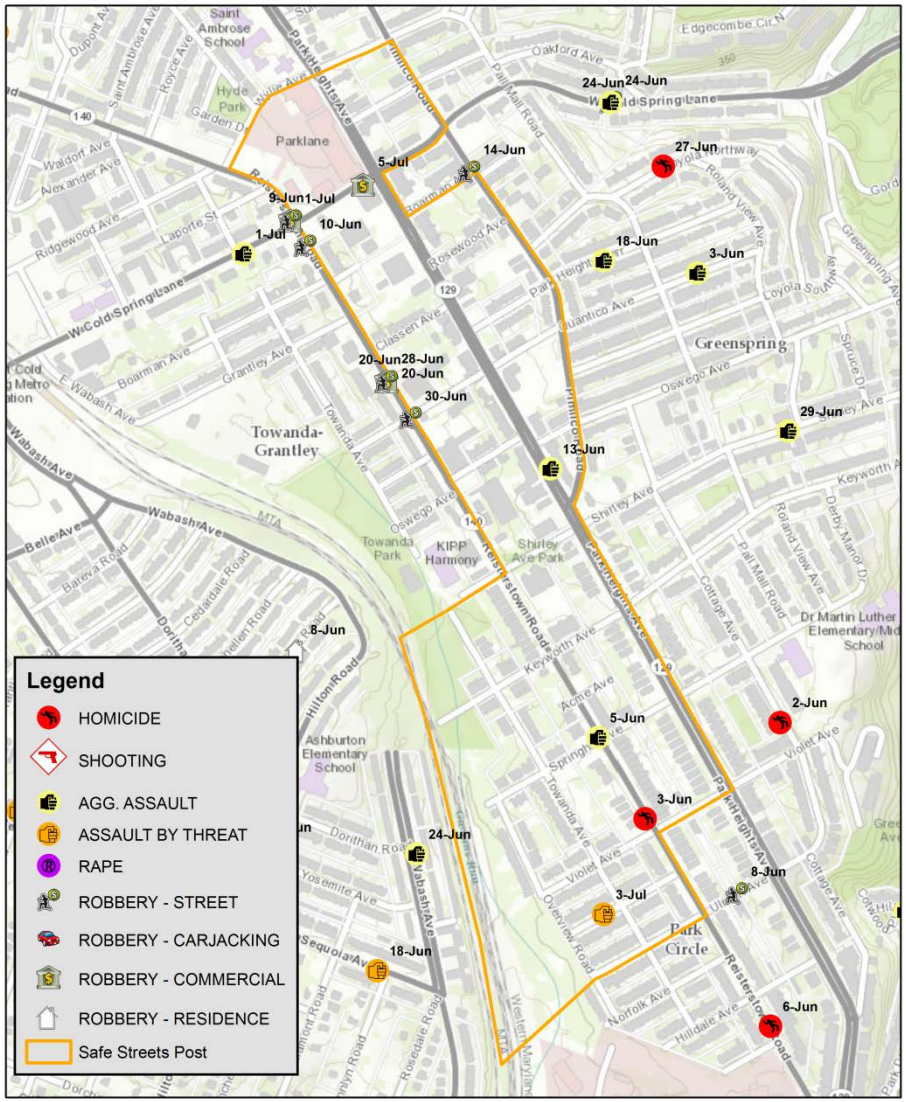


Shootings begin to pickup in frequency in the mid afternoon, 1-3pm, and steadily increase through evening hours—peaking between 9pm to 2am. About 46 percent of shootings occurred during Friday, Saturday, and Sunday.

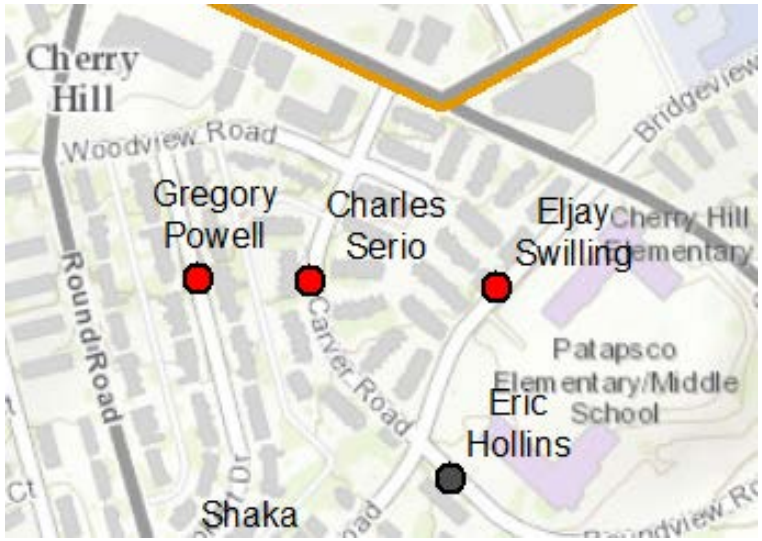
Place

<u>Point data</u>:
Violent crimes,
June to Early July 2014

Example of a map given to
Park Heights Safe Streets staff



Place



Labeling:
Names of gun offenders

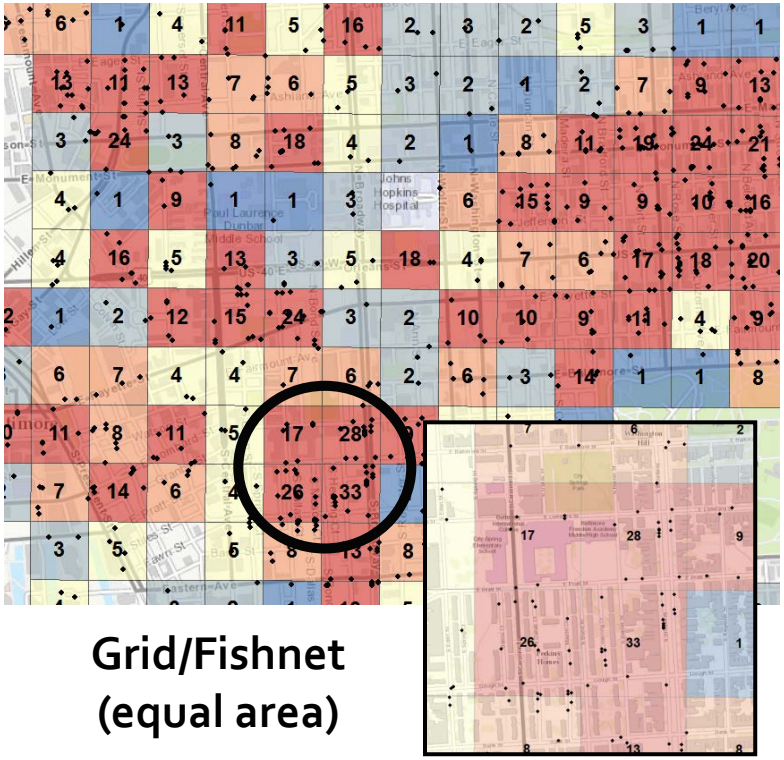
Density of past shootings or mapping current risks

- Baltimore
- May Be Incarcerated

Source: Open Baltimore, Gun Offenders

Place

Victims of Violent Crime, 2013



Grid/Fishnet (equal area)

Perkins Homes, Public Housing

Census Tracts with Lower Shooting Rates

Near High Areas

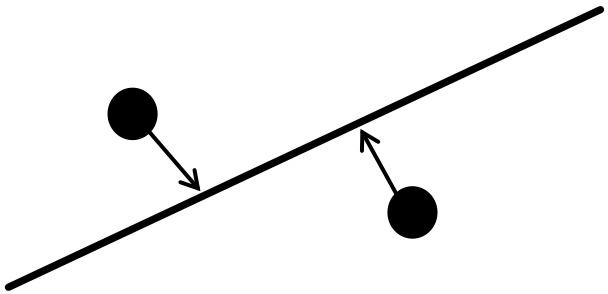
Tracts: 1603
Population: 1,558
Median Age: 43 (older)
Diversity: No
Income: Well below average

Cluster analysis

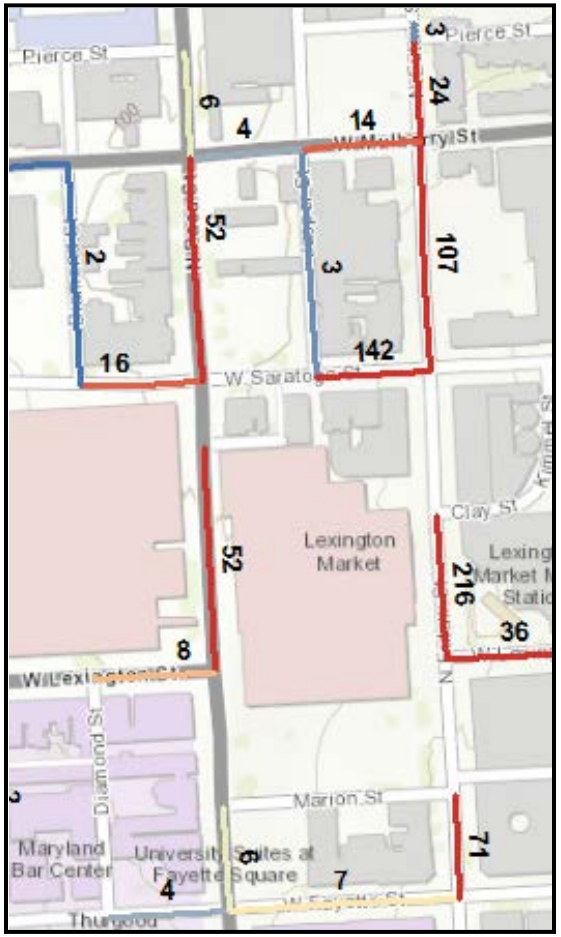
Note: Grids can be created for anything, liquor licenses, etc.

Street Segments

- Points can also be attached to street segments



Sum = 2

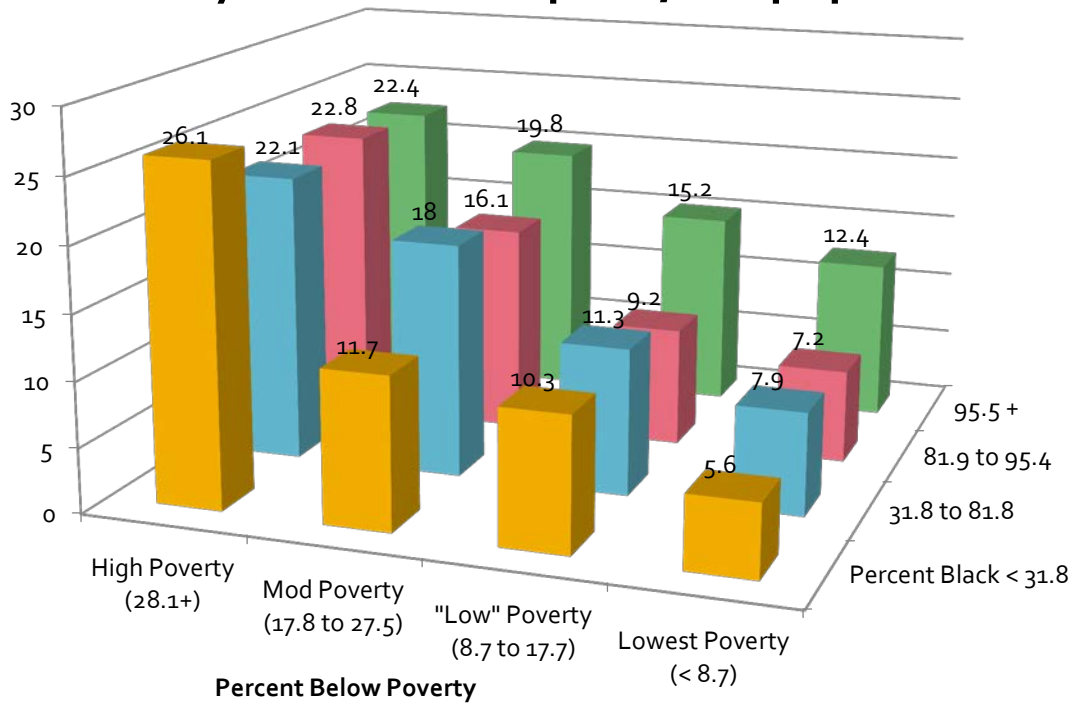


Adult drug arrests around Lexington Market (2012)

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.

Number of Census Tracts			
21	15	10	3
14	19	13	3
12	13	9	15
1	3	17	29
		Total:	197/200

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, …

Tips and Tricks

- **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
  - http://www.qgis.org/en/site/
- **GeoDA**
  - Spatial data analysis including regression
  - http://geodacenter.asu.edu/projects/opengeoda
- **CrimeStat IV**
  - Spatial and temporal analysis of crime-related data
  - http://www.nij.gov/topics/technology/maps/pages/crimestat.aspx
- **GWR4**
  - Regression modeling, non-linear models
  - http://www.st-andrews.ac.uk/geoinformatics/gwr/gwr-software/
- **SaTScan**
  - Spatial, temporal, and space-time scan statistics
  - http://www.satscan.org/