CONNECTED IN CRIME
HOW NETWORK SCIENCE CAN HELP ADDRESS AMERICA’S GUN VIOLENCE EPIDEMIC

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crime epidemic
Baby dies day after she and dad shot: 'We have another tragedy'

March 19, 2013

6-month-old Jonyesh Watkins died one day after she and her father, Jonathan Watkins, 29, were shot while driving in a vehicle in the Woodlawn neighborhood.

Gone But Never Forgotten
RISK FACTORS

being poor, young, & black
non-fatal shooting rate in Chicago, 2006 to 2012

- Black
- Hispanic
- White

- Total
- Males
- Males < 18
- Males 18 to 34

Rate per 100,000
fatal & non-fatal shootings in chicago, 2006-2012
who gets shot?
who gets shot?

network science
Baby dies day after she and dad shot: 'We have another tragedy'

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6-month-old Jonylish Watkins died one day after she and her father, Jonathan Watkins, 29, were shot while in a vehicle in the Woodlawn neighborhood.
40% of Associates are Victims
40% of associates are victims.

- Associate
- Shooting Victim
- Co-Offending Tie
- Family Tie
westside of Chicago
ROAD MAP

- the idea ~ gun violence as a bloodborne pathogen
- recent findings ~ concentration, exposure, and diffusion
- program evaluation
- future directions
violence as a bloodborne pathogen
who gets shot?
fatal & non-fatal shootings in chicago, 2006-2012
risky behaviors
co-offending
• most delinquent acts occur in groups

• crime and delinquency strong associated with peer influence

• involvement of gangs/groups in violence/homicide

• guns are durable goods
risky behavior: co-offending
FINDINGS

the small world of gun violence
violence concentrates **socially**
Network Exposure and Homicide Victimization in an African American Community

Andrew V. Papachristos, PhD, and Christopher Wildeman, PhD

Journal of Urban Health

Social Networks and the Risk of Gunshot Injury

Andrew V. Papachristos, Anthony A. Braga, and David M. Hureau
Boston

6% of population

85% of all gunshot injuries

Papachristos, Hureau, & Braga 2012
• 6 % of total population
• 40 % of arrested population
• 70 % of all shootings
• 89% in a single network

Papachristos, Wildeman, & Roberto 2014
five year average gun homicide rate (per 100,000)
newark, NJ

Papachristos, Braga, Piza, & Grossman 2015

largest component
cincinnati, OH

largest component
violence concentrates socially
exposure to violence matters
40% of associates are victims.
Associate
Shooting Victim
Co-Offending Tie
Family Tie

40% of associates are victims.
Predicted Probability of Gunshot Victimization by Network Exposure to Guns for 14 to 24 year old Men

Exposure to Guns at Geodesic Distances $\leq 2$

Note: Predicted probabilities are estimated with remaining variables held constant at their mode.
Predicted Probability of Gunshot Victimization by Network Exposure to Guns for 14 to 24 year old Men

- Blue, Gang Member
- Green, Not in Gang
- Yellow, Hispanic, Gang Member
- Black, Not in Gang
- Red, White, Gang Member
- Purple, White, Not in Gang

Note: Predicted probabilities are estimated with remaining variables held constant at their mode.
Predicted Probability of Gunshot Victimization by Network Exposure to Guns for 14 to 24 year old Men

Note: Predicted probabilities are estimated with remaining variables held constant at their mode.
violence concentrates socially

exposure to violence matters

gunshot cascades
does gun violence **diffuse** through a network?
SHOOTING CASCADES
SHOOTING CASCADES

collaborators: Ben Green & Thibaut Horel
SHOOTING CASCADES

63%

collaborators: Ben Green & Thibaut Horel
63% 83 days between shootings

collaborators: Ben Green & Thibaut Horel
gun violence prevention
FOCUS
853 gang factions in chicago
853 gang factions in Chicago
effects of VRS call-ins in Chicago

quasi-experimental design

• N = 149 treatment factions v. N = 428 matched control factions

• propensity score matching: 20 covariates

• shooting behavior 12 months before/after call-in
the **one-year** effect of VRS Call-Ins

- **23 percent** reduction in total fatal and non-fatal shootings
- **32 percent** reduction in the likelihood of their members being a victim
urban gardens in Philadelphia on the rise to improve neighborhoods

THANK YOU

@AVPapachristos

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