

Changing blighted urban environments as an evidence-based solution to firearm violence

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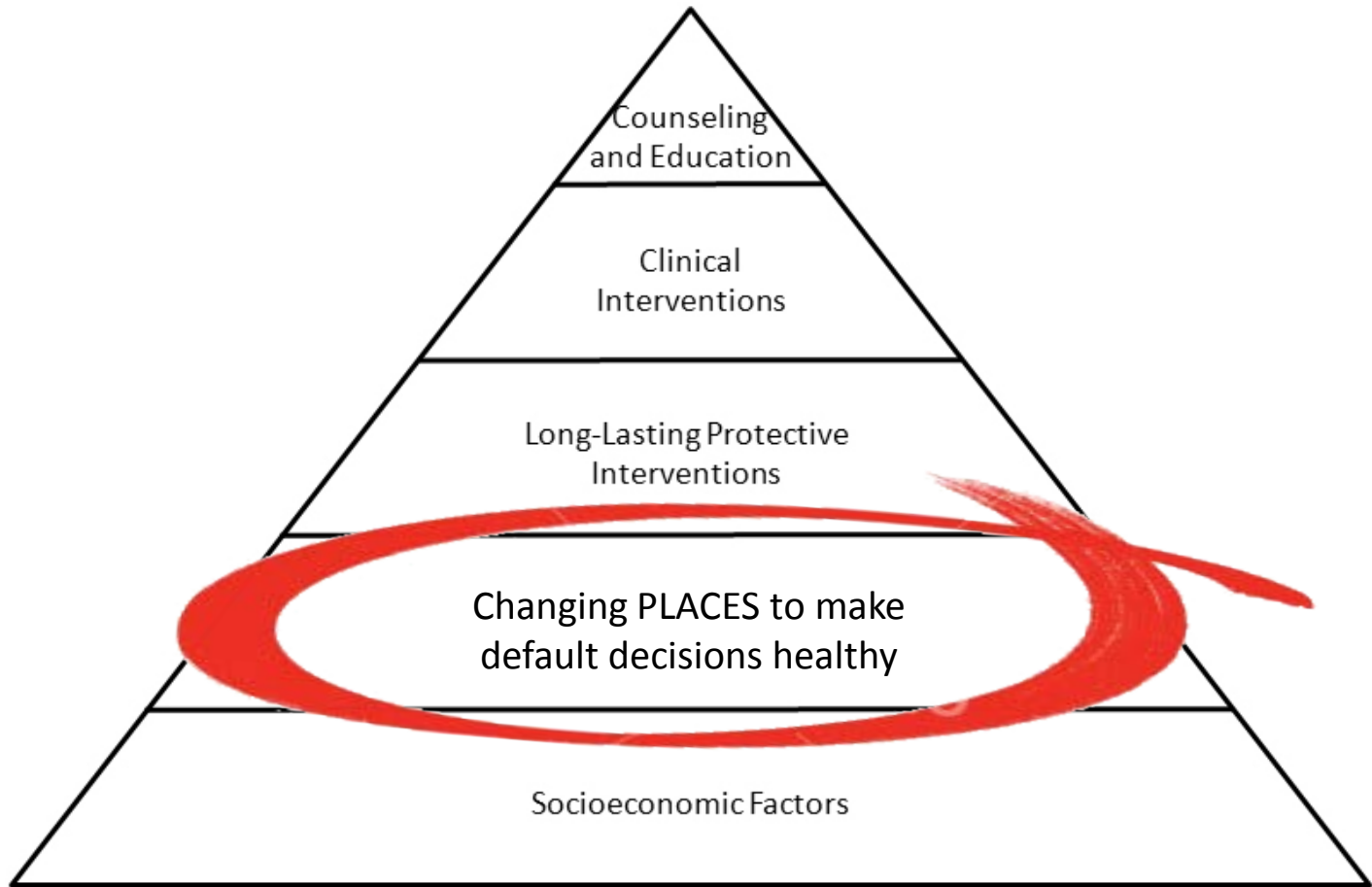


Traditional Public Health - People, Pathogens, Places

“If a brackish tidal pool is breeding mosquitoes ... filling it in may be far more likely to continue reducing malaria years after funding has run out ... than expecting local community members to continue regular applications of larvicide”

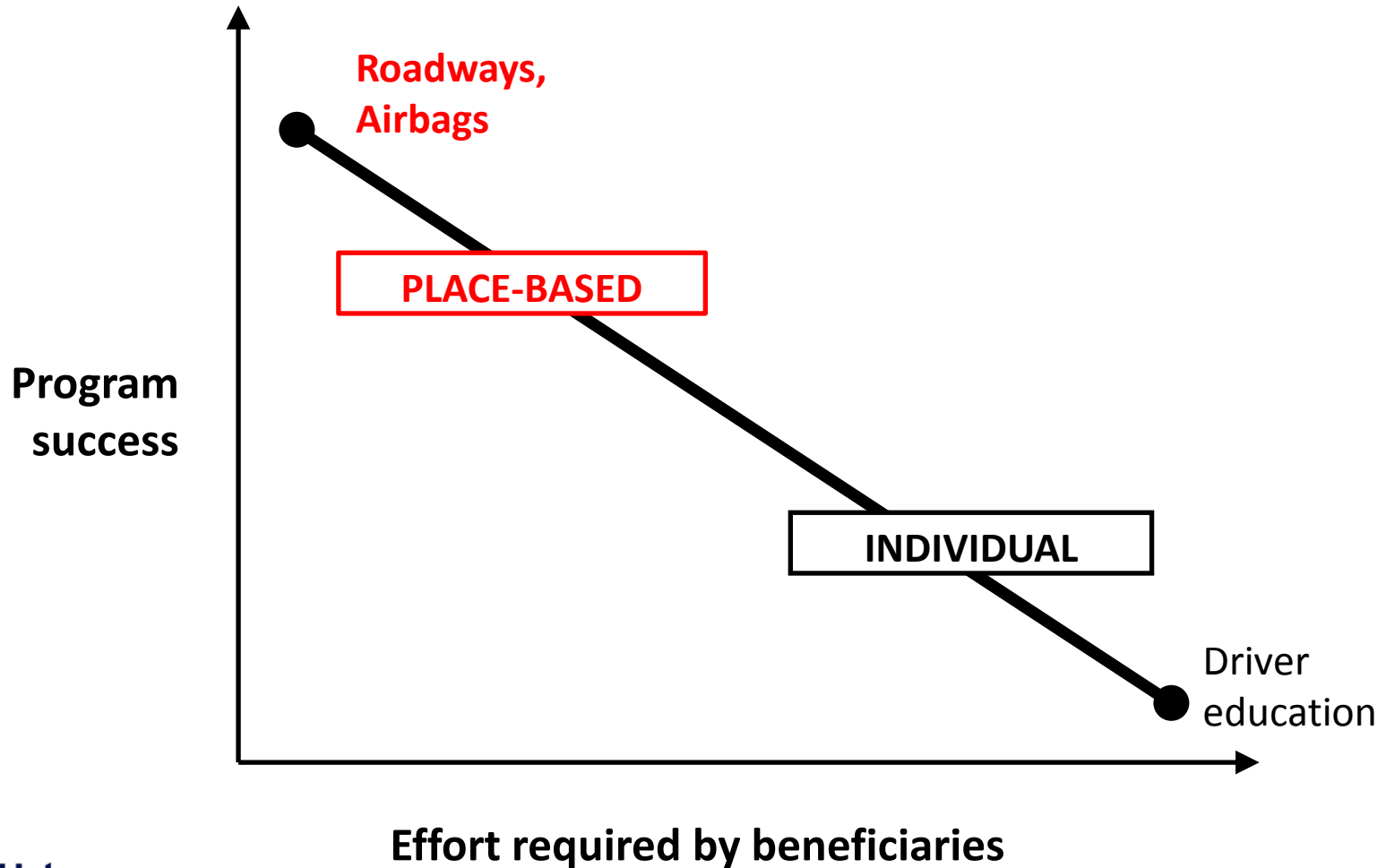


Changing Places affects “More People for Longer Periods of Time”

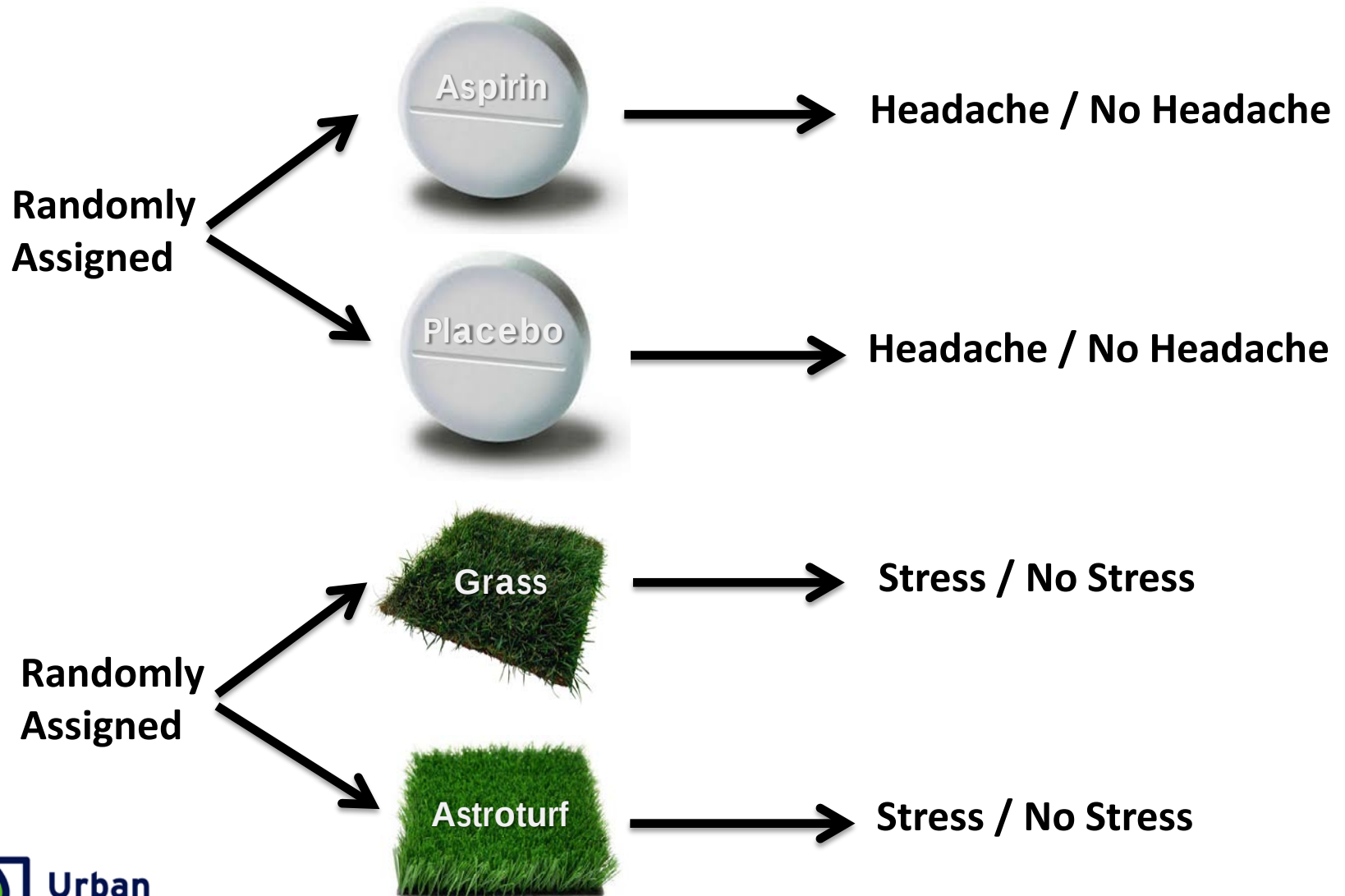


Changing Places

“Makes the Healthy Choice the Easy Choice”



Randomized controlled trials





EXECUTIVE OFFICE OF THE PRESIDENT
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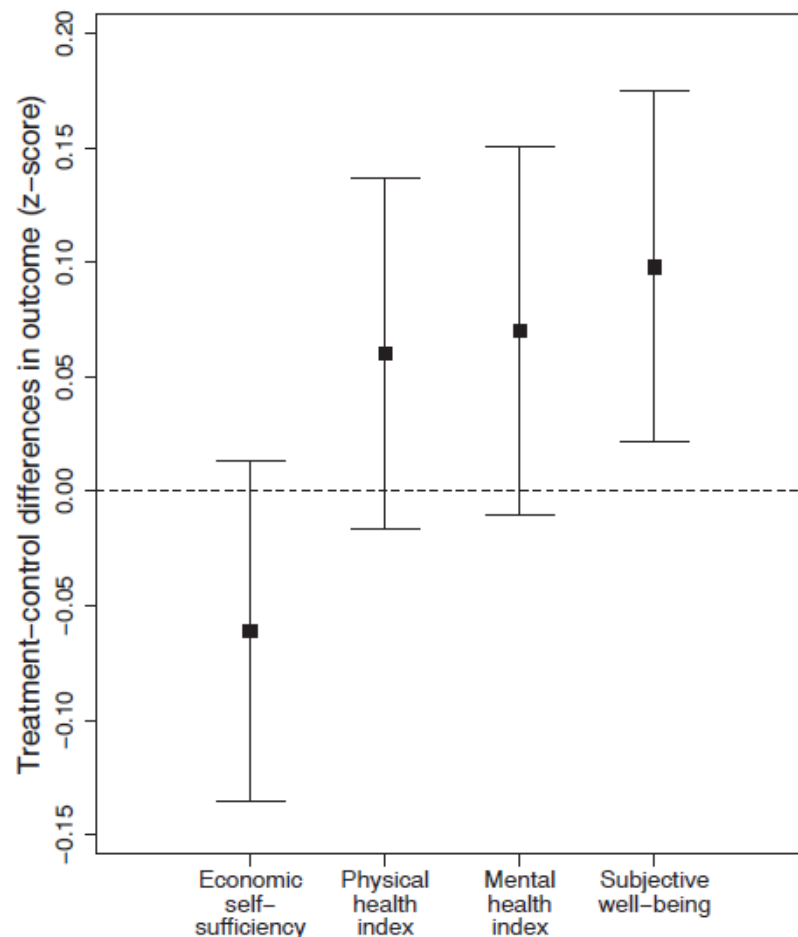
“Agencies are encouraged to allocate resources to programs and practices backed by strong evidence ... by utilizing randomized controlled trials or careful quasi-experimental techniques ... to distinguish strong from weak evidence and measure cost effectiveness.”

Dutch Place-based Field Experiments

- Purposely created disorder, graffiti
- Led to significantly more littering, graffiti, incivility



Moving to Opportunity: A bold housing relocation experiment



- 3-arm, 5-city HUD randomized trial:
 - (1) **Experimental group** – housing vouchers to move out of poverty (n=1700)
 - (2) **Comparison group** – housing vouchers to move anywhere (n=1300)
 - (3) **Control group** – no vouchers (n=1400)
- Less obesity, diabetes, unhappiness
- More depression and conduct disorder for boys
- Landmark scientific work showing impact of place
- But are we really going to move people as a place-based policy?
- Cost and other considerations

“In situ” – Structural – Scalable – Sustainable



Vacant Lot Greening



Mean/lot: \$1600 installation, \$180/year maintenance

Abandoned Building Remediation



Mean/building: \$2550 installation, \$180/year maintenance

Methods

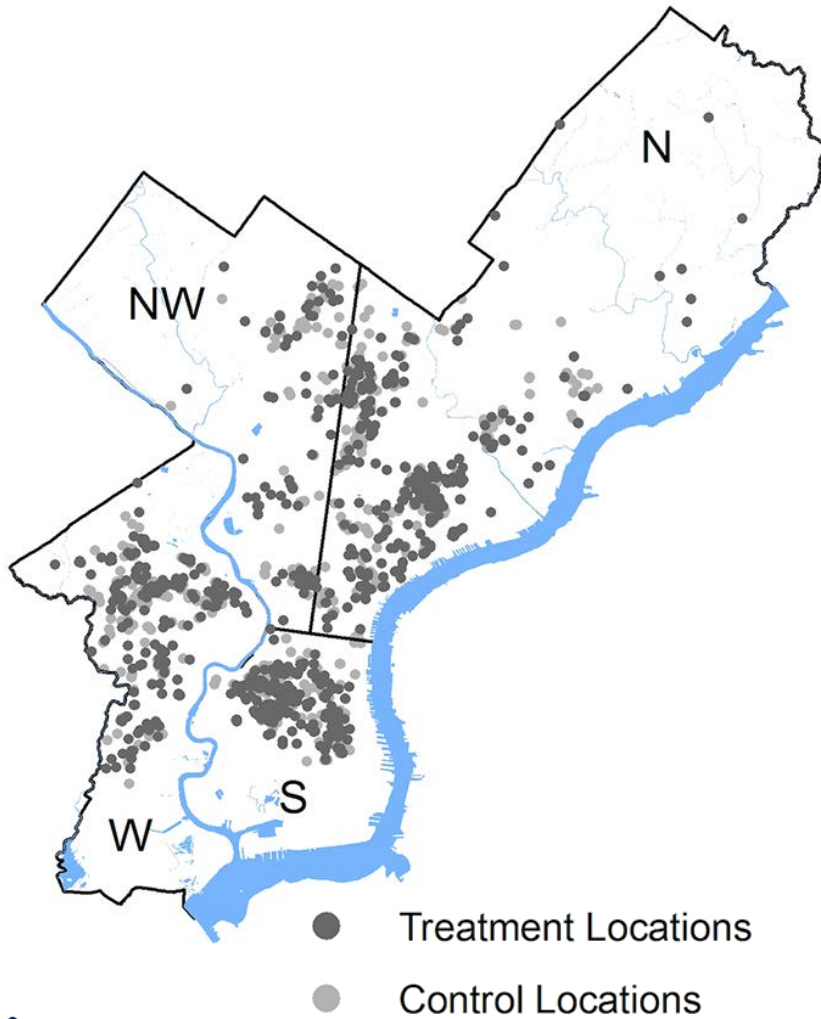
- Citywide Philadelphia study of 5,112 blighted properties
- Multiple municipal and private agencies
- Two quasi-experimental, difference-in-differences analyses
 - Abandoned buildings
 - From 2010 – 2013
 - N = 676 treated, 676 controls (1:1)
 - Vacant lots
 - From 1999 – 2008
 - N = 4,436 treated, 13,308 controls (1:3)
- Controls randomly selected from treatment-eligible pool and matched to treated units, within geographic city section
- Treated-control matched sets separated by at least ¼ mile

Data and Analysis

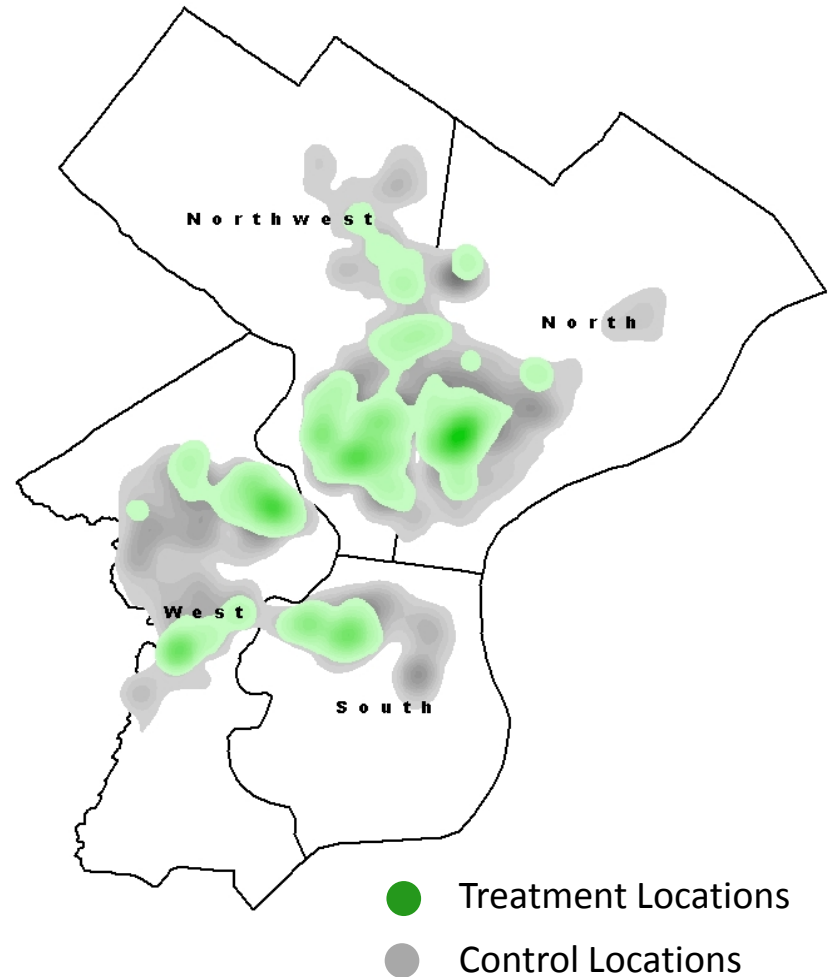
- Day and address police data of firearm/non-firearm assault outcomes
- Yearly block group data of covariates: age, education, poverty, income
- Point-based kernel density and IDW geographic metrics
- Poisson regression models
 - Difference-in-differences interaction term
 - Adjusted for covariates and size of buildings / lots
 - Pre-period means adjusted for regression-to-the-mean
 - Huber/White/sandwich robust s.e. estimators
 - Spatial displacement tests
- Average annual returns-on-investment to:
 - Taxpayers (criminal justice system costs)
 - Society at-large (criminal justice system + victims/medical/property + productivity losses/pain&suffering costs)

Philadelphia

Abandoned buildings



Vacant lots



Vacant Lot Greening

$n \approx 17,000$

- Significant **-8% drop** in gun violence
- Sustained **for 3.5 years**
- Every \$1 in **returns \$26.00**



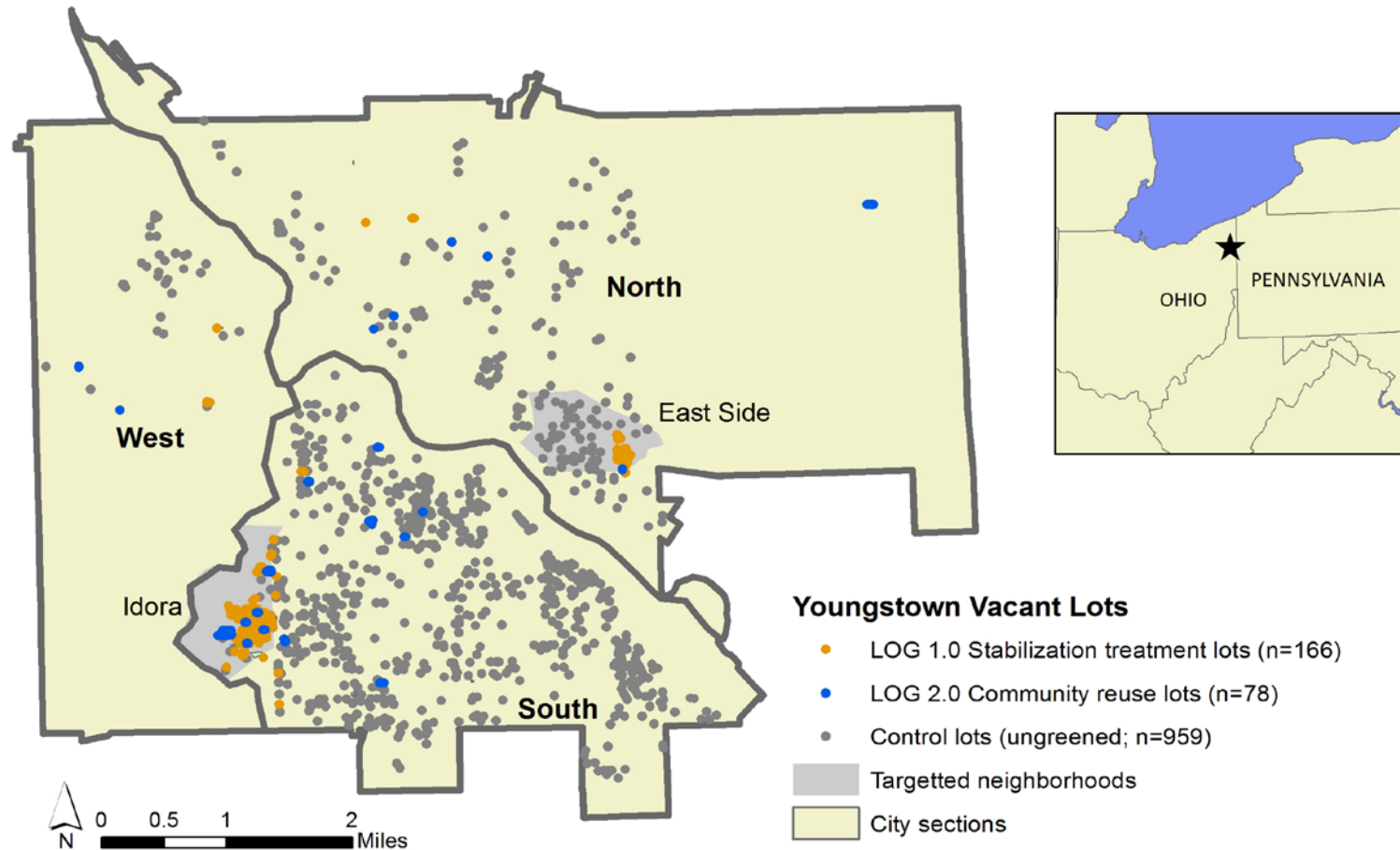
Abandoned Building Remediation

$n \approx 1,400$

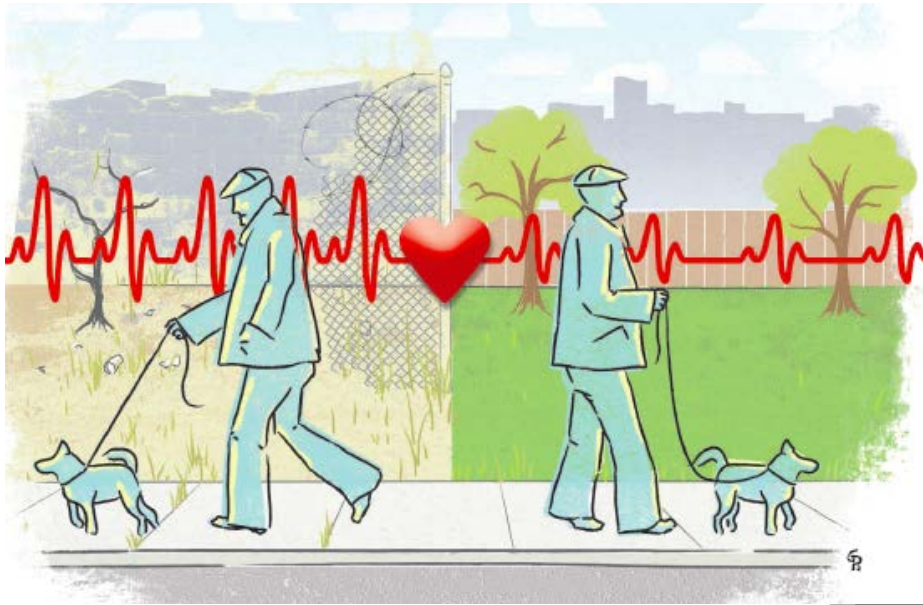
- Significant **-39% drop** in gun violence
- Sustained **for 1 year**
- Every \$1 in **returns \$5.00**



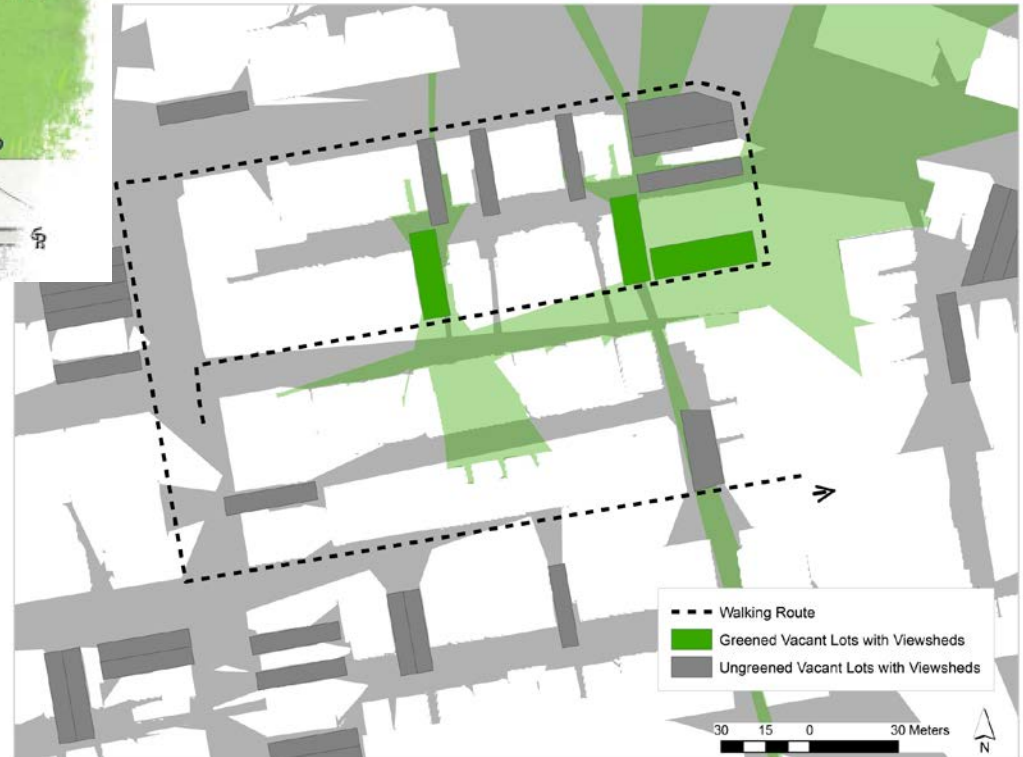
Youngstown



Walking Trial

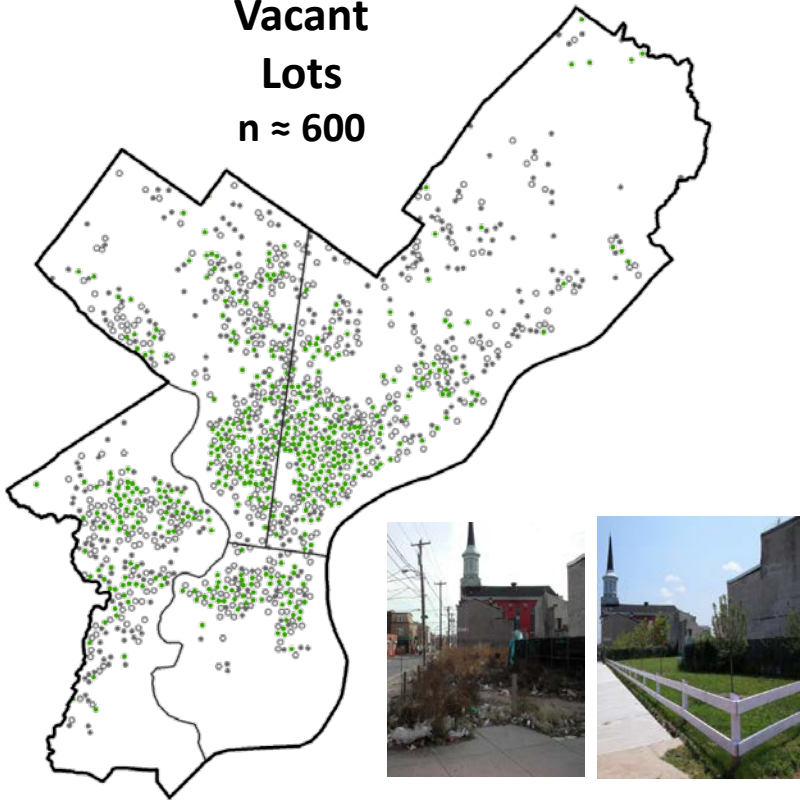


Significant drop in heart rate when in view of newly greened lots



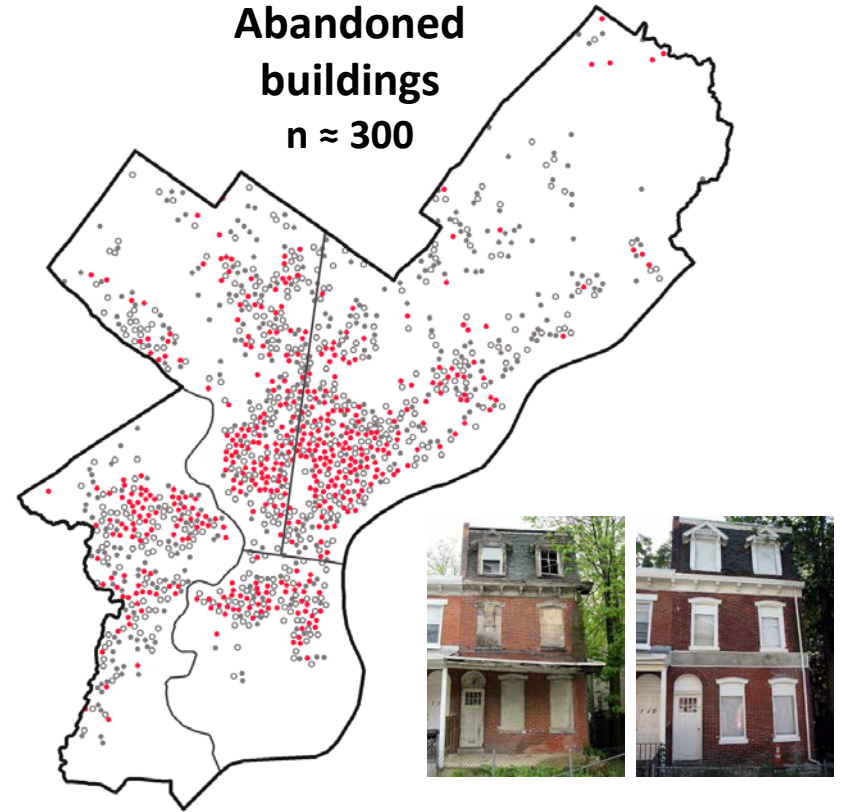
Active randomized community trials

**Vacant
Lots**
 $n \approx 600$



- Cleaning + Greening + Maintenance
- Cleaning + Maintenance
- Control Lots

**Abandoned
buildings**
 $n \approx 300$

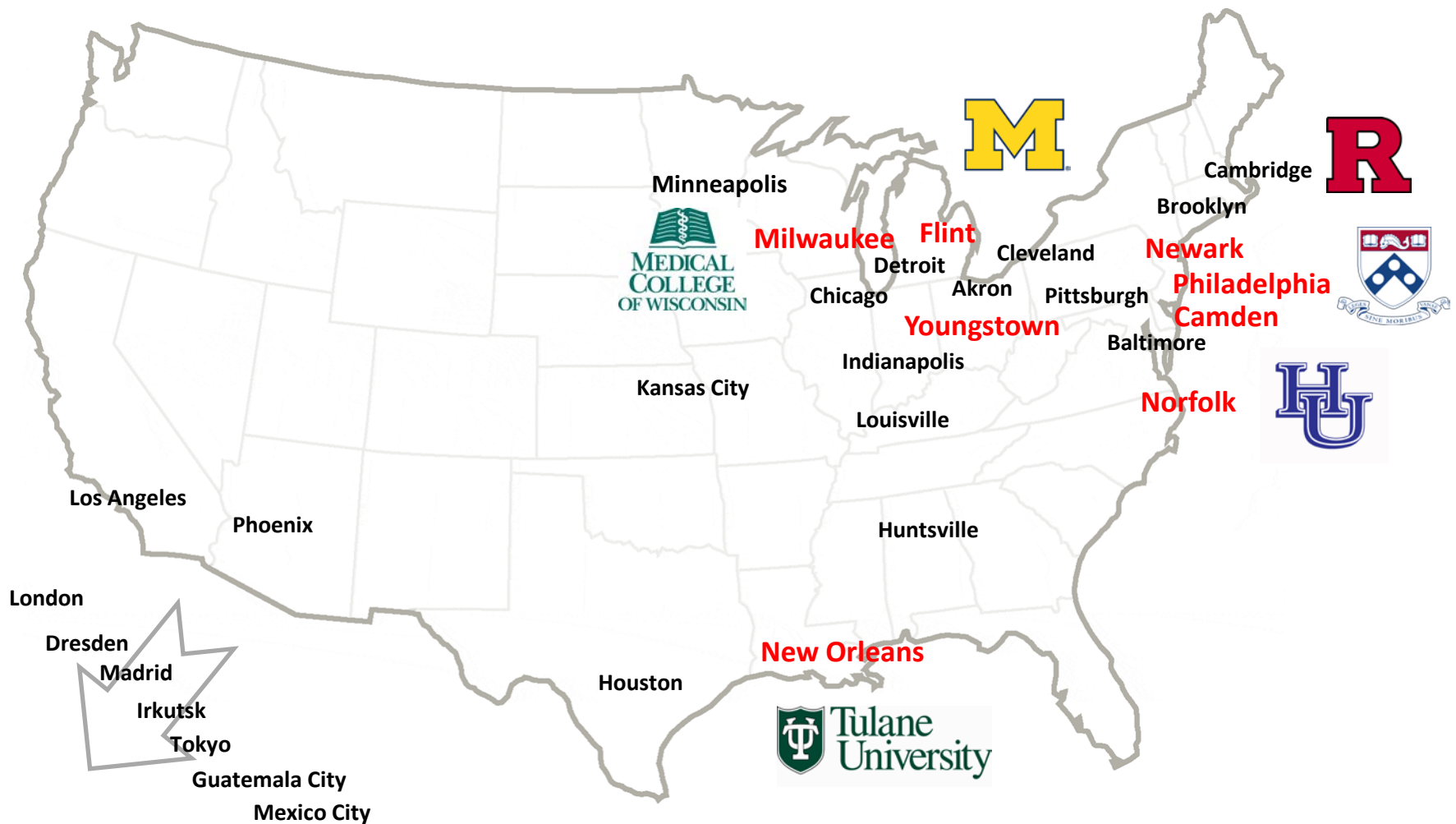


- Cleaning + Building + Maintenance
- Cleaning + Maintenance
- Control Buildings

In multiple cities and multiple types of analyses, both large quasi-experimental studies and randomized controlled trials:

- Urban blight remediation can significantly reduce firearm violence with high ROI
- Other outcomes also significantly affected by blight remediation:
 - Biologic and self-reported stress significantly reduced
 - Depression and serious mental illness significantly reduced
 - Sedentary behavior significantly reduced
 - Nuisance crimes significantly decreased
 - Perceptions of high crime and vandalism significantly reduced
 - Calls to 9-1-1 significantly increased
- Firearm violence uniquely reduced, vs. nonfirearm violence which was unaffected
- Early RCT results: reduction most pronounced in neighborhoods below the poverty line
- Why?
 - Biologic: stress and poor mental health
 - Sociologic: broken windows theory in under-resourced areas
 - Physical: blighted spaces are “storage lockers” for illegal guns

Who's been interested



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