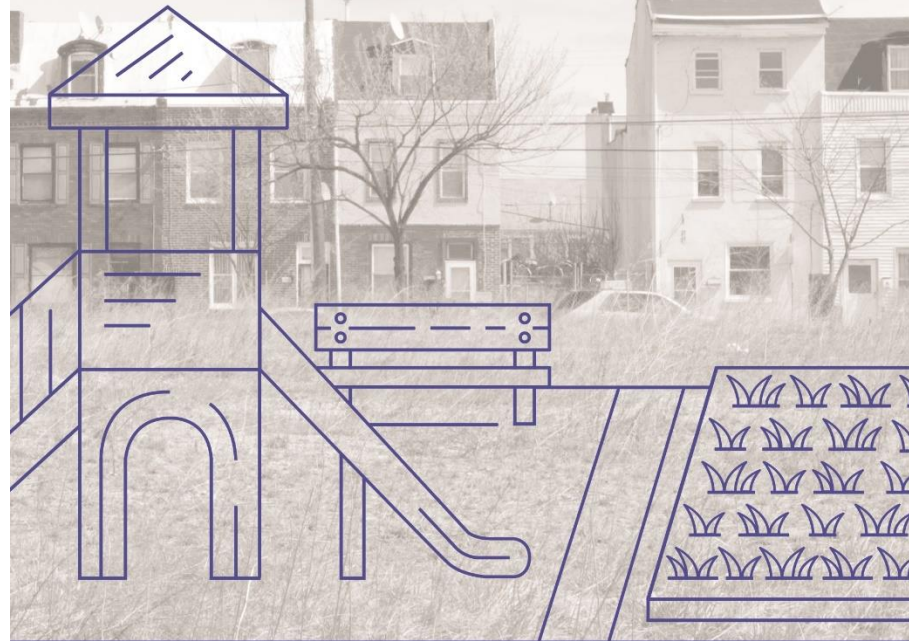


# CHANGING PLACES

*The SCIENCE and ART  
of NEW URBAN PLANNING*



**JOHN MACDONALD,  
CHARLES BRANAS, and  
ROBERT STOKES**

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## **A New Movement Based on Old Ideas**

**Decisions and our success are deeply shaped by the context in which we live, work, and play**

**The design of places is fundamental to our well-being, and good science can help us create safer and healthier cities**

**Return to 19<sup>th</sup> century idea of planning communities for our health and well-being**

**Need to marry ideas from urban planning with science of place-based experiments to inform policy decisions**

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## **Evidence that Place Matters**

**Electric power grids, water treatment plants, building codes, and roadway designs have done more to enhance safety and health than individual medical treatments pills and police**

**Housing, parks, and playgrounds need to be integrated into our ideas about how to shape public health and safety**

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# **Changes to the Built Environment of Places Can Impact the Health and Safety of People Living or Working in an Area**

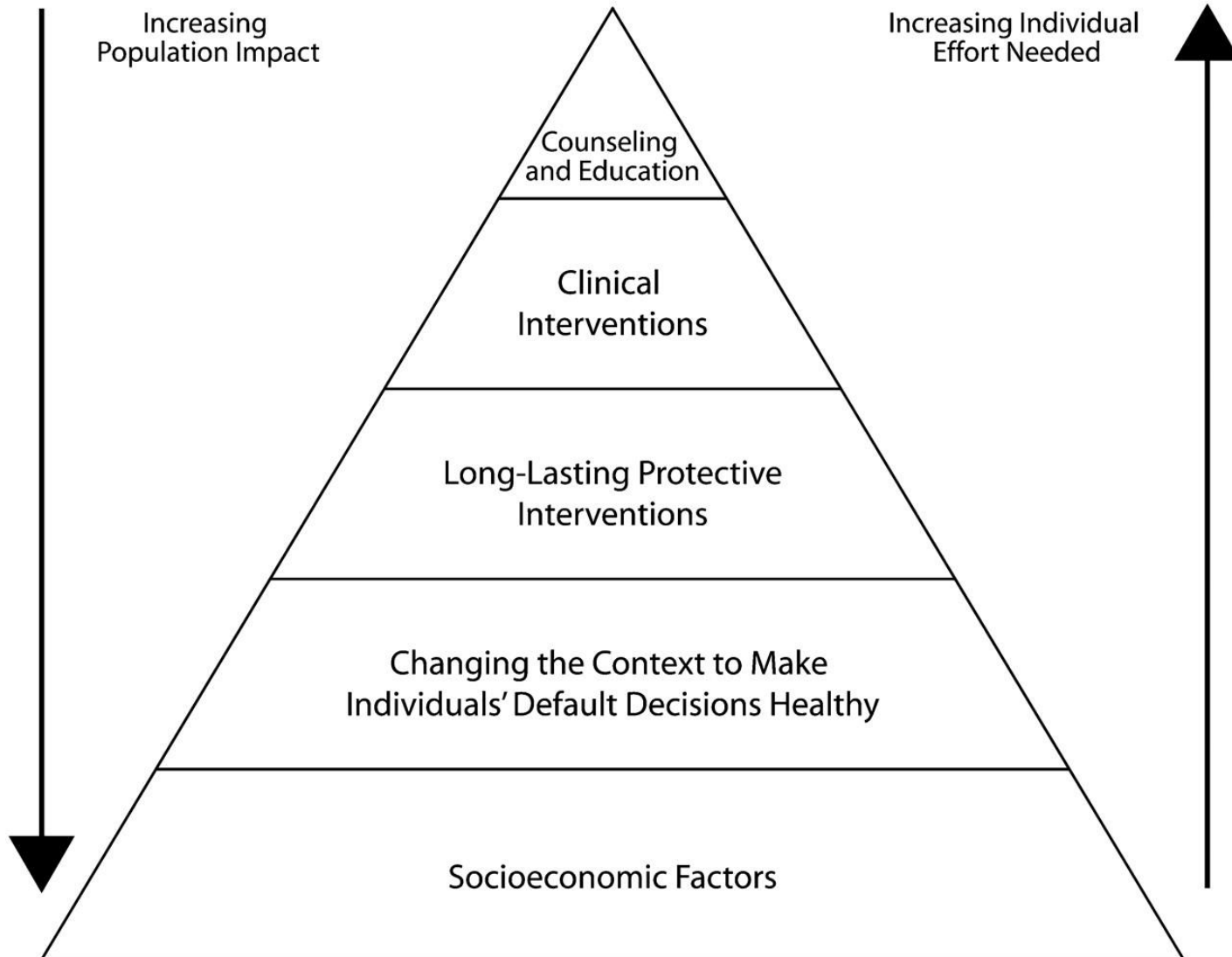
**Three rules for choosing places-based programs:**

- 1. Make a structural change to a place (new buildings, sidewalks, plantings, cleanup, etc.).**
- 2. Choose changes that can be scaled to entire populations**
- 3. Choose programs that can be sustained over time.**

**Test whether redesign programs work, and replicate successful programs across cities.**

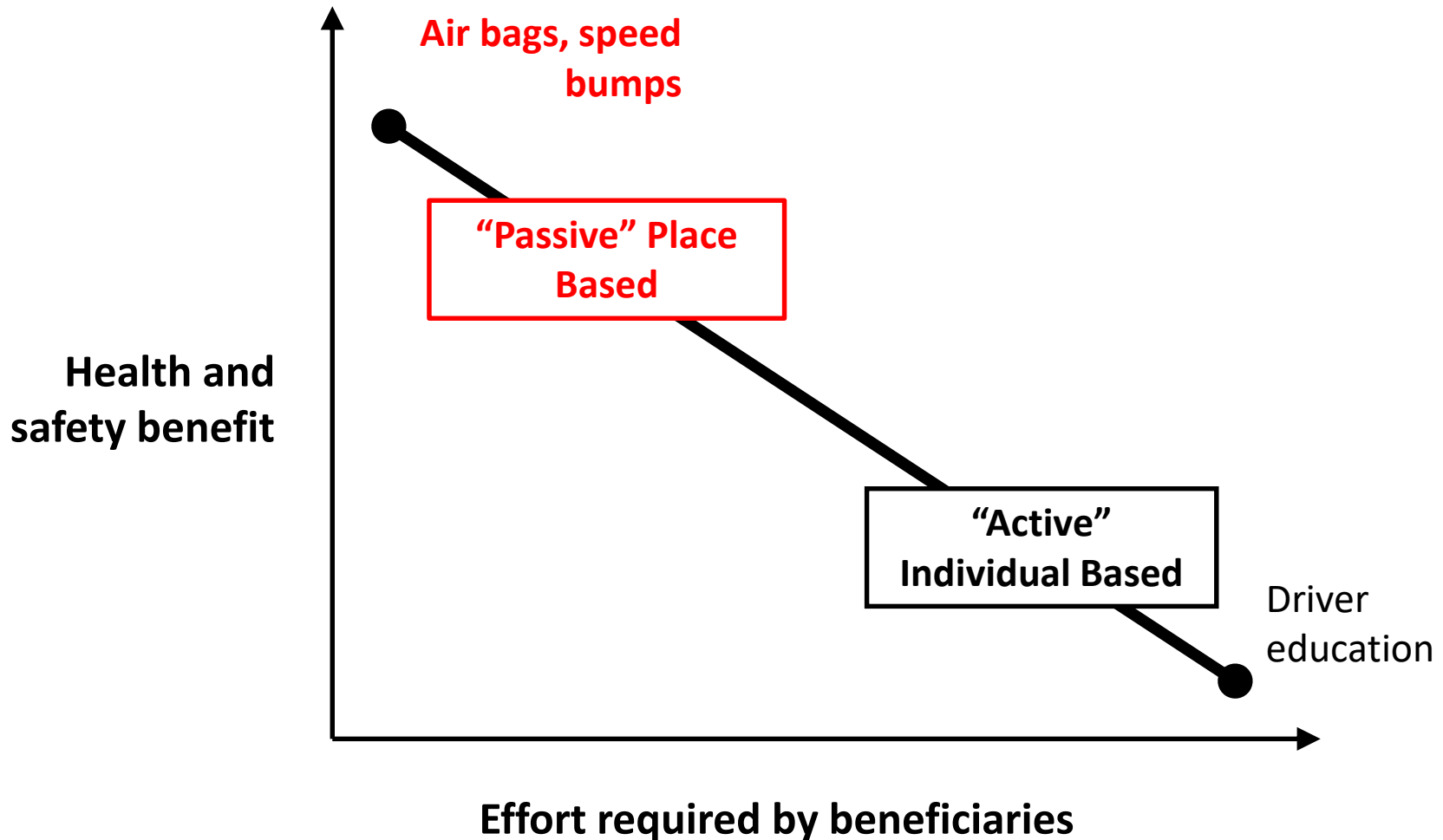


**CHANGING PLACES AFFECTS  
“MORE PEOPLE FOR LONGER PERIODS OF TIME”**



Thomas Frieden, AJPH 2010

# Interventions more likely to be successful require less individual effort



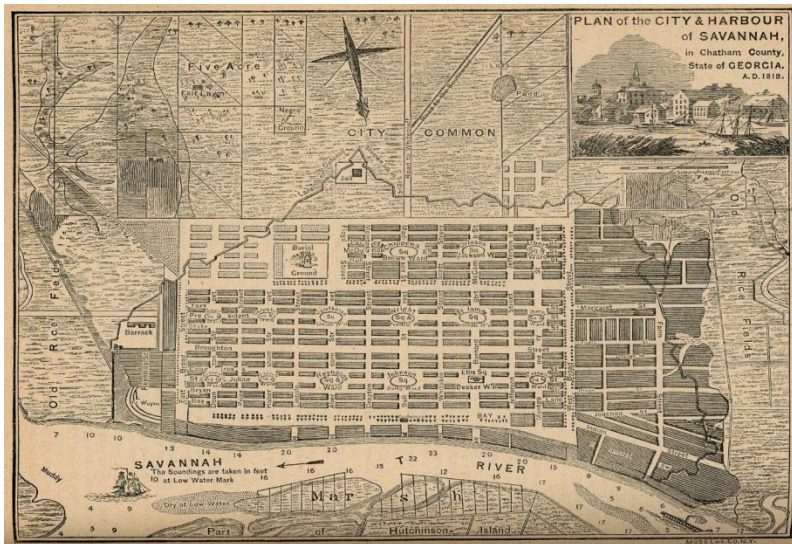
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## **A New Movement Based on Old Ideas: Return to 19<sup>th</sup> Century Focus on the Powerful Role of Place**

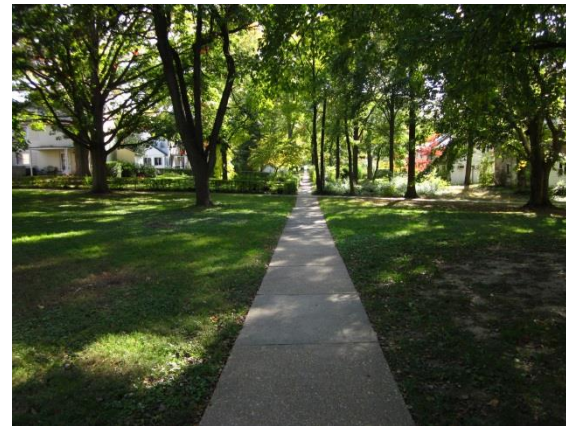
- **Congress for New Urbanism (1993)**
  - **Diversity of use, conservation of natural spaces, and preservation of “built legacy”**
- **Active Design and Health Places**
  - **Mixed-use development and walkable neighborhoods with narrower streets in grid pattern**
- **Crime Prevention through Environmental Design**
  - **Physical design of streets and housing impacts level of guardianship**

# New Urbanism and Greening Influenced by Older Ideas in Urban Planning

- The Grid System:  
The Original Plan for Savannah, GA



- The Garden City:  
Greenbelt Maryland



# Active Living by Design





# Crime Prevention Through Environmental Design

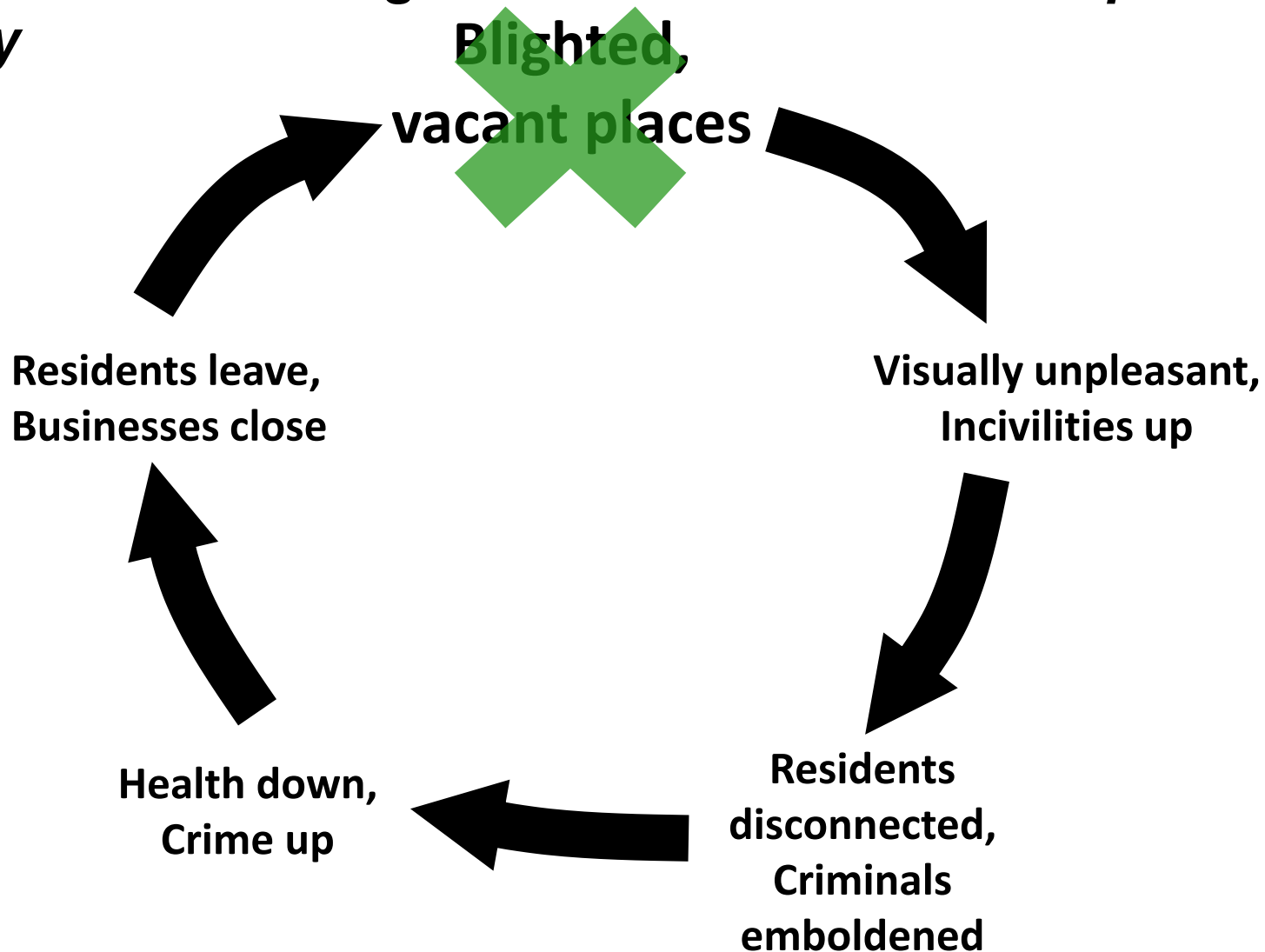


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# Design Elements that Directly Shape Opportunities and Norms of How People Use Space

- **Opportunities**
  - Increase (or decrease) of walking for daily activity
  - Make areas less (or more) attractive to crime
  - Make automatic decisions that improve (or reduce) health and safety
- **Norms**
  - Socialization with neighbors
  - Routine daily behaviors and what is considered acceptable

# *When Places are Neglected: Disorder and the Spiral of Decay*



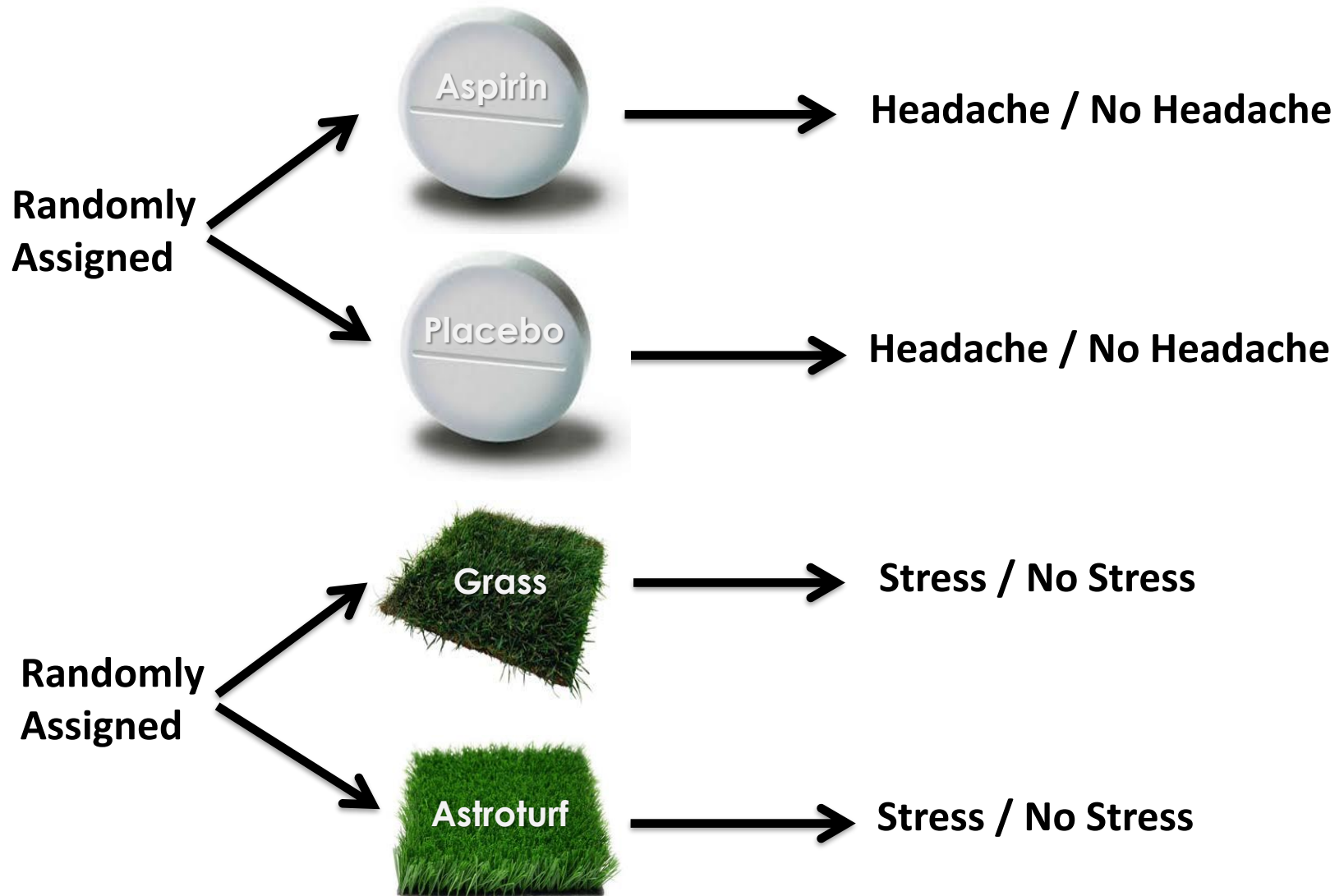


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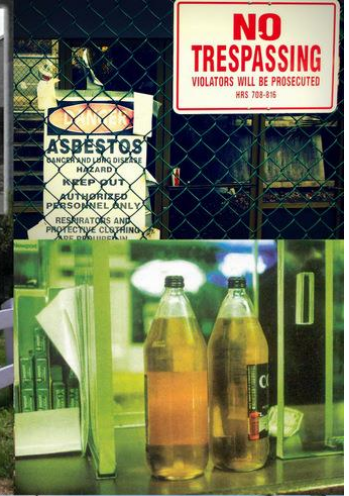
# Establishing Evidence: Causality and Place

- How well a study informs action rests on the quality of evidence and how translatable it is to action
- What happens after we change a place?
  - Randomized controlled trials are the 1<sup>st</sup> choice
  - Quasi-experiments offer a 2<sup>nd</sup> best choice

# Scientific evidence from a randomized controlled trial



# “In situ” – Structural – Scalable – Sustainable





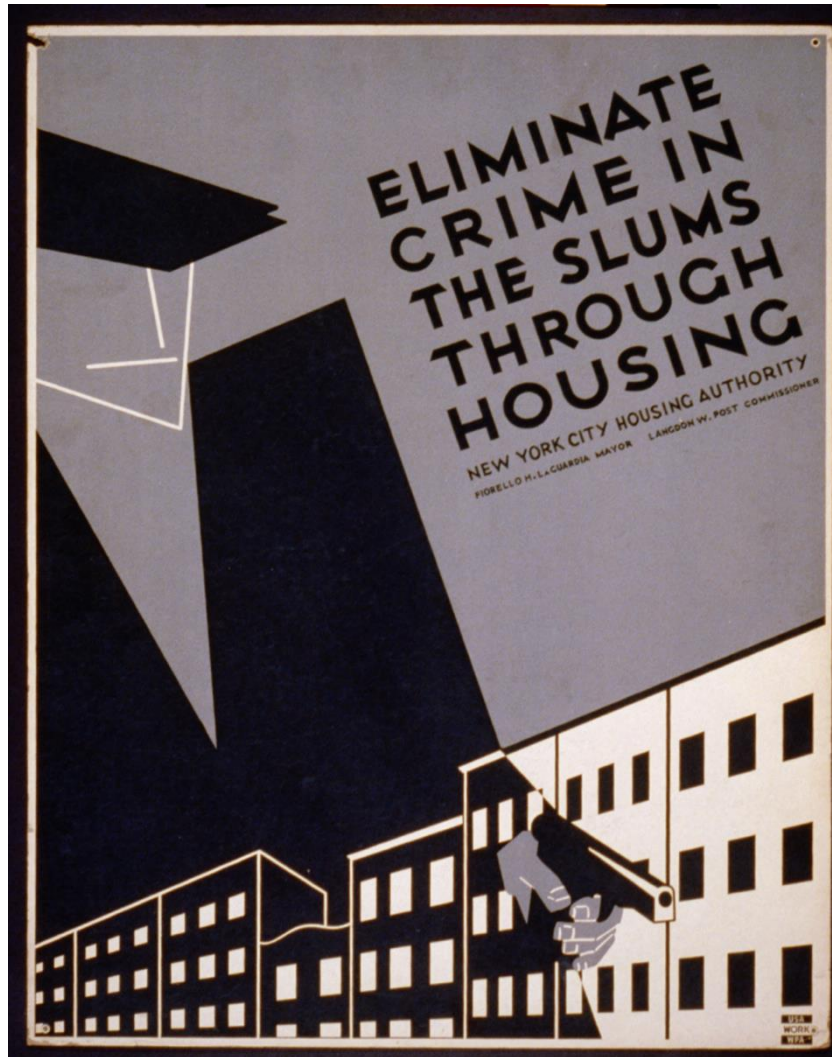
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## Cities in Ruin



**Ruin photography as a form of art (Detroit, Michigan)**

# The Evolution of Negative Housing



# Good Intentions Gone Awry



The Pruitt-Igoe built in 1959, abandoned in 1960s, demolished in the 1970s

# REBUILD OR ESCAPE?



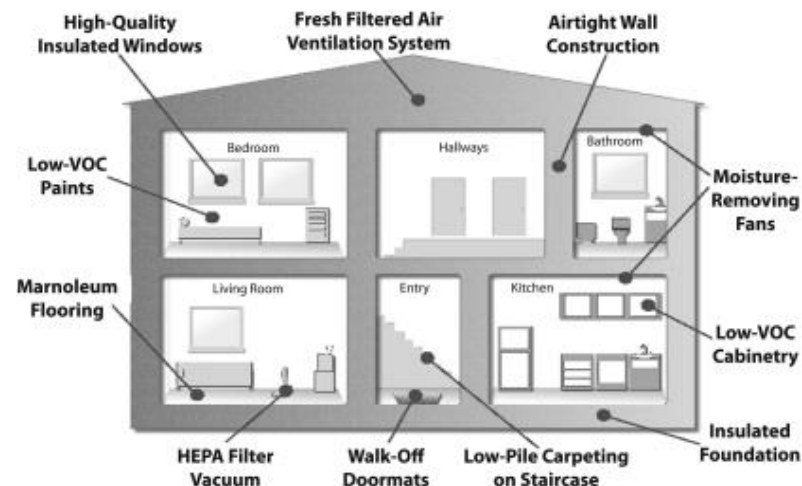
# ***What Happens to Our Health in Better Homes?***

**Asthma afflicts millions of children in the world**

**Home environments are major triggers**

**Seattle Housing Authority's High Point Area**

**Built 60 Breath Easy Homes (BEH)**





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## Improvements seen after 1 year of living in a BEH

	Children that moved into BEH  (Experimental group)	Children that received general health intervention  (Control group)
Change		
Rescue medicine used	-4.1%	-2.0%
Asthma attacks	-5.1%	-2.1%
Nights with symptoms	-3.5%	-1.4%
Mold, smoking, pests, and other triggers	-1.3%	-0.6%

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Source: Takaro, T. K., Krieger, J., Song, L., Sharify, D., & Beaudet, N. (2011). The Breathe-Easy Home: The Impact of Asthma-Friendly Home Construction on Clinical Outcomes and Trigger Exposure. *American Journal of Public Health*, 101(1), 55–62.  
doi:10.2105/AJPH.2010.300008

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## ***Fixing Doors and Windows***

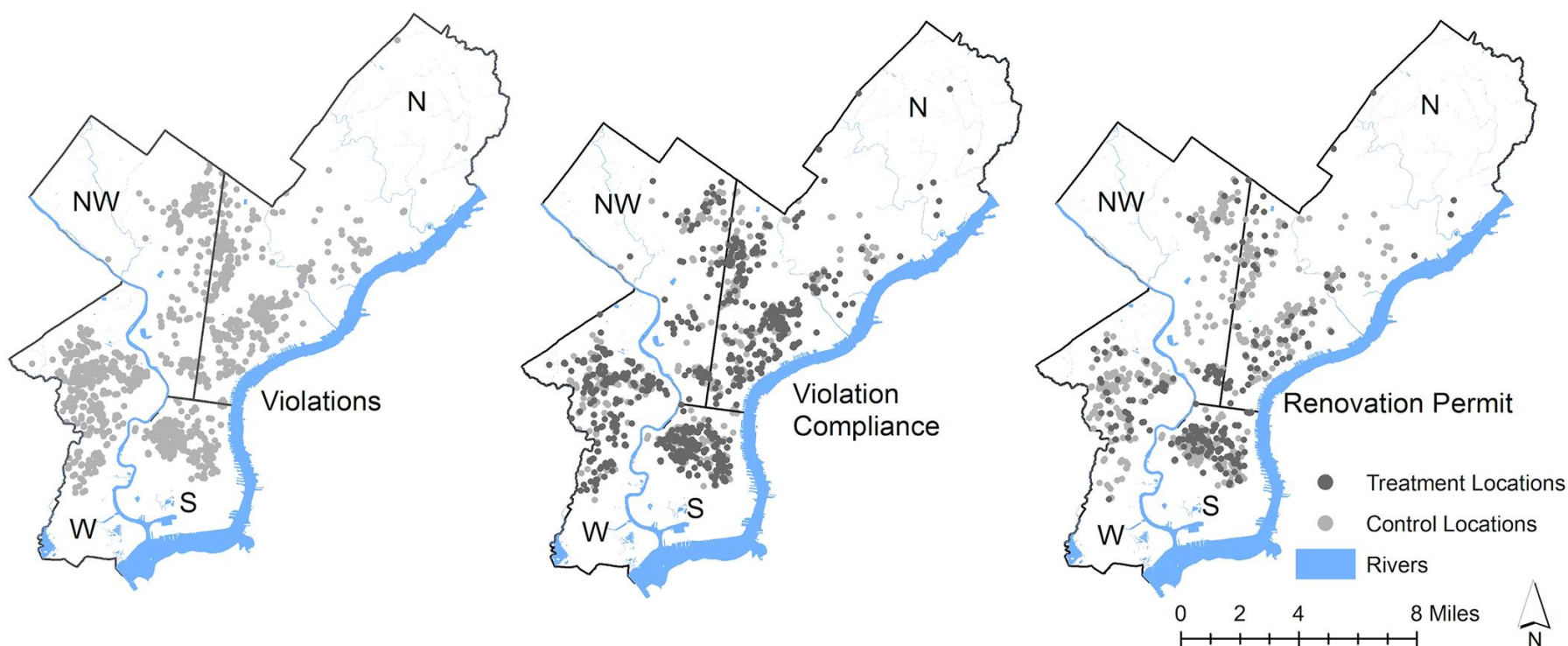
- **Housing abandonment a problem in many cities**
- **In 2010 Philadelphia had some 40 thousand vacant properties, with at least 3 thousand vacant structures**
- **In 2011 the city passed a “Doors and Windows” ordinance**

# Before-After of Compliance with Ordinance



# Quasi-experimental study compared crime changes from 2010 to 2013 around compliant and non-compliant houses

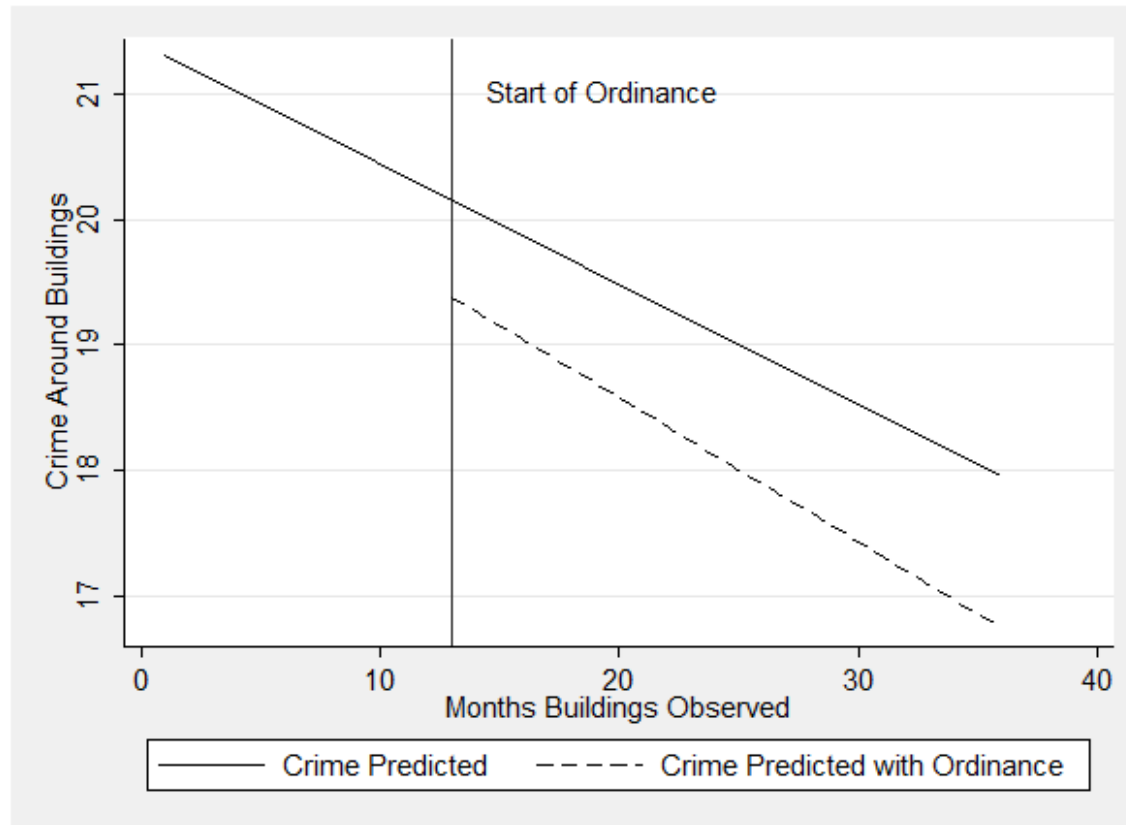
Note: controlling for city location and demographics



Kondo, Keene, Hohl, MacDonald, and Branas  
(2015)

## Significant reductions in crime

~20% fewer assaults, 39% fewer gun assaults, and 16% fewer nuisance crimes



**No evidence of displacement of crime to nearby areas**

# ***THE NATURE CURE***



# Crime Fighting Trees

THE NATURE CURE 85

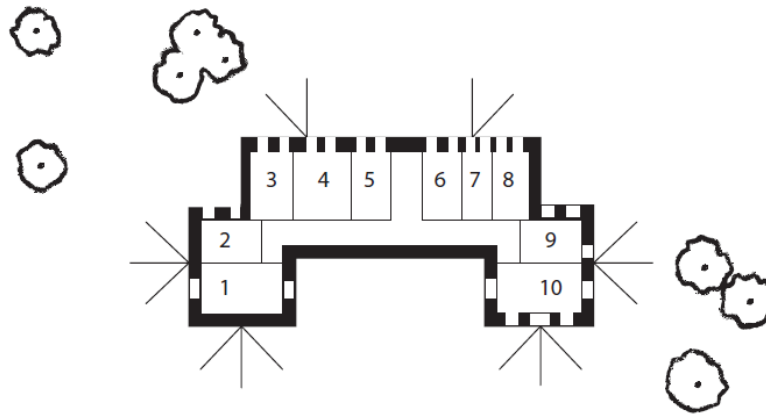


FIGURE 5.1. Plan view of an apartment building and trees nearby. *Source:* Kuo, Frances E., and William C. Sullivan, "Aggression and violence in the inner city: Effects of environment via mental fatigue," *Environment and Behavior* 33, no. 4 (2001): 553. Copyright © 2001 by SAGE Publications. Reprinted by Permission of SAGE Publications, Inc.

- **Several natural experiments show that living near well maintained greened space and trees reduces crime and aggression.**

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# **Pennsylvania Horticultural Society (PHS) LandCare Program**

**Started as pilot project with a neighborhood association in 1996**

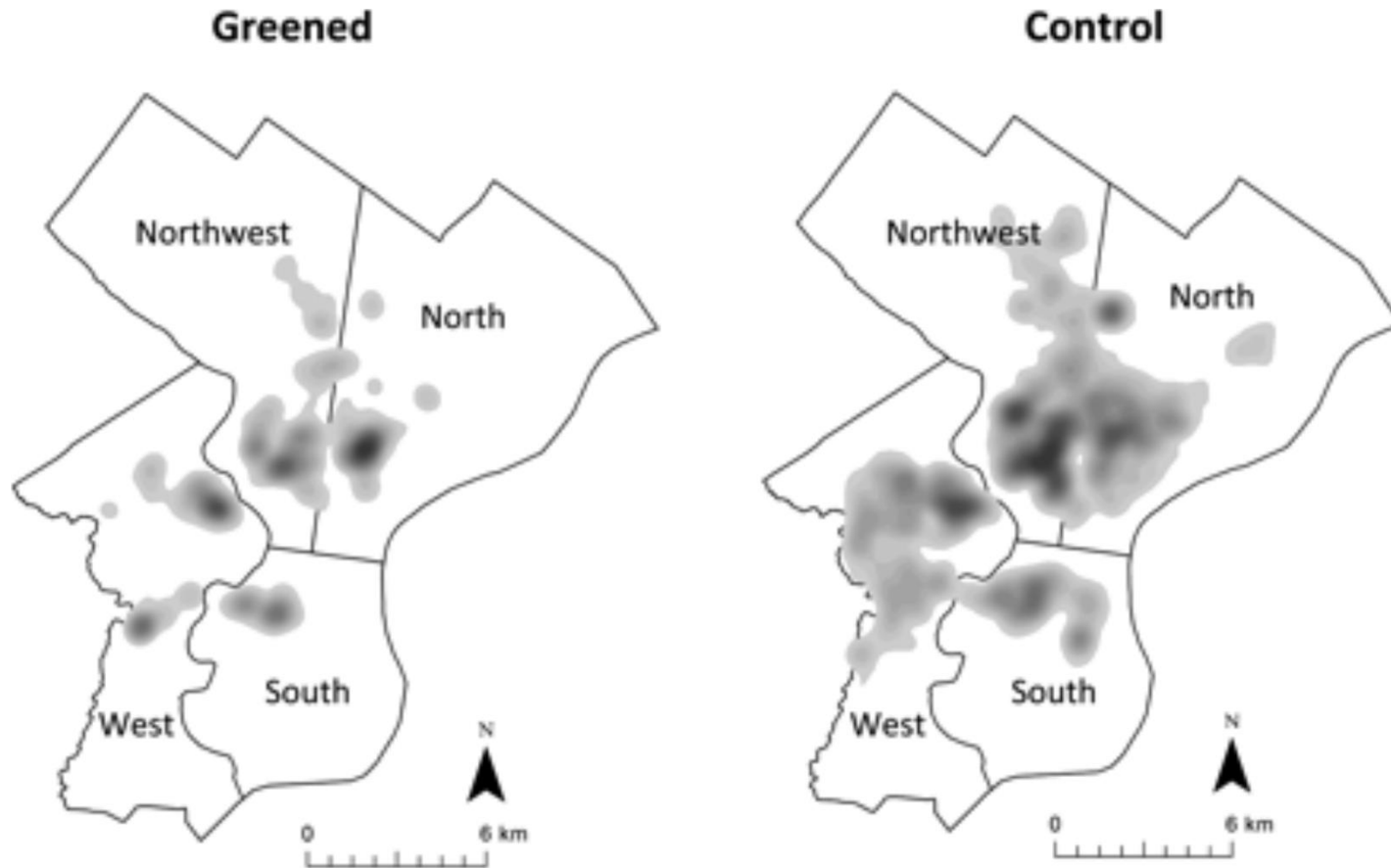
**Vacant lot treatments: remove trash and debris, grade the land, plant grass and trees to create a park-like setting, install low wooden post-and-rail fence**



## Relatively Simple and Noticeable Results



## Now a citywide program





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## Citywide cluster randomized trial to restore blighted vacant land and its effects on violence, crime, fear, and mental health

**Clean/green**



→ No. Crimes/Fear

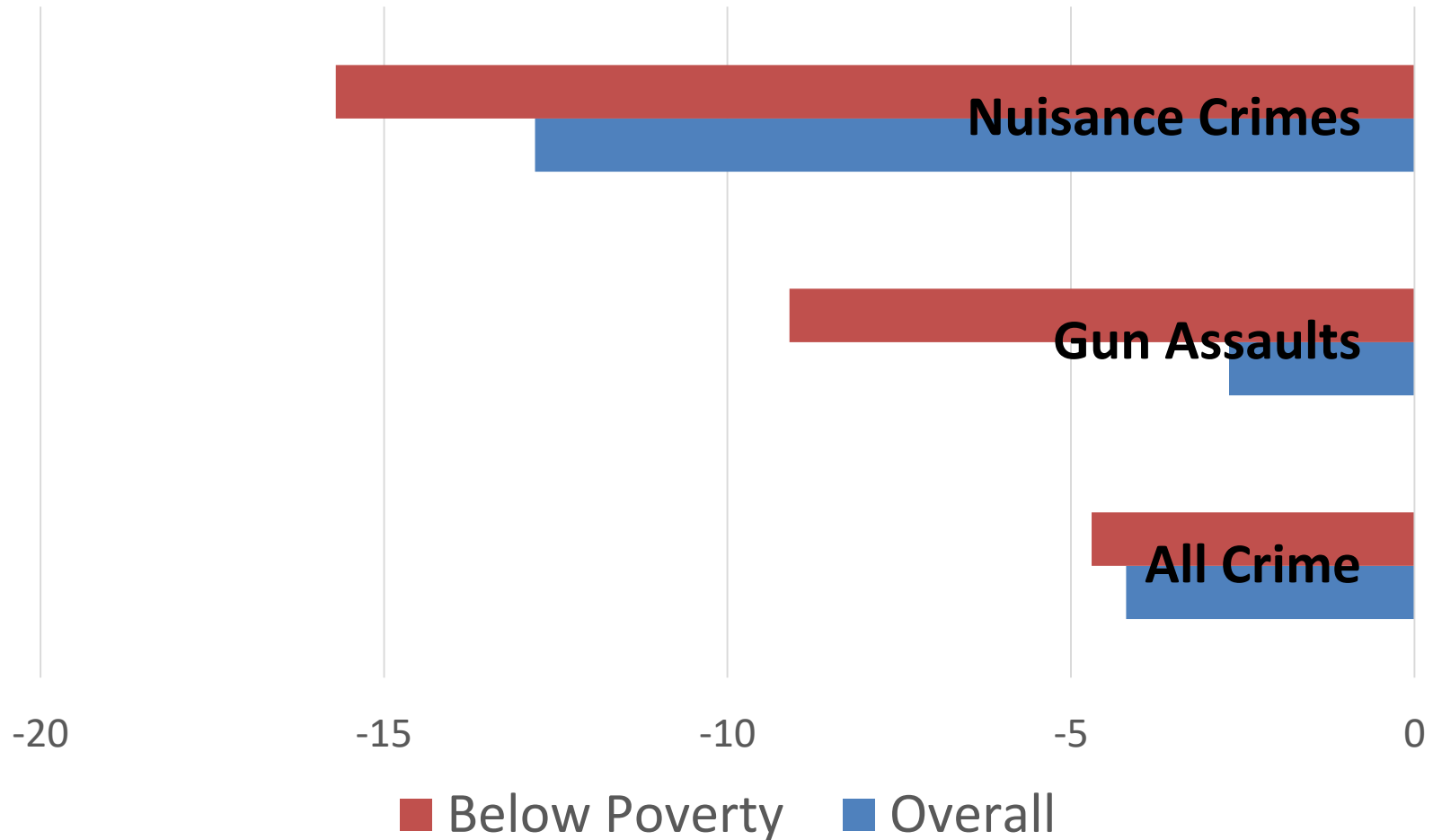
**Randomly  
Assigned**

**Trash/debris**

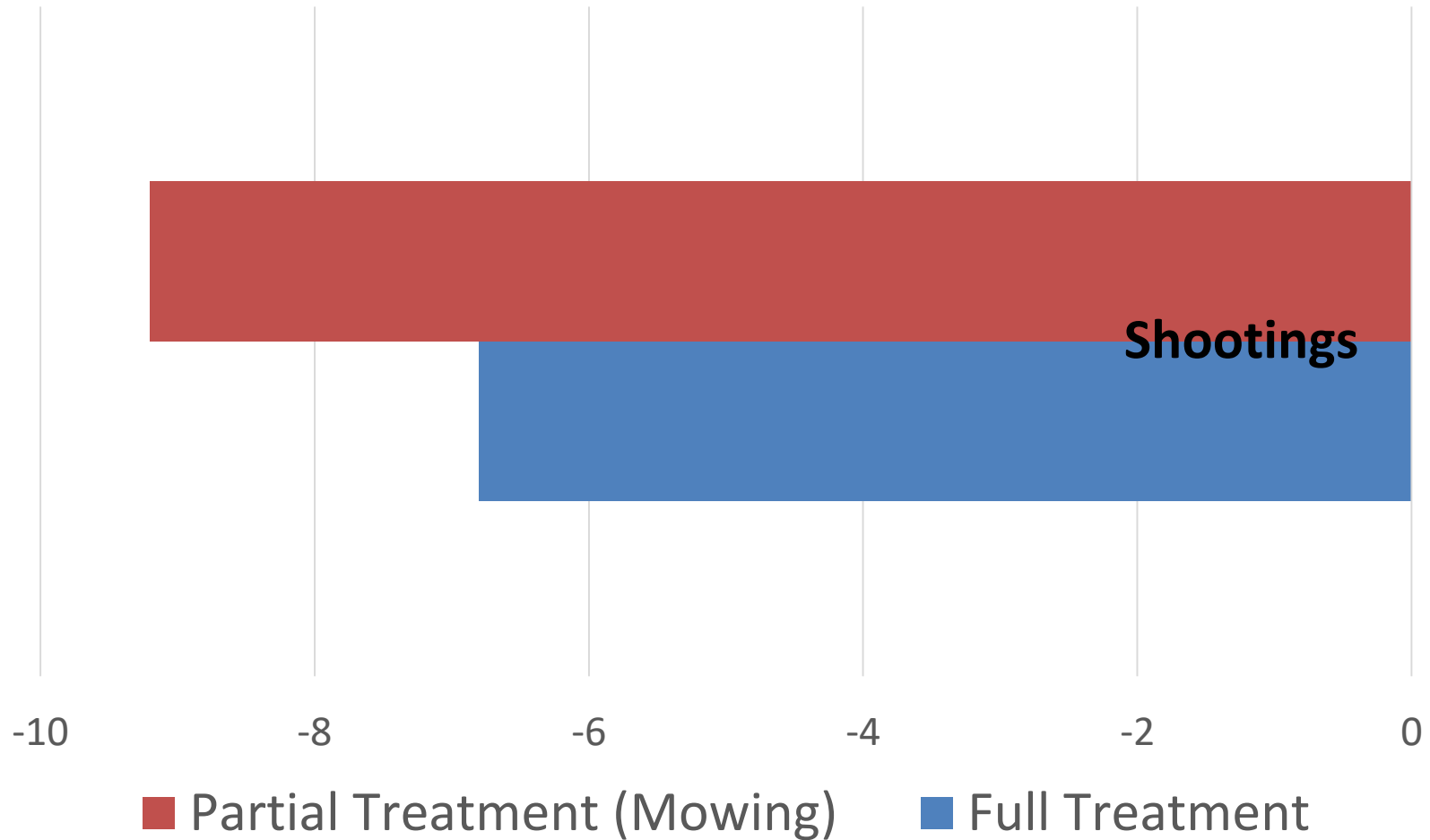


→ No. Crimes/Fear

## % Change in Serious Crime



## % Change in Shootings

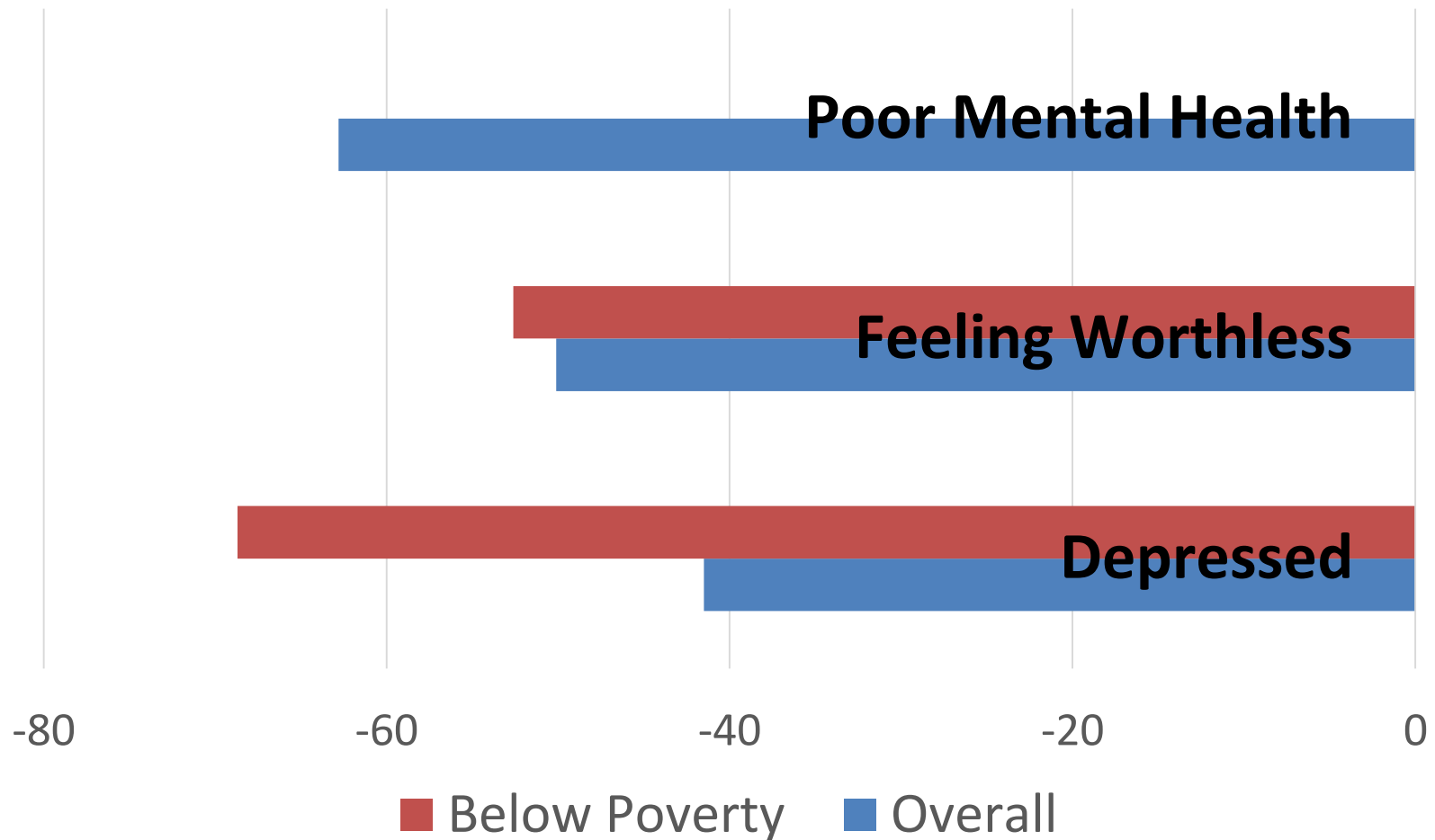


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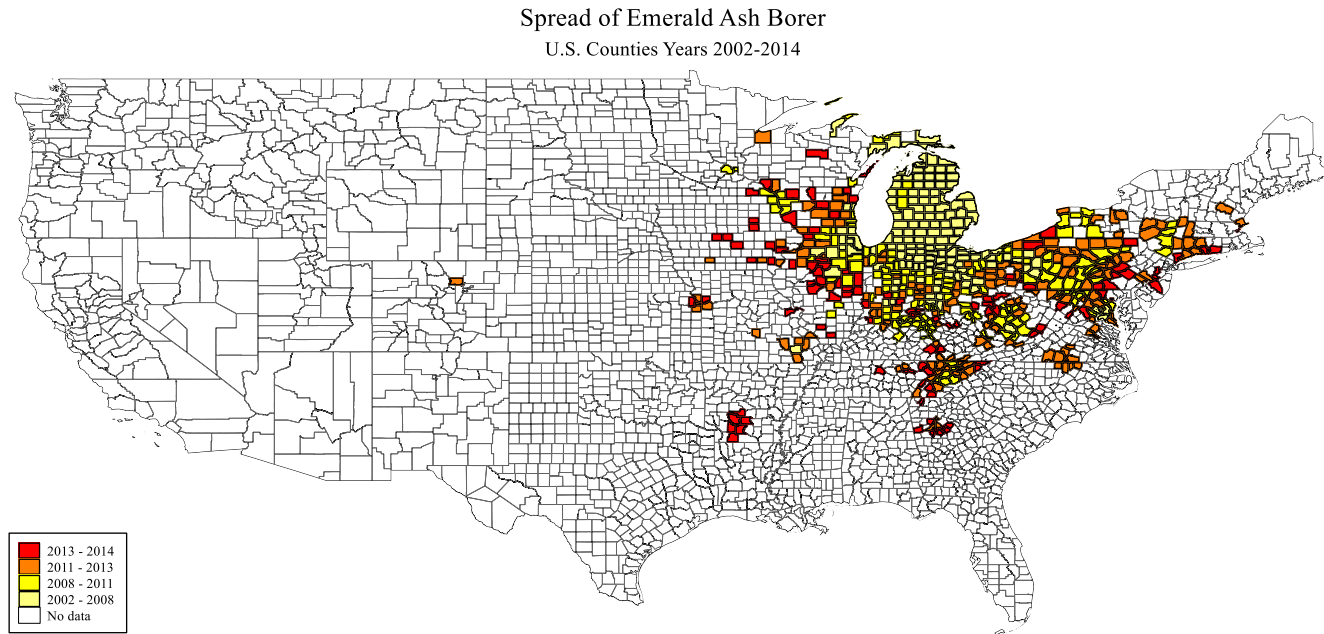
## **Seeing Green Space Also Improves Mental Health**

# Seeing Green Space Also Improves Mental Health

% Change



# Beetles that Kill Trees Are Bad for Our Health and Safety



RE: Data provided by Geoffrey Donovan, U.S. Forest Service

**Emerald ash borer (EAB) beetle infestation across Midwest counties: 15 states lost ~100 million ash**



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## Before-After destruction caused by EAB in Toledo, Ohio



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## Lack of Trees Can Kill You Faster

- **Change in mortality rates for cardiovascular and lower-respiratory diseases in 1,300 counties as the EAB spread across the U.S. (1990-2007)**
  - **An additional 6.8 respiratory and 16.7 cardiovascular deaths per year for each 100,000 adults**
  - **Largest effects in counties with at least 4 years of infestation**
  - **No effect of EAB on accident deaths – placebo test**

Donovan, Geoffrey H. et al. 2012. *Am J Prev Med.* 2013 Feb;44(2):139-45

# Urban Trees and Crime: Evidence from the spread of the emerald ash borer in Cincinnati

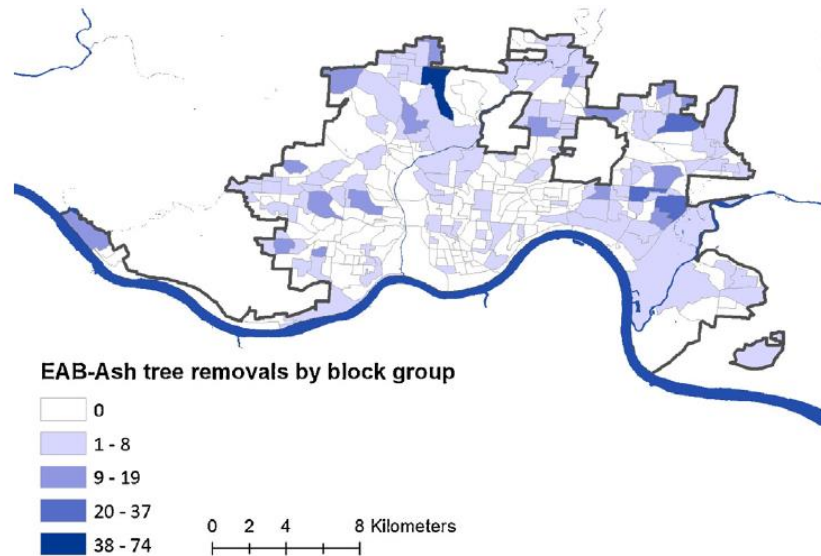
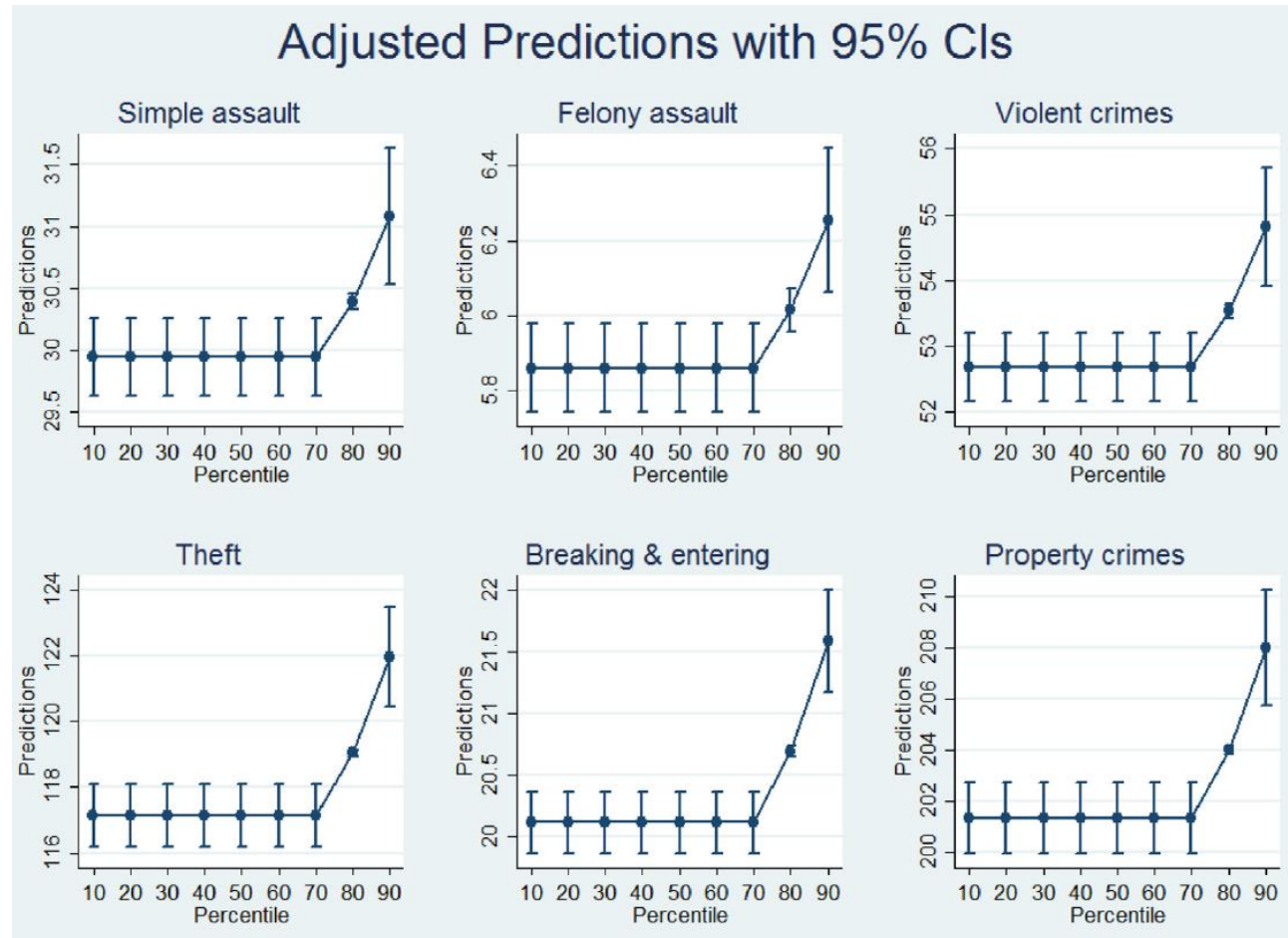


Fig. 3. Map of ash tree removals in Cincinnati by Census block group, April 2007–September 2014.

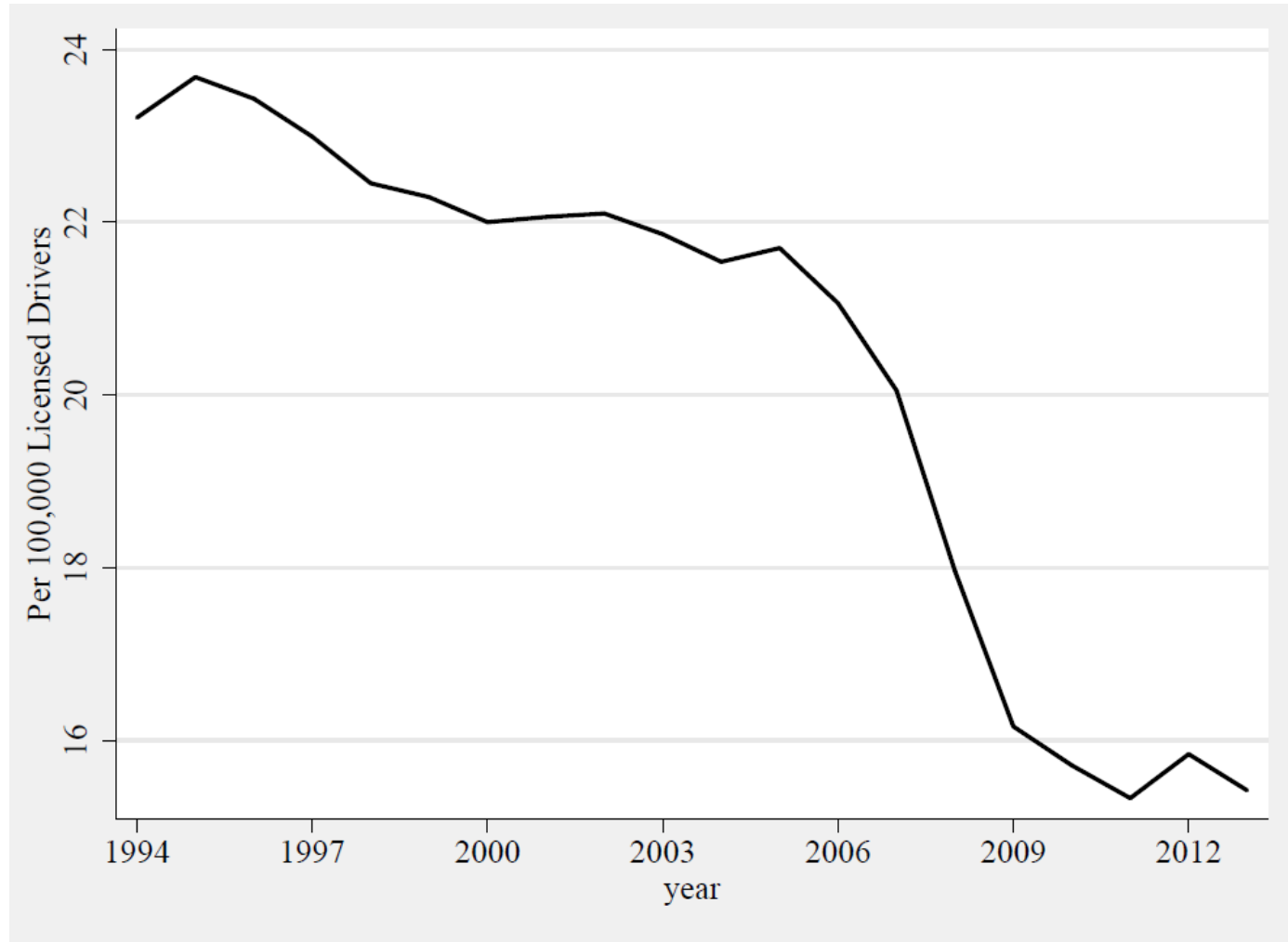
Kondo, Han, Donovan, and MacDonald (2017)  
*Landscape and Urban Planning*

# Significant increase in crime associated with losing trees caused by the EAB (1-2% per lost tree)

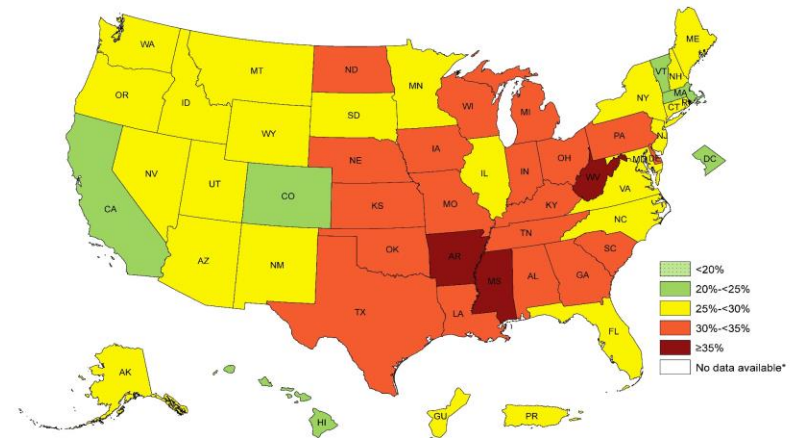


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***Driving Ambivalence: Regulations to car designs (e.g., safety belts) have helped make driving safer***



# Sedentary Living is A Contributor to the Obesity Epidemic

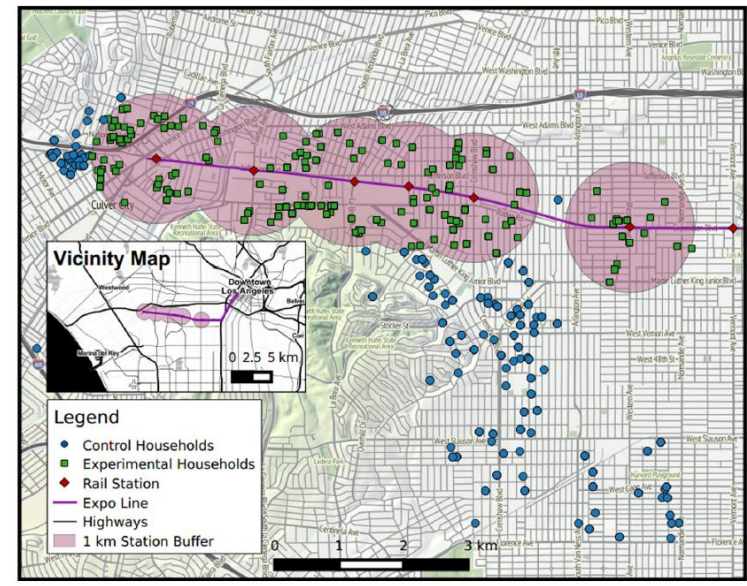
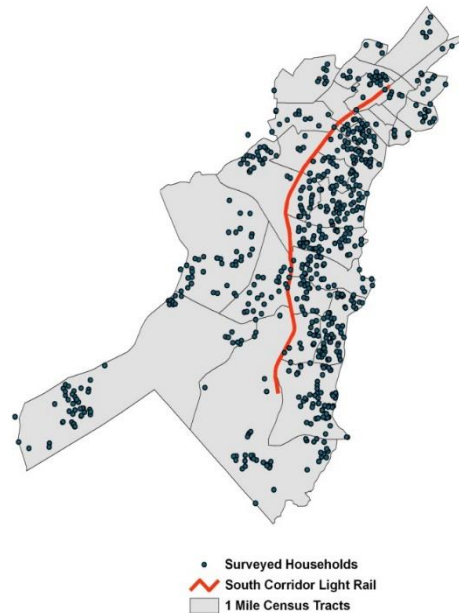




# Riding Rail in to Increase Exercise and Lose Weight



# People Living Near Light Rail Stations Before and After They Open in Charlotte and Los Angeles

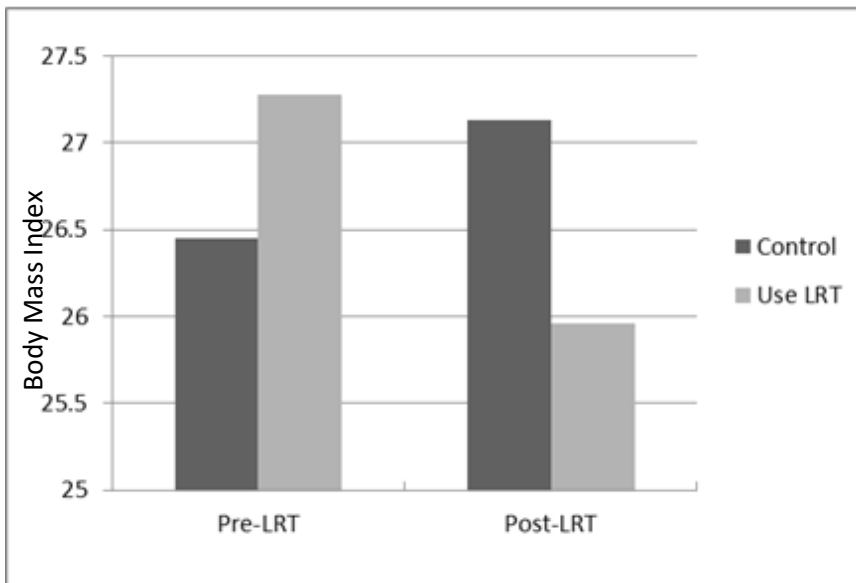


MacDonald, J. M., Stokes, R. J., Cohen, D. A., Kofner, A., & Ridgeway, G. K. (2010). The effect of light rail transit on body mass index and physical activity. *American Journal of Preventive Medicine*.

Spears, S., Boarnet, M. G., & Houston, D. (2017). Driving reduction after the introduction of light rail transit: Evidence from an experimental-control group evaluation of the Los Angeles Expo Line. *Urban Studies*.

# Light rail users lose weight, take fewer trips in cars, and get more walking relative to non-users

Charlotte



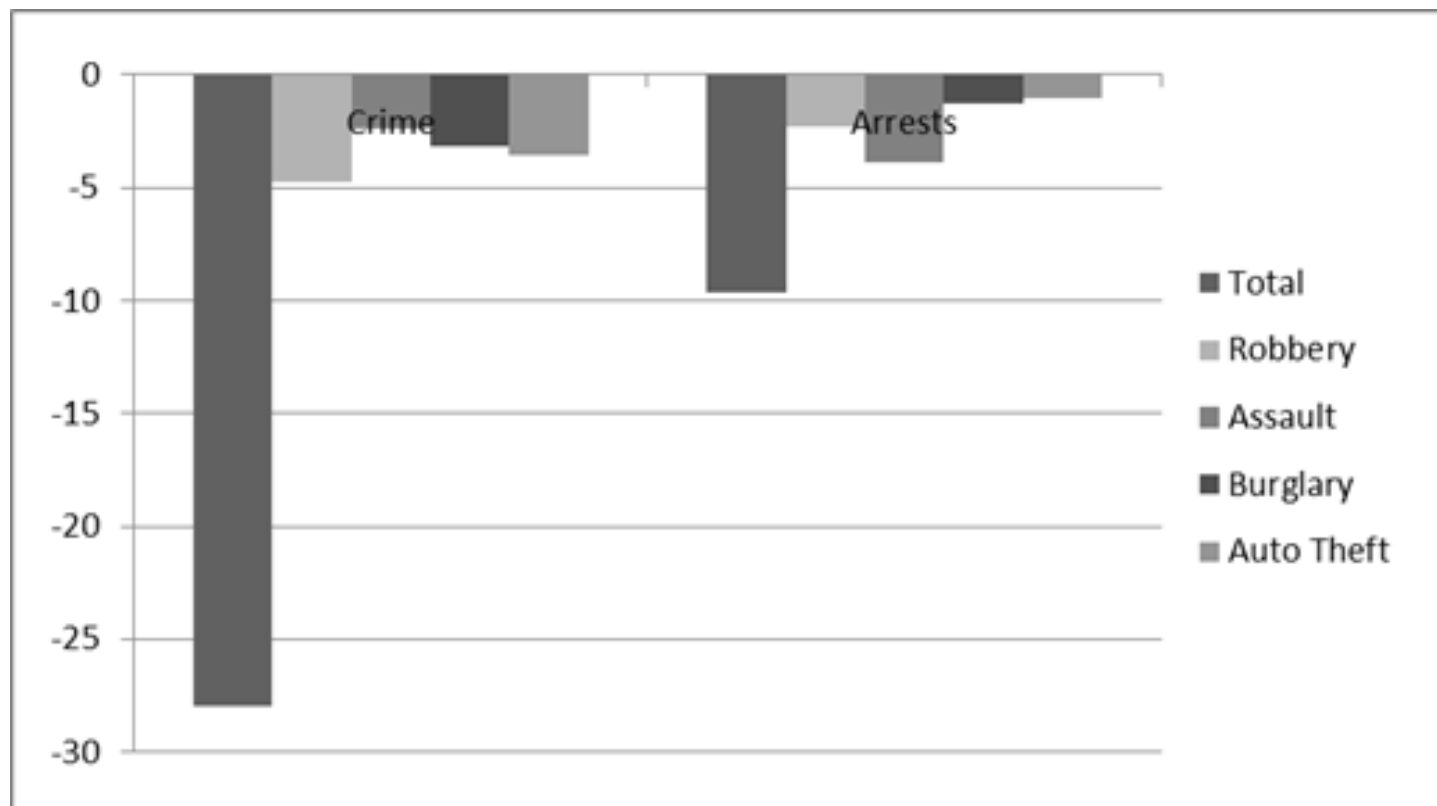
Los Angeles

- 11 fewer vehicle miles per day
- Increase in walking trips
- Increase in moderate to vigorous activity

# Good Clean Fun: Making Commercial Districts Safe: BID's in Los Angeles



## The Effect of BIDs on Crime and Arrests



11% decline in total crime; 18% for robbery; 32% decline in arrests

Cook and MacDonald (2011). *The Economic Journal*

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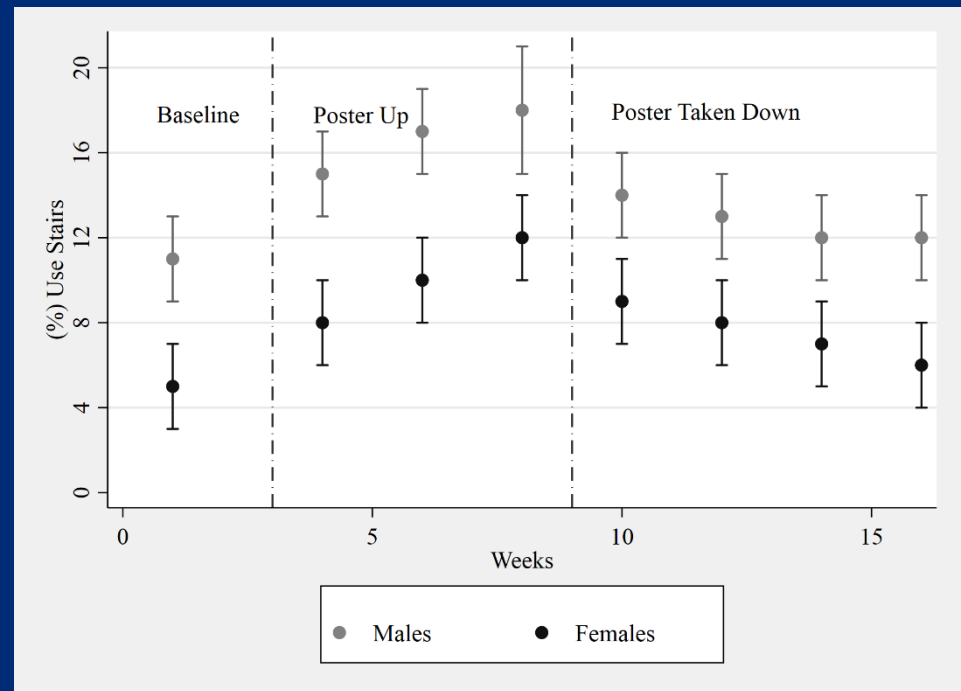
# ***Making Parks Places for Physical Activity***

**How can we make parks part of routine physical activity?**

**Is it possible to get people to use parks for more physical activity without devoting major sums to programming?**

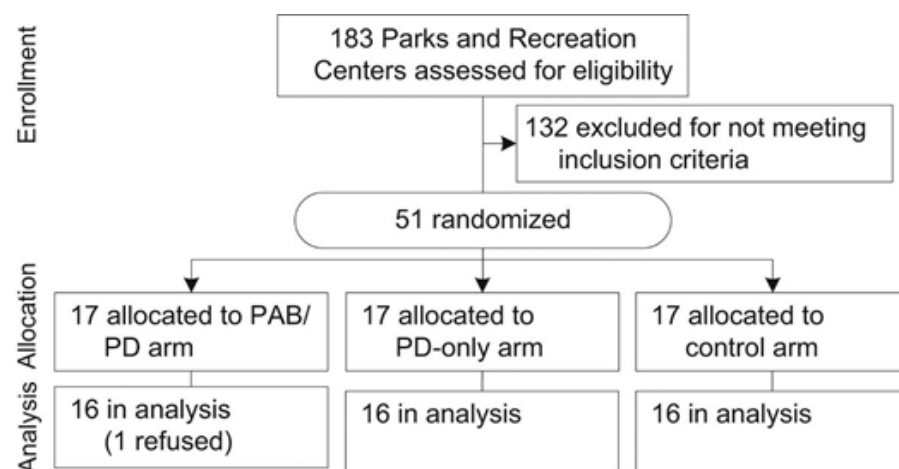


# Motivational signs are a low cost intervention when coupled with the redesign of places



# Simple Signs Increase Physical Activity in LA Parks

- Observed parks before and after the intervention
- Parks that made small investments in signs (\$4,000) saw 7-12% increase in observed and self-reported park usage
- Control parks saw a small decline in the number of observed self-reported users 6-10%, as well as declines in physical activity



Cohen, Han et al. (2013) *American Journal of Preventive Medicine*.

# Embracing Change: Success May Bring Unintended Consequences

- Changing places may increase property values
- Greater demand for public services
- Increase gentrification or homogenization of places
- Need to pilot test programs and guard against changes that displace residents who want to stay in a place



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# Where Next?

- A place-based set of interventions work to improve safety and health in communities
- Experiments should be imbedded in planning designs to see what works, under what contexts
- Partnerships are needed between scientists and urban planning that connects communities as part of policy labs tailored to the context of a given community
- Structural changes to places that are long lasting and scalable can help rebuild communities with designs that encourage health and active living

# THANK YOU!

