

NEIGHBORHOOD DISINVESTMENT, ABANDONMENT AND CRIME DYNAMICS

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Overview

- Terminology
- Research Question
- Empirical Model & Data
- Results
- Simulation of Neighborhood Decline & Crime Dynamics
- Policy Implications

Detroit



Detroit as a Symbol



Vacant Buildings...



Vacant Land



Vacant vs. Abandoned



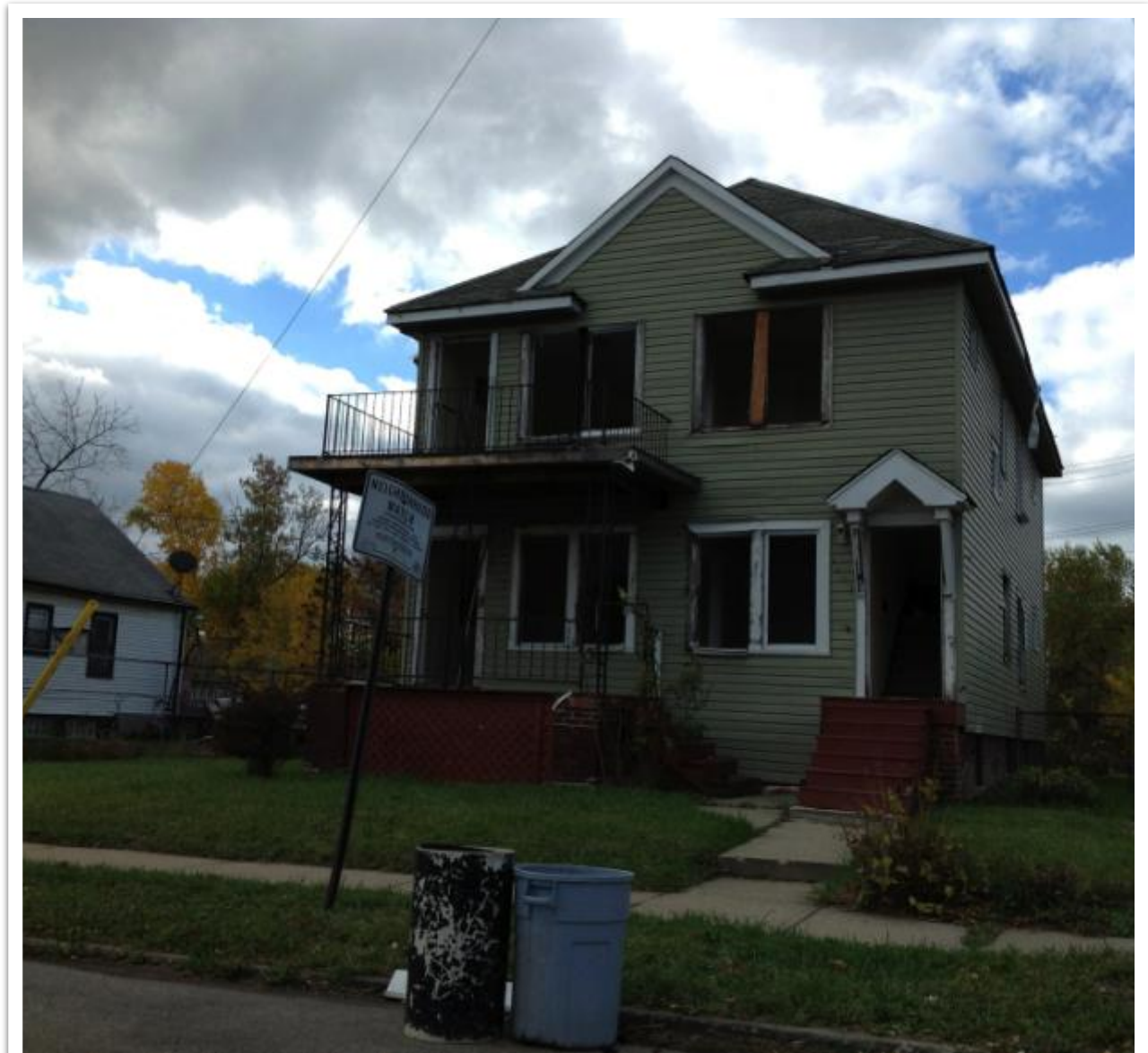
Crime & Abandonment

Poll of Detroit
residents'
concerns:

Crime: 43%

Abandoned
Buildings: 19%

Detroit Free Press
March 29, 2012



Assumed Relationship

- “Vacant homes are dangerous threats... they can become dens of criminal activity... or worse, the lairs of rapists.”
 - Detroit Free Press October 28, 2012.

Research Question

To what extent do vacant and abandoned dwellings, plus a wide variety of block-level indicators of neighborhood decline, predict a wide range of crime types during the subsequent quarter, controlling for a variety of other socio-demographic and physical characteristics of the block and crime conditions in nearby blocks?

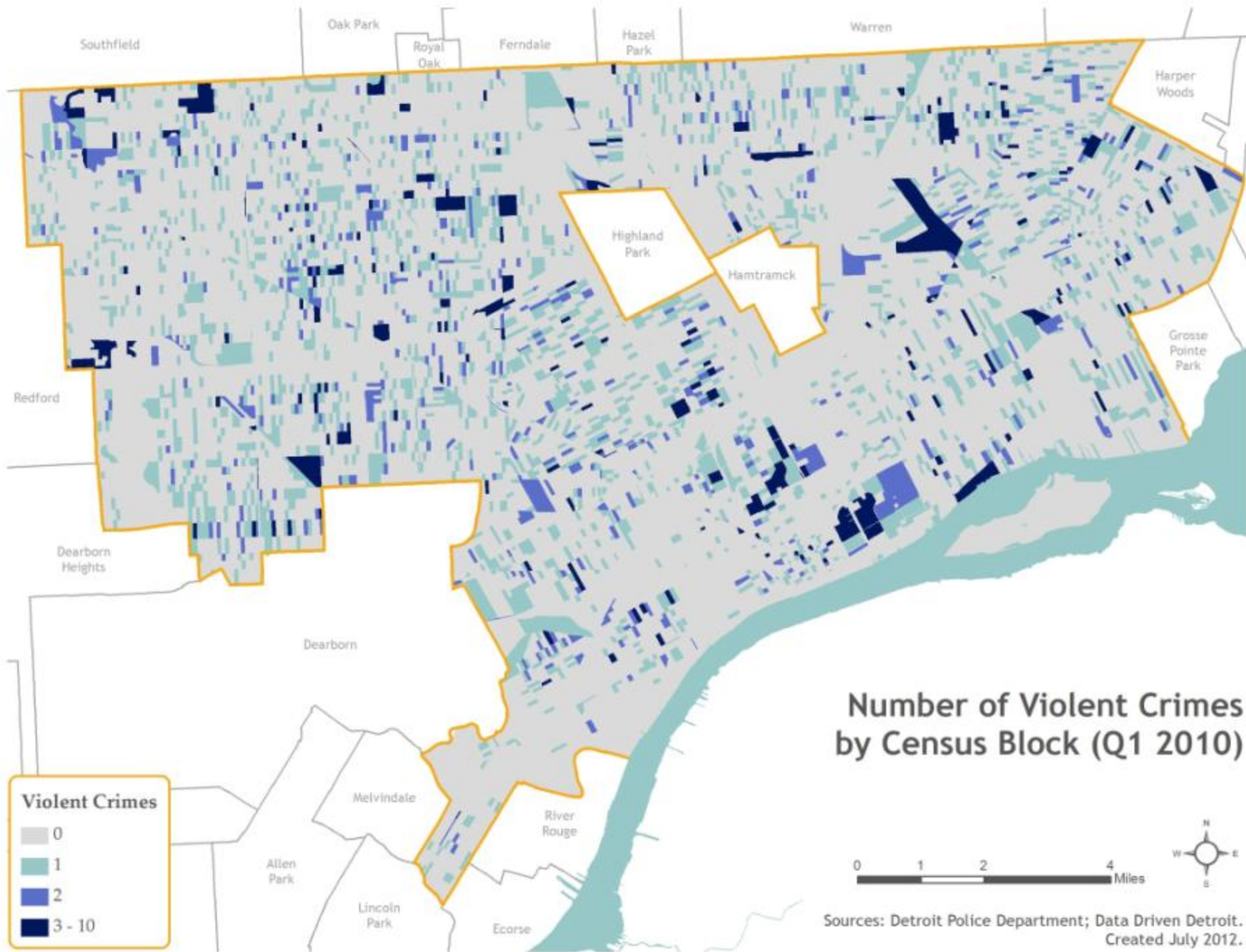
Empirical Model

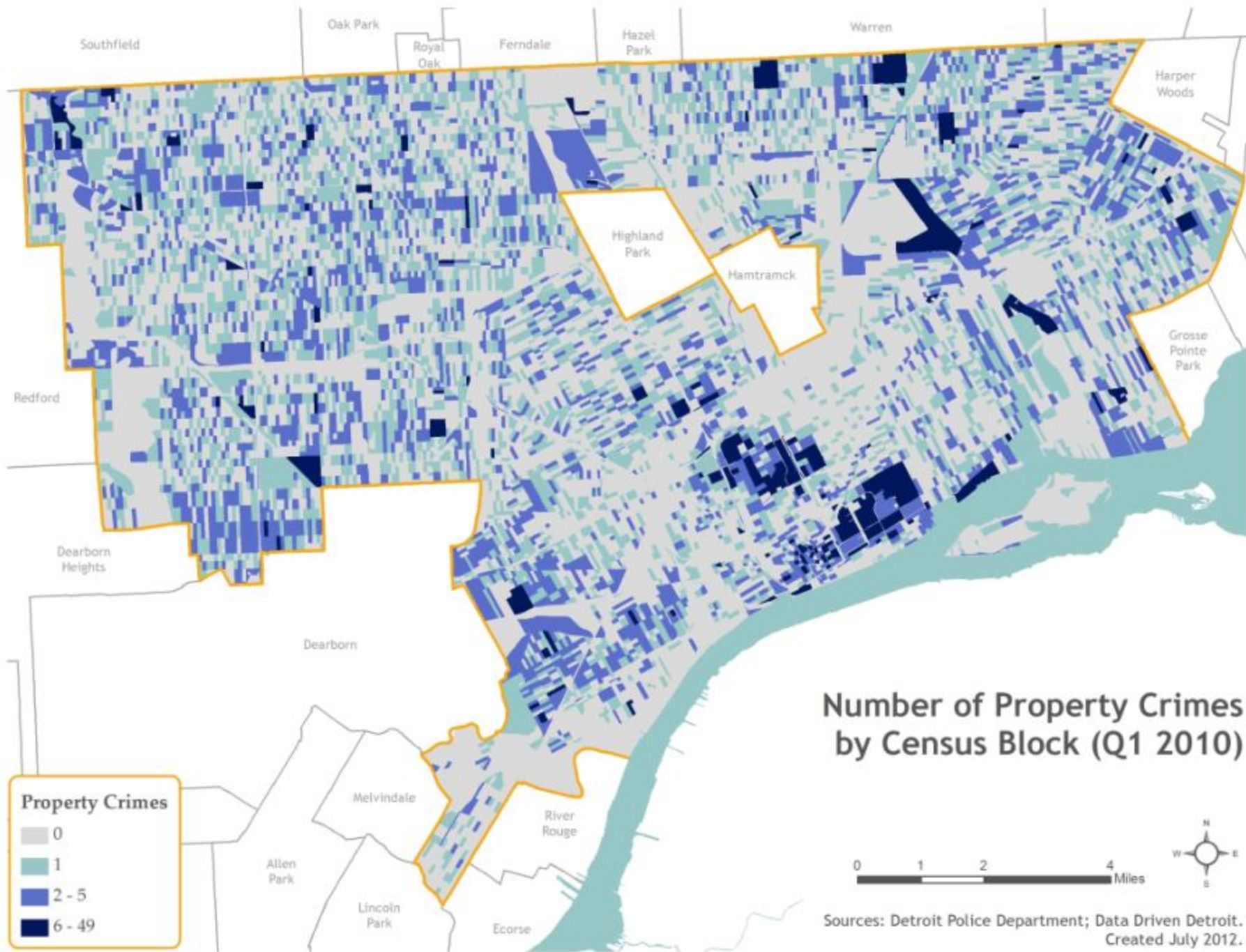
$$\#Crimes_{jit} = f([Abandoned/Vacant Lots_{it-1}]; [Housing_{it}]; [Population_{it}]; [Business_{it}])$$

- **Violent:** All (UCR), Assault, Robbery
- **Property:** All (UCR) Burglary, Destruction/Vandalism, Drug/Narcotics, Larceny, Motor Vehicle Theft
- Negative binomial regression
- Spatial lag of crime, abandonment, vacancy, and vacant land
- Sample: 11,289 census blocks

Data

- Detroit Police Department: Q1 2010 offenses by type, point-level aggregated to census block
- Detroit Residential Parcel Survey: Q3 2009 condition and occupancy, parcel-level aggregated to census block
- Local Employment Dynamics OnTheMap
- Michigan Liquor Control Commission
- Michigan Department of Education
- 2010 Census
- 2007-2011 American Community Survey





Key Results

- Property and violent crimes more frequently occurring on blocks with:
 - higher renter occupancy
 - more liquor licenses
 - lower population density
 - more crime on adjacent blocks

Examples

↑ Renter Occupancy Rate by 10% →
↑ Property Crime Rate by 5.4%; ↑ Violent Crime Rate by 8.7%

↑ Vacancy Rate by 10% →
↑ Burglary Rate by 8%; ↓ Larceny Rate by 5.5%

↑ Vacancy Rate on Nearby Blocks by 10% →
↑ Robbery Rate by 26%; ↓ Burglary Rate by 11%

↑ Vacant Lot Rate by 10% →
↓ Burglary Rate by 4.9%; ↓ Larceny Rate by 5.2%

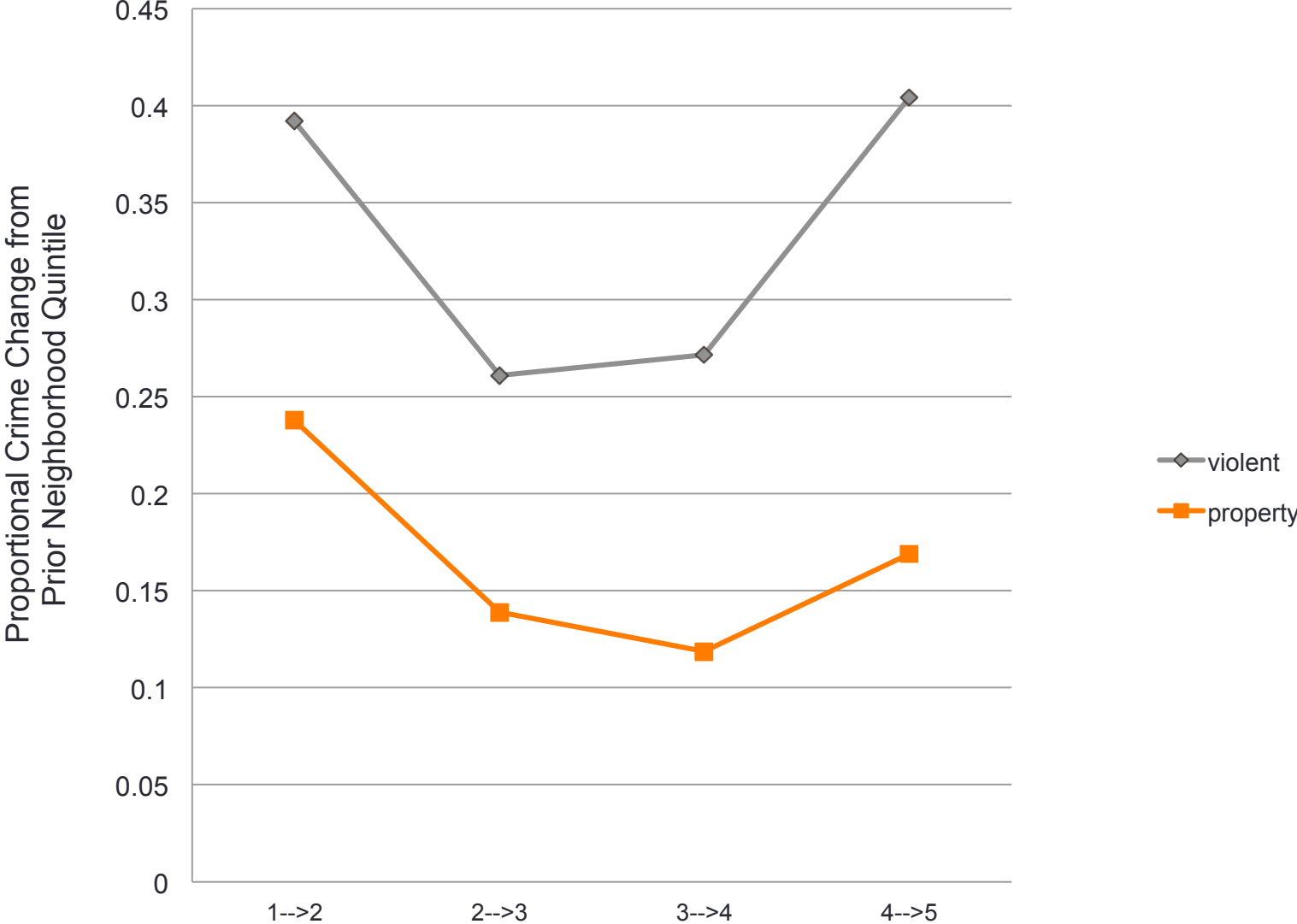
Surprising Results

- More abandoned dwellings ONLY associated with higher drug/narcotic crimes
- Spatial lag of abandoned dwelling measure not significant for any crime type

Simulation of Neighborhood Decline & Crime Dynamics

- Assume 5 stages of decline, with values of key model variables at the midpoint of quintiles (i.e., 10th, 30th, 50th, 70th, 90th percentiles) of Detroit census tracts
- Use model parameters to predict crimes for each stage
- Calculate rate of growth of crime between stages

Crime and Neighborhood Dynamics



Implications for Policy

- Demolishing abandoned housing
- “Right-sizing” urban footprints

Implications for Policy

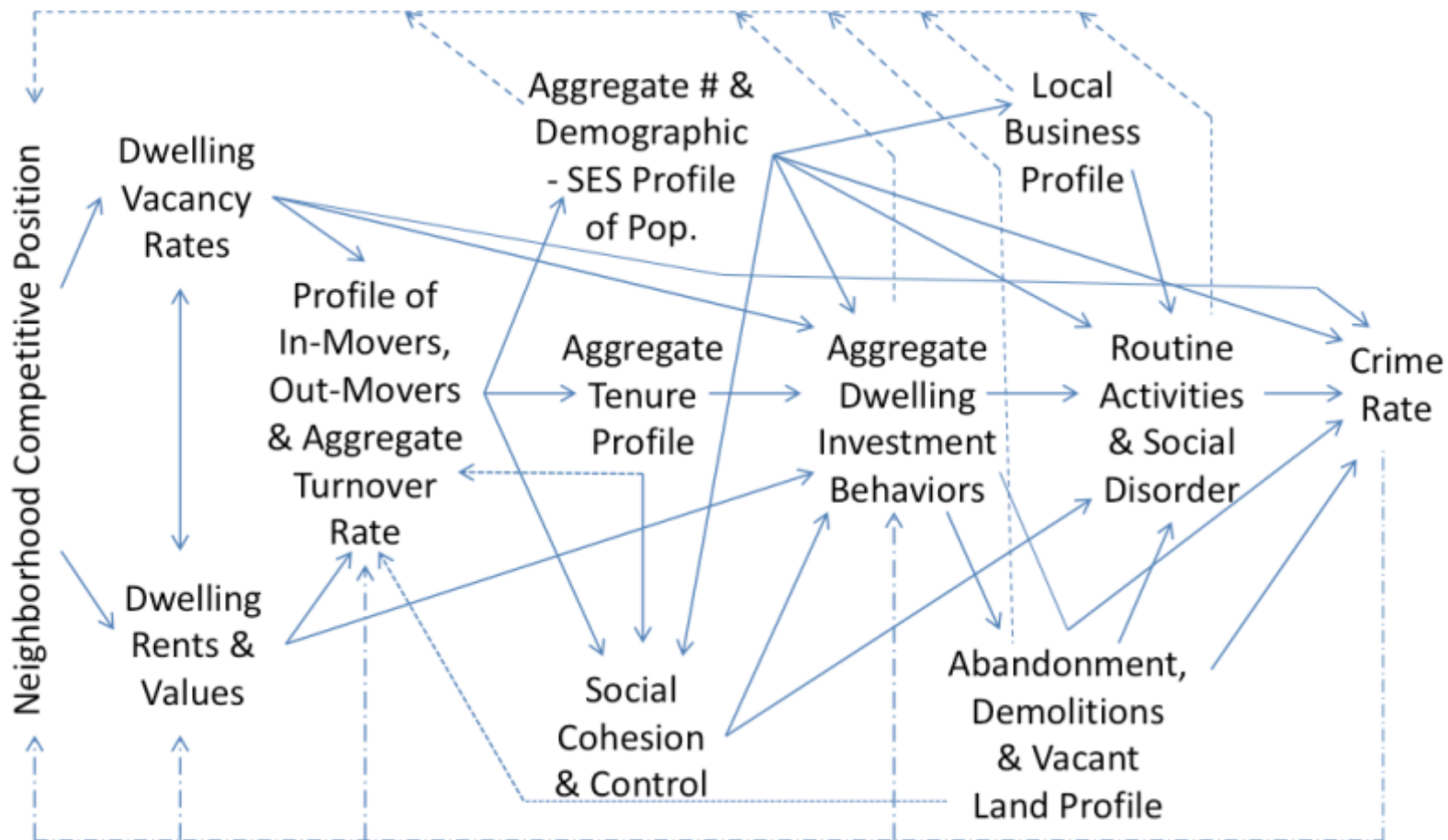
- Demolishing abandoned buildings
 - Vacant dwellings, not abandoned ones, are the problem
 - BUT may want to demolish abandoned units given vacant lots have less crime

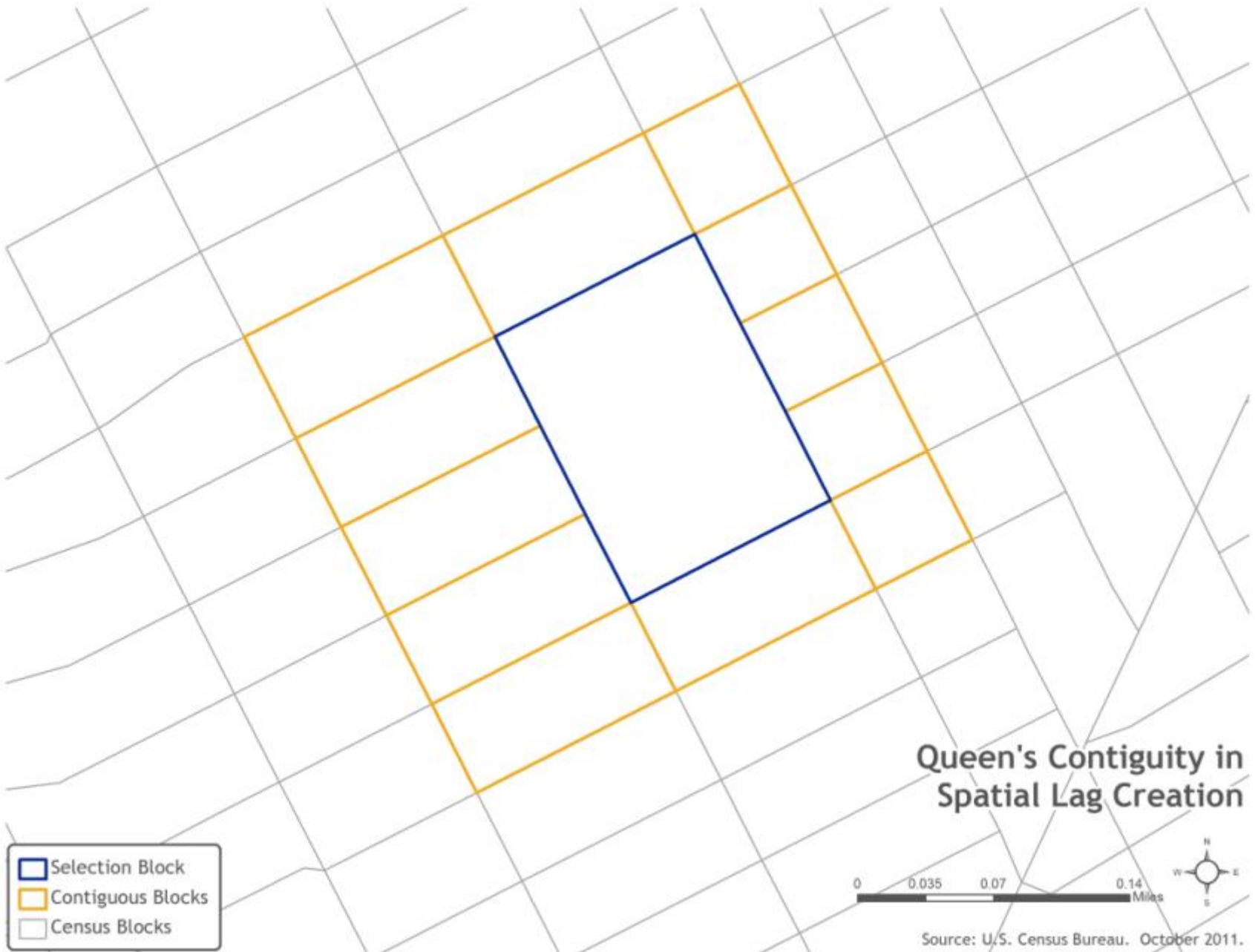
Implications for Policy

- Demolishing abandoned buildings
 - Vacant dwellings, not abandoned ones, are the problem
 - BUT may want to demolish abandoned units given vacant lots have less crime
- “Right-Sizing” urban footprints
 - Would be predicted to reduce crime:
 - In vacated areas by increasing vacant land via demolition
 - In densified areas by reducing vacancy rates and increasing population densities

THANK YOU

Model of Neighborhood and Crime Dynamics





Queen's Contiguity in Spatial Lag Creation

- Selection Block
- Contiguous Blocks
- Census Blocks



Source: U.S. Census Bureau. October 2011.

