NEIGHBORHOOD DISINVESTMENT, ABANDONMENT AND CRIME DYNAMICS

Erica Raleigh & George Galster

Urban Affairs Association
March 2014
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.”
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

\[#\text{Crimes}_{jit} = f( [\text{Abandoned/Vacant Lots}_{it-1}]; [\text{Housing}_{it}]; [\text{Population}_{it}]; [\text{Business}_{it}] )\]

- **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
Number of Violent Crimes by Census Block (Q1 2010)

Sources: Detroit Police Department; Data Driven Detroit. Created July 2012.
Number of Property Crimes by Census Block (Q1 2010)

Sources: Detroit Police Department; Data Driven Detroit. Created July 2012.
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., 10\textsuperscript{th}, 30\textsuperscript{th}, 50\textsuperscript{th}, 70\textsuperscript{th}, 90\textsuperscript{th} 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

Proportional Crime Change from Prior Neighborhood Quintile

- Violent
- Property
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