

# Residential Instability & Crime in Toledo: A 10-Year Time Series Analysis

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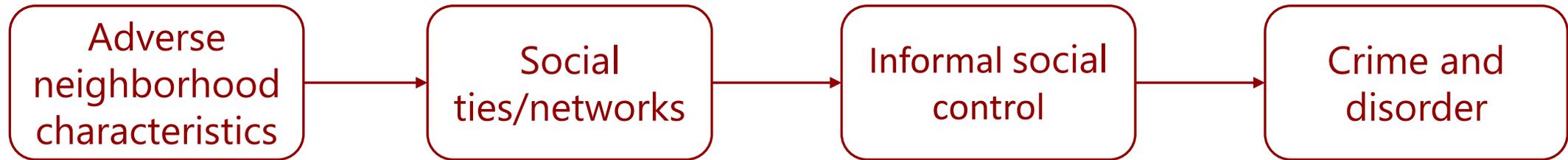
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## Study Objective

- Explore the association between residential instability and crime across 92 census tracts in Toledo, Ohio, from 2010 through 2019.
- Examine how different measures of residential instability influence neighborhood crime.

# Social Disorganization Theory

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- Social disorganization as a neighborhood feature.<sup>1</sup>
- Residential instability <sup>2, 3</sup>
  - Limits economic resources
  - Yields conditions opportunistic to crime
  - Draws crime into the community

# Literature Review – Residential Vacancies

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- Residential vacancies have been significantly linked to neighborhood-level violent and property offenses.<sup>4, 5, 6, 7</sup>
  - Larceny and burglary.<sup>8, 9, 10</sup>
  - Homicide, aggravated assault, and gun assault.<sup>11, 12</sup>
  - Drug offenses, including higher rates of adolescent substance use.<sup>13, 14, 15</sup>

# Literature Review – Rentals & Geographic Mobility

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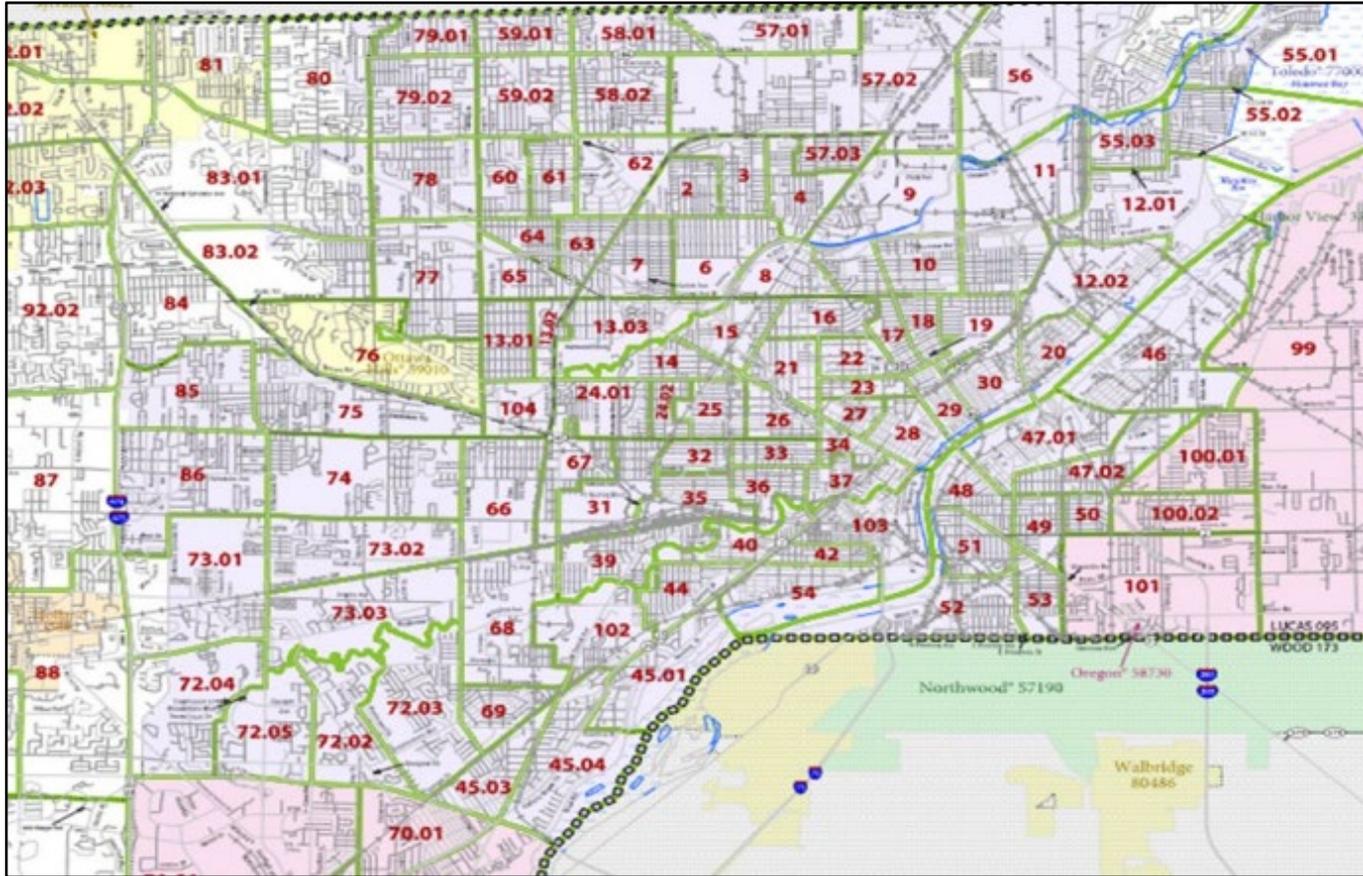
## Renter-Occupied Housing Units

- Census blocks with higher rates of rental occupancy -> increased violent and property crime.<sup>13</sup>
  - Assault and robbery
- Housing tenure -> neighborhood-level burglary rates.<sup>10</sup>

## Geographic Mobility

- Residential turnover -> risk of property victimization.<sup>16</sup>
- Increased younger/middle-aged persons moving into a neighborhood -> increased violent and property crime rates.<sup>17</sup>
  - Weakened social cohesion and control

## 2010 Toledo Census Tracts



# Data

- 2010 - 2019
- 2010 Census Tracts
  - 92 included
  - 35 excluded
- United States Department of Housing and Urban Development (HUD) vacancy data
- 2010 Census and American Community Survey data
  - Demographics
  - Rentals/geographic mobility

# Crime Incident Data

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- Toledo Police Department's Intelligence and Special Investigations Bureau
- 2010 – 2019 Crime incident data
  - Crime type, address, date/time
- Data preparation
  - 145 crime types
    - Part 1 personal, Part 1 property, Part 2 personal, Part 2 property, public order, and substance offense
  - Tract identification through Census Geocoder
  - 548,154 included crime incidents

# Measures

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## *Vacancies*

- Percentage of vacant addresses per tract

## *Rentals*

- Percentage of the census tract population in renter-occupied housing units

## *Geographic mobility*

- Percentage of persons per tract in the same house as they were 1 year ago

## *Crime Incident Type*

- Part 1 personal, Part 1 property, Part 2 personal, Part 2 property, public order, and substance offense.
- Yearly counts

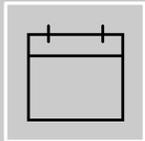
# Analytical Plan

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Multivariate Regression

Between-tract analysis



Vector Autoregressive Analysis  
(VAR) Cross-Lagged Panel

Within-tract analysis

# Between-Tract Findings – Residential Vacancies

Table 1. Summary of Significant Multivariate Regression Findings for Percent Vacancies and Crime

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Vacancy Percent Change	7.16%	7.8%	7.61%	7.96%	8.29%	8.65%	8.74%	9.35%	9.88%	10.27%
Crime Incident										
<i>Part 1 Personal</i>	3.8	-	5.3	4.18	6.77	4.49	5.16	-	2.53	2.92
<i>Part 1 Property</i>	-	-	-	-	27.17	-	-	-	14.61	17.16
<i>Part 2 Personal</i>	15.56	-	13.98	20.84	24.92	28.72	27.83	-	22.03	28.6
<i>Part 2 Property</i>	12.13	-	9.61	14.47	15.27	12.93	10.71	11.17	7.19	-
<i>Public Order</i>	-	-	-	31.66	39.8	31	31.85	-	-	-
<i>Substance</i>	-	-	12.05	22.47	34.03	25.79	25.71	23	26.89	28.74
Overall Crime	31.49	-	40.95	93.62	147.97	102.93	101.26	34.17	73.26	77.43

# Between-Tract Findings – Rentals & Geographic Mobility

## *Rentals*

- In 2010, an 21.5% incremental increase in renter-occupied housing units was associated with an additional 12.32 Part 2 property crime incidents.

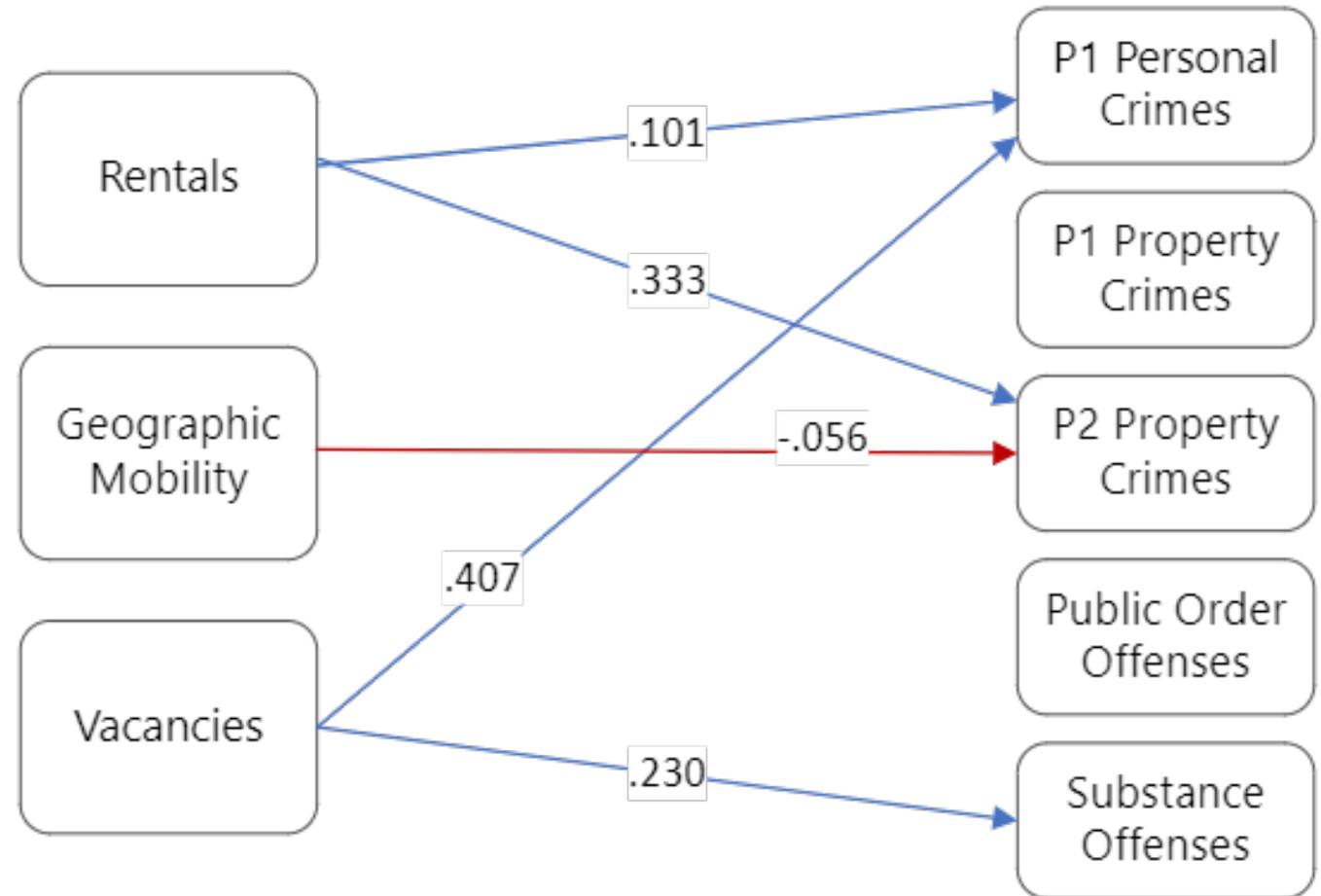
## *Geographic Mobility*

- In 2014, an 8.32% incremental increase in geographic mobility was associated with approximately 15.04 less substance offenses.

# Within-Tract Findings

- Rentals -> one Part 1 personal and 12 Part 2 property crimes.
- Geographic Mobility -> two Part 2 property crimes.
- Vacancies -> 4 Part 1 personal crimes 12 substance offenses

Figure 1. Significant Carryover Effects Within Tracts: Residential Instability Measures and Crime Incidents



# Discussion

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- Percentage of vacancies had the most substantial influence on crime incidents.
  - Between-tracts – significantly influenced crime incidents for all years except 2011.
  - Within-tracts – an incremental increase in vacancies was associated with 16 additional crime incidents.
- Both between- and within-tracts, the residential instability measures had a limited influence on public order incidents.
- Within-tracts, an increase in geographic mobility was associated with a decrease in Part 2 property offenses.
  - Consistent with social disorganization framework

# References

1. Kubrin, C. E. (2009). Social disorganization theory: Then, now, and in the future. In *Handbook on crime and deviance* (pp. 225-236). New York, NY: Springer New York.
2. Nobles, M. R., Ward, J. T., & Tillyer, R. (2016). The impact of neighborhood context on spatiotemporal patterns of burglary. *Journal of Research in Crime and Delinquency, 53*(5), 711-740.
3. Theodos, B., McTarnaghan, S., & Coulton, C. (2018). Family Residential Instability. *Urban Institute*.
4. Ellen, I. G., Laco, J., & Sharygin, C. A. (2013). Do foreclosures cause crime?. *Journal of Urban Economics, 74*, 59-70.
5. Cui, L., & Walsh, R. (2015). Foreclosure, vacancy and crime. *Journal of Urban Economics, 87*, 72-84.
6. Boessen, A., & Chamberlain, A. W. (2017). Neighborhood crime, the housing crisis, and geographic space: Disentangling the consequences of foreclosure and vacancy. *Journal of Urban Affairs, 39*(8), 1122-1137.
7. Chen, X., & Rafail, P. (2020). Do housing vacancies induce more crime? A spatiotemporal regression analysis. *Crime & Delinquency, 66*(11), 1579-1605.
8. Jones, R. W., & Pridemore, W. A. (2016). A longitudinal study of the impact of home vacancy on robbery and burglary rates during the US housing crisis, 2005-2009. *Crime & Delinquency, 62*(9), 1159-1179.
9. Roth, J. J. (2019). Empty homes and acquisitive crime: Does vacancy type matter?. *American Journal of Criminal Justice, 44*, 770-787.
10. Meng, Y. (2022). BURGLARY RATES AND NEIGHBORHOOD Contextual Characteristics: A Case Study in Hartford, Connecticut. *Northeastern Geographer, 13*.
11. Suresh, G., & Vito, G. F. (2009). Homicide patterns and public housing: The case of Louisville, KY (1989-2007). *Homicide Studies, 13*(4), 411-433.
12. Branas, C. C., Rubin, D., & Guo, W. (2012). Vacant properties and violence in neighborhoods. *International Scholarly Research Notices, 2012*(1), 246142.
13. Raleigh, E., & Galster, G. (2015). Neighborhood disinvestment, abandonment, and crime dynamics. *Journal of Urban Affairs, 37*(4), 367-396.
14. Furr-Holden, C. D. M., Lee, M. H., Milam, A. J., Johnson, R. M., Lee, K. S., & Ialongo, N. S. (2011). The growth of neighborhood disorder and marijuana use among urban adolescents: a case for policy and environmental interventions. *Journal of studies on alcohol and drugs, 72*(3), 371-379.
15. Teixeira, S. (2015). "It Seems Like No One Cares" Participatory Photo Mapping to Understand Youth Perspectives on Property Vacancy. *Journal of Adolescent Research, 30*(3), 390- 414.
16. Xie, M., & McDowall, D. (2008). The effects of residential turnover on household victimization. *Criminology, 46*(3), 539-575.
17. Hipp, J. R., & Chamberlain, A. W. (2023). Who Leaves and Who Enters? Flow Measures of Neighborhood Change and Consequences for Neighborhood Crime. *Journal of Research in Crime and Delinquency, 60*(5), 543-581.