

A LONGITUDINAL ANALYSIS ON CHANGING DEMOGRAPHICS AND CRIME



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Neighborhood Change and Crime

- The relationship between neighborhood change and crime is prominent in previous research
 - Criminological and ecological theories:
 - social disorganization, collective efficacy, concentrated disadvantage, broken windows, gentrification
- An important measure is ethnic heterogeneity
 - Measured: $(1 - [\sum P_i^2])$, P_i = fraction of the population in a given group (thus, 1 = complete heterogeneity)
 - Previous research: ethnic heterogeneity *increases* crime
 - Varies by context
 - BUT, changes over time (e.g. gentrification): can *decrease* crime



Research Questions

Q1: How is the socio-demographic composition of DC neighborhoods changing?

Q2: Are these change trajectories similar across neighborhoods?

Q3: Do these change trajectories impact the amount of crime that occurs within these neighborhoods?

Q4: Is this impact robust across different measures of crime?



Washington DC Data

- Demographic Data (Block Groups)
 - **Wave 1:** Census 2000
 - **Wave 2:** ACS 2005-2009 5yr estimates
 - **Wave 3:** Census 2010

- Crime Data
 - Metropolitan Police Department (DC) arrest data
 - Point data aggregated to BGs



Research Methods

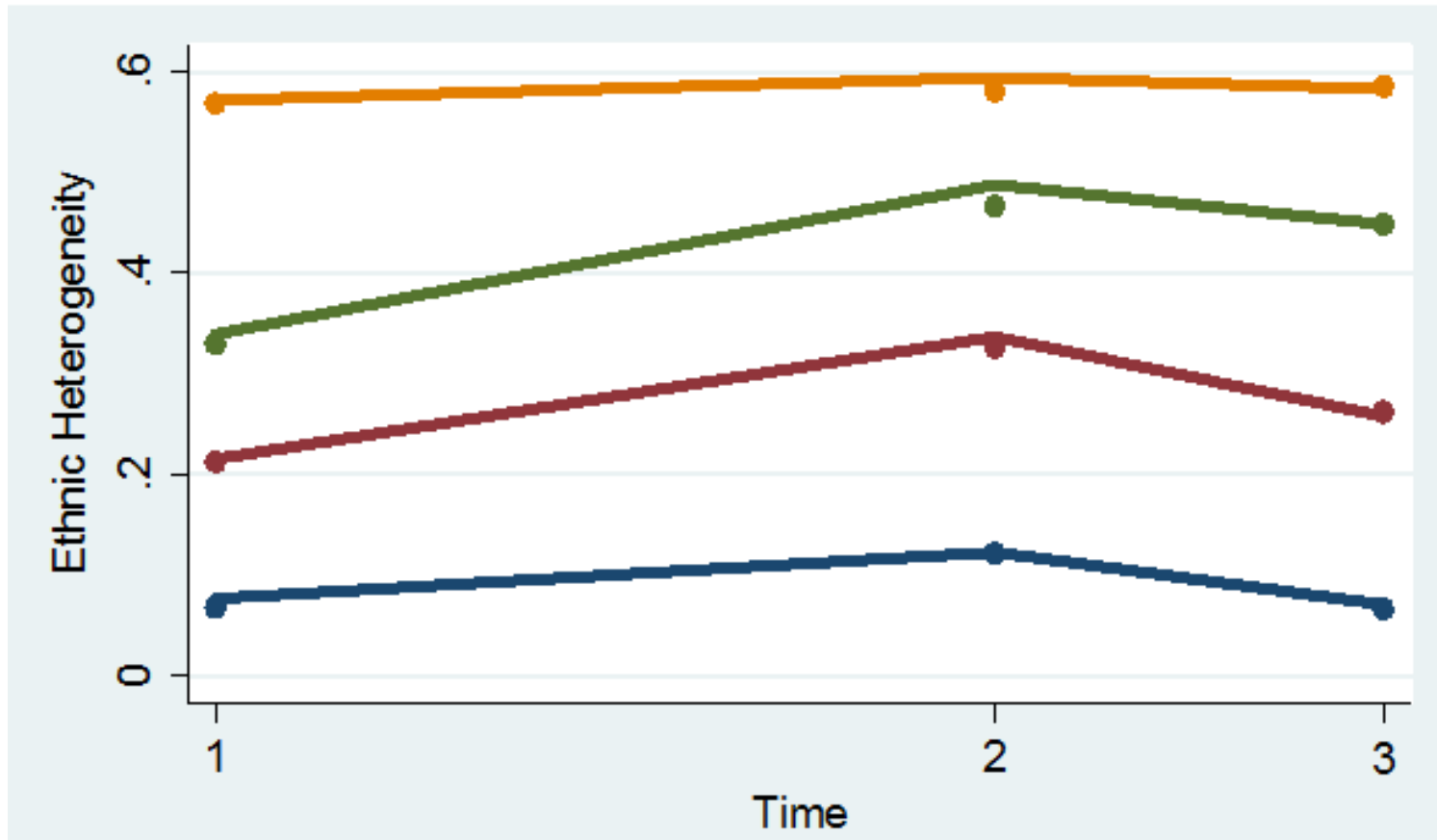
Group-Based Trajectory Analysis

- **Purpose:** Groups units by latent trajectories
- **Application:** Identify block group-level trajectories of socio-demographic change
- **Measure:** ethnic heterogeneity

Negative Binomial Regression

- Determine the effect of group membership on crime
- **DV:** 1) total crimes; 2) homicides; 3) robberies; 4) burglaries; 5) thefts; 6) grand theft auto
- **IV:** group membership
- **Controls:** median age, %15-24yrs, %renter-occupied homes, previous crime

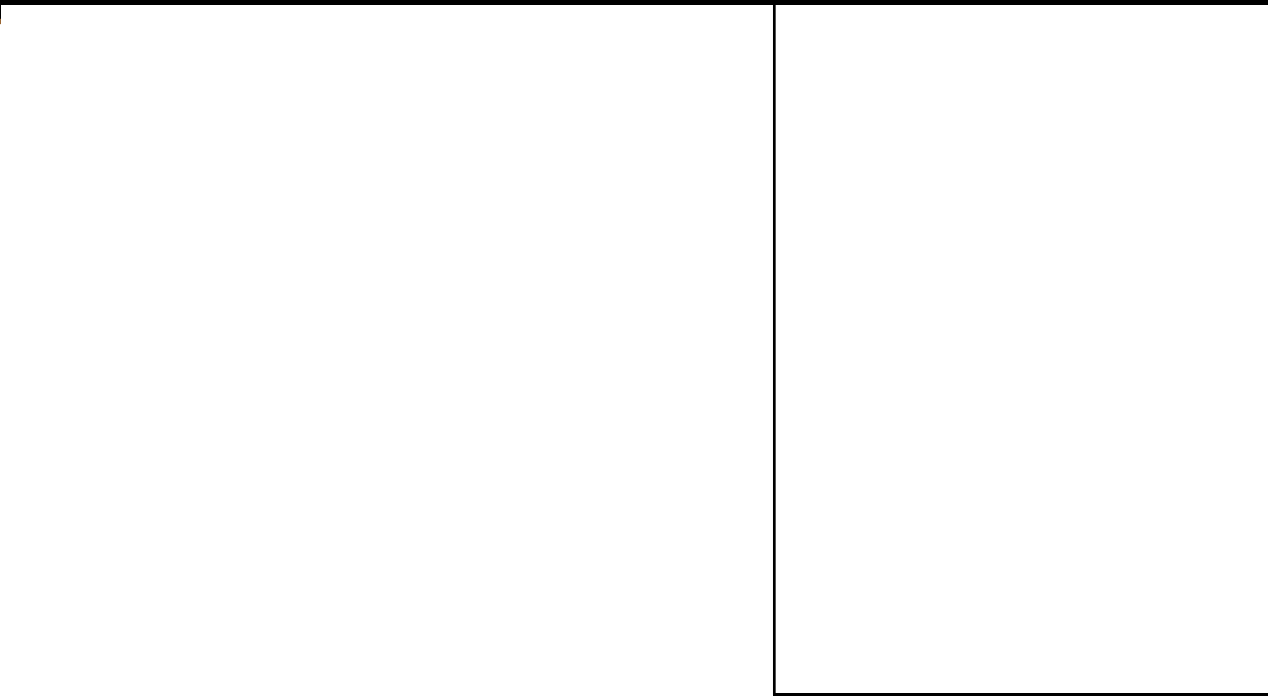
Latent Trajectories of 4 Groups



1	29.4%	2	19.4%
3	29.3%	4	21.9%



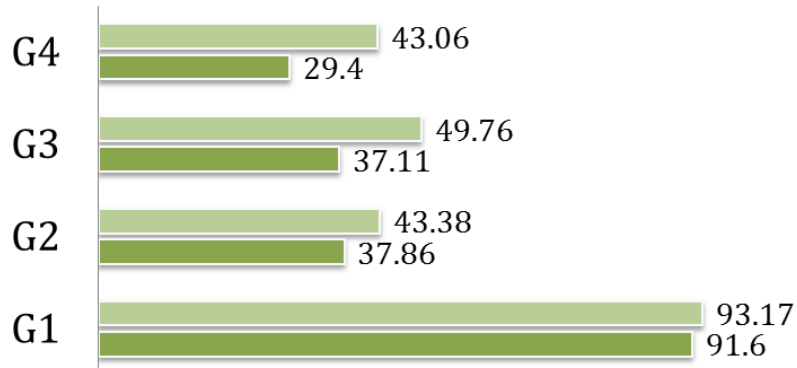
Mapped Group Membership



Neighborhood Profile

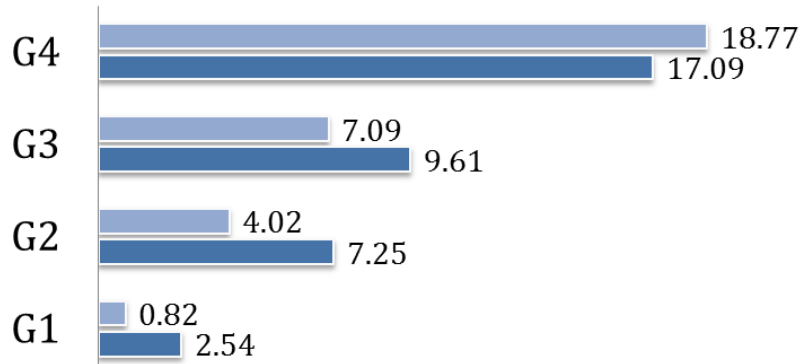
Percent Black

■ 2000 ■ 2010



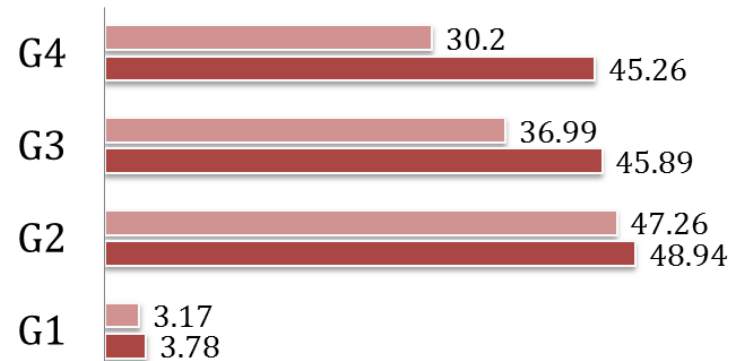
Percent Hispanic

■ 2000 ■ 2010



Percent White

■ 2000 ■ 2010



Group Membership on Crime

Crime Measure	Group Membership (IRR)		
	G2: Shifting, Mid-High	G3: Shifting, Mid-Low	G4: Stable, High
<i>Total</i>	0.814**	0.775***	0.756**
<i>Homicide</i>	0.207***	0.221***	0.275***
<i>Robbery</i>	0.730**	0.821*	0.796*
<i>Burglary</i>	0.633***	0.672***	0.576***
<i>Theft</i>	1.000	1.064	0.983
<i>GTA</i>	0.716***	0.660***	0.647***

Note: Group 1 is the reference category; models also controlled for: total population, median age, percent ages 15-24, percent households rented, and the number of crimes in 2009

*p<.05, **p<.01, ***p<.001



Discussion

- Group trajectories impact crime
 - Groups with increasing/high ethnic heterogeneity = less crime
 - The effect of group membership was robust
- Neighborhood processes are dynamic
- Additional steps
 - Analyze the trajectories of other important neighborhood changes
 - Use other race/ethnicity measures to modify group membership



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