Dividing Lines: Racial Segregation across Local Government Boundaries

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Racial Segregation in Urban US

- Segregation is an enduring social ill in US cities
- Large literature shows negative effects of segregation on opportunity
  - Education Guryan (2004), Card and Rothstein (2007), Billings et al. (2014)
  - Social mobility Chetty et al. (2014), Bergman et al. (2019)

- Segregation takes place at different scales
  - Neighborhoods are segregated within cities
  - Cities are segregated within metropolitan areas

- US metro areas (N = 380) are fractured into dozens of local jurisdictions
  - school districts (N $\approx$ 13,000) $\rightarrow$ public education, school attendance boundaries
  - municipalities (N $\approx$ 19,000) $\rightarrow$ land-use zoning, policing, fire, housing services

- Goal of this paper: comprehensively describe empirical link between **local government boundaries and racial segregation**

The Economics of Urban Segregation

- What determines racial segregation in urban areas?
- **Canonical literature** focuses on household preference heterogeneity and its impact on residential sorting Tiebout, (1956); Schelling (1972)
  - Sorting $\rightarrow$ variation in "willingness to pay" for high-quality public goods Black, (1999); Bayer et al., (2007); Boustan, (2012)
  - Role of government $\rightarrow$ limited to "aggregator of preferences" Epple et al., (2001); Calabrese et al., (2012)
- **An emerging literature** highlights direct role of government and policy in perpetuating urban segregation
  - Land-use zoning decisions driven by racial discrimination Shertzer et al. (2016), Akbar et al. (2019), Troesken et al. (2019), Sahn (2021)
  - Federal redlining affected long-term trajectory of cities Aaronson et al. (2020), Fishback et al. (2021), Mazumder et al. (2021)
- New model: local governments may be controlled by factions serving their own interests, potentially exacerbating inequality

History of School Districts in the US

- Enormous drop in number of school districts since early 20th century:
  - At turn of 20th century there were over 117,000 school districts in the US
  - By 1980 still 15,000 school districts, today more like 13,000 Goldin and Katz (2003)
- Empirical literature on era of consolidation: Nelson (1990); Kenny and Schmidt (1994); Brasington (1999); Gordon and Knight (2008, 2009)
  - Upshot: District mergers were strategic, outcome of a bilateral negotiation process between neighboring jurisdictions
  - Variation in merge likelihoods can be explained by demographics, homogeneous jurisdictions more likely to merge
- District secessions also important and strategic Lutz (2011); Collins and Kaplan (2017)

Research Questions and Data

- Research questions:
  1. How is urban segregation empirically related to local government boundary lines?
  2. How has this relationship changed over time for different racial/ethnic groups?
  3. Is between jurisdiction segregation explained by proximity to neighborhood amenities or by public good provision?
- Data:
  1. Census block GIS data and population counts by race: 1990, 2000, 2010, 2020
  2. GIS data on municipal, county, school district, and school attendance boundaries
     - Census TIGER/Line shapefiles for counties, districts, and cities
     - Precisely data services for school attendance zones (SAZs)

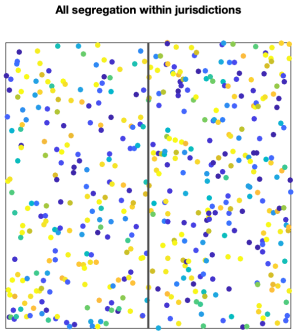
Empirical Approach

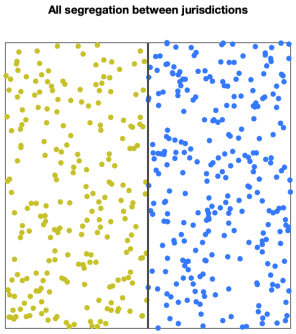
- Measuring segregation: the variance ratio index
  - Index measures relative likelihood of racial isolation
  - Intuitive interpretation: ”how predictive is my race is of the race of my peers”?
- We measure the segregation of census blocks at the scale of:
  - Local governments (smaller): cities, districts, counties
  - Metropolitan areas (larger)
- Decomposition of metro area segregation
  - Based on a counterfactual thought exercise:

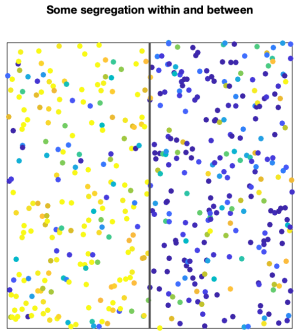
  → How much segregation would prevail in a metro area

  → If we perfectly integrated within local governments, but not between?

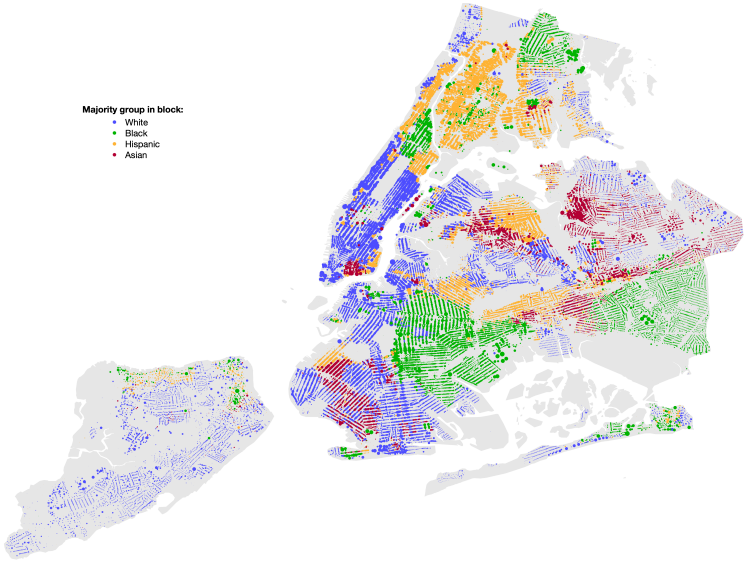
Simulation: Segregation Within and Between Jurisdictions

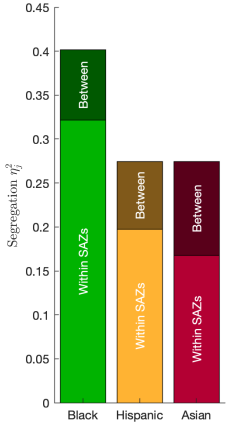




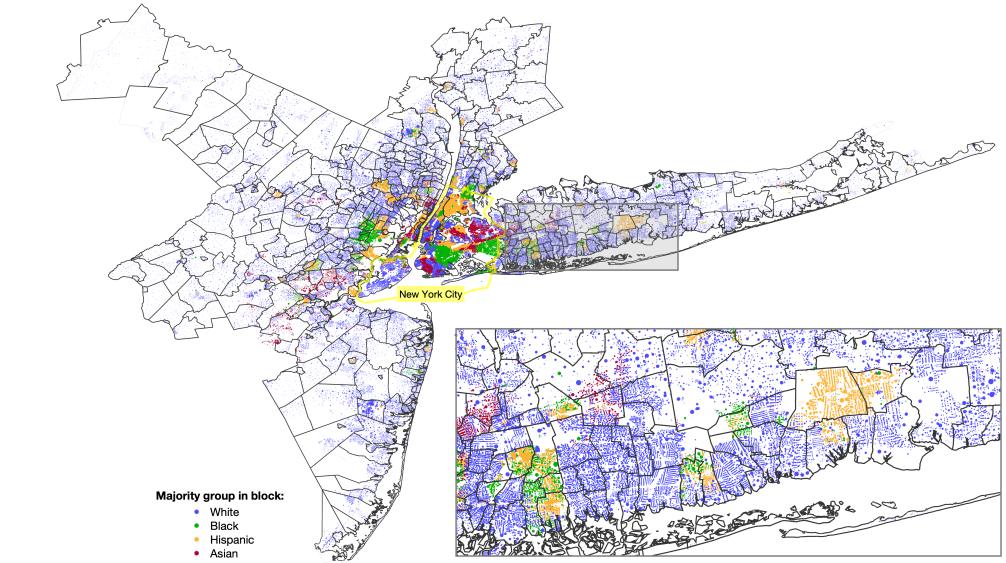


Segregation in New York City

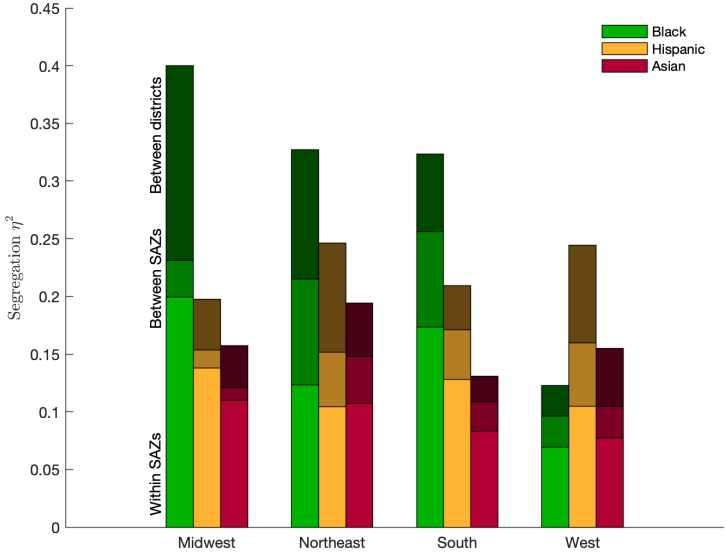




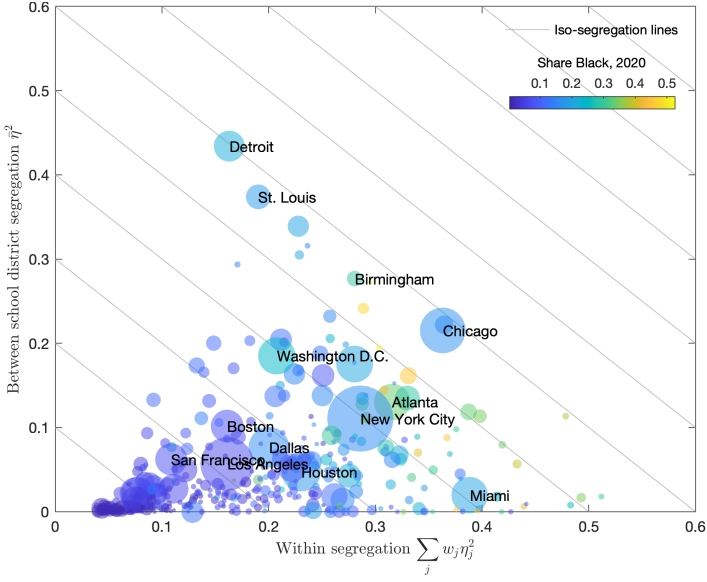
School Districts and Segregation in New York Metro



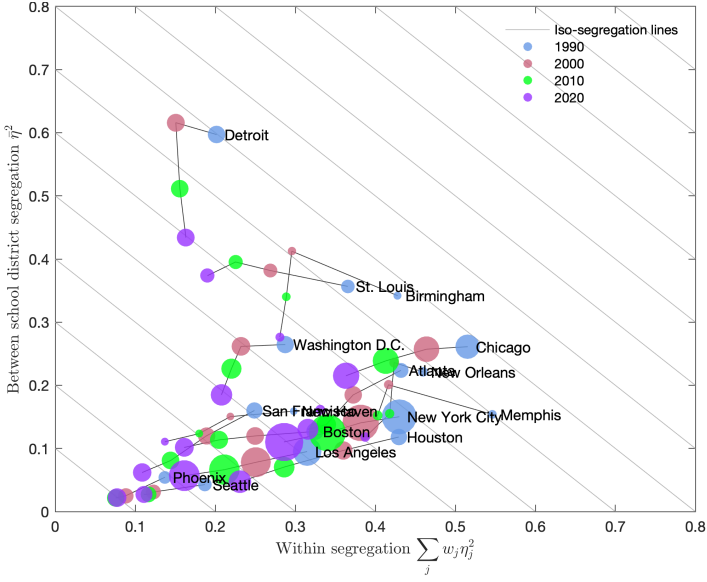
Decomposing Segregation across US Regions



Between versus Within Segregation: Black Households



Evolution of Black Segregation in Selected Cities



Demographic Discontinuities at Local Government Boundaries

- Decomposition findings:
  1. Between-jurisdiction sorting still a substantial driver of segregation today
  2. Has changed little since 1990
  3. Substantial heterogeneity across metros
- What are the mechanisms?
  - One potential driver of segregation is the geographic location of living amenities
    - Some people just want to live in specific neighborhoods
    - Can between-segregation be simply an artifact of sorting on such amenities?
  - Or does it arise directly due to differences in public good provision?
- Spatial regression discontinuity (RD) methods can help us dig deeper
  - Disentangle proximity to amenities from public good provision

Household Sorting Model - Summary

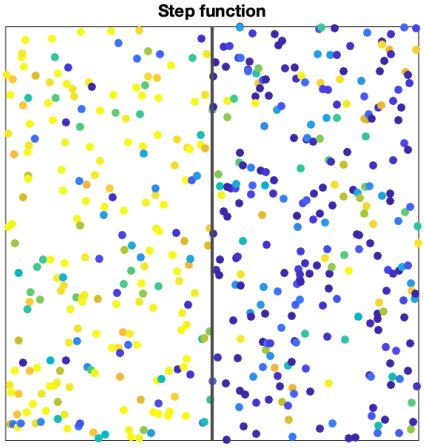
- Why may demographic discontinuities arise at local govt. boundaries?
- We built a neighborhood sorting model with the following features:
  1. Two populations $t \in \{\text{M,W}\}$ drawing from income endowment distribution $F_t(y)$
  2. One-dimensional neighborhood space $\ell \in [0, 1]$ with jurisdictional boundary at 0.5 and corresponding jump in public good quality x
  3. Strictly increasing amenities $a(\ell)$ over space
  4. Household valuation of locations: $v_t(\ell) = \lambda_t x_j + a(\ell)$
  5. One housing unit per household. Housing market clearing condition must hold
- Households solve:

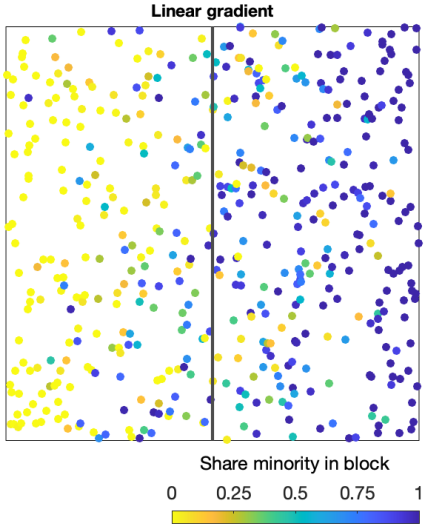
$$\begin{aligned} &\max_{c,\ell} \log c + \phi v_t(\ell) \\ &\text{s.t. } c + (1 + \pi_t)p(\ell) \leq y \end{aligned} \tag{1}$$

Household Sorting Model - Summary

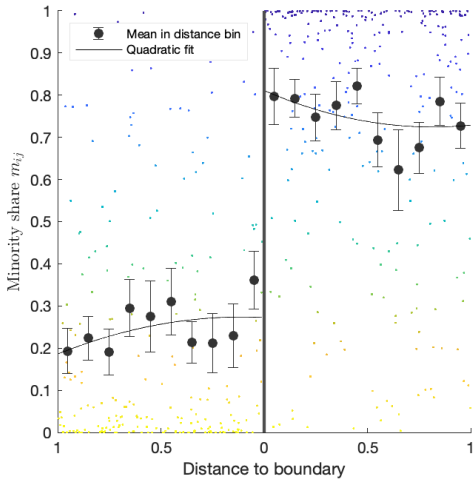
- Key model prediction: racial discontinuities at boundaries arise iff one of the following holds
  1. Preference heterogeneity: minorities value public goods less than White households
  2. Discrimination in public good provision: minorities receive less public good quality within some jurisdictions
  3. Discrimination in public good pricing: minorities have to pay more for one unit of public good in some jurisdictions
- Mechanisms that cannot explain racial discontinuities at boundaries
  1. Neighborhood amenities
  2. Sorting on the basis of income
  3. Preference for living nearby ”own-group” types

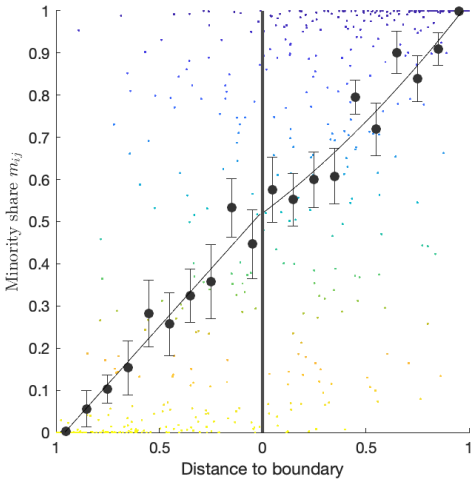
Simulation: Areas with the Same Between/Within Segregation



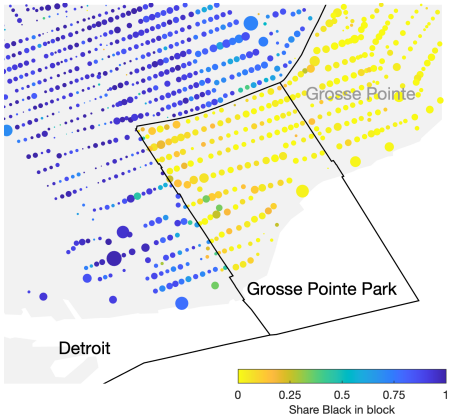


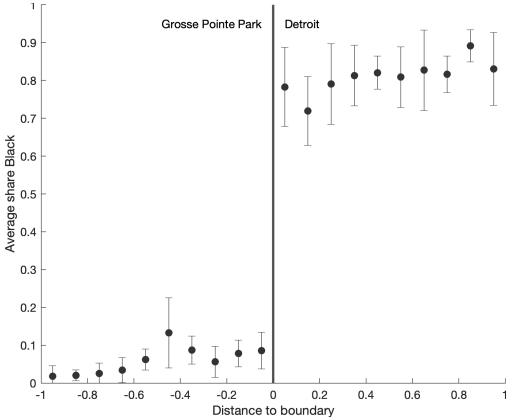
Simulation: Smooth Gradient or Discontinuity at the Boundary?



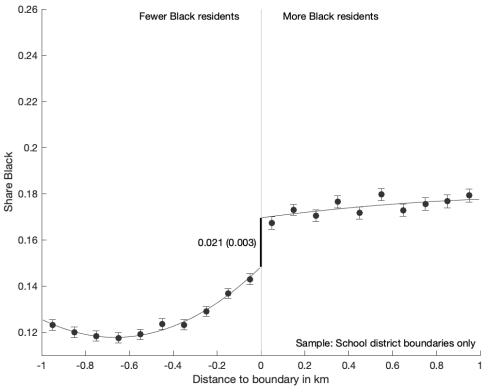


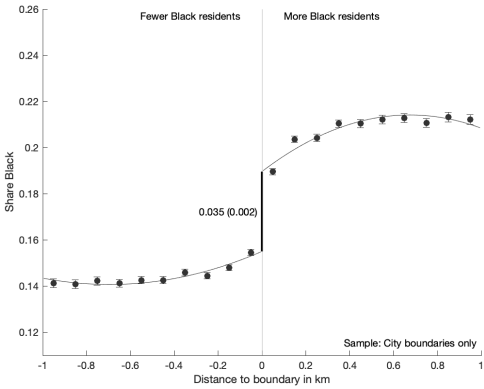
Example: Detroit and Grosse Pointe Park, Michigan



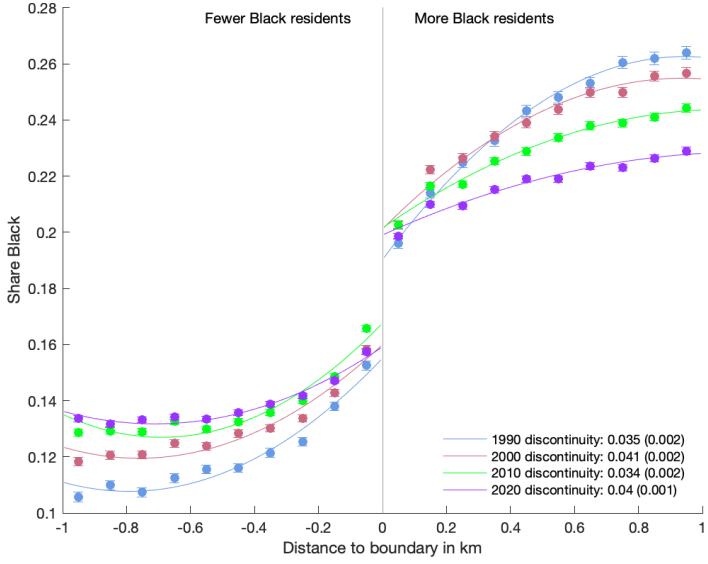


National Average Discontinuity: Cities and School Districts

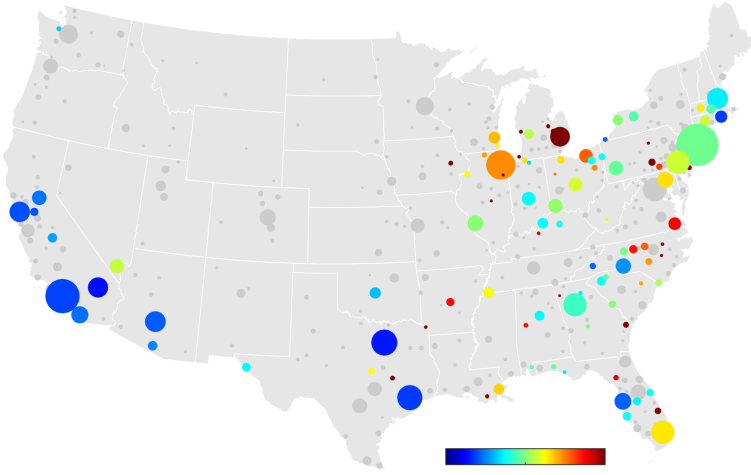




National Average Local Government Discontinuity Over Time



Geographic Heterogeneity in Loc. Gov. Boundary Dicontinuities



Black-White Student Achievement Gap and Segregation Components

	(1)	(2)	(3)	(4)	(5)	(6)
Total segregation	-0.41***	-0.23***	-0.19***	-0.60***	-0.44***	-0.41***
	(0.05)	(0.07)	(0.07)	(0.11)	(0.09)	(0.09)
Share of seg. between districts		-0.31***	-0.29***		-0.25***	-0.23***
		(0.07)	(0.07)		(0.07)	(0.07)
1(significant spatial RD estimate)			-0.04***			-0.03***
			(0.02)			(0.01)
Covariates				X	X	X
R^2	0.31	0.44	0.48	0.53	0.60	0.61
N	379	379	379	375	375	375

Notes: Robust standard errors reported in parenthesis. Metropolitan area observations weighted by population. Covariates include: the gap in average free or reduced price (FRL) lunch rates between Black and White students, population share Black, share White, and indicators for 4 major Census regions (omitting the South).

Implications

- Local government boundaries explain a large share of variation in residential demographics and segregation
- Additional credence to emerging literature on institutional drivers of inequality
- Key policy question: Is changing boundaries a potential avenue for lowering inequality and segregation?
  - Cannot pin down counterfactual with this type of evidence
  - Both the location of residents and the positioning of boundaries are endogenous
- Work in progress:
  1. Boundaries $\rightarrow$ sorting: SAZ boundary changes 2011-2019 & Zillow data
  2. Sorting $\rightarrow$ boundaries: Suburban municipal incorporations after Great Migration