Overlapping Jurisdictions & Residential Segregation by Race

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Do overlapping local governments further segregate metropolitan areas?

Reasons for segregation

1. Individual preferences
2. Income sorting
3. Local government policy

Local government policy → segregation

- Following Trounstine (2018, 2020), residents use restrictive land use regulations to limit housing production
- They do so to,
  - Maximize house prices
  - Minimize tax burdens
  - Ensure high quality public services
- This has the effect of reinforcing segregation

Overlapping governments

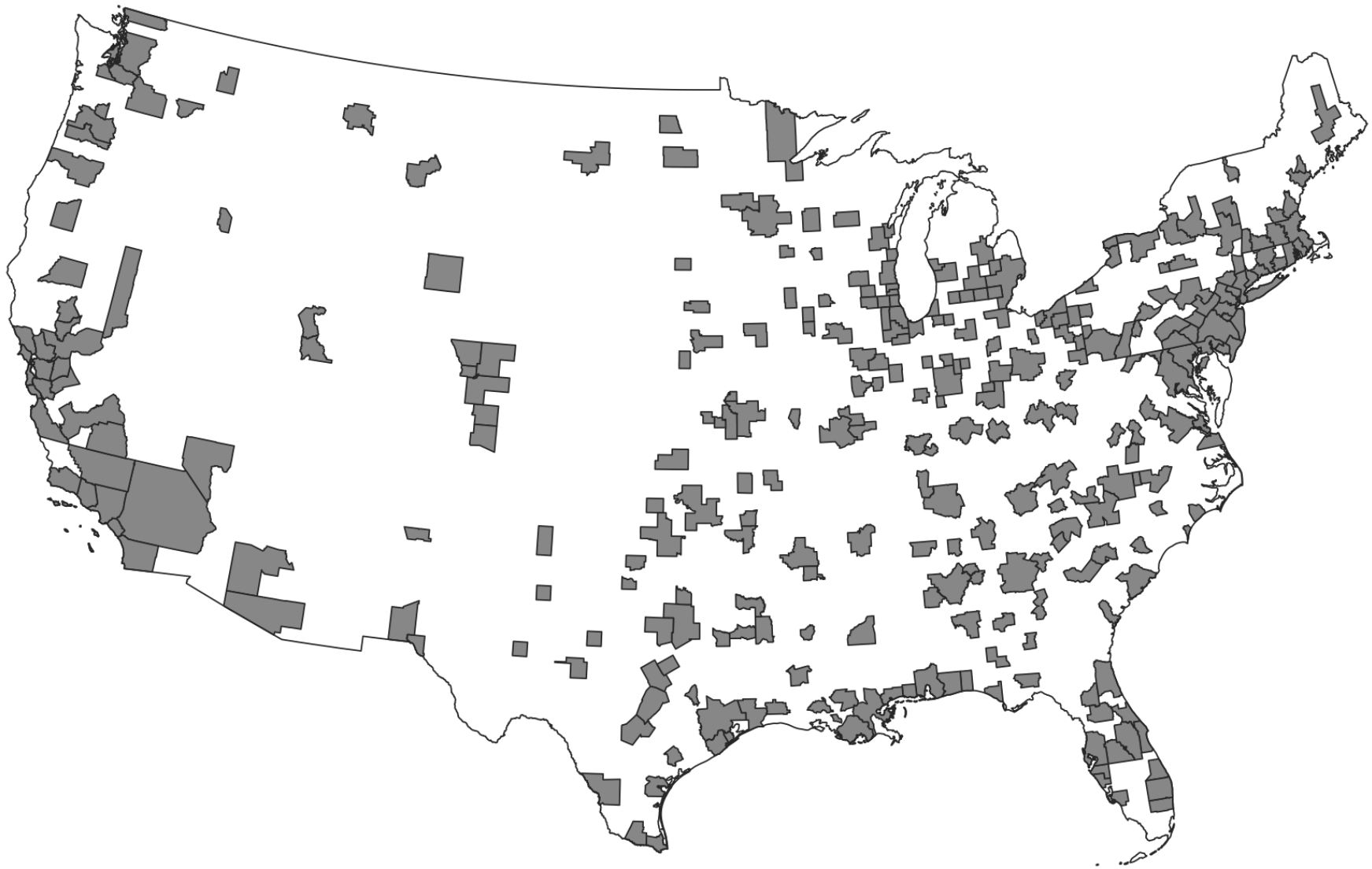
- Commonly, special districts
  - Administratively and fiscally independent from other local governments
  - Typically provide a single service (*specialization*)
  - Can choose their boundaries (*territorial flexibility*)
- Measured as the ratio of special districts to non-overlapping general-purpose local governments

How do overlapping governments help segregate metropolitan areas?

- In light of "imperfectly restrictive" land use regulations, special districts can achieve much of what municipalities can
  - Specialized service provision can provide high quality public services
  - Such public services capitalized positively into house prices
  - By limiting service provision to within (homogenous) district, between parcel subsidies are minimized, keeping tax burden low
- Overlapping governments can mimic restrictive land use regulations
- Conditioned on residents having the knowledge to create special districts
  - Patterns of political involvement (white, male, homeowners) suggest the knowledge exists

Sample construction

- Period: Census years, 1980 - 2010
- Units: SMSAs (1983 definition)
  - 309 PMSAs & NECTAs
  - To ensure outward growth of MSA does not influence results
- Data: Census of Population & Housing; Census of Governments
  - Tract level data normalized to 2010 definitions using the Longitudinal Tract Database



Measuring segregation

Theil (1972) index based on entropy,

$$E = \sum_{r=1}^{R} (\pi_r) \ln \frac{1}{\pi_r}$$

Where π_r is the proportion of racial group r

Segregation is measured as the deviation of E from a larger geographic aggregation of E, weighted by population.

$$H_{c\_t} = \sum_{t=1}^{T} \frac{P_t}{P_c} \left(\frac{E_c - E_t}{E_c} \right)$$

$$H_{m\_c} = \sum_{c=1}^{C} \frac{P_c}{P_m} \left(\frac{E_m - E_c}{E_m} \right)$$

Measuring segregation

As explained by Trounstine (2018), Theil's H index, calculated as the deviation of neighborhood diversity from metropolitan diversity, can be decomposed into the deviation between cities (H_{m_c}) and a weighted average of within-city deviations.

$$H_{m\_t} = \sum_{t=1}^{T} \frac{P_t}{P_m} \left(\frac{E_m - E_t}{E_m} \right) = H_{m\_c} + \sum_{c=1}^{C} \left(\frac{P_c}{P_m} \right) \left(\frac{E_c}{E_m} \right) H_{c\_t}$$

Overall (H_{m_t}) and between-city (H_{m_c}) segregation form the two dependent variables for this analysis.

Identification strategy

$$SEG_{it} = \beta_{ij} + \beta_2 DEMO_{it} + \beta_3 RHET_{it} + \beta_4 DENSITY_{it} + \beta_5 GROW_{it} + \beta_6 \widehat{OVERLAP}_{it} + \phi_i + \tau_t + \varepsilon_{it}$$

- $DEMO_{it}$ = Black-white demographic characteristics
- $RHET_{it}$ = Measures of racial heterogeneity
- $DENSITY_{it}$ = SMSA population density
- $GROW_{it}$ = Annualized population growth
- $\widehat{OVERLAP}_{it}$ = Predicted jurisdictional overlap
- ϕ = state FE, τ = common time effect, ε = typical error term

Instruments

Concern that segregation leads to more overlapping governments.

Exploit exogenous variation in local geography to instrument for overlapping governments

1. Mean slope (degree from horizontal)
2. Miles of river segments (of segments at least 3.5 miles) Both sourced from the USGS

$$OVERLAP_{it} = \beta_{ij} + \beta_2 DEMO_{it} + \beta_3 RHET_{it} + \beta_4 DENSITY_{it} + \beta_5 GROW_{it} + \beta_6 SLOPE_i + \beta_7 RIVERS_i + \phi_i + \tau_t + \varepsilon_{it}$$

Descriptive statistics

Variable	Mean	St. Dev	Min.	Max.
Segregation measures				
Metrowide segregation	0.249	0.149	0.011	0.766
Between city segregation	0.103	0.092	0.000	0.746
Overlapping governments				
Jurisdictional overlap	2.372	3.103	0.000	25.600
Instruments				
Average slope	3.819	3.773	0.036	21.332
Number of river miles	403.119	332.103	8.354	2160.268

Descriptive statistics

Variable	Mean	St. Dev	Min.	Max.
Racial heterogeneity measures				
Racial Herfendahl index	0.328	0.165	0.022	0.723
BW difference, percent younger than 15	0.082	0.036	0.000	0.298
BW difference, percent older than 60	0.088	0.047	0.000	0.394
BW difference, percent in poverty	0.194	0.074	0.003	0.803
BW demographic characteristics				
Percent younger than 15	0.210	0.029	0.066	0.341
Percent older than 60	0.179	0.046	0.048	0.426
Percent in poverty	0.121	0.042	0.040	0.397
Other MSA controls				
Population growth rate	0.011	0.013	-0.131	0.069
Population density	437.473	850.102	11.462	13776.385

Findings

	Metrowide segregation	Between city segregation
Overlapping governments		
Jurisdictional overlap	0.357**	0.308
	0.109	0.162
Model summary		
F-stat. for instrument significance	13.840**	13.840**
N	309	309
T	4	4

Note: Excluded instruments: average slope and number of river miles. Significance levels: ** p<0.01, * p<0.05. All coefficients reported as elasticites at the mean.

Controls

	Metrowide segregation		Between city segregation	
	Elasticity	**S.E.**	**Elasticity**	**S.E.**
Racial heterogeneity measures				
Racial Herfendahl index	0.763**	0.057	0.760**	0.084
BW difference, percent younger than 15	0.092*	0.045	0.071	0.067
BW difference, percent older than 60	-0.174**	0.049	-0.209**	0.073
BW difference, percent in poverty	0.218**	0.049	0.157*	0.073
BW demographic characteristics				
Percent younger than 15	0.013	0.178	0.500	0.265
Percent older than 60	0.619**	0.132	0.906**	0.197
Percent in poverty	-0.281**	0.06	-0.450**	0.089
Other MSA controls				
Population growth rate	-0.040	0.021	-0.051	0.032
Population density	0.032**	0.01	0.037*	0.015
State FE	Yes		Yes	
Model summary				
F-stat. for instrument significance	13.840**		13.840**	
N	309		309	
T	4		4	

Discussion

- Increasing numbers of overlapping local governments leads to an increase in Black-white racial segregation
  - A ten percent increase in overlap → 3.6 percent increase in metropolitan-wide segregation
  - The results appear driven by within-city changes in segregation (between city measures show no association)
- While municipalities undoubtedly drive some portion of racial segregation through restrictive land use regulations, overlapping governments can accomplish similar results

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Thanks!

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