# Housing Market Channels of Segregation

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New Evidence on the Determinants of Neighborhood Segregation and Inequality
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# Segregation is bad.

## For children

Cutler and Glaeser (1997); Card and Rothstein (2007)

## For adults

Kain (1968); Wilson (1987); Cutler and Glaeser (1997); Ananat (2011); Chetty et al. (2014); Chetty and Hendren (2018)

# But, researchers are pessimistic about policy.

*...[T]he appropriate means of reducing school segregation that results from residential segregation is to reduce the residential segregation itself... But this means a slower process of reducing school segregation, and it means that the schools will never be racially balanced.*

*–Coleman (1975)*

*[I]t may be that widespread social changes in attitudes toward minorities and housing choices will be required before equality of outcomes can finally be achieved.*

*–Cutler and Glaeser (1997)*

# Competing (?) explanations for segregation's genesis

Cutler, Glaeser, and Vigdor (1999)

1. *Market forces*: Decentralized neighborhood choices
   - White flight following school desegregation

     Coleman, Kelly, and Moore (1975); Reber (2005)
   - White flight following Black migration

     Boustan (2010); Shertzer and Walsh (2016)
   - Neighborhood tipping

     Card, Mas, and Rothstein (2008)

2. *Non-market forces*: Restrictions on Black choice
   - De jure (e.g. restrictive covenants, racial zoning laws)

     Rothstein (2018); Bayor (1988); Bayor (1996)
   - De facto (e.g. threats, violence, steering)

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# Which was it?

**Most neighborhoods had essentially no Black people in 1930s**

Is this because they didn't want to live there? (market forces)

- Too expensive ("White flight")
- Preferences for Black communities
- Tastes for different amenities

Or were they excluded because of non-market forces?

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# This paper

**What**: Quantitative decomposition of contributions to segregation

- from Market forces
- from Non-market forces

**When**: 1930–1940

**Where**: 46 Major U.S. Cities

**Why**: Is racial segregation inevitable?

# **How**: Predicting Black choices absent constraints

How much are Black and White households willing to pay for more or less Black neighborhoods?

- **Step 1**: IV strategy using rural-to-urban migrant inflows

Do Black households value same amenities as White households?

- **Step 2**: Correlated Random Effects

Decomposition of segregation

- **Step 3**: Decomposition of the KL divergence using counterfactual demand

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# Roadmap for Today

A. Conceptual framework

B–E. Empirical analysis

# A. Conceptual Framework

# A. Essential ingredients of conceptual framework

**Objective**: Predicting Black choices absent non-market constraints

**(Market) demand relationship** Bayer, Ferreira, and McMillan (2007)

- *choice prob.* $\ln \pi_{rjt}$
- *price* $\ln P$
- *share of Black residents in the neighborhood* $s$
- *amenities* $\xi$

$$\ln \pi_{rjt} = -\theta_{rct} + \beta_r \ln P_{jt} + \gamma_r s_{jt} + \xi_{rjt} \qquad (*)$$

- **Constraints**: race-specific choice sets $\mathcal{J}_{rc} \subseteq \mathcal{J}_c^*$

**Decomposable measure of segregation**

$$KL_c\left(\pi_{Bct} || \pi_{Wct}\right) = \sum_{j \in \mathcal{J}_c^*} \pi_{Bjt} \ln \frac{\pi_{Bjt}}{\pi_{Wjt}} \qquad (**)$$

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# De jure and de facto restrictions on choice


Arthur Siegel. "Riot at the Sojourner Truth Homes." Detroit, MI, 1942.

Source: Library of Congress

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# B. Tradeoff between price and racial composition

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# Threats to estimating $\beta_r$ and $\gamma_r$ via OLS

$$\ln \pi_{rjt} = -\theta_{rct} + \boxed{\beta_r \ln P_{jt} + \gamma_r s_{jt}} + \xi_{rjt} \qquad (*)$$

$\xi_{rjt}$ is a nuisance parameter

**Problem 1**: unobserved quality differences

*e.g. better neighborhoods are more expensive neighborhoods*

**Problem 2**: upward sloping supply

*e.g. improving neighborhoods have higher house price growth*

**Problem 3**: endogenous social interactions Manski (1993)

*i.e. mechanical relationship between* $\ln \pi$ *and* $s$

# B. Solution: IV

**Part 1**: first differences

$$\Delta \ln \pi_{rj} = -\Delta\theta_{rc} + \boxed{\beta_r \Delta \ln P_j + \gamma_r \Delta s_j} + \Delta\xi_{rj}$$

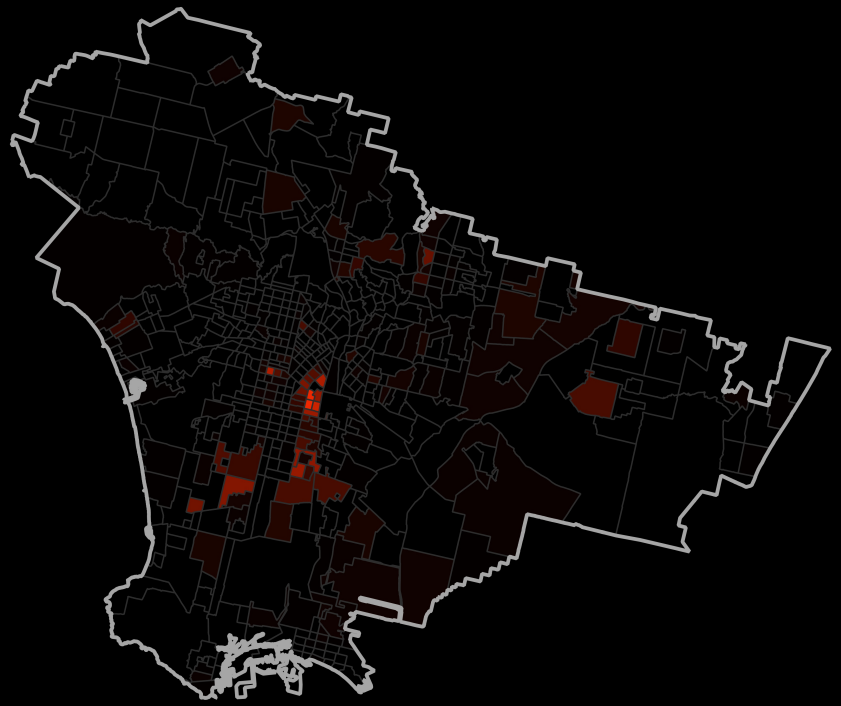
**Part 2**: instrumental variables

Ideal thought experiment:

- Random "drop" of black and white residents to neighborhoods
- Interpret: changes in choices reflect pref. for price and race

# Example: Los Angeles

Rural-to-Urban Migrant Flows from Texas and Oklahoma, 1935–1940



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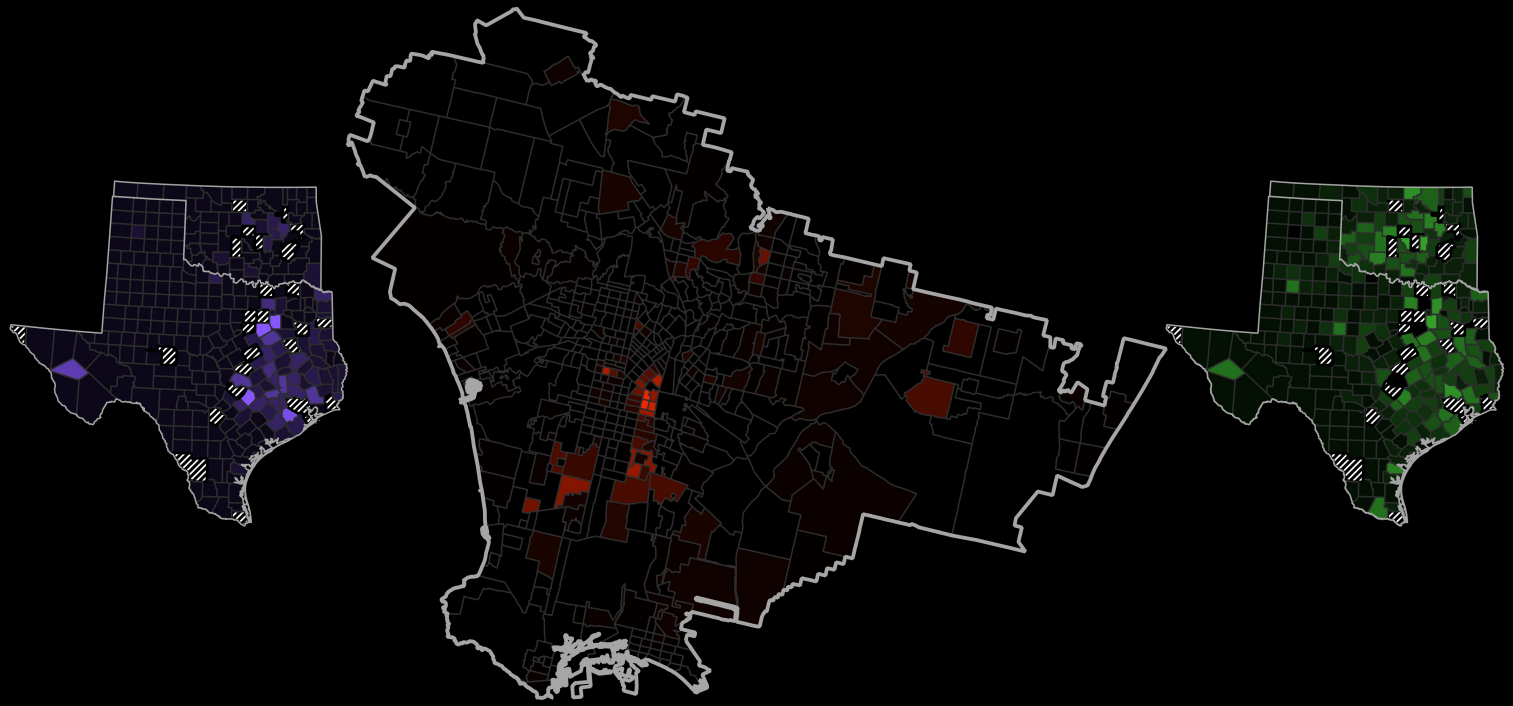

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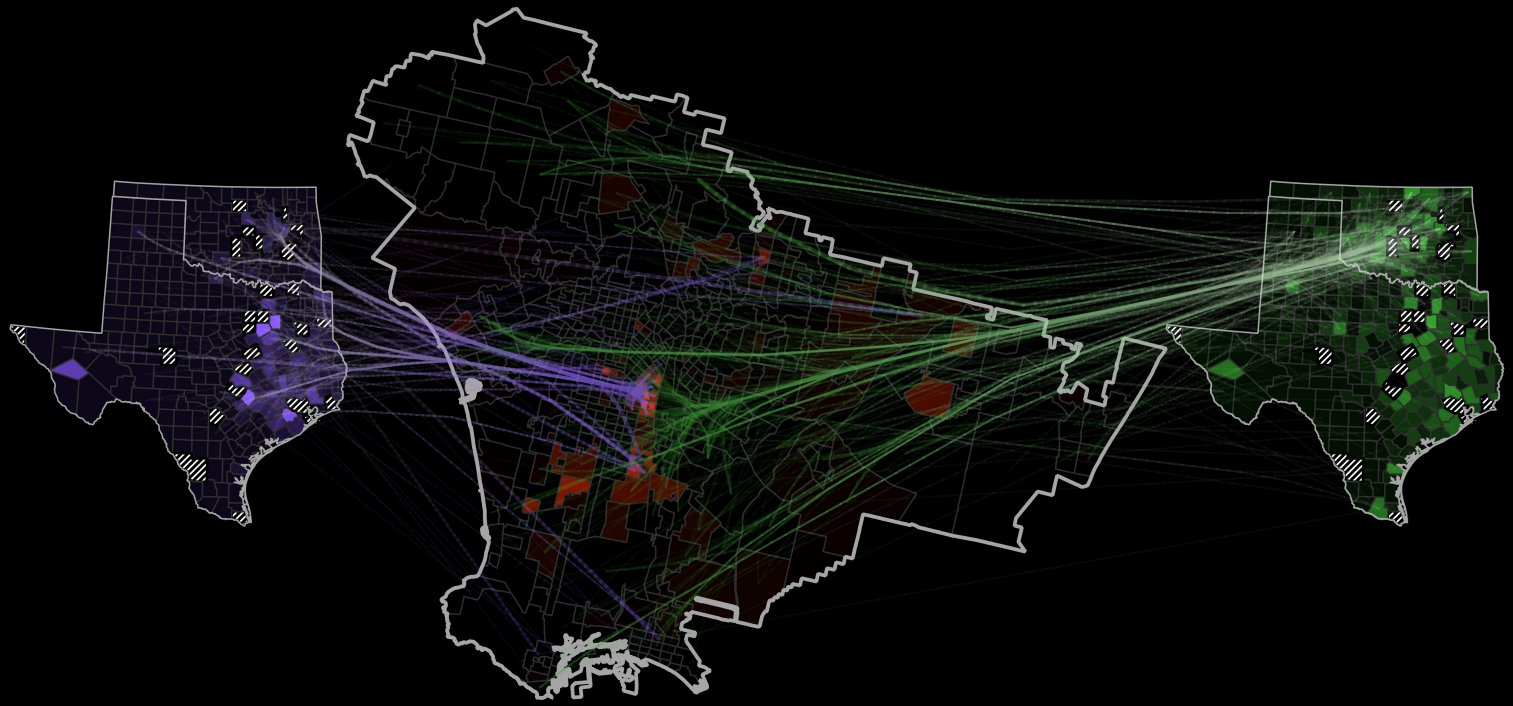

# Estimates of $\beta$ and $\gamma$

$$\Delta \ln \pi_{rj} = -\Delta\theta_{rc} + \boxed{\beta_r \Delta \ln P_j + \gamma_r \Delta s_j} + \Delta\xi_{rj}$$

(a) Black

| | (1) Low-skilled | (2) Higher-skilled |
|---|---|---|
| Log Housing Costs | -1.906 | -0.284 |
| | (0.553) | (0.452) |
| Black Share | -0.0113 | 0.350 |
| | (0.704) | (0.639) |
| Tracts | 1087 | 490 |
| Semi-elasticity | -0.00593 | 1.230 |
| | (0.368) | (4.092) |

(b) White

| | (1) Low-skilled | (2) Higher-skilled |
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| Log Housing Costs | -4.109 | -2.743 |
| | (1.026) | (0.828) |
| Black Share | -3.982 | -2.134 |
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| Tracts | 5750 | 6015 |
| Semi-elasticity | -0.969 | -0.778 |
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# What do changes tell us about levels?

**Summary**: Analysis of neighborhood *changes*

- Variation: rural migrants perturb equilibrium
- Interpretation: Whites *willing* to pay to avoid Black neighbors.

**Did Whites have to pay to avoid Black neighbors?**

**Next**: Analysis of segregated equilibrium (*levels*)

- How do you predict Black demand?

# C. How households value local amenities

$$\ln \pi_{rjt} = -\theta_{rct} + \beta_r \ln P_{jt} + \gamma_r s_{jt} + \boxed{\xi_{rjt}} \qquad (*)$$

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# Residual determinants of neighborhood demand

## 2/3 Ingredients

$$\ln \pi_{rjt} = -\theta_{rct} + \beta_r \ln P_{jt} + \gamma_r s_{jt} + \boxed{\xi_{rjt}} \qquad (*)$$

$\xi_{rjt}$ is a ~~nuisance parameter~~ **the object of interest**

**Problems**:

1. $\xi_{rjt}$ is not directly measurable (doesn't exist)
2. Black demand not measured in White neighborhoods
3. Few observable $X$'s

# C. Solution: Correlated Random Effects

$$\ln \pi_{rjt} = -\theta_{rct} + \beta_r \ln P_{jt} + \gamma_r s_{jt} + \boxed{\xi_{rjt}} \qquad (*)$$

**Key**: $\xi_{rjt}$ is <u>different</u> preferences for <u>same</u> amenities

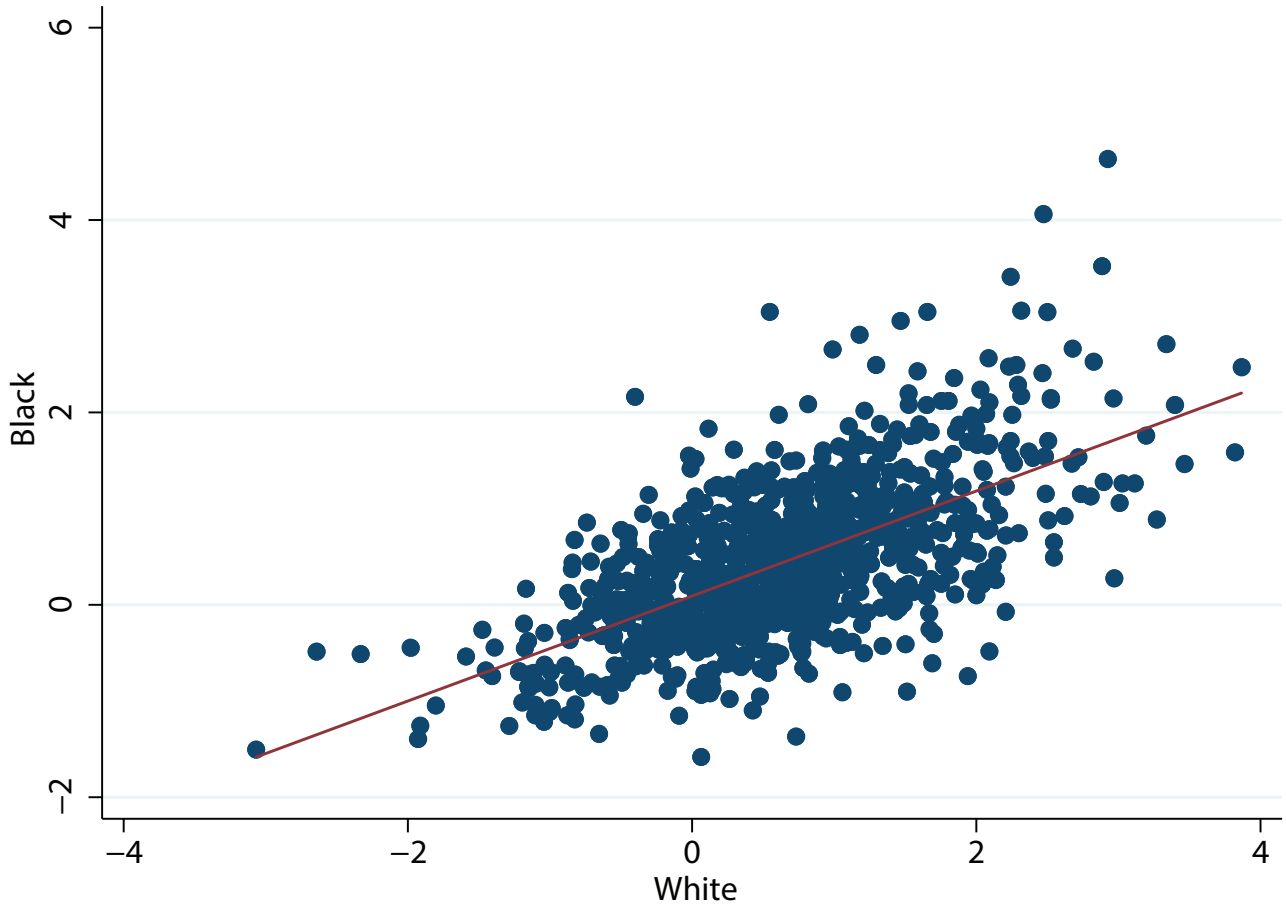
**Strategy**: Use White demand to predict Black demand

- *Measure* (cross-decadal) correlation in mixed neighborhoods
- *Predict* (out-of-sample) in White neighborhoods

**Question**: Did amenities drive segregation?

# Did amenities drive segregation?

No.



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1. Construct counterfactual Black demand *without constraints*

**Did Whites have to pay to avoid Black neighbors?**

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- If White neighborhoods not $\implies$ more constraints

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1. IV
2. CRE
3. Counterfactual choice sets $\mathcal{J}_{Bc}^{CF} = \mathcal{J}_c^*$

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## 2. Measure constraints

KL divergence: avg. distance between Black and White choices

**Split the difference**:

$$KL_c = \sum_{j \in \mathcal{J}_c^*} \pi_{Bjt} \left[ \underbrace{\left( \ln \pi_{Bjt} - \widehat{\ln \pi_{Bjt}^{CF}} \right)}_{\text{constraints}} + \underbrace{\left( \widehat{\ln \pi_{Bjt}^{CF}} - \ln \pi_{Wjt} \right)}_{\text{preferences}} \right]$$

**Two comparisons**:

1. Constraints: actual vs. CF Black demand
2. Preferences: CF Black demand vs. actual White demand

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# D. Decomposing segregation

| | (1) Overall | (2) Constraints | (3) Preferences | (4) % Constraint |
|---|---|---|---|---|
| Washington, DC | 0.96 | 0.29 | 0.68 | 29.8% |
| Baltimore, MD | 2.08 | 0.65 | 1.43 | 31.2% |
| **Midwest** | | | | |
| Chicago, IL | 5.26 | 1.46 | 3.80 | 27.8% |
| Cincinnati, OH | 2.78 | 0.74 | 2.04 | 26.5% |
| Cleveland, OH | 3.53 | 0.96 | 2.57 | 27.3% |
| Detroit, MI | 2.79 | 1.15 | 1.65 | 41.1% |
| **Northeast** | | | | |
| New York, NY | 2.39 | 1.88 | 0.51 | 78.5% |
| Philadelphia, PA | 1.41 | 0.91 | 0.50 | 64.6% |
| **South** | | | | |
| Atlanta, GA | 2.69 | 1.53 | 1.17 | 56.7% |
| Birmingham, AL | 0.99 | 0.13 | 0.86 | 13.1% |
| Nashville, TN | 1.19 | 0.29 | 0.90 | 24.5% |
| New Orleans, LA | 1.29 | 0.31 | 0.98 | 24.3% |
| Savannah, GA | 1.46 | 0.32 | 1.15 | 21.6% |
| Avg., All Cities | 2.24 | 1.10 | 1.14 | 49.1% |
| Wgt. Avg., All Cities | 2.19 | 0.98 | 1.21 | 44.5% |
| Wgt. Avg., Cities w/ Black Pop $>$ 50k | 2.05 | 0.97 | 1.25 | 43.6% |

# D. Decomposing segregation

| | (1) Overall | (2) Constraints | (3) Preferences | (4) % Constraint |
|---|---|---|---|---|
| Washington, DC | 0.96 | 0.29 | 0.68 | 29.8% |
| Baltimore, MD | 2.08 | 0.65 | 1.43 | 31.2% |
| **Midwest** | | | | |
| Chicago, IL | 5.26 | 1.46 | 3.80 | 27.8% |
| Cincinnati, OH | 2.78 | 0.74 | 2.04 | 26.5% |
| Cleveland, OH | 3.53 | 0.96 | 2.57 | 27.3% |
| Detroit, MI | 2.79 | 1.15 | 1.65 | 41.1% |
| **Northeast** | | | | |
| New York, NY | 2.39 | 1.88 | 0.51 | 78.5% |
| Philadelphia, PA | 1.41 | 0.91 | 0.50 | 64.6% |
| **South** | | | | |
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# Conclusion

$$\ln \pi_{rjt} = -\theta_{rct} + \beta_r \ln P_{jt} + \gamma_r s_{jt} + \xi_{rjt} \qquad (*)$$

$$KL_c\left(\boldsymbol{\pi}_{Bct} || \boldsymbol{\pi}_{Wct}\right) = \sum_{j \in \mathcal{J}_c^*} \pi_{Bjt} \ln \frac{\pi_{Bjt}}{\pi_{Wjt}} \qquad (**)$$

How much are Black/White households WTP for more/less Black neighborhoods?

- **Step 1**: IV strategy using rural-to-urban migrant inflows
  - Whites WTP to avoid Black neighbors

Do Black households value same amenities as White households?

- **Step 2**: Correlated Random Effects
  - Amenities do not drive segregation

Decomposition of segregation

- **Step 3**: Decomposition of the KL divergence using counterfactual demand
  - Half of segregation driven by constraints

So what?

# Is segregation inevitable?

*...[T]he appropriate means of reducing school segregation that results from residential segregation is to reduce the residential segregation itself... But this means a slower process of reducing school segregation, and it means that the schools will never be racially balanced.*

*–Coleman (1975)*

*[I]t may be that widespread social changes in attitudes toward minorities and housing choices will be required before equality of outcomes can finally be achieved.*

*–Cutler and Glaeser (1997)*

# E. Persistence

Racial preferences imply multiple equilibria

**Strategy**:

1. Regress segregation (1960–2010) on components (1940)

$$KL_{ct} = c_t + d_{1t}\,Constraints_{c,1940} + d_{2t}\,Preferences_{c,1940} + u_{ct}$$

2. Plot coefficients.

# The long-term consequences of constraints