THE EFFECTS OF RESIDENTIAL SEGREGATION DURING CHILDHOOD ON LIFE CHANCES: CAUSAL EVIDENCE USING HISTORICAL RAILROAD TRACK CONFIGURATIONS

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Keywords: segregation, intergenerational mobility, neighborhood/school quality; racial inequality

Abstract:

Human capital accumulation may depend on the neighborhood in which one grows up through a variety of channels, including access to school resources, health and social service funding, neighborhood crime, peer and role model effects, proximity to a chemical dumping ground or related environmental hazards, and connectedness to job networks and informal sources of support. This paper provides new causal estimates of the effects of racial residential segregation during childhood on subsequent adult attainment outcomes. I account for the potential endogeneity of segregation and neighborhood location choice using instrumental variables based on 19th Century railroad track configurations, historical migration patterns, political factors, and topographical features. Following Ananat (2011), it is shown that cities that were subdivided by railroads into a greater number of physically-defined neighborhoods became significantly more segregated after the Great Migration of African-Americans to northern and western cities. To examine the consequences of segregation during childhood, this study analyzes the life trajectories of children born since 1950 and followed through 2009. Data from the Panel Study of Income Dynamics (PSID) spanning four decades are linked with information on neighborhood attributes and school quality resources that prevailed at the time these children were growing up. Results from 2SLS/IV models demonstrate that, for blacks, the level of racial residential segregation during childhood negatively impacts subsequent educational attainment, reduces the likelihood of high school graduation, increases the probability of incarceration, reduces adult earnings and the likelihood of intergenerational mobility, increases the annual incidence of poverty in adulthood, and leads to worse health status in adulthood; segregation effects for whites were not statistically significant across each of these outcomes but the point estimates were in the opposite direction of the corresponding estimates for blacks. The results are consistent with prior research that has found that increased segregation leads to more inequality in spending across districts of the same MSA, thus worsening the relative position of poorer districts.

* I wish to thank Elizabeth Oltmans Ananat for sharing data on 19th century railroad track configurations, and the PSID staff for access to the confidential restricted-use PSID geocode data. This work benefited from comments received from seminar participants at Columbia University and the University of Chicago.

The Effects of Residential Segregation during Childhood on Life Chances:

Causal Evidence from Historical Railroad Track Configurations

Univ of Chicago, Inequality Working Group Conference on Intergenerational Mobility

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Segregation (multi-racial dissimilarity index), continental United States metropolitan statistical areas

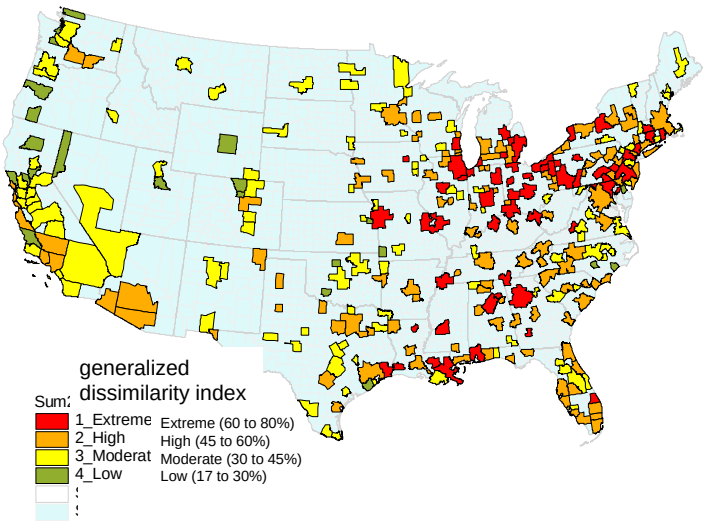


Table 1. Metropolitan Segregation* 1980-2000			
	1980	1990	2000
Black with Whites	73.8	68.8	65.0
Hispanic with Whites	50.7	50.6	51.5
Asian with Whites	41.2	42.0	42.1

Census, 2000

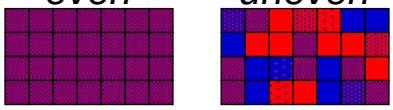
* Index of dissimilarity

Why Human Capital may be influenced by child neighborhood?

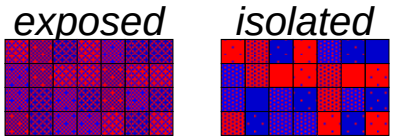
- Access to school resources
- Peer & role model effects
- Neighborhood crime
- Health & social service provision
- Environmental hazards
- Connections to job networks
- Informal sources of support

Dimensions of Segregation

- Uneveness
  - Most common measure
  - Dissimilarity Index



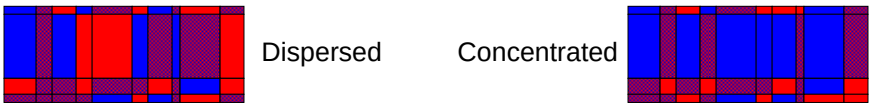
- Isolation / Exposure
  - Probability of "interaction" with same or majority racial group
  - Good measure of segregation experience



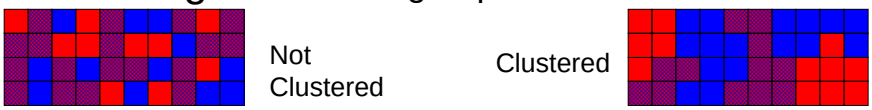
- *Neighborhood racial composition*
  - *often used as (inappropriate) surrogate*

"Spatial" Dimensions of Segregation

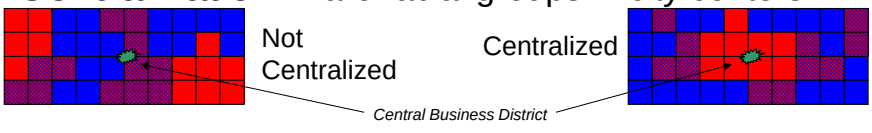
- Concentration- density of racial group in metro area



- Clustering – are racial groups in "ethnic enclaves?'



- Centralization – are racial groups in city centers?



Challenges in Estimating Neighborhood Effects

- Neighborhood variables may capture unmeasured aspects of family background
- Residential location patterns reflect, in part, sorting of preferences for neighborhood amenities
- Neighborhood quality difficult to measure
  - Choice of factors often driven by available data, which are limited
  - Data limitations require "neighborhood" to be defined as large, diverse area

Research Design

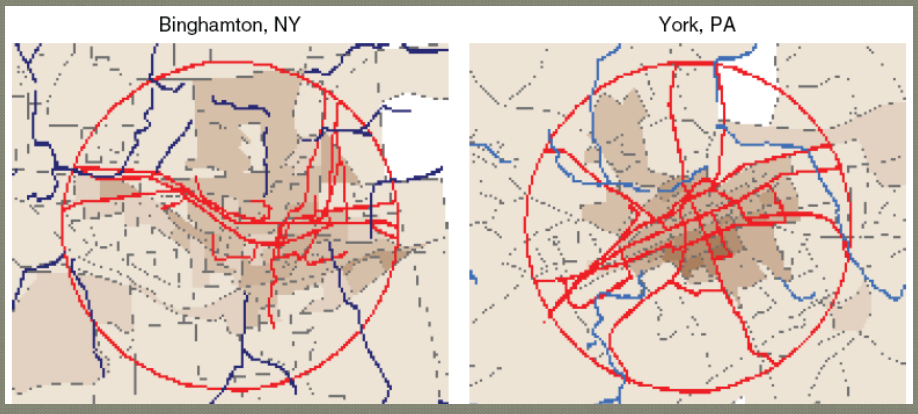
- Cities subdivided by railroads
  - greater number of physically defined neighborhoods
  - became significantly more segregated during Great Migration than other cities (Ananat, 2011)
- Use 19th-century railroad configs as instrument for city segregation during childhood for individuals born post 1950

Measuring a City's Railroad-Induced Potential for Segregation

RDI=railroad division index
Quantifies extent to which city's land is divided into smaller units by railroads

$$RDI_c = 1 - \sum_{i=1}^{n} \left(\frac{area_{neighborho\ odi}}{area_{total}} \right)^2$$

The Natural Experiment



Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Validity of IV

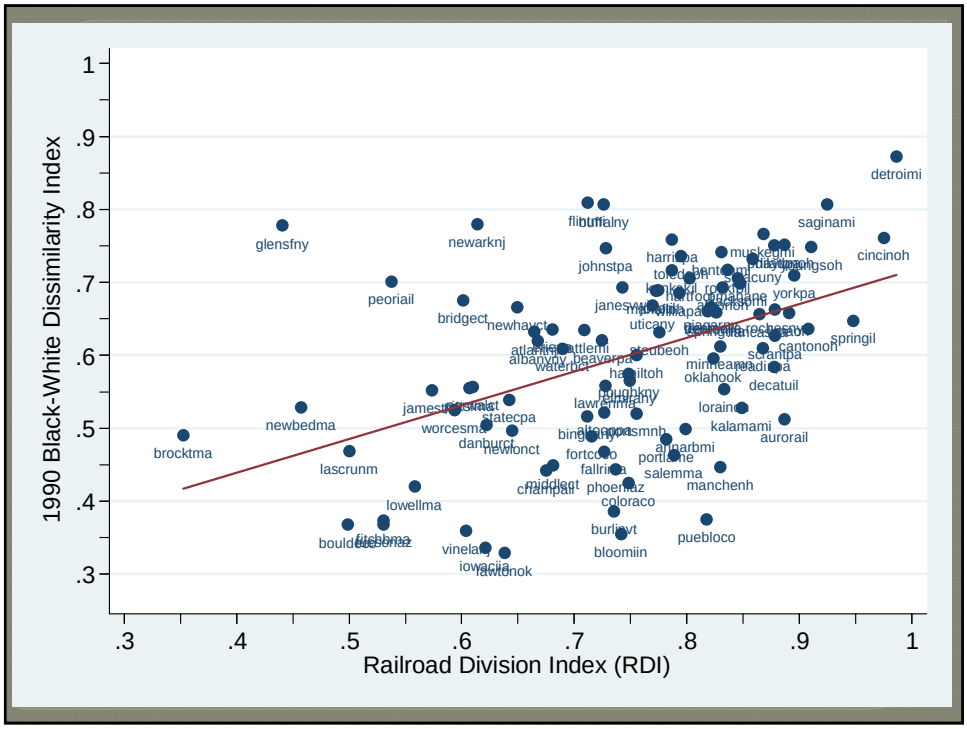
- Railroad division does NOT predict pre-period characteristics nor initial characteristics of city in-migrants (Ananat, 2011)
- RDI affects outcomes only in places that received significant black inflows

Segregation Measures

- **Dissimilarity Index** – assess sorting of individuals

$$D_t = \frac{1}{2} * \sum_{i=1}^{n} \left| \frac{b_{it}}{B_t} - \frac{w_{it}}{W_t} \right|$$

  - b_{it} and w_{it} refer to the # of black and white individuals, respectively, living in neighborhood *i* at time *t*
  - B_t and W_t refer to total # black and white individuals, respectively, in the city
  - ranges from 0 to 1, with 1 denoting complete segregation
  - Interpretable as the percent of blacks who would need to be reassigned to a different neighborhood for perfect integration to be achieved given the city's overall racial composition
- **Racial Composition** of neighborhood



Outline of Talk

- Data
- Measures of Mobility
- Unconditional Mobility Estimates, Black-White Diffs
- 2SLS/IV Estimates: Effects of Childhood Res. Segregation
- Exploring Mechanisms
  - School Segregation
  - School Quality inputs (District per-pupil spending)
- My Related work on School Desegregation

Data

PSID individuals born since 1950 followed up to 2009

- Adulthood attainment outcomes (1984-2009);
- Data linked to neighborhood of upbringing
  - (earliest available census block/tract/cnty in childhood)

Resulting Sample:

- Use all person-year obs in adulthood (73,087)
  - from 7,111 (2,597) individuals
  - from 2,275 (722) families
  - from 1,599 (574) neighborhoods in 299 (125) counties (76 MSAs)
- Mean age = 35, range [20,59], 37% black
- Matched to…
  - 1960-1990 Census data, case inventory of desegregation court cases
  - 1955-1990 Office of Civil Rights (Logan, American Communities Project)
  - 1962-1982 Census of Governments, and Common Core data (compiled by National Center for Education Statistics.)

Data: PSID

- Cohorts between 1950 and 1975 followed up to 2009.
- Use oversample of blacks and survey weights
- Parental Income avg during ages 12-17.
- Children's income in adulthood averaged during 30s
- *N* = 9,085 (men and women)

2SLS/IV Model Specification

MSA Black-White Dissimilarity Index During Childhood (*Race)

Railroad Division Index (Instrument)

$$(1) Seg_c = \theta_1 RDI_c + \theta_2 X + \mu_c$$

$$(2) Y_{cni} = \beta_1 Seg_c + \beta_2 Seg_c * White_i + \beta_3 X_{cni} + \varepsilon_{cni}$$

Adult Outcomes of Interest: Generational Mobility, Educational Attainment, SES, Wk Hrs, Incarceration, Health

Exogenous Controls: Birth Yr FE x Race, Gender, Parent Rank

2SLS/IV Model Specification

School District Spending (*Race)

Railroad Division Index (Instrument)

$$(1) Spend_{cni} = \theta_1 RDI_c + \theta_2 RDI_c * White + \theta_3 X_{cni} + \mu_{cn}$$

$$(2) Y_{cni} = \beta_1 Spend_{cni} + \beta_2 X_{cni} + \varepsilon_{cni}$$

Adult Outcomes of Interest: Generational Mobility, Educational Attainment, SES, Wk Hrs, Incarceration, Health

Exogenous Controls: Birth Yr FE x Race, Gender, Parent Rank

2SLS/IV Model Specification

School District Segregation (*Race)

Railroad Division Index (Instrument)

$$(1) SSeg_{cni} = \theta_1 RDI_c + \theta_2 RDI_c * White + \theta_3 X_{cni} + \mu_{cni}$$

$$(2) Y_{cni} = \beta_1 SSeg_{cni} + \beta_2 SSeg_{cni} * White + \beta_3 X_{cni} + \varepsilon_{cn}$$

Adult Outcomes of Interest: Generational Mobility, Educational Attainment, SES, Wk Hrs, Incarceration, Health

Exogenous Controls: Birth Yr FE x Race, Gender, Parent Rank

Testing RDI as an Instrument

	First stage
Outcome:	1990 dissimilarity index[a] (1)
RDI	**0.357** **(0.088)**
Track length per square kilometer	18.514 (10.731)
Mean of dependent variable	0.568
N	121

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	First stage	Falsification checks	
		1910 city characteristics	
Outcome:	1990 dissimilarity index[a] (1)	Physical area (square miles/ 1,000)[a] (2)	
RDI	**0.357**	−3.993	
	(0.088)	(11.986)	
Track length per square kilometer	18.514	−574.401	
	(10.731)	(553.669)	
Mean of dependent variable	0.568	14.626	
N	121	58	

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	First stage	Falsification checks	
		1910 city characteristics	
Outcome:	1990 dissimilarity index[a] (1)	Physical area (square miles/ 1,000)[a] (2)	Pop. (1,000s)[b] (3)
RDI	**0.357**	−3.993	0.666
	(0.088)	(11.986)	(1.36)
Track length per square kilometer	18.514	−574.401	75.553
	(10.731)	(553.669)	(135)
Mean of dependent variable	0.568	14.626	1,527
N	121	58	121

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	First stage	Falsification checks			
		1910 city characteristics			
Outcome:	1990 dissimilarity index[a] (1)	Physical area (square miles/ 1,000)[a] (2)	Pop. (1,000s)[b] (3)	Ethnic dissimilarity index[a] (4)	
RDI	**0.357**	−3.993	0.666	0.076	
	(0.088)	(11.986)	(1.36)	(0.185)	
Track length per square kilometer	18.514	−574.401	75.553	15.343	
	(10.731)	(553.669)	(135)	(53.249)	
Mean of dependent variable	0.568	14.626	1,527	0.311	
N	121	58	121	49	

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	First stage	Falsification checks				
		1910 city characteristics				
Outcome:	1990 dissimilarity index[a] (1)	Physical area (square miles/ 1,000)[a] (2)	Pop. (1,000s)[b] (3)	Ethnic dissimilarity index[a] (4)	Ethnic isolation index[a] (5)	
RDI	**0.357**	−3.993	0.666	0.076	0.027	
	(0.088)	(11.986)	(1.36)	(0.185)	(0.070)	
Track length per square kilometer	18.514	−574.401	75.553	15.343	−12.439	
	(10.731)	(553.669)	(135)	(53.249)	(17.288)	
Mean of dependent variable	0.568	14.626	1,527	0.311	0.055	
N	121	58	121	49	49	

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	First stage	Falsification checks					
		1910 city characteristics					
Outcome:	1990 dissimilarity index[a] (1)	Physical area (square miles/ 1,000)[a] (2)	Pop. (1,000s)[b] (3)	Ethnic dissimilarity index[a] (4)	Ethnic isolation index[a] (5)	Percent black[b] (6)	
RDI	**0.357**	−3.993	0.666	0.076	0.027	−0.0006	
	(0.088)	(11.986)	(1.36)	(0.185)	(0.070)	(0.0100)	
Track length per square kilometer	18.514	−574.401	75.553	15.343	−12.439	**9.236**	
	(10.731)	(553.669)	(135)	(53.249)	(17.288)	**(0.650)**	
Mean of dependent variable	0.568	14.626	1,527	0.311	0.055	1.442 percent	
N	121	58	121	49	49	121	

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	First stage	Falsification checks					
		1910 city characteristics					
Outcome:	1990 dissimilarity index[a] (1)	Physical area (square miles/ 1,000)[a] (2)	Pop. (1,000s)[b] (3)	Ethnic dissimilarity index[a] (4)	Ethnic isolation index[a] (5)	Percent black[b] (6)	Street-cars per cap. (1,000s) (1915)[a] (7)
RDI	**0.357**	−3.993	0.666	0.076	0.027	−0.0006	−0.132
	(0.088)	(11.986)	(1.36)	(0.185)	(0.070)	(0.0100)	(0.183)
Track length per square kilometer	18.514	−574.401	75.553	15.343	−12.439	**9.236**	3.361
	(10.731)	(553.669)	(135)	(53.249)	(17.288)	**(0.650)**	(20.507)
Mean of dependent variable	0.568	14.626	1,527	0.311	0.055	1.442 percent	179
N	121	58	121	49	49	121	13

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	Falsification checks
	1920 city characteristics
Outcome:	Percent black[b] (8)
RDI	0.0132 (0.0091)
Track length per square kilometer	**9.119 (0.615)**
Mean of dependent variable	1.558 percent
N	121

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	Falsification checks	
	1920 city characteristics	
Outcome:	Percent black[b] (8)	Percent literate[b] (9)
RDI	0.0132 (0.0091)	0.052 (0.030)
Track length per square kilometer	**9.119 (0.615)**	0.178 (0.883)
Mean of dependent variable	1.558 percent	95.9 percent
N	121	121

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	Falsification checks			
	1920 city characteristics			
Outcome:	Percent black[b] (8)	Percent literate[b] (9)	Labor force participation[b] (10)	Percent of empl. in trade[b] (11)
RDI	0.0132 (0.0091)	0.052 (0.030)	0.029 (0.025)	−0.080 (0.097)
Track length per square kilometer	**9.119 (0.615)**	0.178 (0.883)	**−3.432 (1.560)**	0.230 (3.122)
Mean of dependent variable	1.558 percent	95.9 percent	41.9 percent	5.77 percent
N	121	121	121	121

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	Falsification checks			
	1920 city characteristics			
Outcome:	Percent black[b] (8)	Percent literate[b] (9)	Labor force participation[b] (10)	Percent of empl. in trade[b] (11)
RDI	0.0132 (0.0091)	0.052 (0.030)	0.029 (0.025)	−0.080 (0.097)
Track length per square kilometer	**9.119 (0.615)**	0.178 (0.883)	**−3.432 (1.560)**	0.230 (3.122)
Mean of dependent variable	1.558 percent	95.9 percent	41.9 percent	5.77 percent
N	121	121	121	121

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Testing RDI as an Instrument

	Falsification checks					
	1920 city characteristics					
Outcome:	Percent black[b] (8)	Percent literate[b] (9)	Labor force participation[b] (10)	Percent of empl. in trade[b] (11)	Percent of empl. in manufacturing[b] (12)	
RDI	0.0132 (0.0091)	0.052 (0.030)	0.029 (0.025)	−0.080 (0.097)	0.185 (0.138)	
Track length per square kilometer	**9.119 (0.615)**	0.178 (0.883)	**−3.432 (1.560)**	0.230 (3.122)	19.740 (11.023)	
Mean of dependent variable	1.558 percent	95.9 percent	41.9 percent	5.77 percent	46.2 percent	
N	121	121	121	121	121	

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	Falsification checks					
	1920 city characteristics					
Outcome:	Percent black[b] (8)	Percent literate[b] (9)	Labor force participation[b] (10)	Percent of empl. in trade[b] (11)	Percent of empl. in manufacturing[b] (12)	Percent of empl. in railroads[b] (13)
RDI	0.0132 (0.0091)	0.052 (0.030)	0.029 (0.025)	−0.080 (0.097)	0.185 (0.138)	−0.074 (0.068)
Track length per square kilometer	**9.119 (0.615)**	0.178 (0.883)	**−3.432 (1.560)**	0.230 (3.122)	19.740 (11.023)	1.583 (2.417)
Mean of dependent variable	1.558 percent	95.9 percent	41.9 percent	5.77 percent	46.2 percent	0.32 percent
N	121	121	121	121	121	121

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Testing RDI as an Instrument

	Falsification checks						
	1920 city characteristics						
Outcome:	Percent black[b] (8)	Percent literate[b] (9)	Labor force participation[b] (10)	Percent of empl. in trade[b] (11)	Percent of empl. in manufacturing[b] (12)	Percent of empl. in railroads[b] (13)	1990 income seg.[a] (14)
RDI	0.0132 (0.0091)	0.052 (0.030)	0.029 (0.025)	−0.080 (0.097)	0.185 (0.138)	−0.074 (0.068)	0.032 (0.032)
Track length per square kilometer	**9.119 (0.615)**	0.178 (0.883)	**−3.432 (1.560)**	0.230 (3.122)	19.740 (11.023)	1.583 (2.417)	−2.504 (1.626)
Mean of dependent variable	1.558 percent	95.9 percent	41.9 percent	5.77 percent	46.2 percent	0.32 percent	0.217
N	121	121	121	121	121	121	69

Source: Ananat, "The Wrong Side(s) of the Tracks: The Causal Effects of Racial Segregation on Urban Poverty and Inequality", AEJ:Applied Econ 3 (2011)

Reduced-Form Effects of Historical Railroad Track Configuration in Childhood MSA on Educational Attainment

	Dependent variable:
	Yrs of Educ
	OLS
RDI	-0.4186***
	(0.1258)
RDI*White	0.2858*
	(0.1549)
Number of Individuals	2,697
Number of Childhood Families	716
Number of Neighborhoods	410
Number of School Districts	238
Number of MSAs	85

Effects of Racial Residential Segregation during Childhood on Educational Attainment

	Dependent variable:	
	Yrs of Educ	
	OLS	2SLS/IV, RDI as instrument for Dissimilarity
Segregation	-0.3923**	-0.8972***
	(0.1520)	(0.4455)
Segregation*White	0.4041**	0.5504**
	(0.1680)	(0.2922)

Unconditional Mobility Estimates

Transition Probability (TP)

- Upward Transition Probability (UTP)

$$UTP_{\tau,s} = \Pr(Y_1 > s + \tau \mid Y_0 \leq s)$$

where Y_t represents the *percentile* in each generation t

- s the cutoff, varies across the bottom half (cumulative)

  s= {10, 20, …50}

  e.g. s = 20, τ = 0, is probability of moving out of the bottom quintile

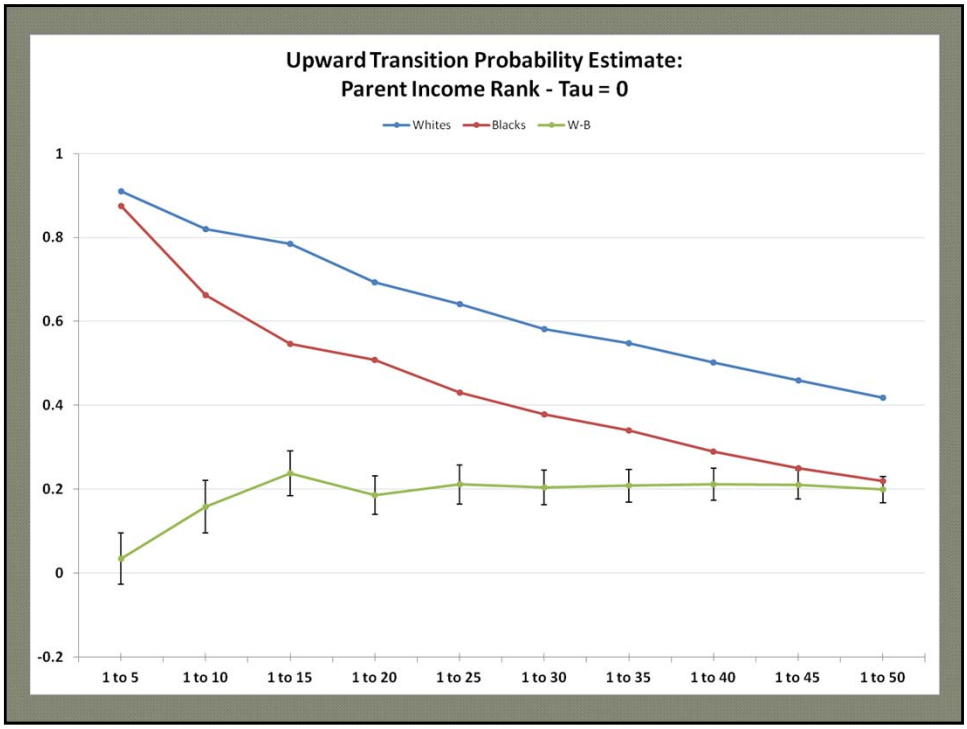
- τ represents an additional increment
  - This will be useful when comparing to new measure
    e.g. s = 20, τ = 0.2, is probability of moving from bottom quintile to above the 40th percentile.

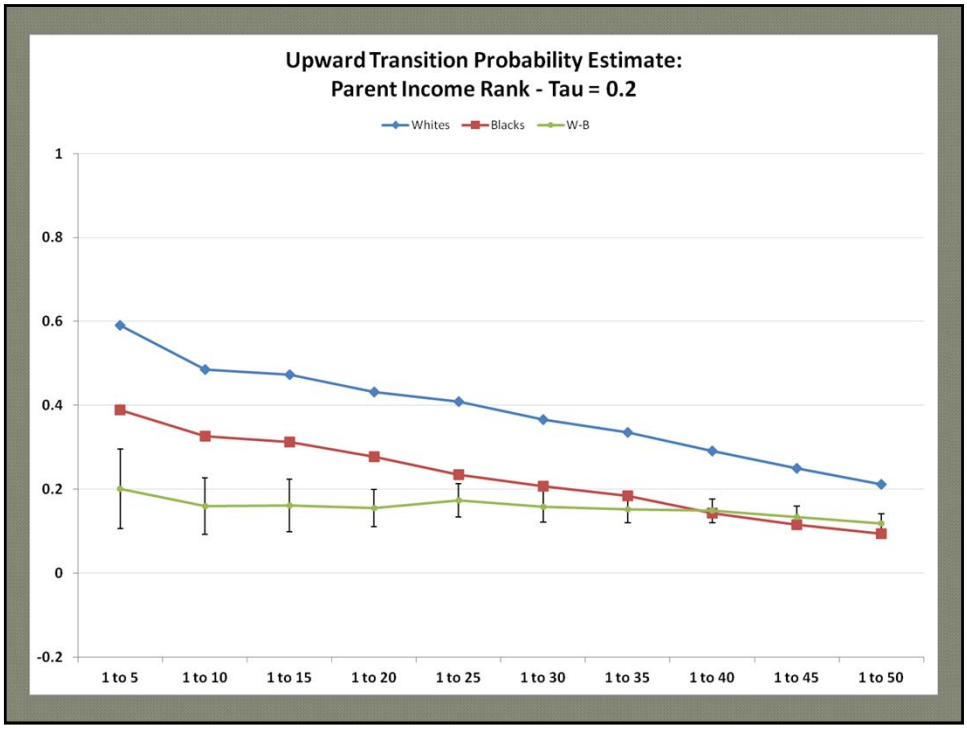
Directional Rank Mobility

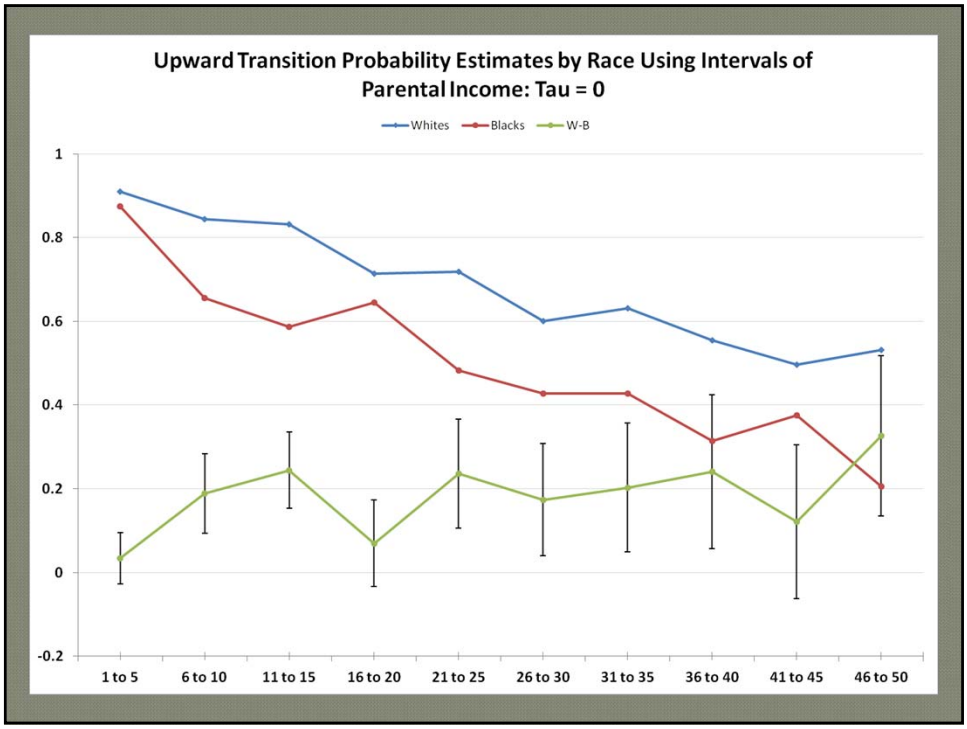
- Upward Directional Rank Mobility (UP)

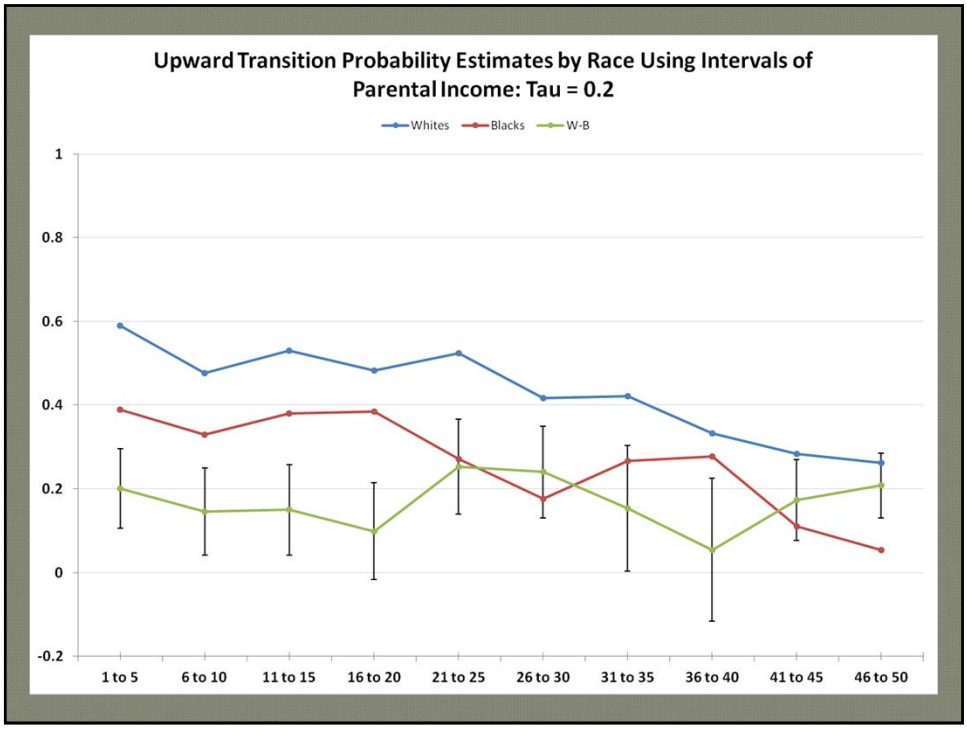
$$UP_{\tau,s} = \Pr(Y_1 - Y_0 > \tau \mid Y_0 \leq s)$$

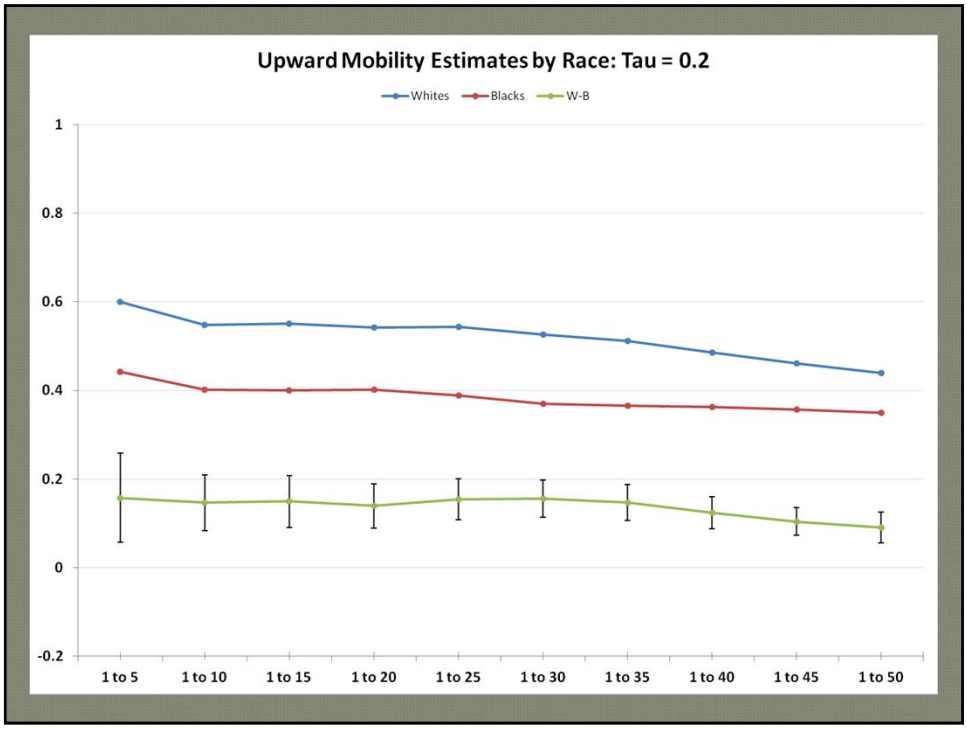
- To be interesting, s must be less than 1
  (though for group differences s can be 1)
- For τ =0, this is simple: are you higher in the distribution than your parents were
- Similarly, construct "DOWN $_{\tau, s}$"
- Can use intervals rather than cumulative samples

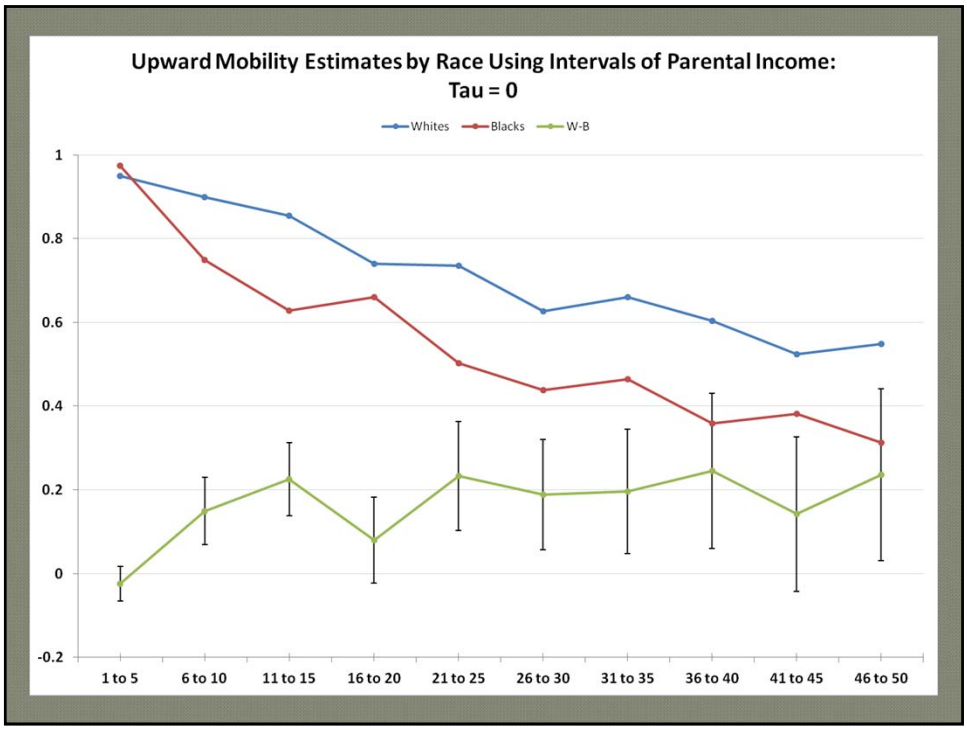

Upward Transition Probability Estimate:
Parent Income Rank - Tau = 0
Whites
Blacks
W-B
1
0.8
0.6
0.4
0.2
0
-0.2
1 to 5
1 to 10
1 to 15
1 to 20
1 to 25
1 to 30
1 to 35
1 to 40
1 to 45
1 to 50

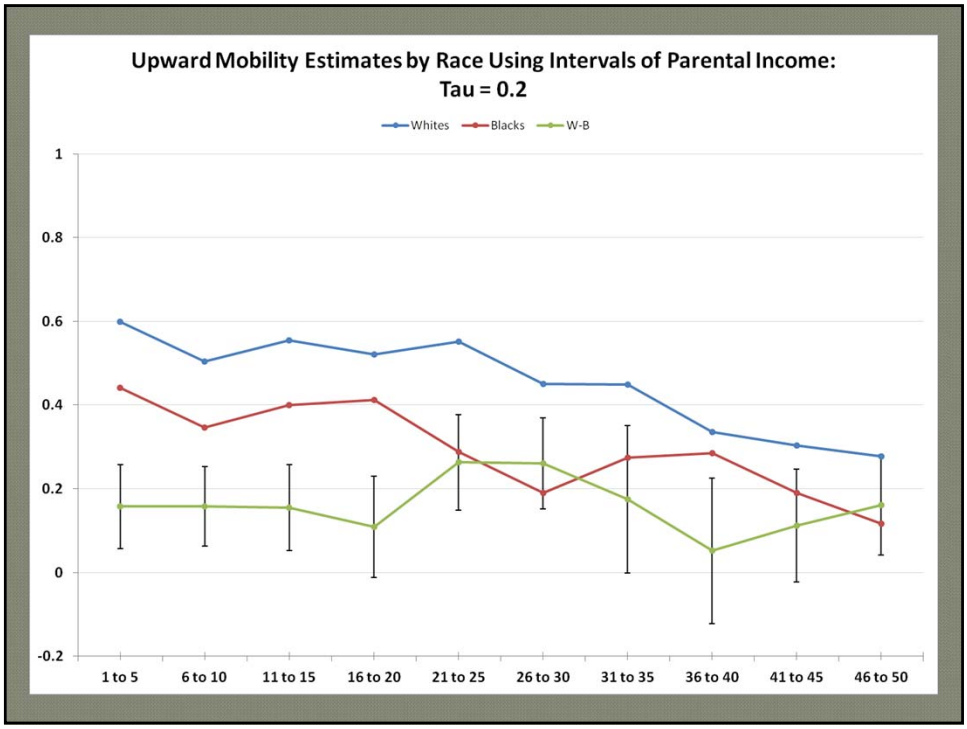

Upward Transition Probability Estimate:
Parent Income Rank - Tau = 0.2
Whites
Blacks
W-B
1
0.8
0.6
0.4
0.2
0
-0.2
1 to 5
1 to 10
1 to 15
1 to 20
1 to 25
1 to 30
1 to 35
1 to 40
1 to 45
1 to 50


Upward Transition Probability Estimates by Race Using Intervals of Parental Income: Tau = 0
Whites
Blacks
W-B
1
0.8
0.6
0.4
0.2
0
-0.2
1 to 5
6 to 10
11 to 15
16 to 20
21 to 25
26 to 30
31 to 35
36 to 40
41 to 45
46 to 50


Upward Transition Probability Estimates by Race Using Intervals of Parental Income: Tau = 0.2
Whites
Blacks
W-B
1
0.8
0.6
0.4
0.2
0
-0.2
1 to 5
6 to 10
11 to 15
16 to 20
21 to 25
26 to 30
31 to 35
36 to 40
41 to 45
46 to 50


Upward Mobility Estimates by Race: Tau = 0.2
Whites
Blacks
W-B
1
0.8
0.6
0.4
0.2
0
-0.2
1 to 5
1 to 10
1 to 15
1 to 20
1 to 25
1 to 30
1 to 35
1 to 40
1 to 45
1 to 50


Upward Mobility Estimates by Race Using Intervals of Parental Income: Tau = 0
Whites
Blacks
W-B
1
0.8
0.6
0.4
0.2
0
-0.2
1 to 5
6 to 10
11 to 15
16 to 20
21 to 25
26 to 30
31 to 35
36 to 40
41 to 45
46 to 50



Reduced-Form Effects of Historical Railroad Track Configuration in Childhood MSA on Intergenerational Mobility

	Dependent variable:			
	Prob(Upward Mobility), tau=0		Prob(Upward Mobility), tau=0.2	
	All	Among Children Born into Bottom Half	All	Among Children Born into Bottom Half
RDI	-0.0679***			
	(0.0229)			
RDI*White	0.0666***			
	(0.0222)			
Number of Individuals	1,575			
Number of Childhood Families	509			
Number of Neighborhoods	257			
Number of School Districts	167			
Number of MSAs	61			

Reduced-Form Effects of Historical Railroad Track Configuration in Childhood MSA on Intergenerational Mobility

	Dependent variable:			
	Prob(Upward Mobility), tau=0		Prob(Upward Mobility), tau=0.2	
	All	Among Children Born into Bottom Half	All	Among Children Born into Bottom Half
RDI	-0.0679***	-0.1031**		
	(0.0229)	(0.0418)		
RDI*White	0.0666***	0.0647*		
	(0.0222)	(0.0418)		
Number of Individuals	1,575	828		
Number of Childhood Families	509	310		
Number of Neighborhoods	257	181		
Number of School Districts	167	116		
Number of MSAs	61	43		

Reduced-Form Effects of Historical Railroad Track Configuration in Childhood MSA on Intergenerational Mobility

	Dependent variable:			
	Prob(Upward Mobility), tau=0		Prob(Upward Mobility), tau=0.2	
	All	Among Children Born into Bottom Half	All	Among Children Born into Bottom Half
RDI	-0.0679***	-0.1031**	-0.0524***	
	(0.0229)	(0.0418)	(0.0186)	
RDI*White	0.0666***	0.0647*	0.0642***	
	(0.0222)	(0.0418)	(0.0207)	
Number of Individuals	1,575	828	1,575	
Number of Childhood Families	509	310	509	
Number of Neighborhoods	257	181	257	
Number of School Districts	167	116	167	
Number of MSAs	61	43	61	

Reduced-Form Effects of Historical Railroad Track Configuration in Childhood MSA on Intergenerational Mobility

	Dependent variable:			
	Prob(Upward Mobility), tau=0		Prob(Upward Mobility), tau=0.2	
	All	Among Children Born into Bottom Half	All	Among Children Born into Bottom Half
RDI	-0.0679***	-0.1031**	-0.0524***	-0.0780*
	(0.0229)	(0.0418)	(0.0186)	(0.0436)
RDI*White	0.0666***	0.0647*	0.0642***	0.1100**
	(0.0222)	(0.0418)	(0.0207)	(0.0422)
Number of Individuals	1,575	828	1,575	828
Number of Childhood Families	509	310	509	310
Number of Neighborhoods	257	181	257	181
Number of School Districts	167	116	167	116
Number of MSAs	61	43	61	43

Reduced-Form Effects of Historical Railroad Track Configuration in Childhood MSA on Intergenerational Mobility

	Dependent variable:	
	Δ in Generational Rank (Child - Parent's Rank)	
	All	Among Children Born into Bottom Half
RDI	-3.3302*	-7.3297**
	(1.9839)	(3.0703)
RDI*White	3.3977*	5.1469*
	(1.8994)	(2.7878)
Number of Individuals	1,575	828
Number of Childhood Families	509	310
Number of Neighborhoods	257	181
Number of School Districts	167	116
Number of MSAs	61	43

2SLS/IV Estimates of Effects of Racial Residential Segregation during Childhood on Intergenerational Mobility

	2SLS/IV, RDI as instrument for Dissimilarity		
	Dependent variable:		
	Δ in Generational Rank	Prob(Upward Mobility), tau=0	Prob(Upward Mobility), tau=0.2
Segregation	-11.0870*	-0.1766**	-0.1615*
	(6.2026)	(0.0847)	(0.0829)
Segregation*White	7.9069***	0.1570***	0.1646***
	(2.6027)	(0.0567)	(0.0522)

2SLS/IV Estimates of Effects of School District Per-pupil Spending on Intergenerational Mobility

	2SLS/IV, RDI as instrument for school district spending	
	Dependent variable:	
	Δ in Generational Rank (Child - Parent's Rank)	Prob(Upward Mobility), tau=0
School district per-pupil spending (avg ages 5-17)	7.7807**	0.1476***
	(3.8543)	(0.0562)

2SLS/IV Estimates of Effects of School District Segregation on Intergenerational Mobility

	2SLS/IV, RDI as instrument for school district segregation	
	Dependent variable:	
	Δ in Generational Rank (Child - Parent's Rank)	Prob(Upward Mobility), tau=0
School District Segregation (avg b-w dissimilarity index, ages 5-17)	-10.3092*	-0.2034**
	(6.4676)	(0.0913)
School District Segregation*White	8.4871	0.0898
	(6.2078)	(0.1127)

Effects of Racial Residential Segregation during Childhood on Adult Poverty Status

	Dependent variable:
	Annual Incidence of Poverty, Adulthood
	2SLS/IV, RDI as instrument for Dissimilarity
Segregation	0.1844***
	(0.0567)
Segregation*White	-0.1462***
	(0.0479)

Effects of Racial Residential Segregation during Childhood on Men's Work Hours

	Dependent variable:
	Annual Work Hours
	2SLS/IV, RDI as instrument for Dissimilarity
Segregation	-351.2326*
	(231.6412)
Segregation*White	158.0939
	(148.8897)

Effects of Racial Residential Segregation during Childhood on the Likelihood of Incarceration

	Dependent variable:	
	Prob(Ever incarcerated)	Annual Incidence of Incarceration, Adulthood
	2SLS/IV, RDI as instrument for Dissimilarity	
Segregation	0.0539*	0.0100*
	(0.0329)	(0.0057)
Segregation*White	-0.0497*	-0.0096*
	(0.0315)	(0.0055)

Effects of Racial Residential Segregation during Childhood on the Likelihood of Teen Pregnancy

	Dependent variable:	
	Prob(Teen Pregnancy)	Prob(Deviant Behavior), expelled/suspended
	2SLS/IV, RDI as instrument for Dissimilarity	
Segregation	0.1456*	0.0819*
	(0.0865)	(0.0523)
Segregation*White	-0.1205***	-0.0404
	(0.0405)	(0.0317)

Effects of Racial Residential Segregation during Childhood on Adult Health Status

	Dependent variable:
	Prob(Problematic Health), Adulthood
	2SLS/IV, RDI as instrument for Dissimilarity
Segregation	0.0611*
	(0.0342)
Segregation*White	-0.0260
	(0.0356)

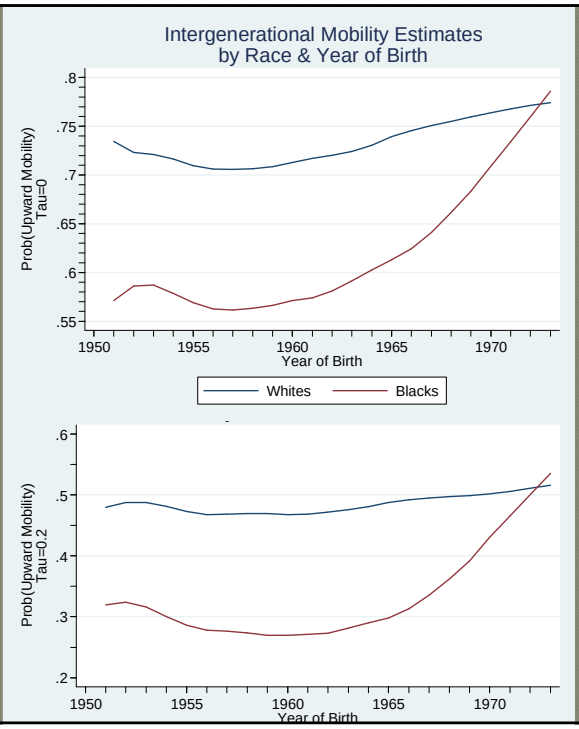
School Desegregation and (In)equality of Opportunity:

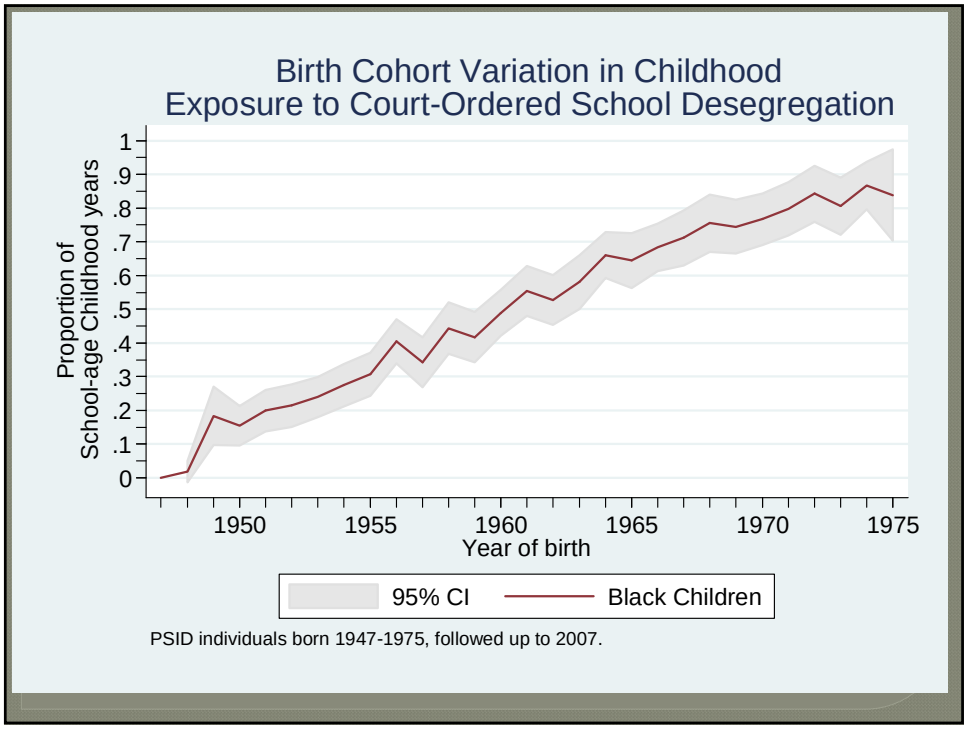
A Story about School Resources

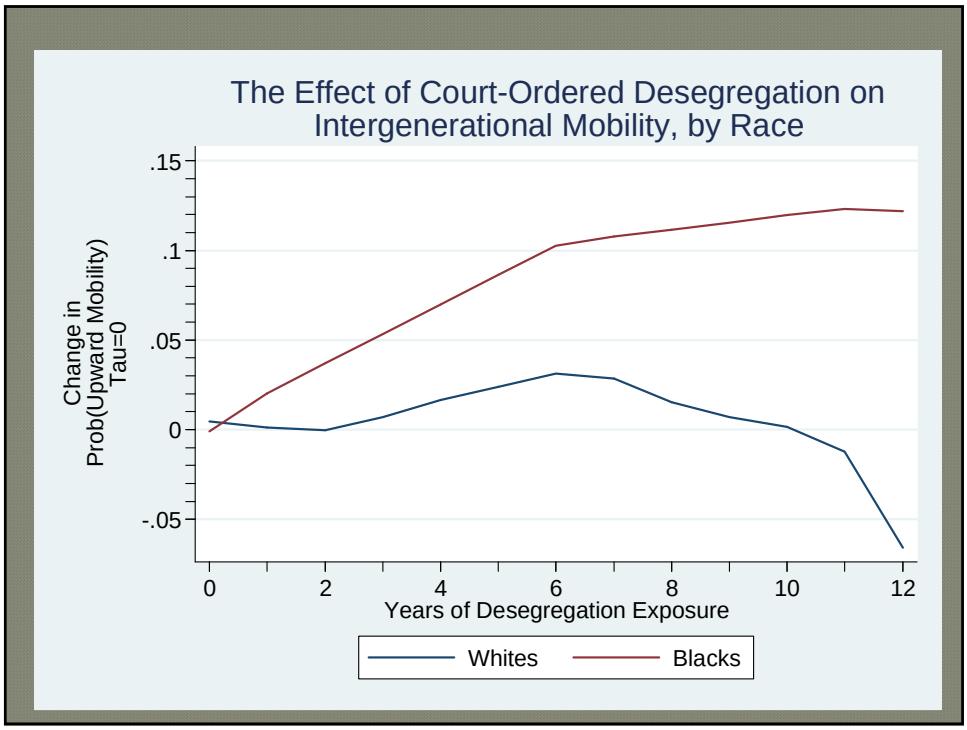
Rucker C. Johnson, UC-Berkeley
Visiting Scholar, Russell Sage Foundation

Tau=0

Tau=0.2




Birth Cohort Variation in Childhood
Exposure to Court-Ordered School Desegregation
Proportion of
School-age Childhood years
0
.1
.2
.3
.4
.5
.6
.7
.8
.9
1
1950
1955
1960
1965
1970
1975
Year of birth
95% CI
Black Children
PSID individuals born 1947-1975, followed up to 2007.


The Effect of Court-Ordered Desegregation on
Intergenerational Mobility, by Race
Change in
Prob(Upward Mobility)
Tau=0
-.05
0
.05
.1
.15
0
2
4
6
8
10
12
Years of Desegregation Exposure
Whites
Blacks

Book Chapters: The Long Legacy of School Desegregation

1. Long-run Impacts of School Desegregation & School Quality on Adult Attainments
2. School Quality & the Long-run Effects of Head Start
3. Who's on the Bus? Schools as a Vehicle to Intergenerational Mobility
4. The Grandchildren of Brown: Intergenerational Returns to Education
5. Educational Consequences of the End of Court-Ordered Desegregation