



Using Big Data to Solve Economic and Social Problems

Professor Raj Chetty

Head Section Leader: Gregory Bruich, Ph.D.

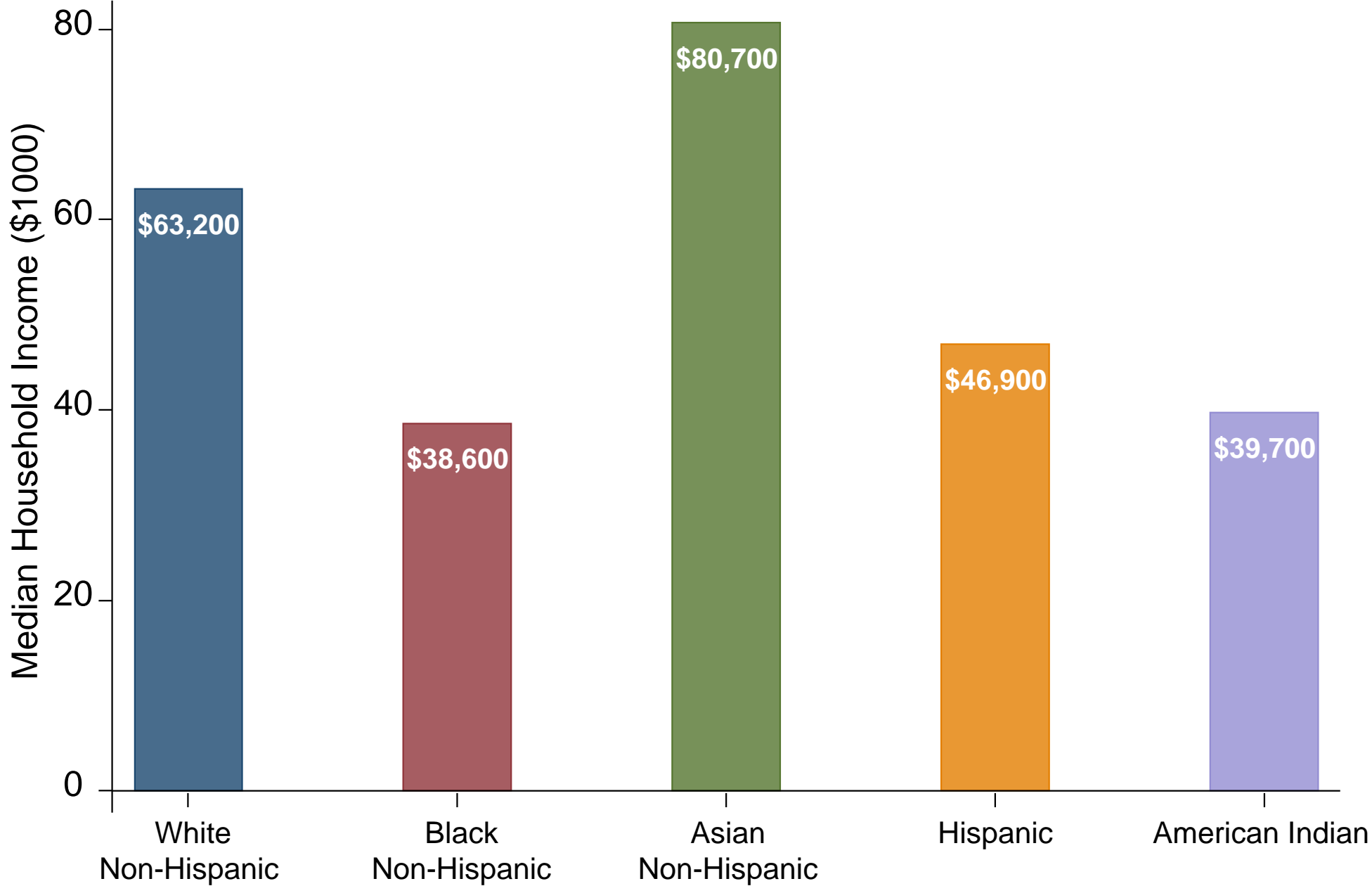
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HARVARD
UNIVERSITY



Median Household Income by Race and Ethnicity in 2016



Source: American Community Survey 2016

Theories of Racial Disparities

Family-Level Factors

Parental Income	Magnuson & Duncan 2006; Rothstein & Wozny 2012
Parental Human Capital & Wealth	Oliver & Shapiro 1995; Orr 2003; Conley 2010
Family Structure and Stability	McAdoo 2002; Burchinal et al. 2011
Ability at Birth	Rushton & Jensen 2005 vs. Fryer & Levitt 2006

Structural Features of Environment

Segregation, Neighborhoods	Massey & Denton 1993; Wilson 1987; Sampson and Wilson 1995; Smith 2005
School Quality	Card & Krueger 1992; Jencks & Phillips 1998; Dobbie & Fryer 2011
Discrimination in the Labor Market	Donohue & Heckman 1992; Heckman 1998; Pager 2003; Bertrand & Mullainathan 2004
Discrimination in Criminal Justice	Steffensmeier, Ulmer, Kramer 1998; Eberhardt et al. 2004; Alexander 2010
Social Alienation, Stereotype Threat	Steele & Aaronson 1995; Tatum 2004; Glover, Pallais, Pariente 2017

Cultural Factors and Social Norms

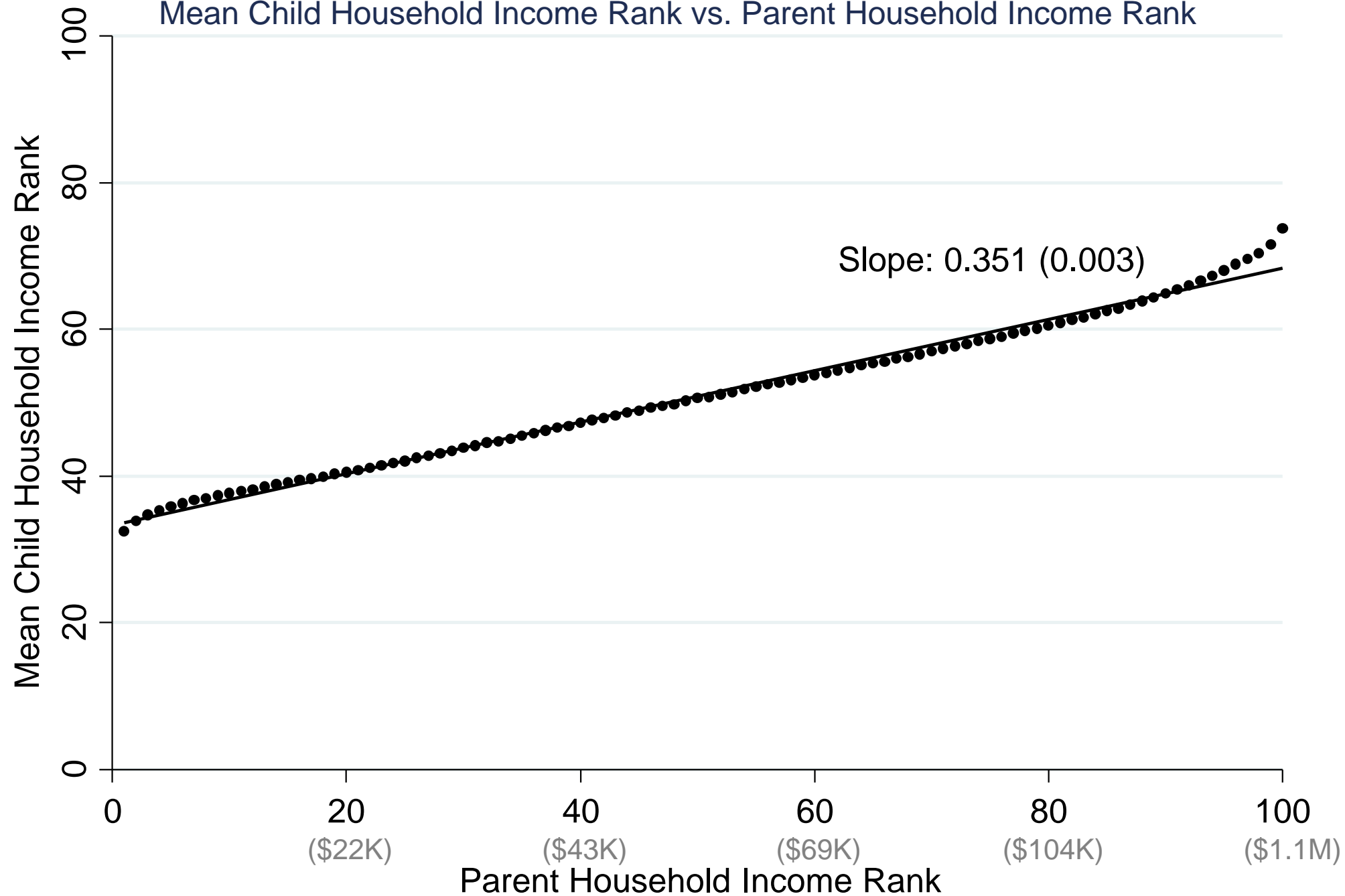
Identity and Oppositional Norms	Fordham & Ogbu 1986; Noguera 2003; Carter 2005; Austen-Smith & Fryer 2005
Aspirations or Role Models	Mickelson 1990; Small, Harding, & Lamont 2010

An Intergenerational Perspective on Racial Disparities

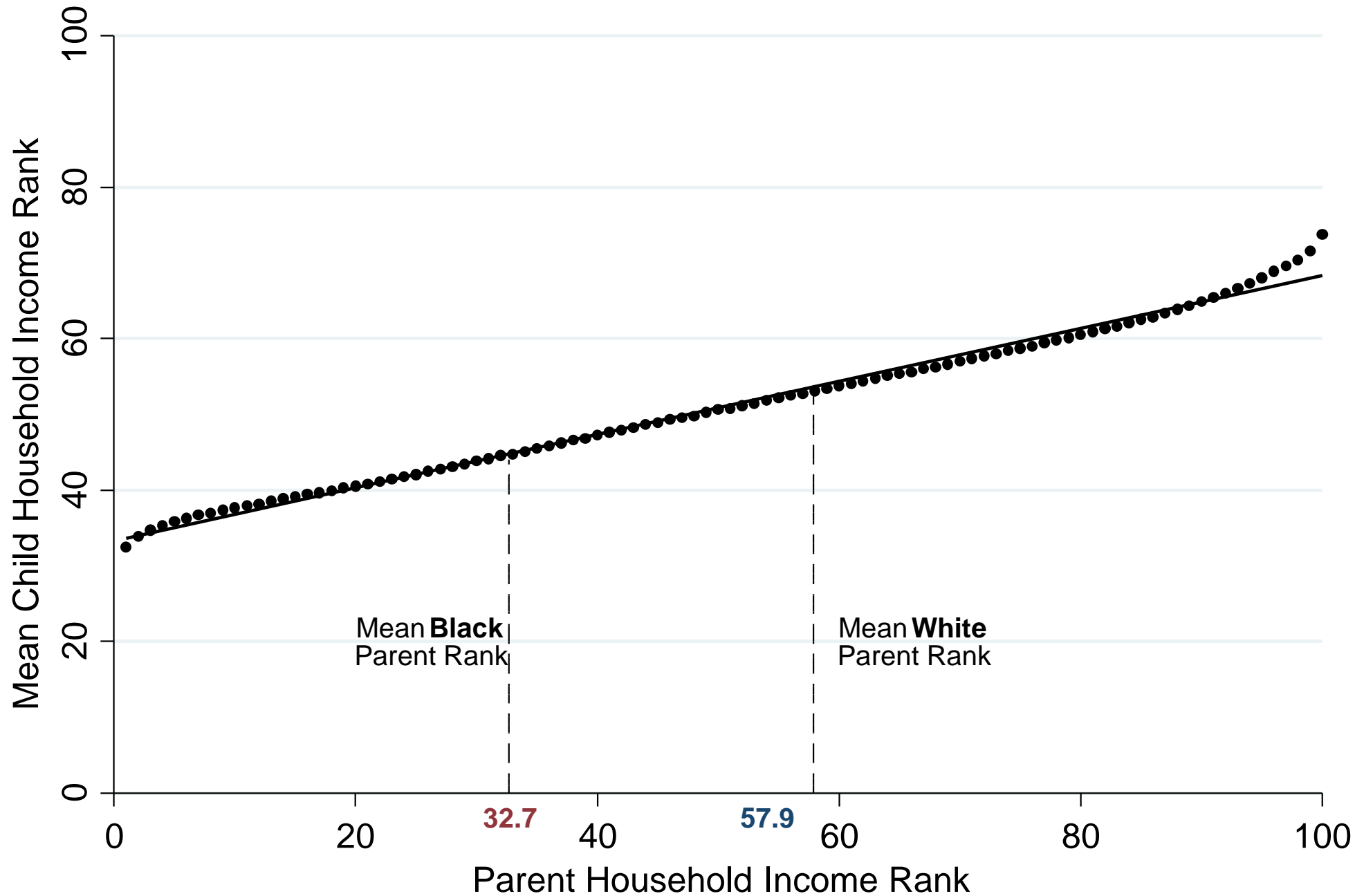
- Most prior work has studied racial disparities within a single generation
- We will take an intergenerational perspective, focusing on dynamics of income across generations
- Intergenerational approach sheds light on which disparities will persist in the long run and allows us to isolate the factors that drive persistent gaps
 - Methods: dynamics of income and **steady states**

Intergenerational Mobility in the United States

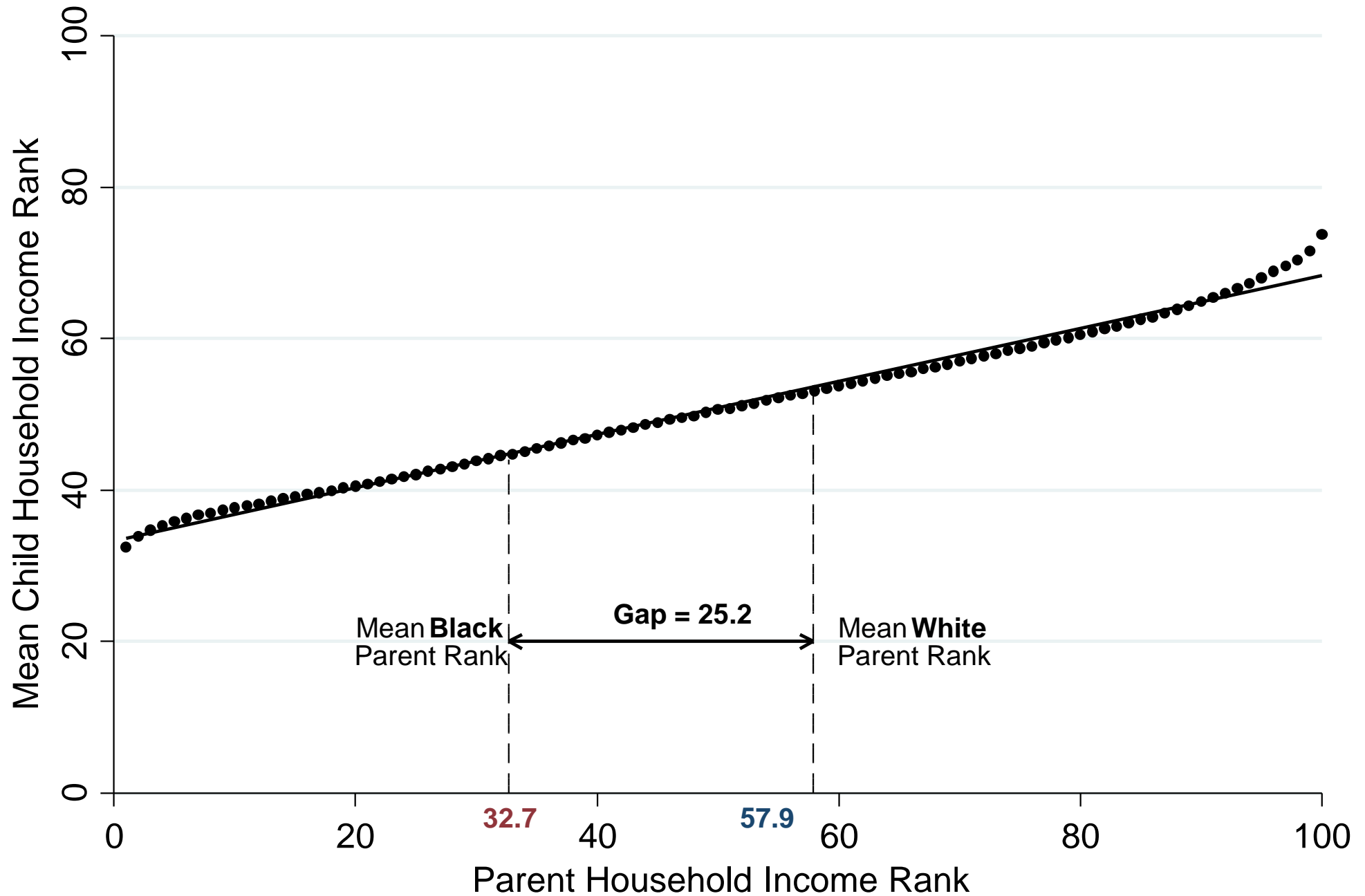
Mean Child Household Income Rank vs. Parent Household Income Rank



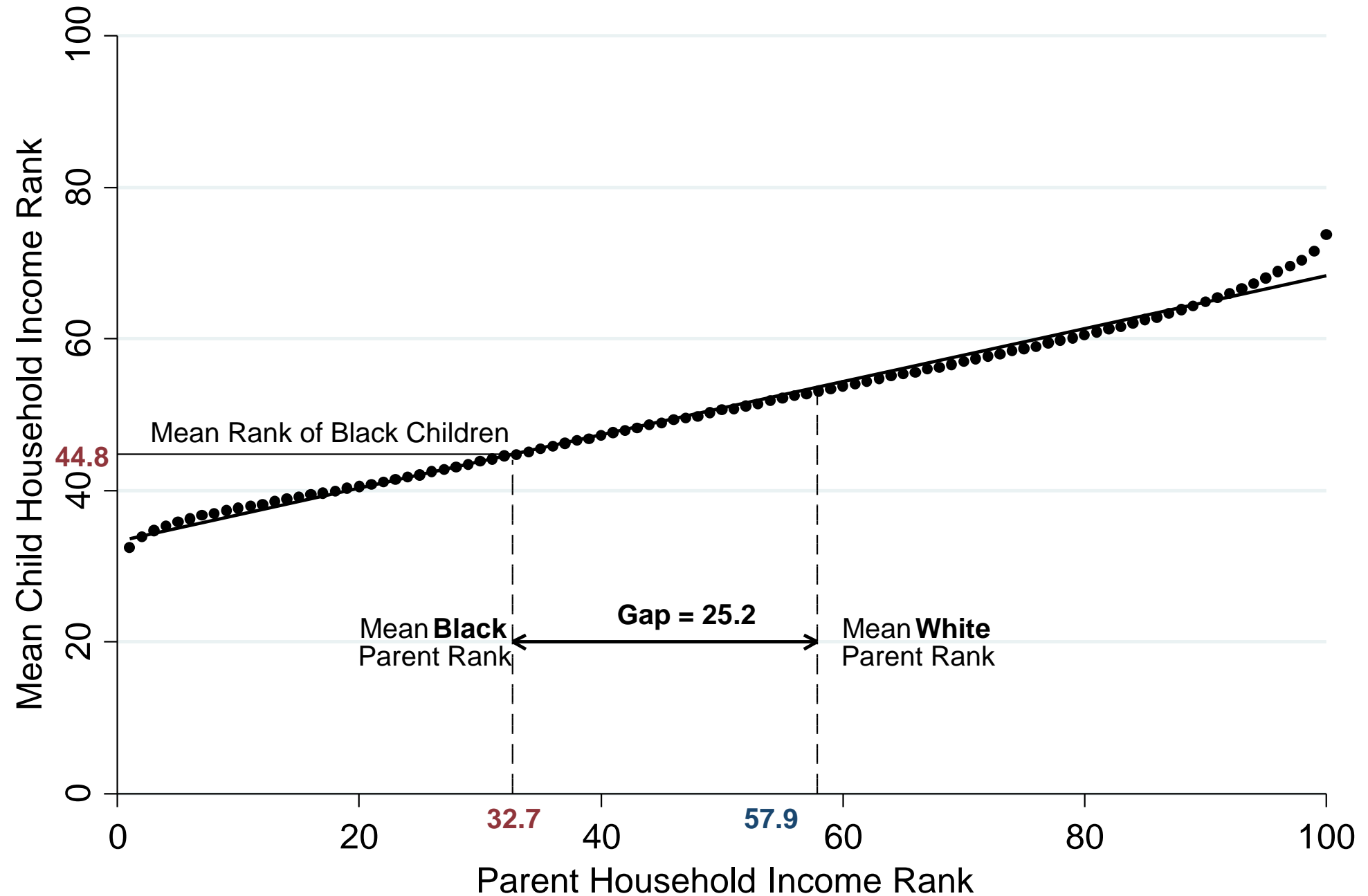
Convergence in Black-White Gap if Intergenerational Mobility is Race-Invariant



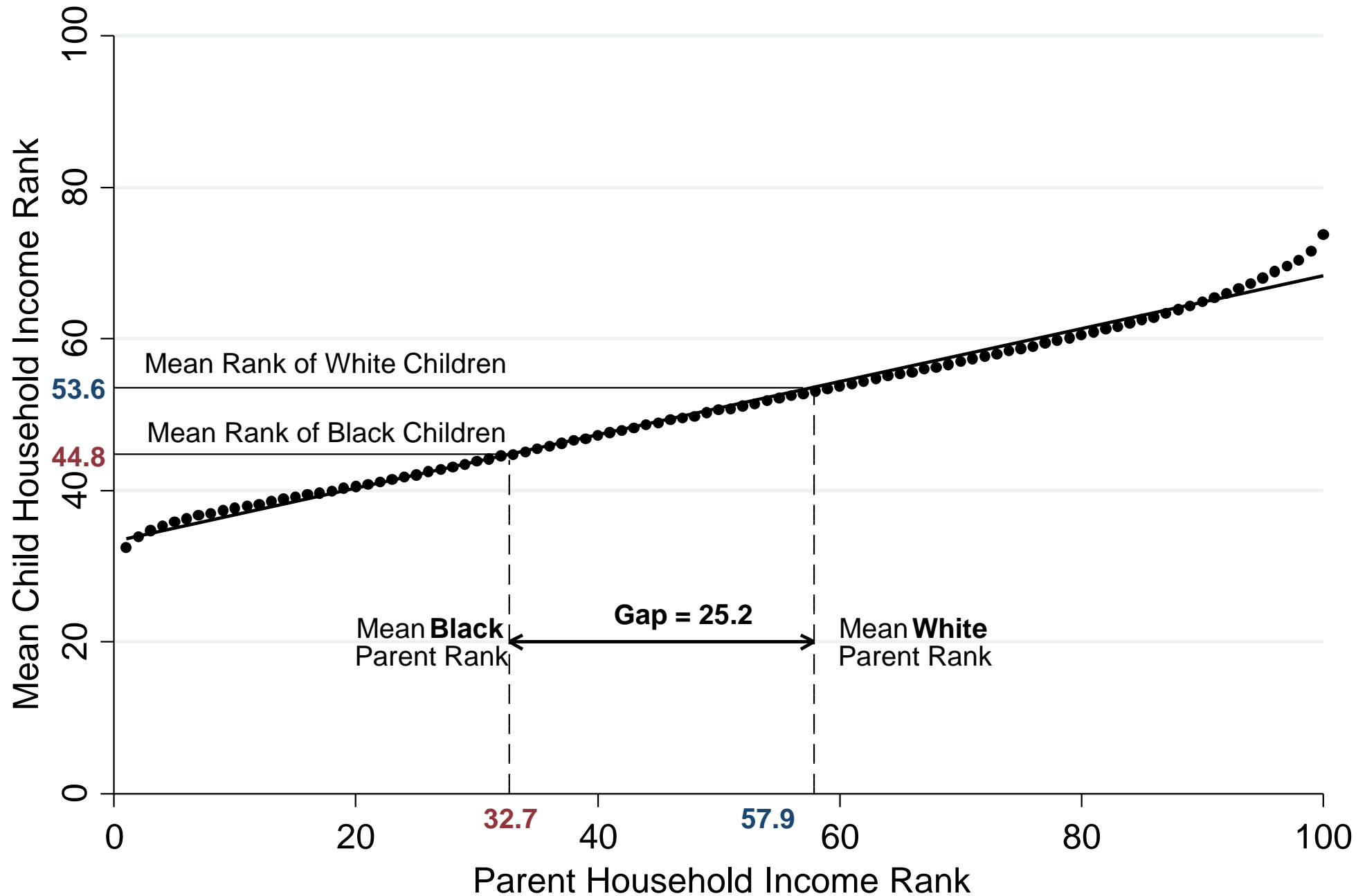
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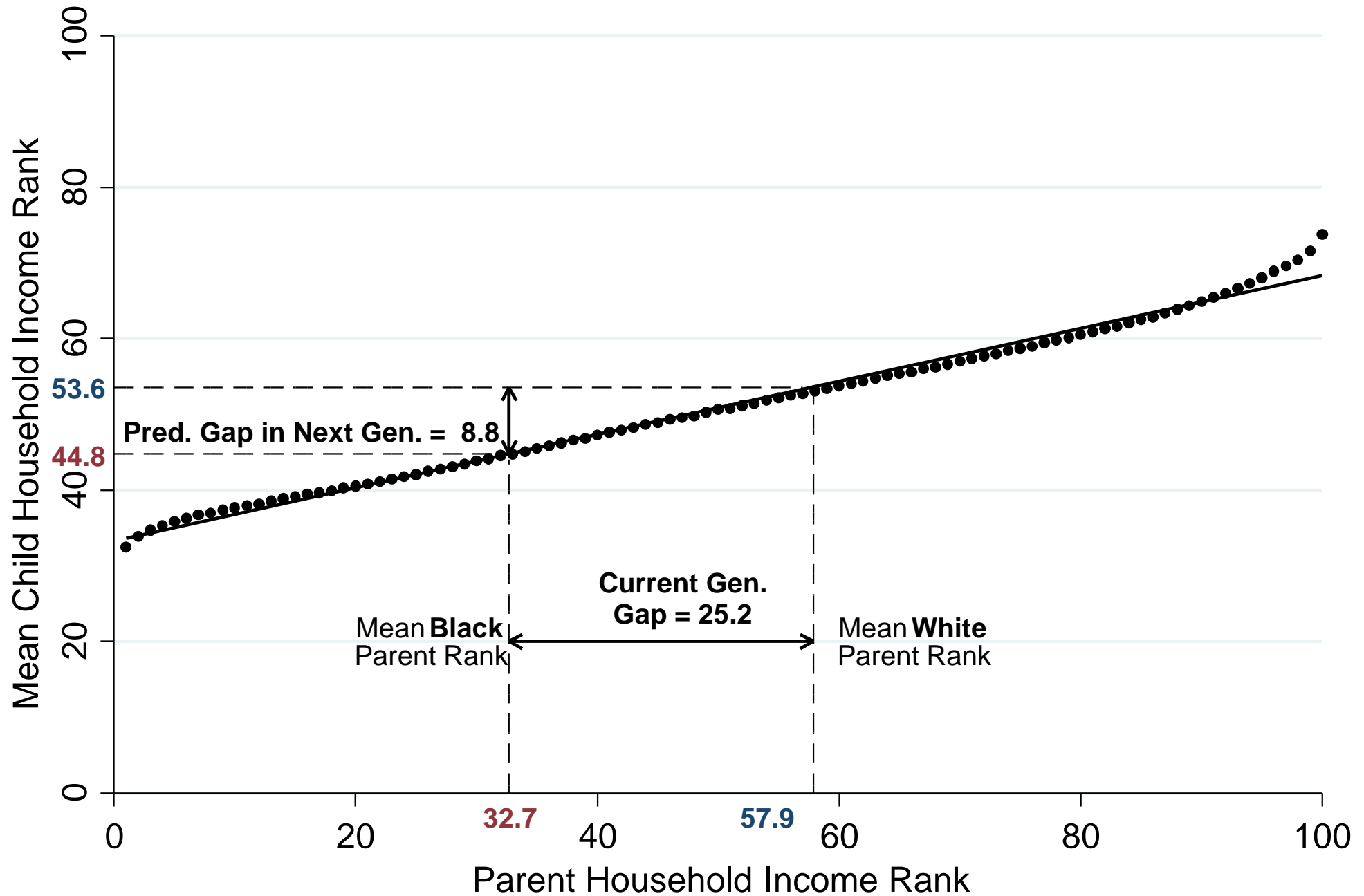
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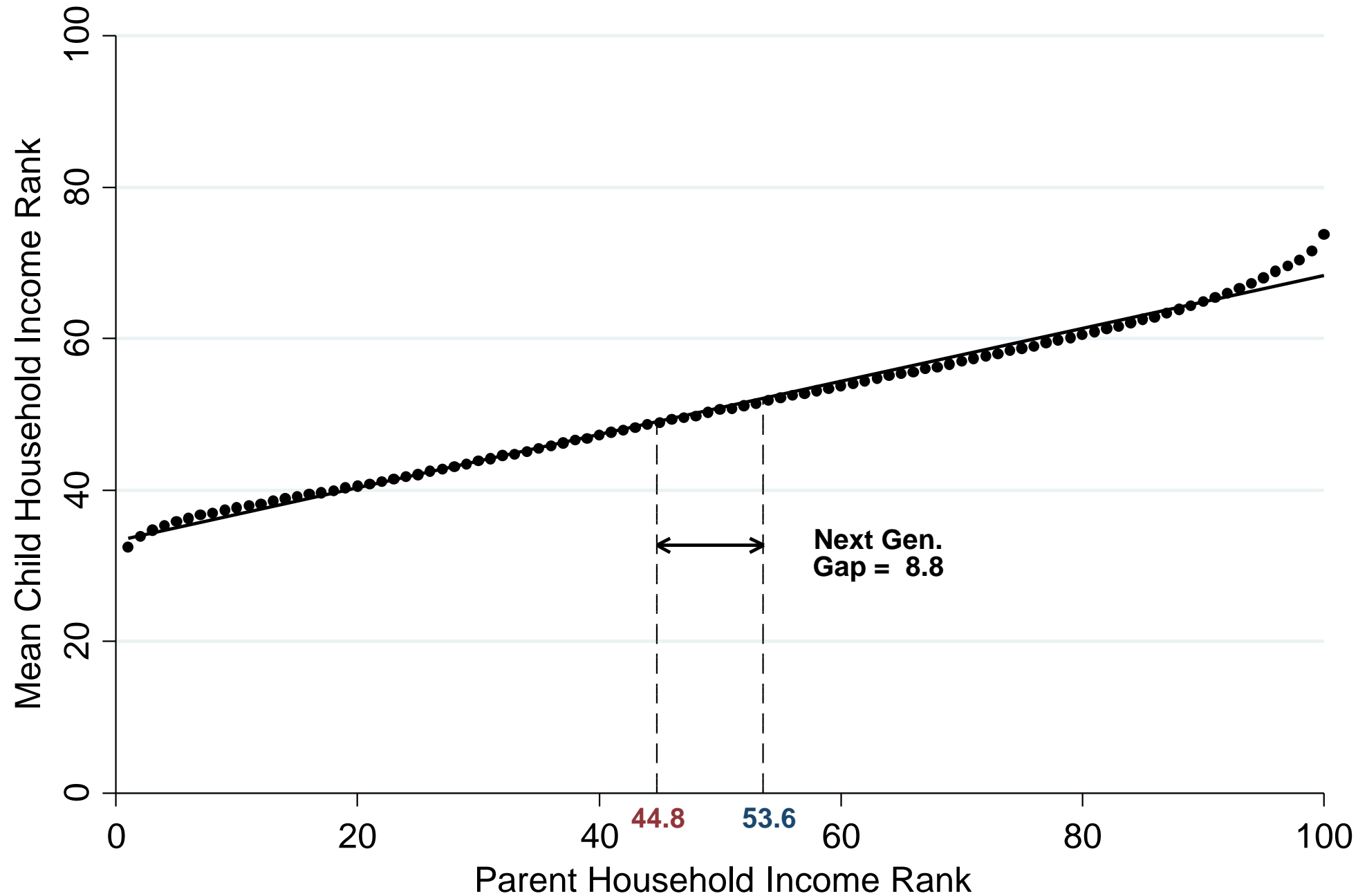
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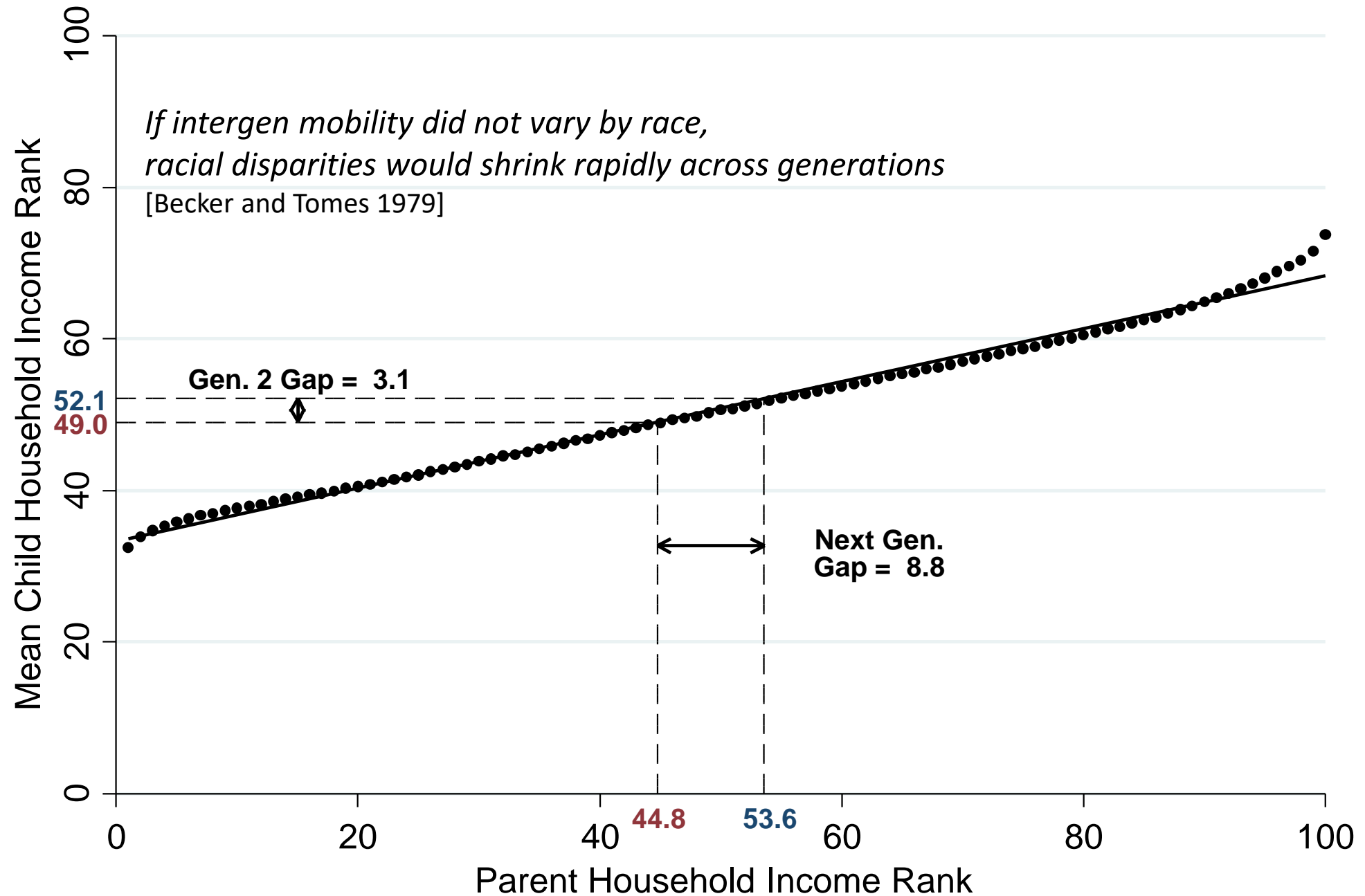
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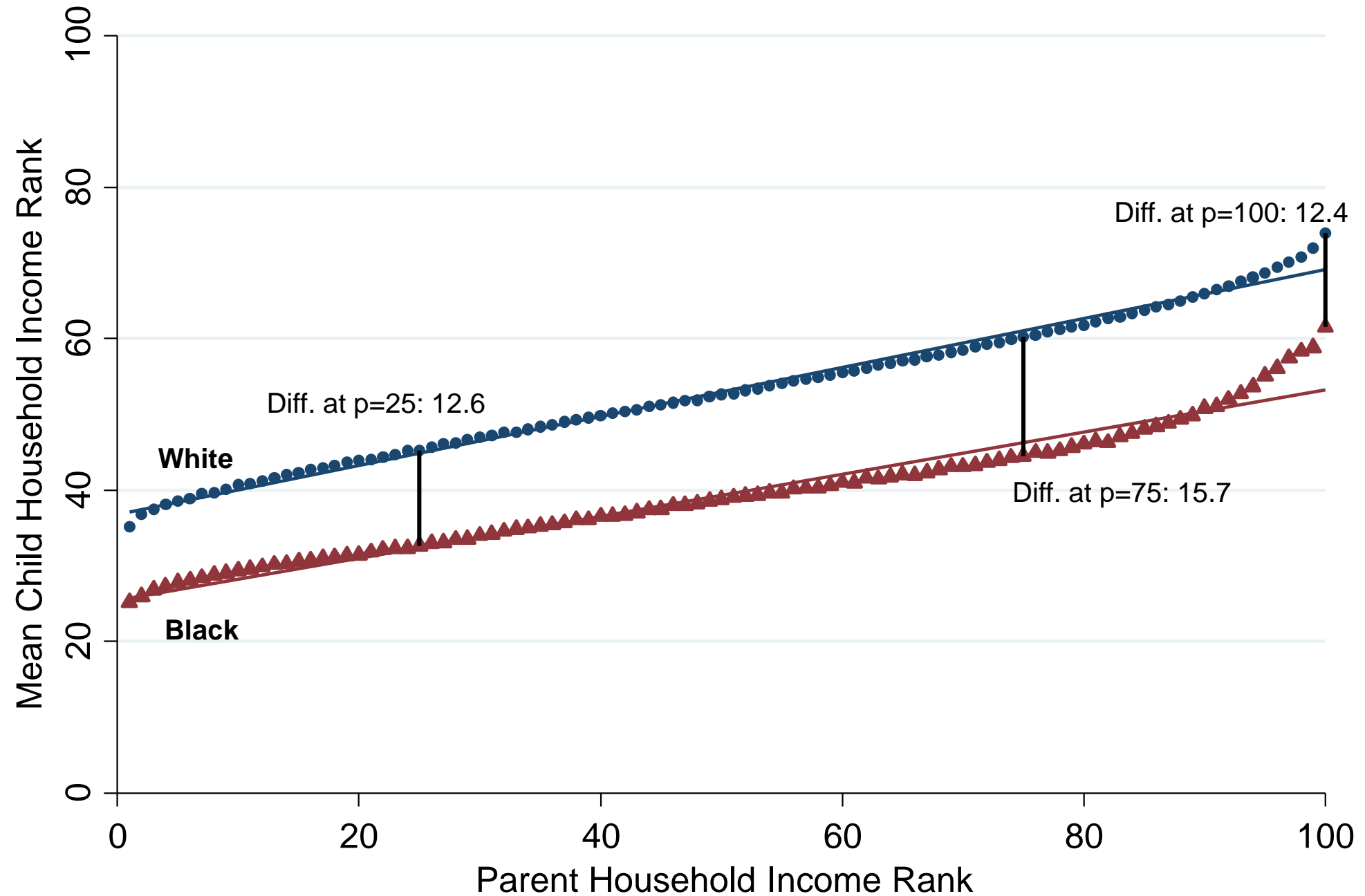
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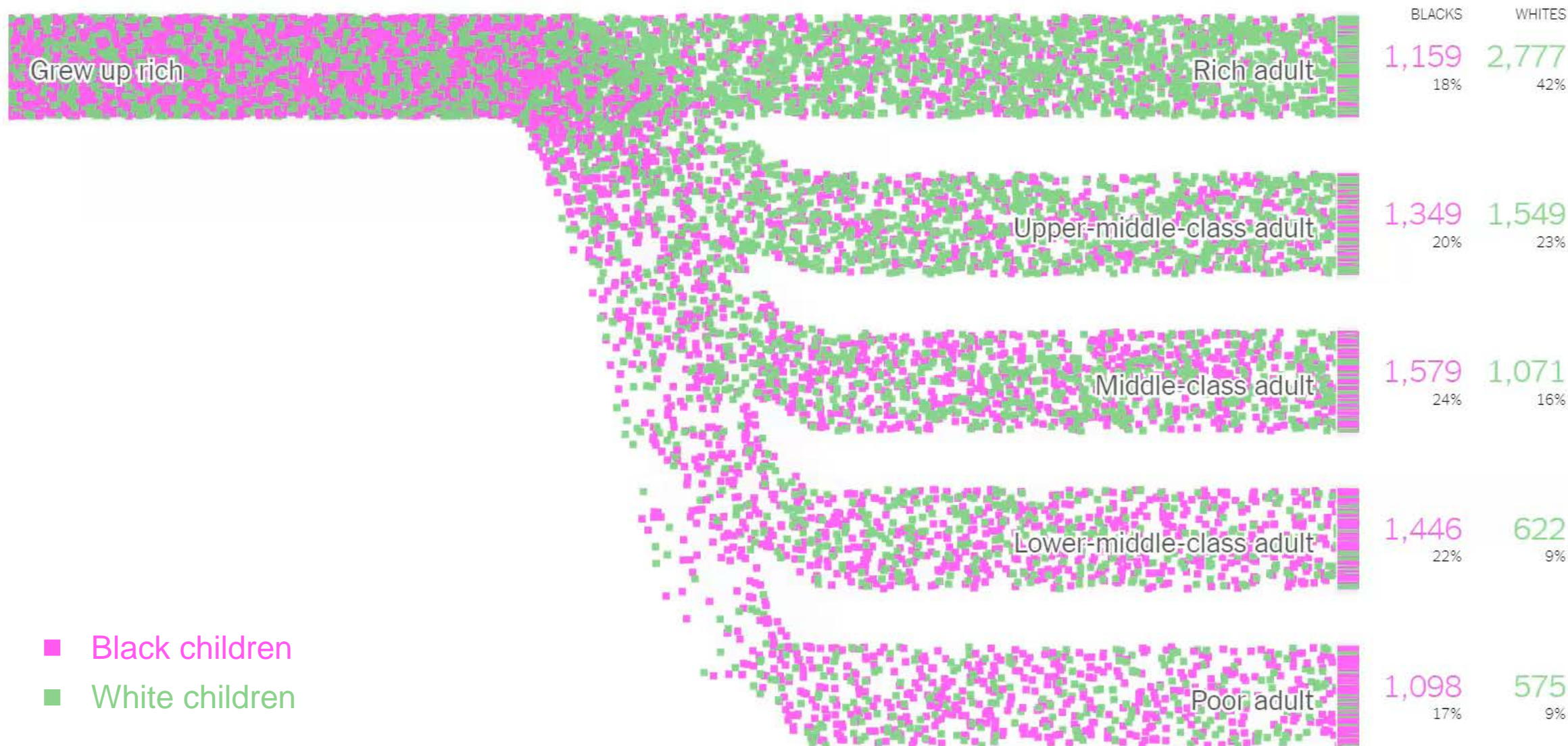


Intergenerational Mobility for Whites vs. Blacks

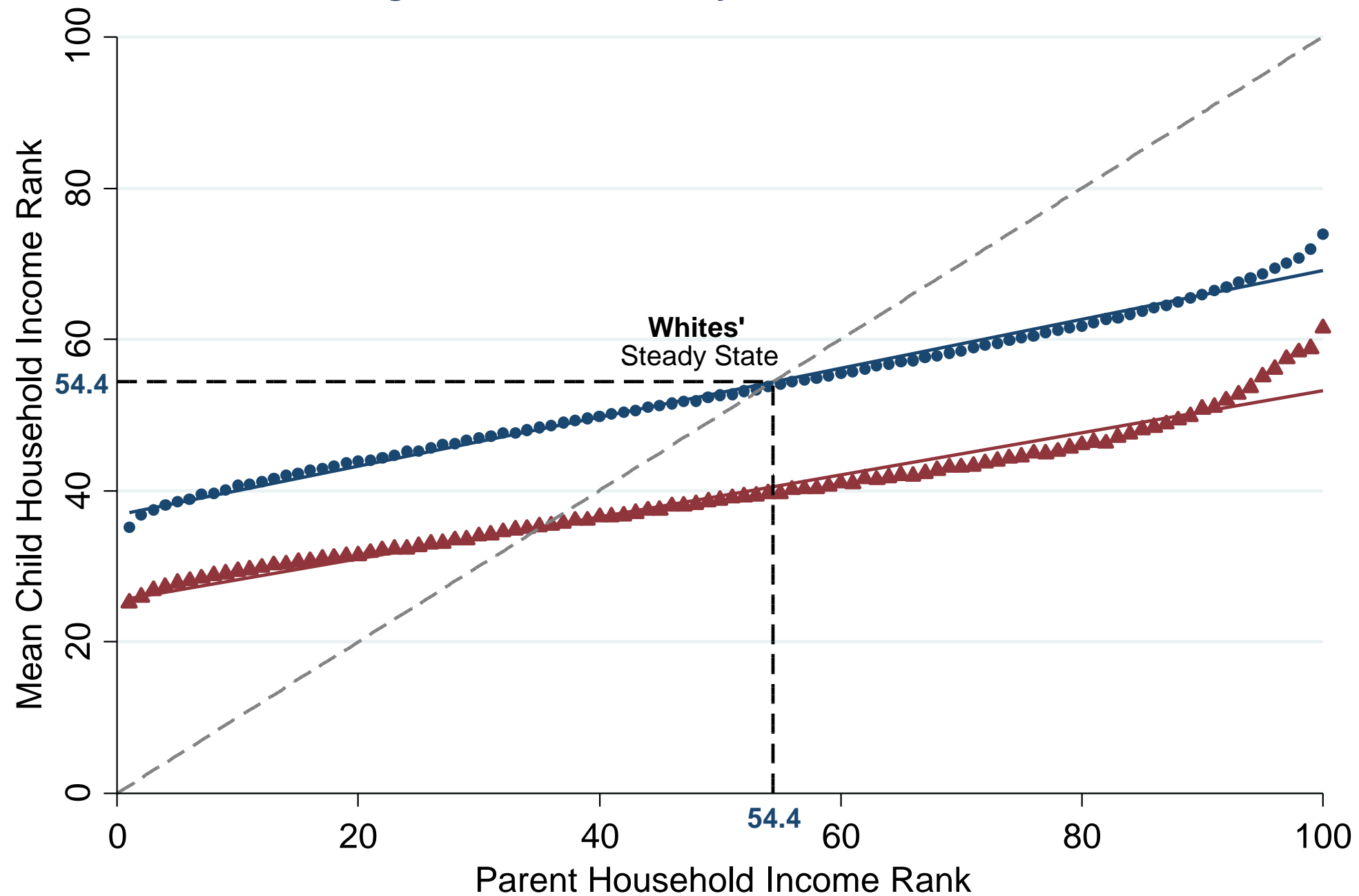


Income Mobility for Black vs. White Children Raised in High-Income Families

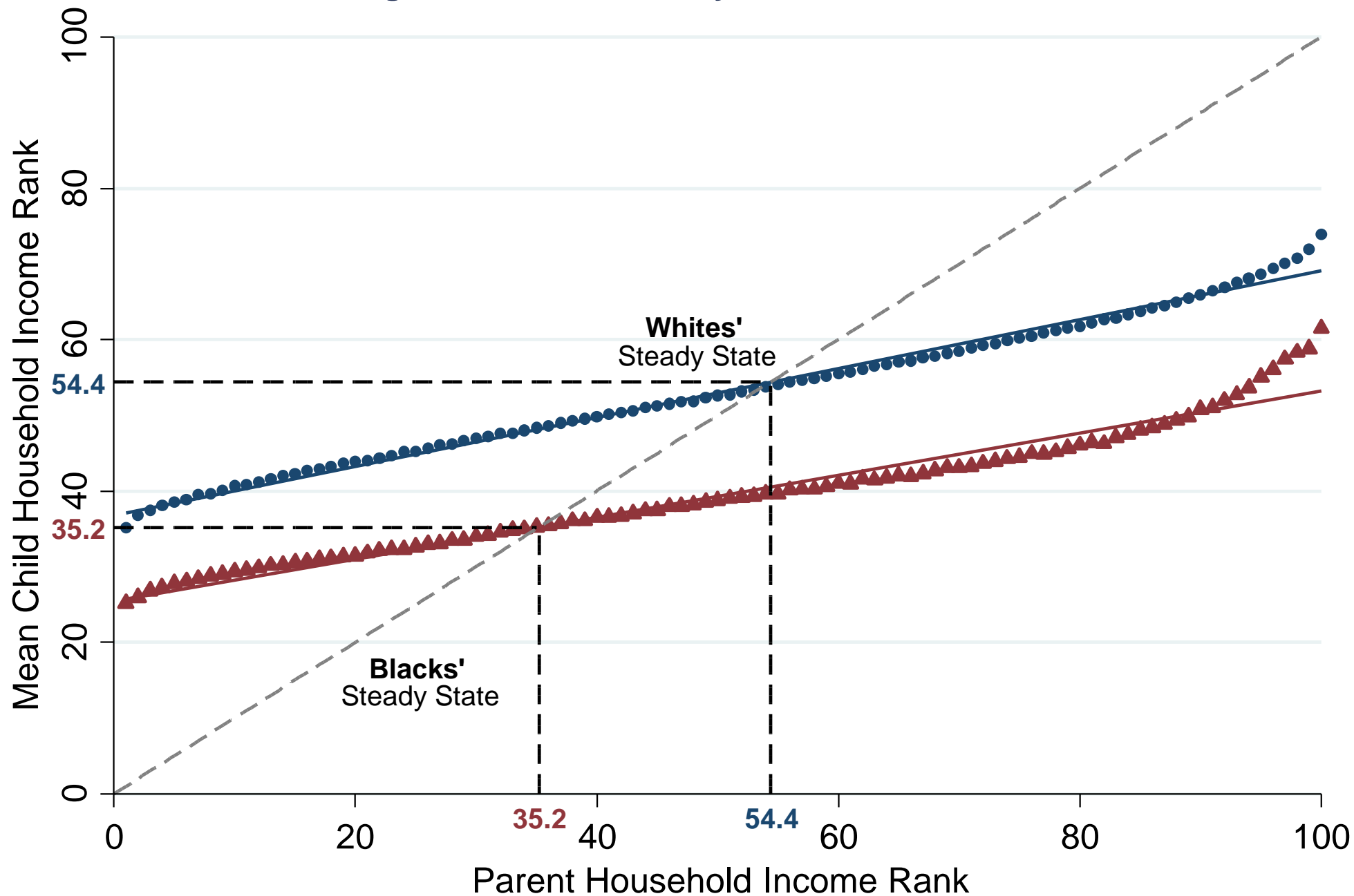
Follow the lives of these **26,867** Americans and see where they end up as adults:



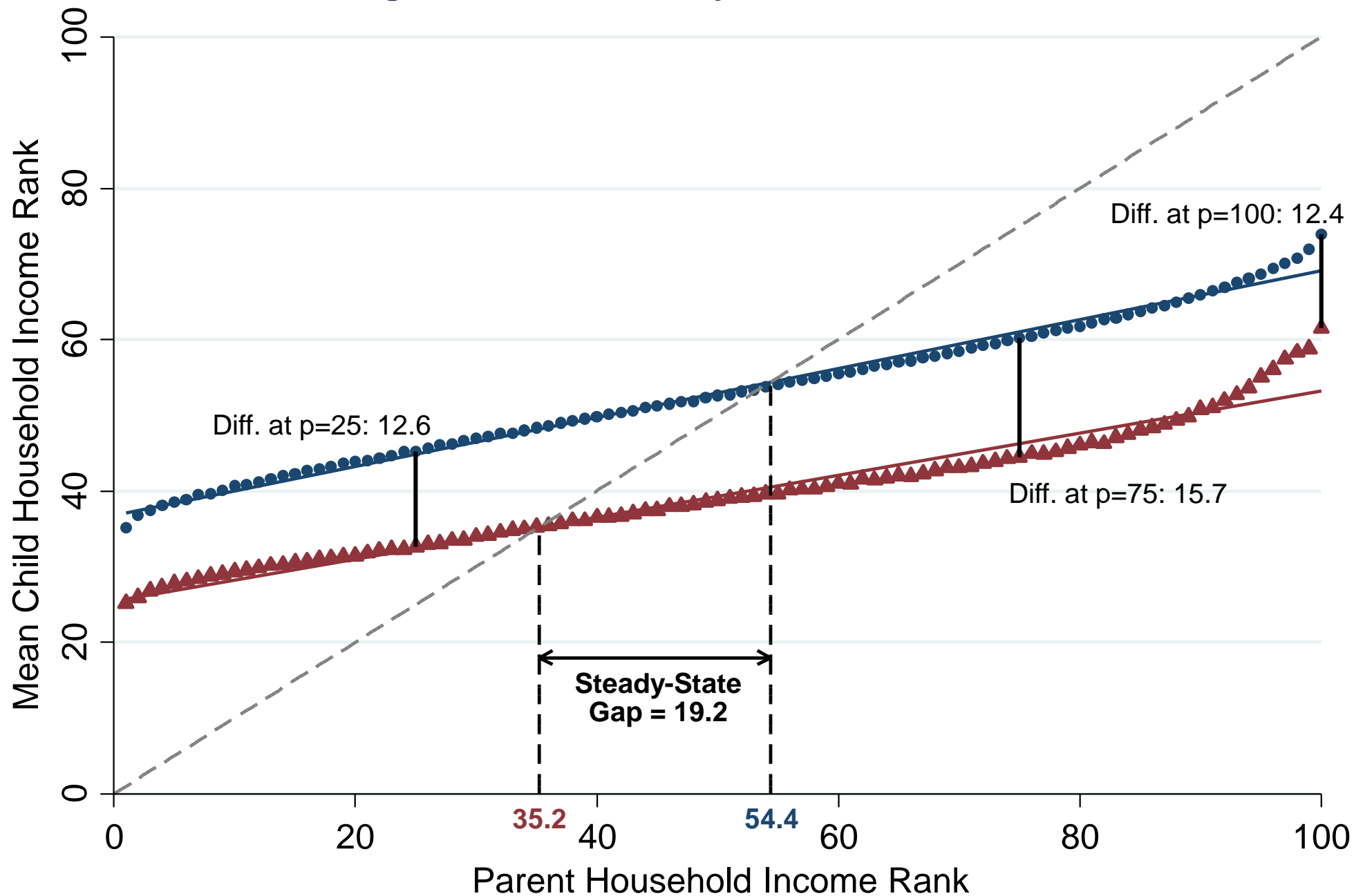
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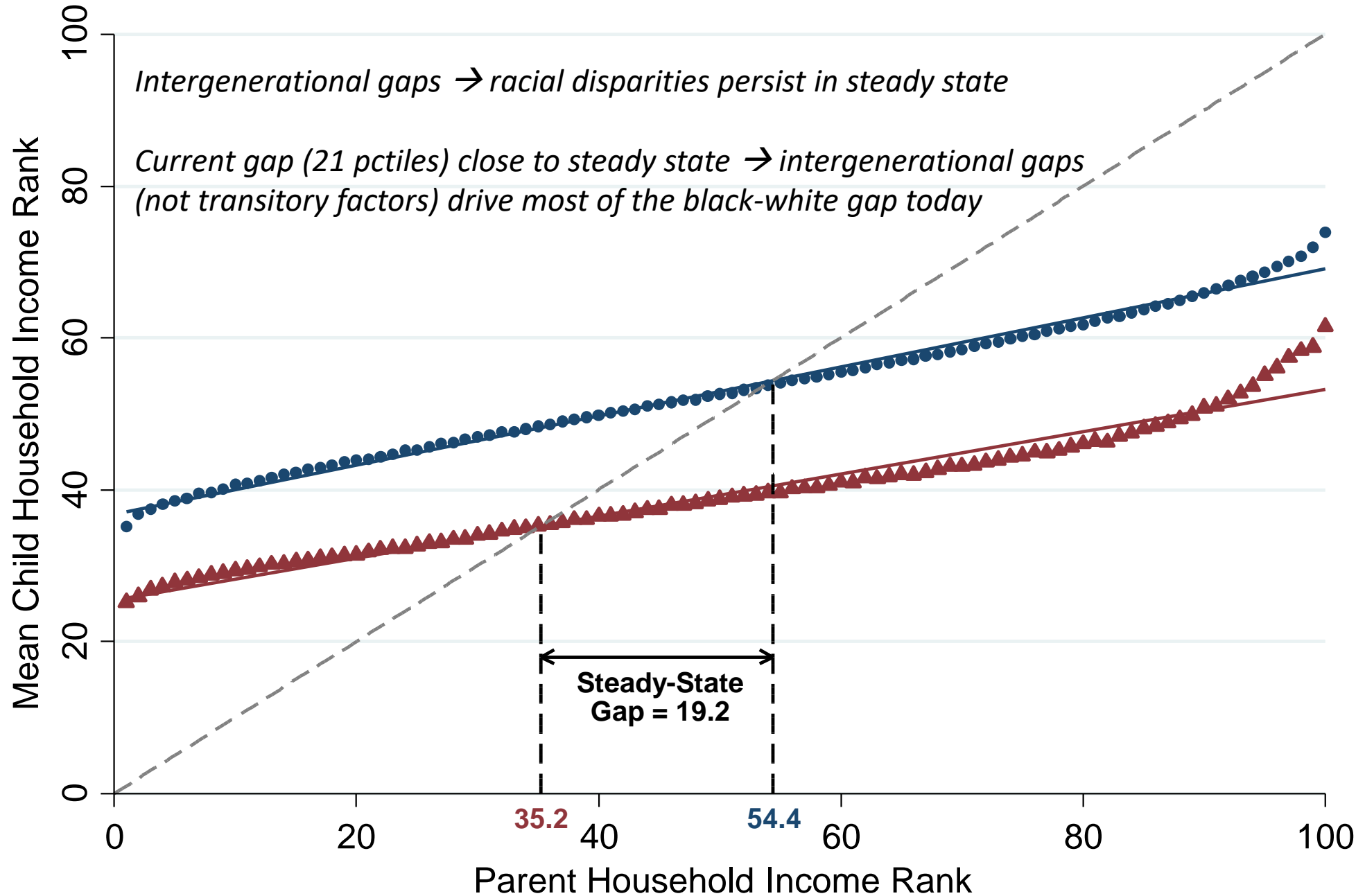
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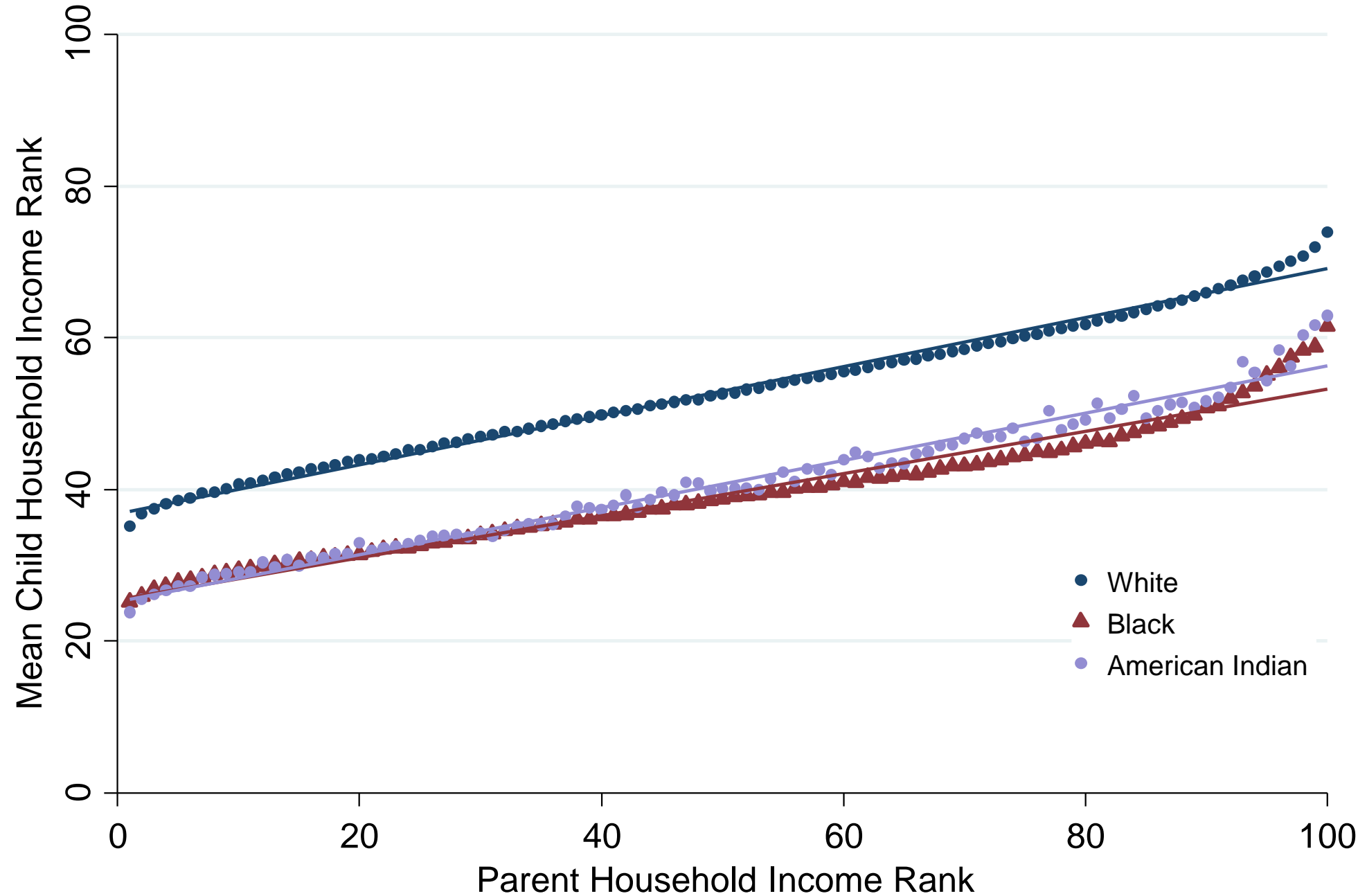
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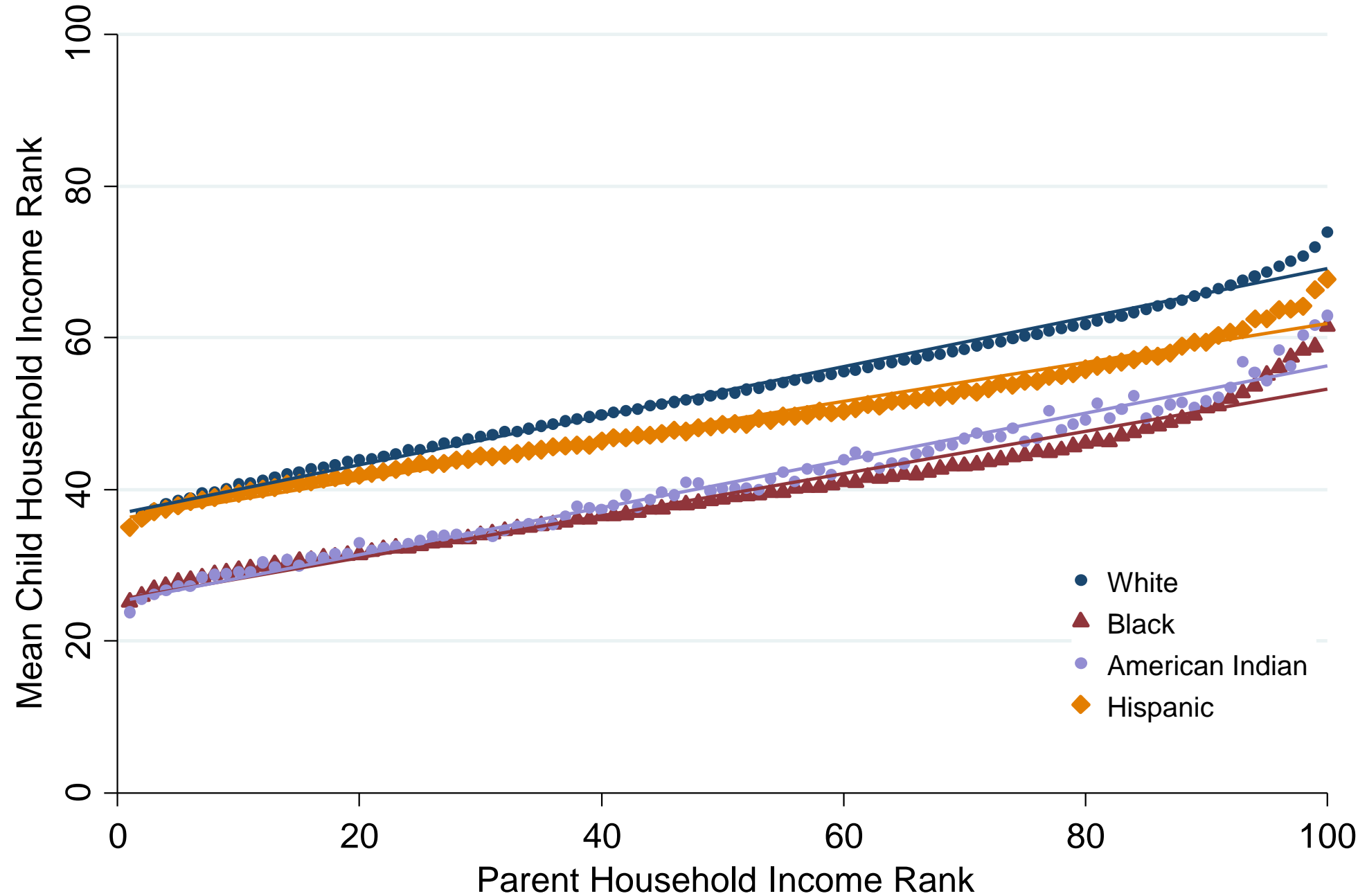
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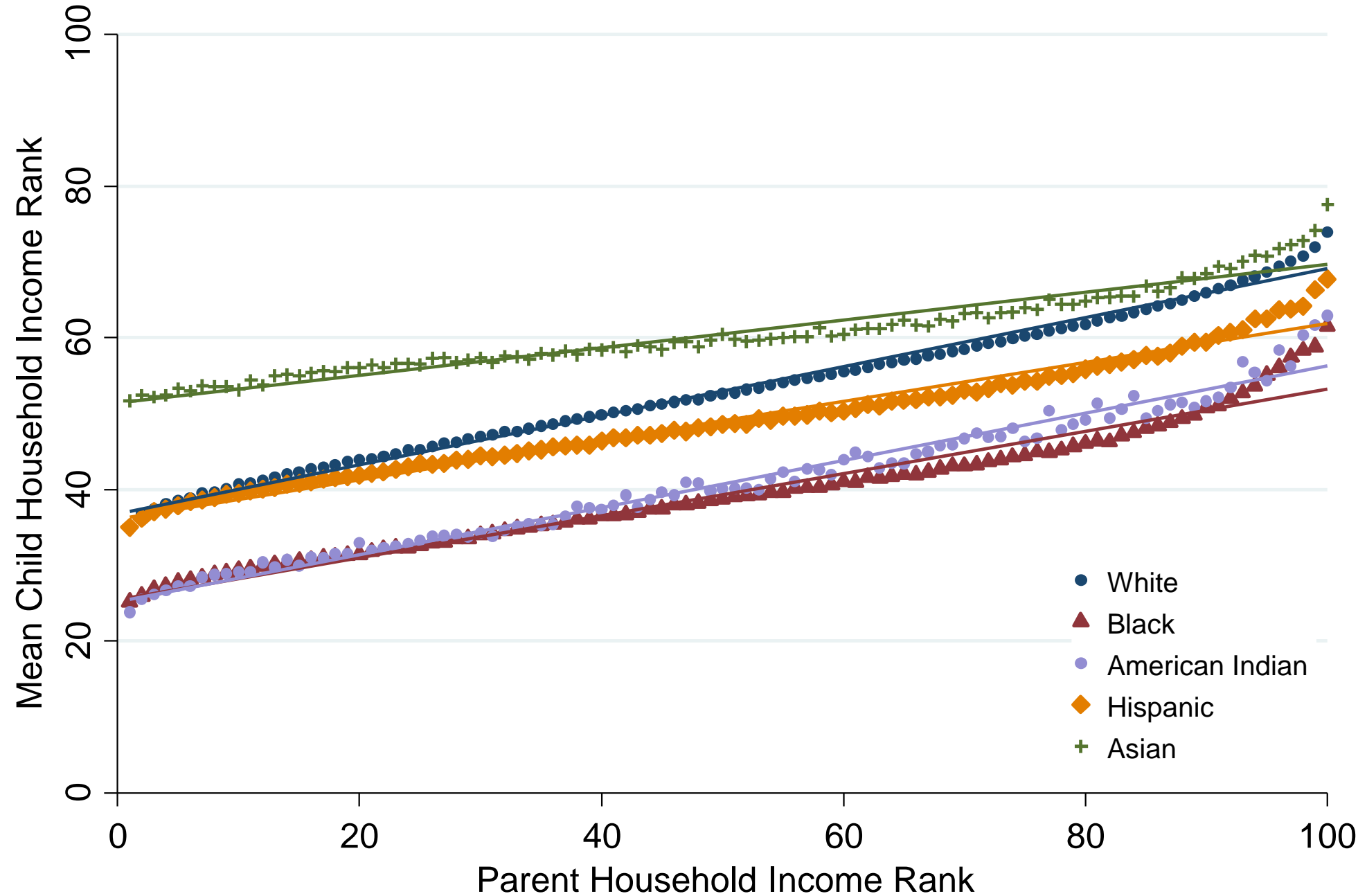
Mean Child Income Rank vs. Parent Income Rank by Race and Ethnicity



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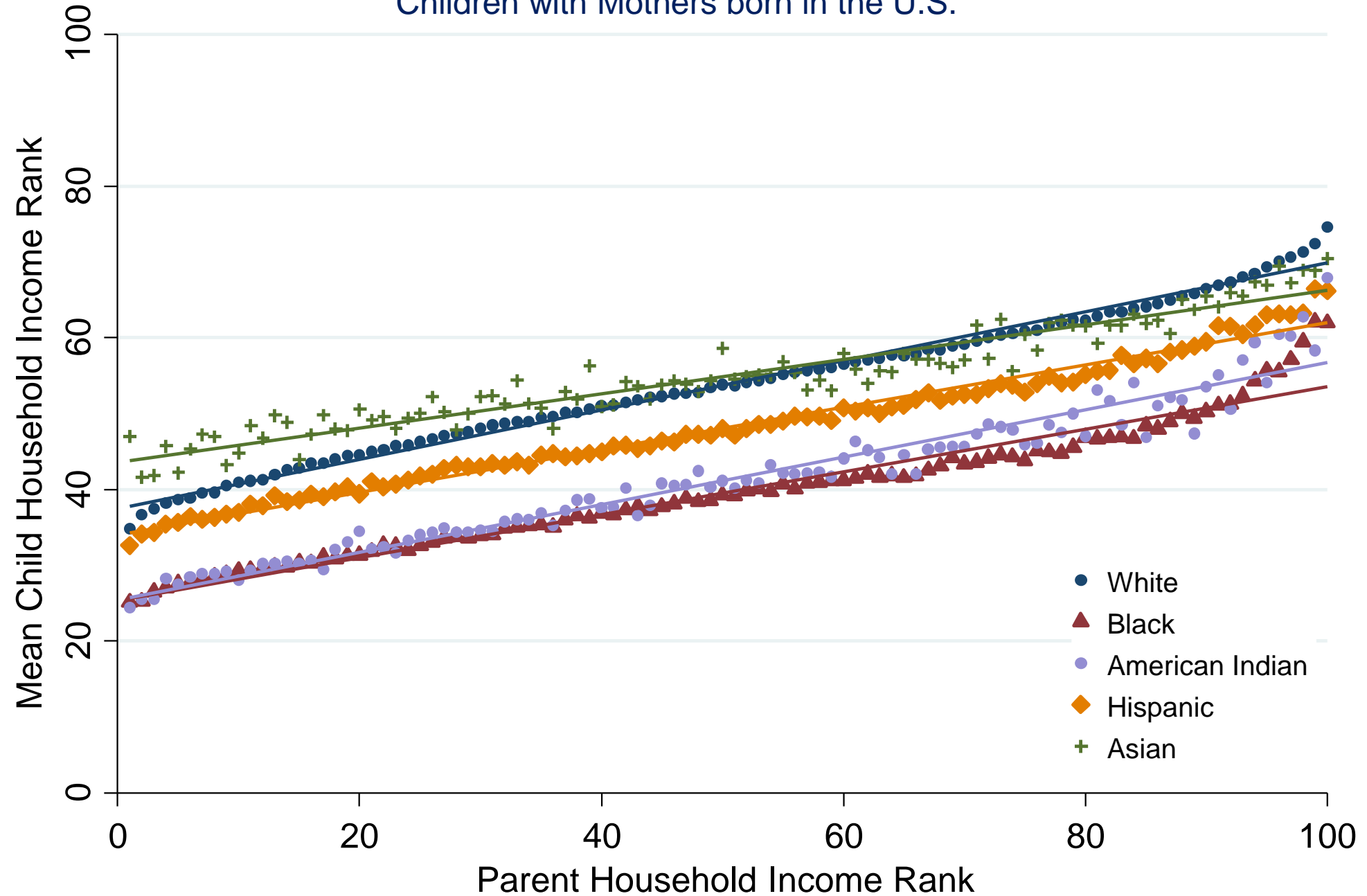


Mean Child Income Rank vs. Parent Income Rank by Race and Ethnicity

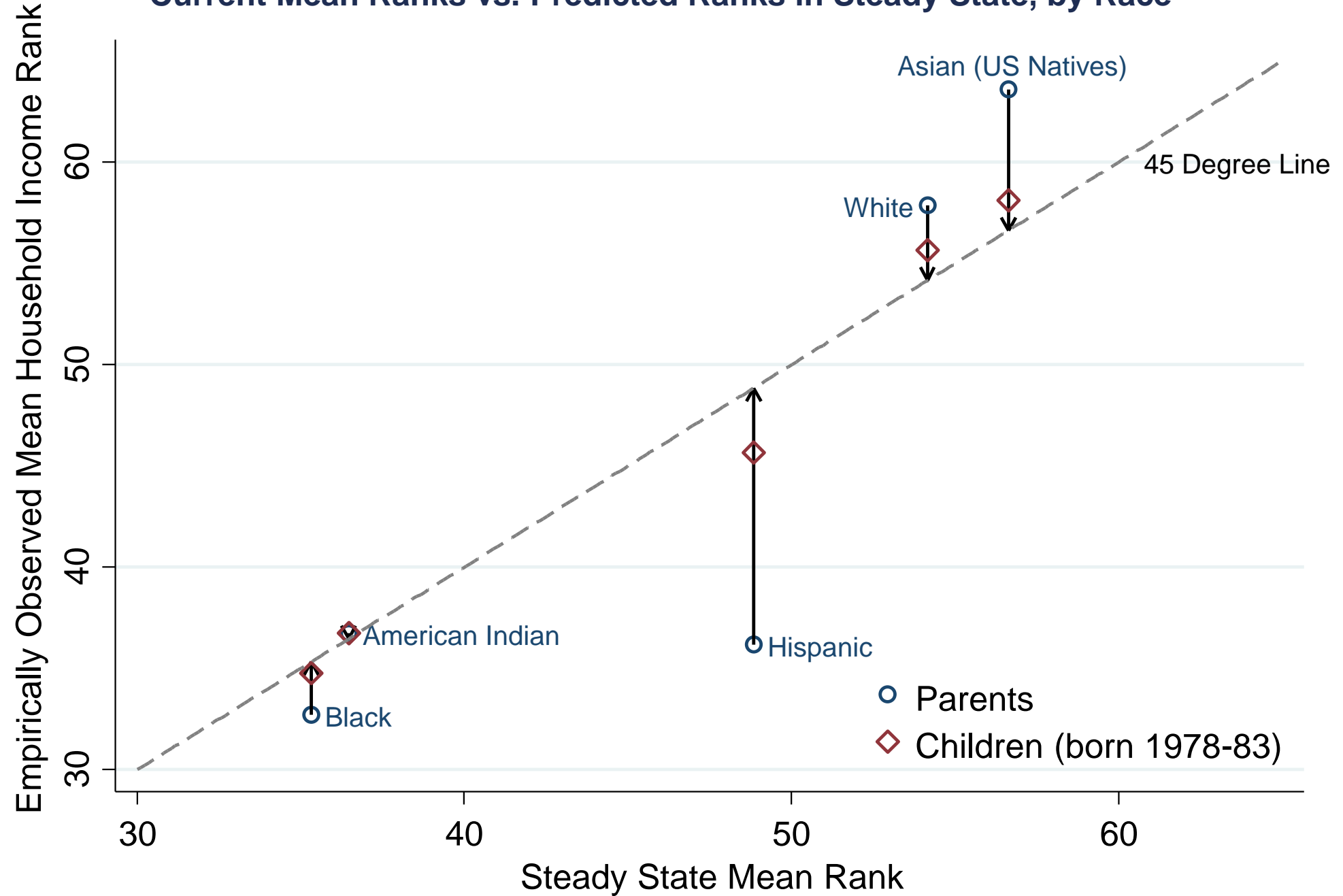


Mean Child Income Rank vs. Parent Income Rank by Race and Ethnicity

Children with Mothers born in the U.S.



Current Mean Ranks vs. Predicted Ranks in Steady State, by Race



Intergenerational Persistence of Racial Disparities

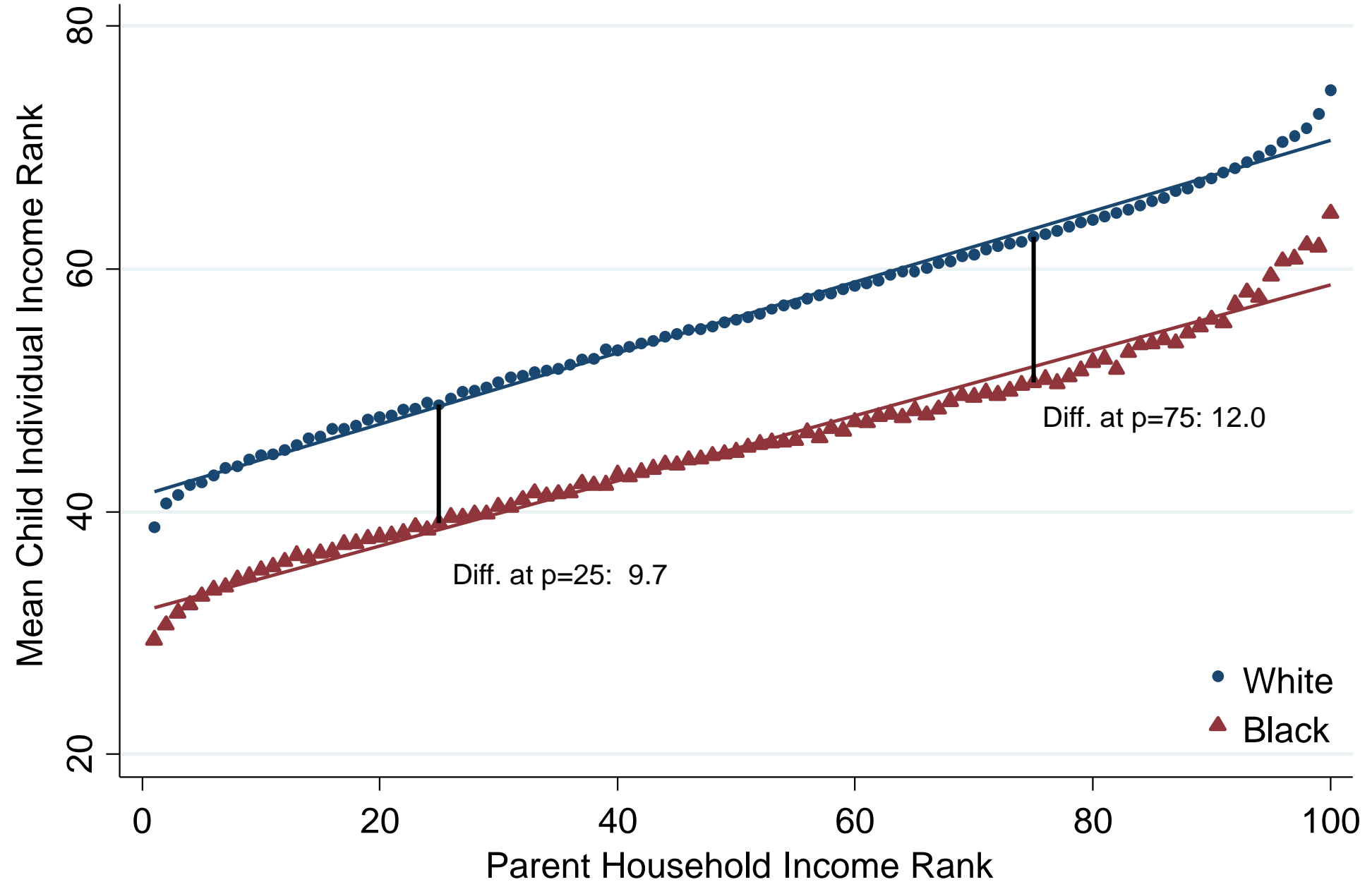
- Black Americans are close to their long-run steady-state
 - Suggests that intergenerational gaps (not transitory factors) drive most of the black-white gap today
- Addressing the black-white gap therefore requires understanding sources of intergenerational gaps
 - Why do black children earn less than white children who grow up in families with comparable incomes?

Gender Differences in Racial Gaps

- First step in understanding this: examine differences by gender
- Focus on **individual** (own) income for this analysis, excluding spousal income

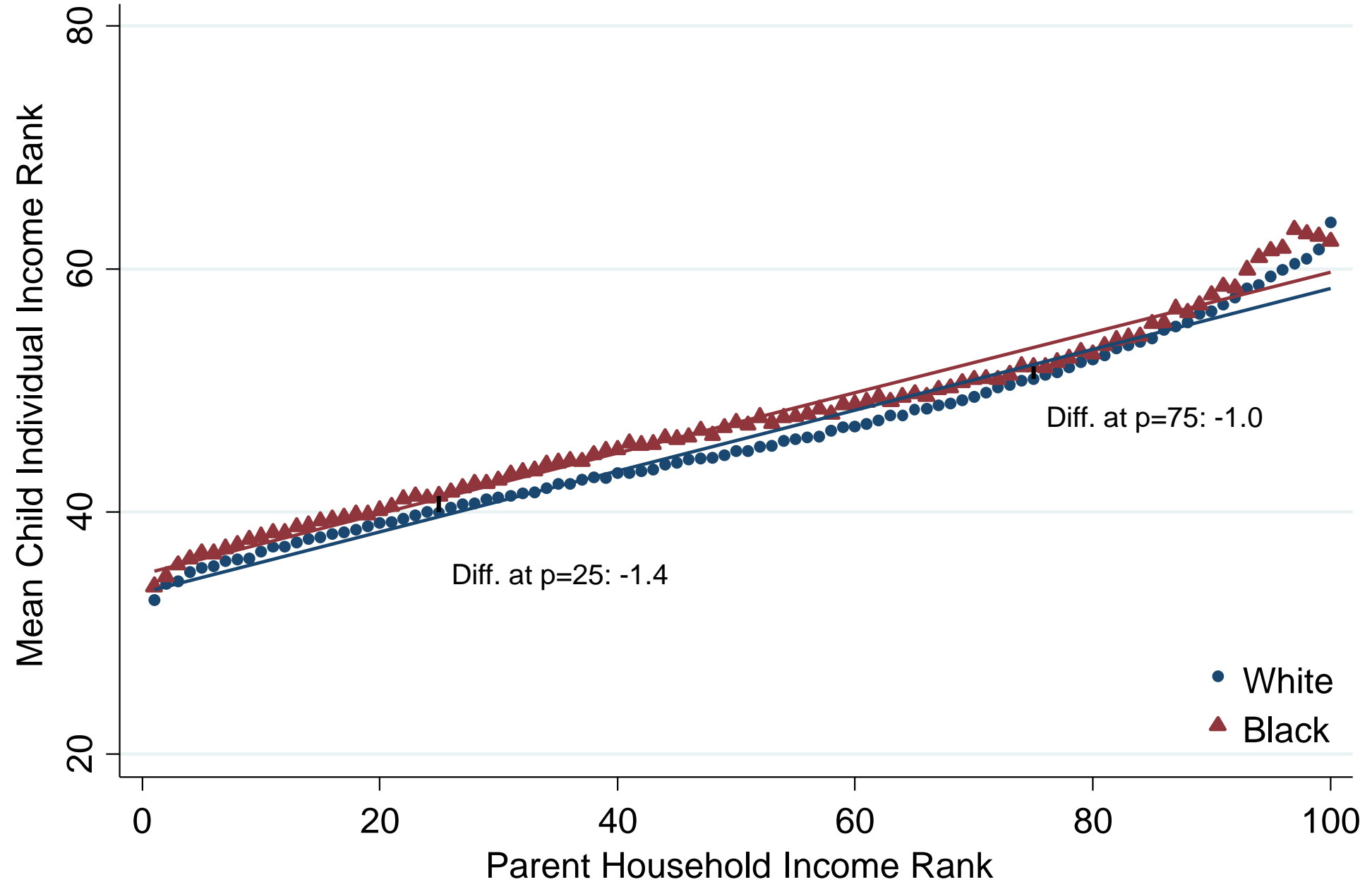
Black-White Gap in Child Individual Income Rank vs. Parent Income Rank

Male Children



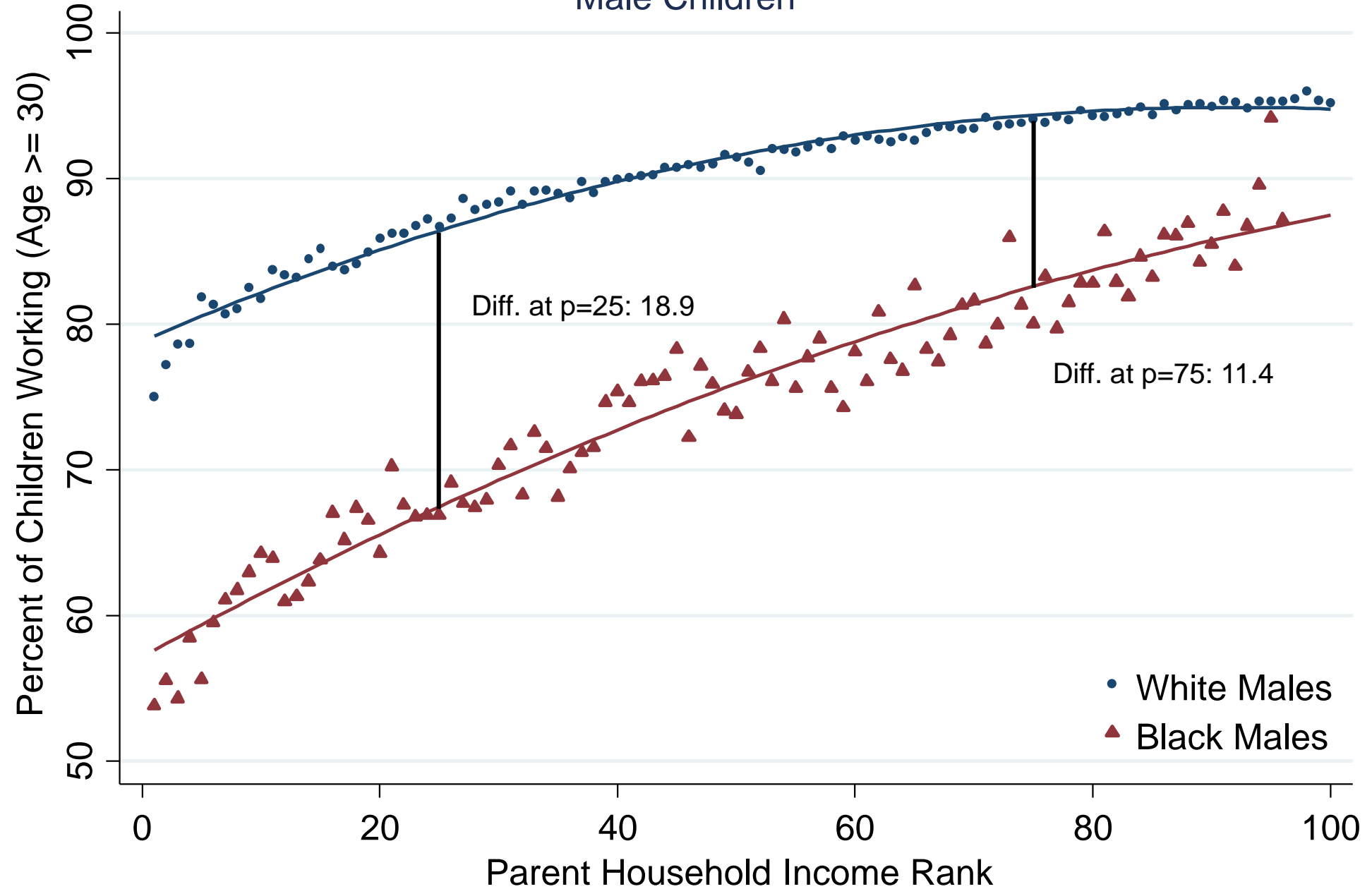
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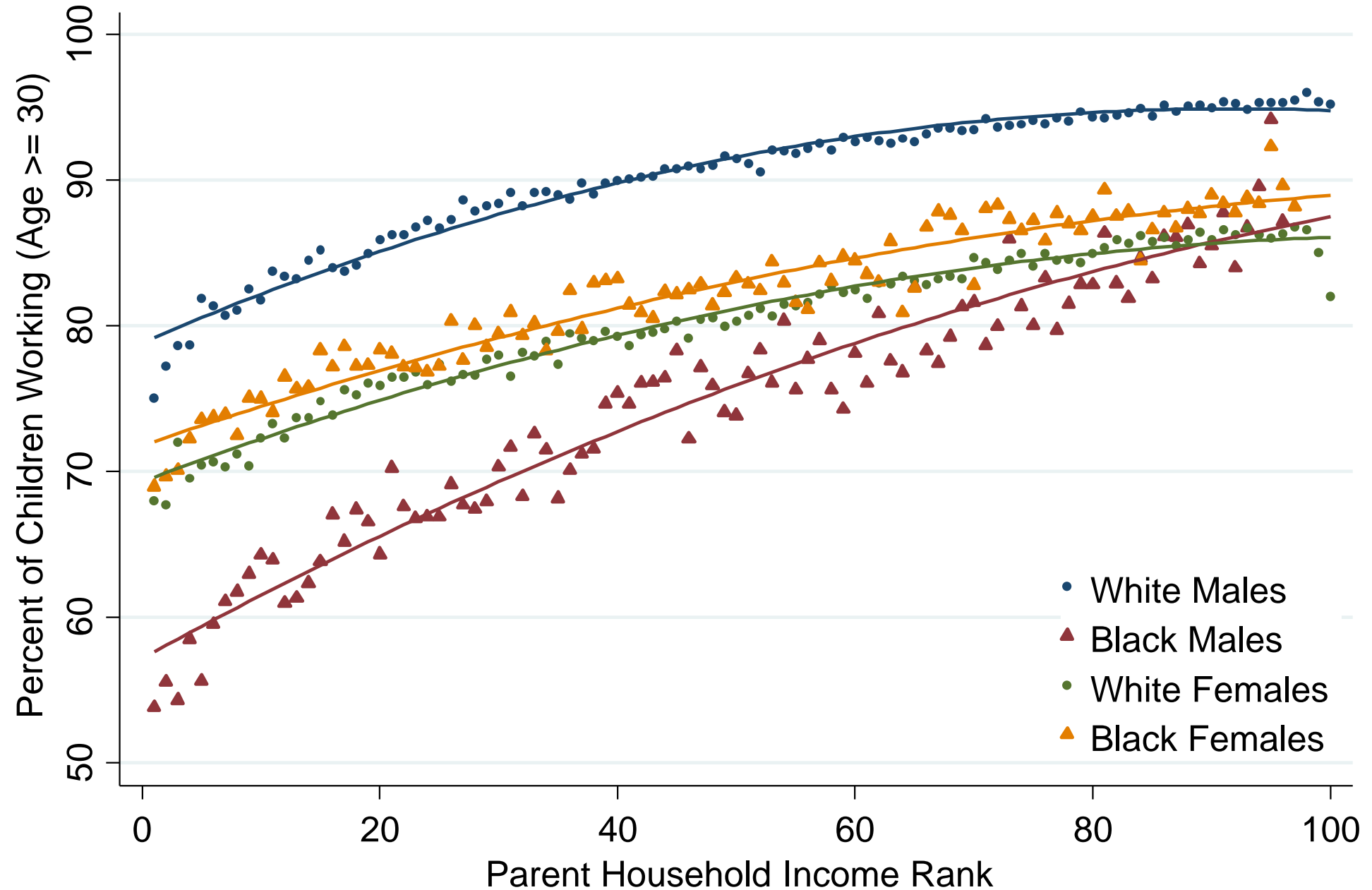


Employment Rates vs. Parent Income Rank

Male Children

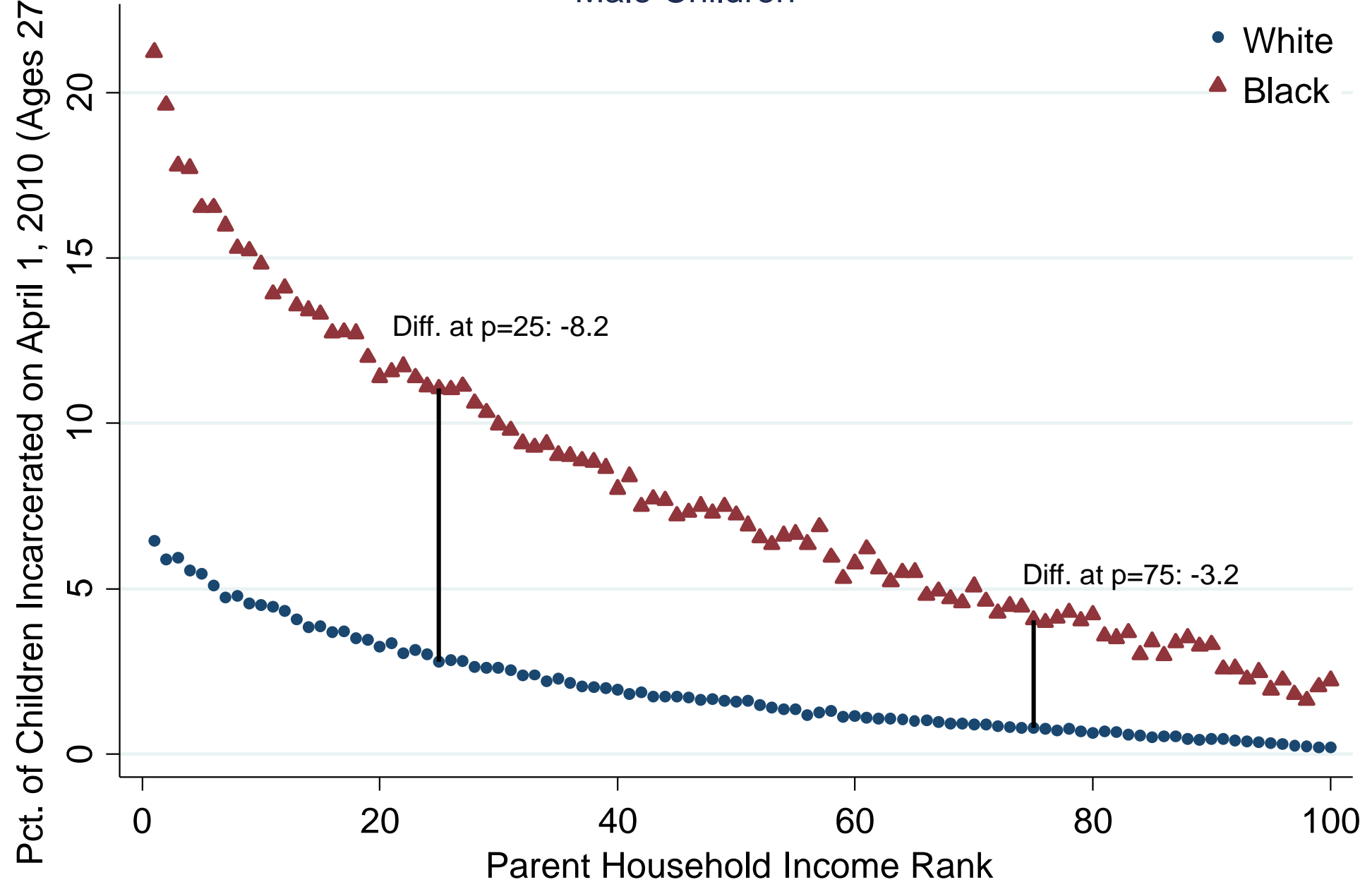


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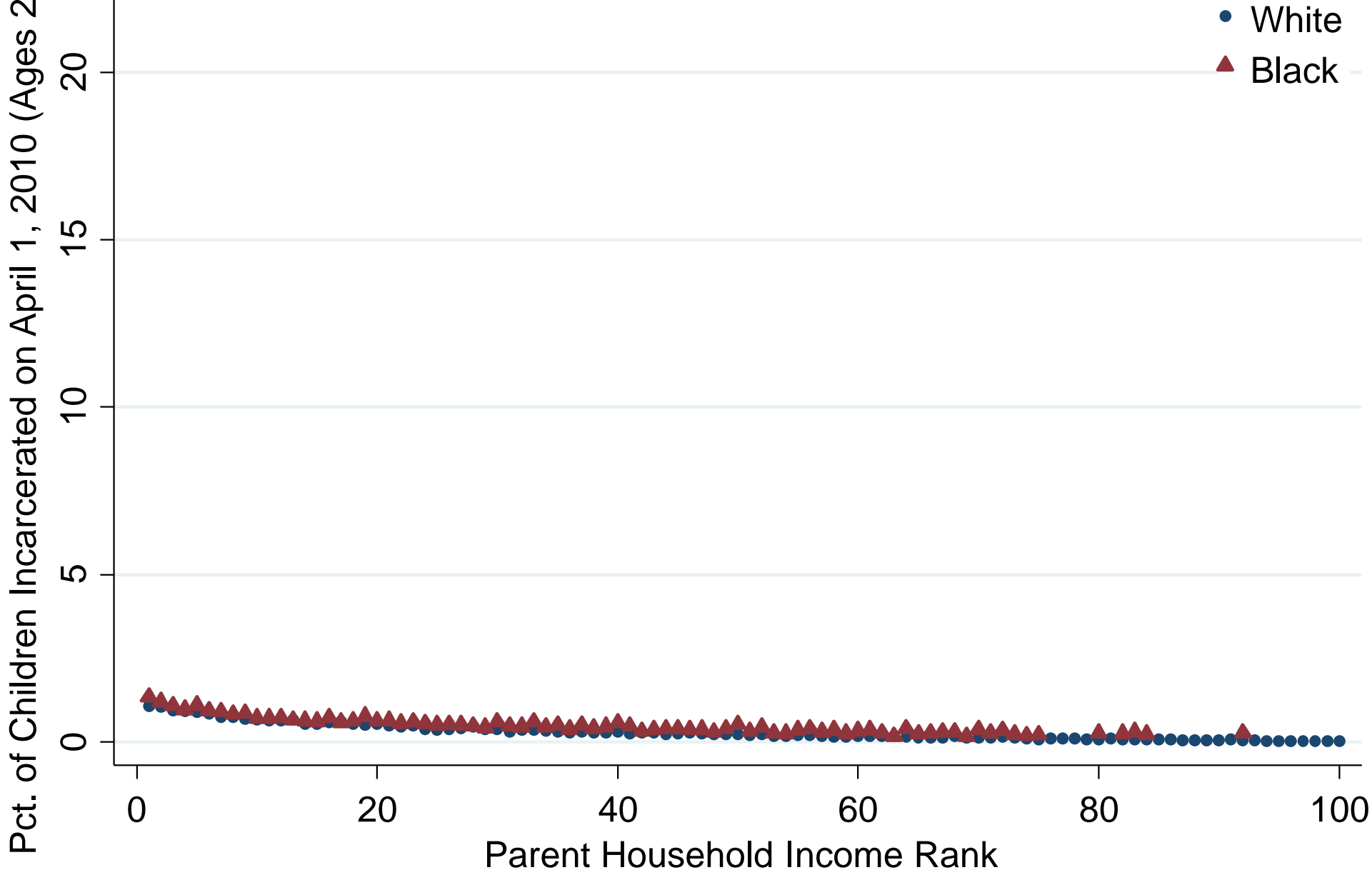
Incarceration Rates vs. Parent Income Rank

Male Children



Incarceration Rates vs. Parent Income Rank

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Explaining the Black-White Intergenerational Income Gap

Family-Level Factors

- Do family-level factors (e.g., parental wealth, education, etc.) explain the black-white intergenerational gap?
 - No: Black men who grow up in two-parent families with comparable income, education, and wealth to white men still fare worse

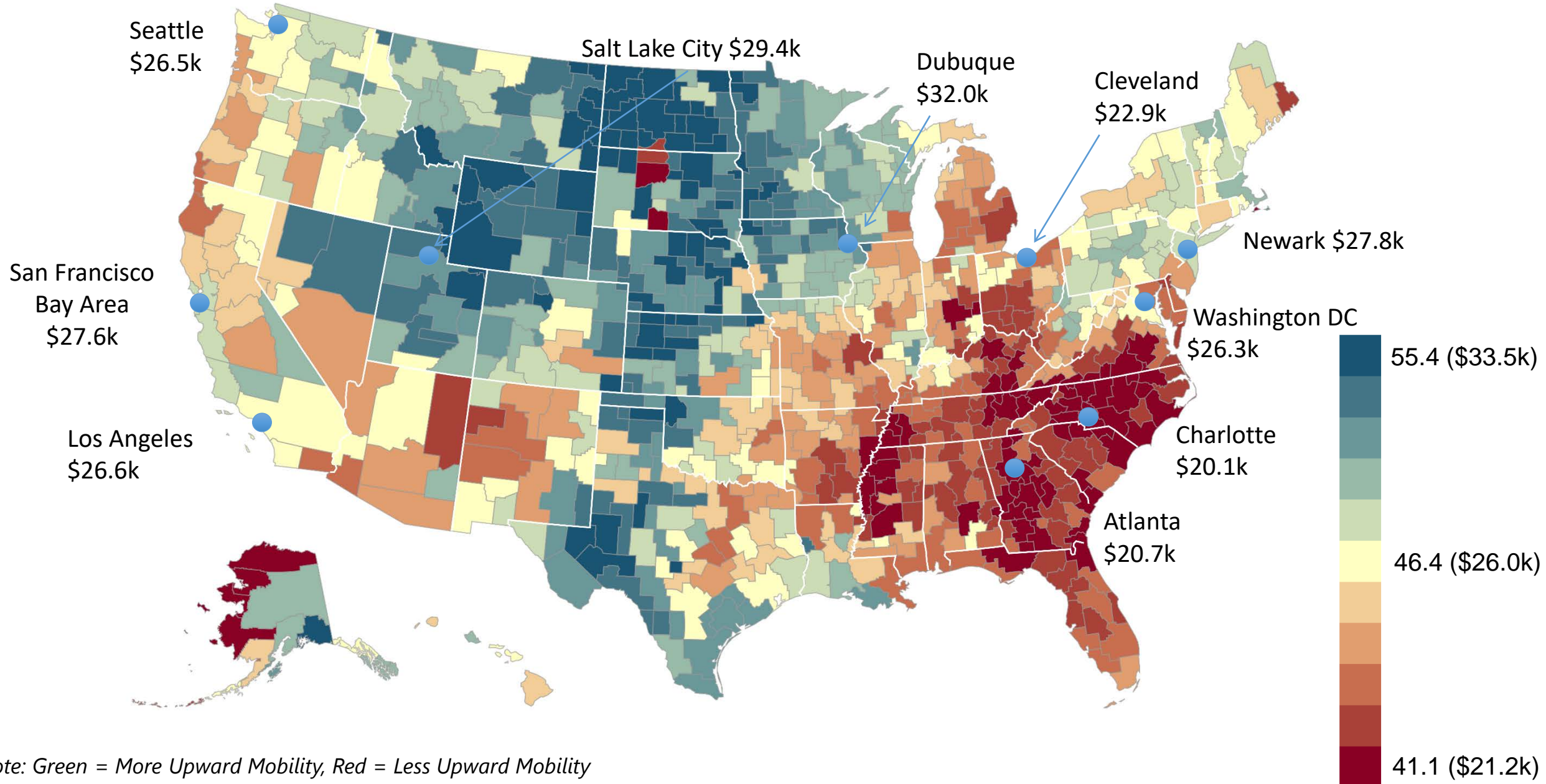
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- Suggests that environmental factors beyond the family matter
- Study the role of environmental factors by analyzing differences in black-white gaps across neighborhoods

The Geography of Upward Mobility in the United States

Average Individual Income Rank for Males with Parents Earning \$25,000 (25th percentile)

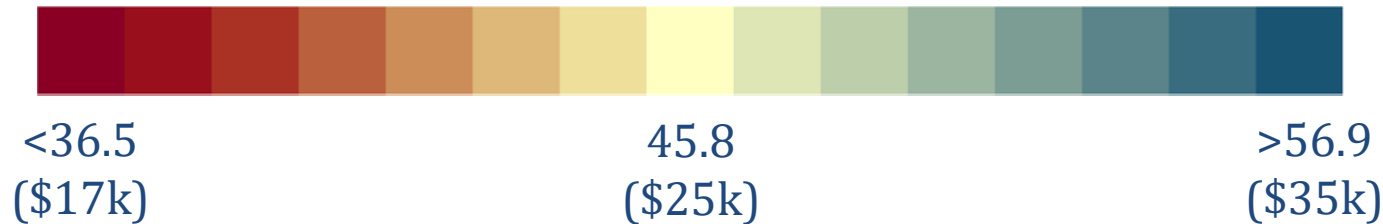
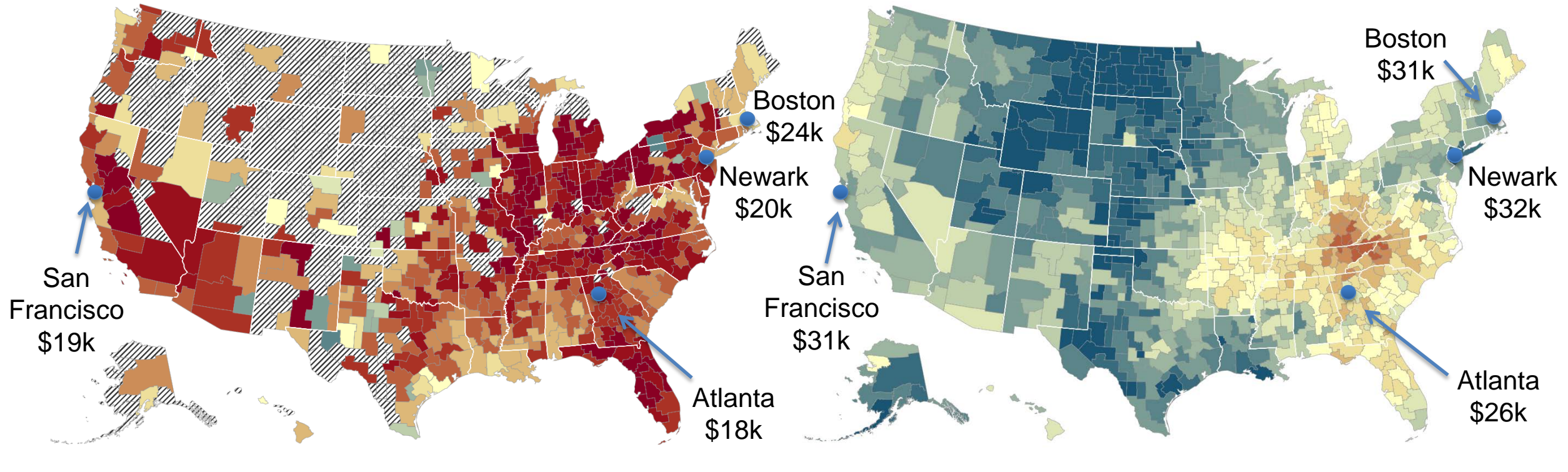


Two Americas: The Geography of Upward Mobility by Race

Average Individual Income Rank for Boys with Parents Earning \$25,000 (25th percentile)

Black Men

White Men



Note: Green = More Upward Mobility, Red = Less Upward Mobility; Grey = Insufficient Data

Neighborhood Environments and the Black-White Gap

- Commuting-zone level variation illuminates broad regional patterns but does not directly test for “neighborhood” effects
- Blacks live in different neighborhoods from whites within CZs
- Zoom in to examine variation across Census tracts

Variation in the Black-White Earnings Gap Across Tracts

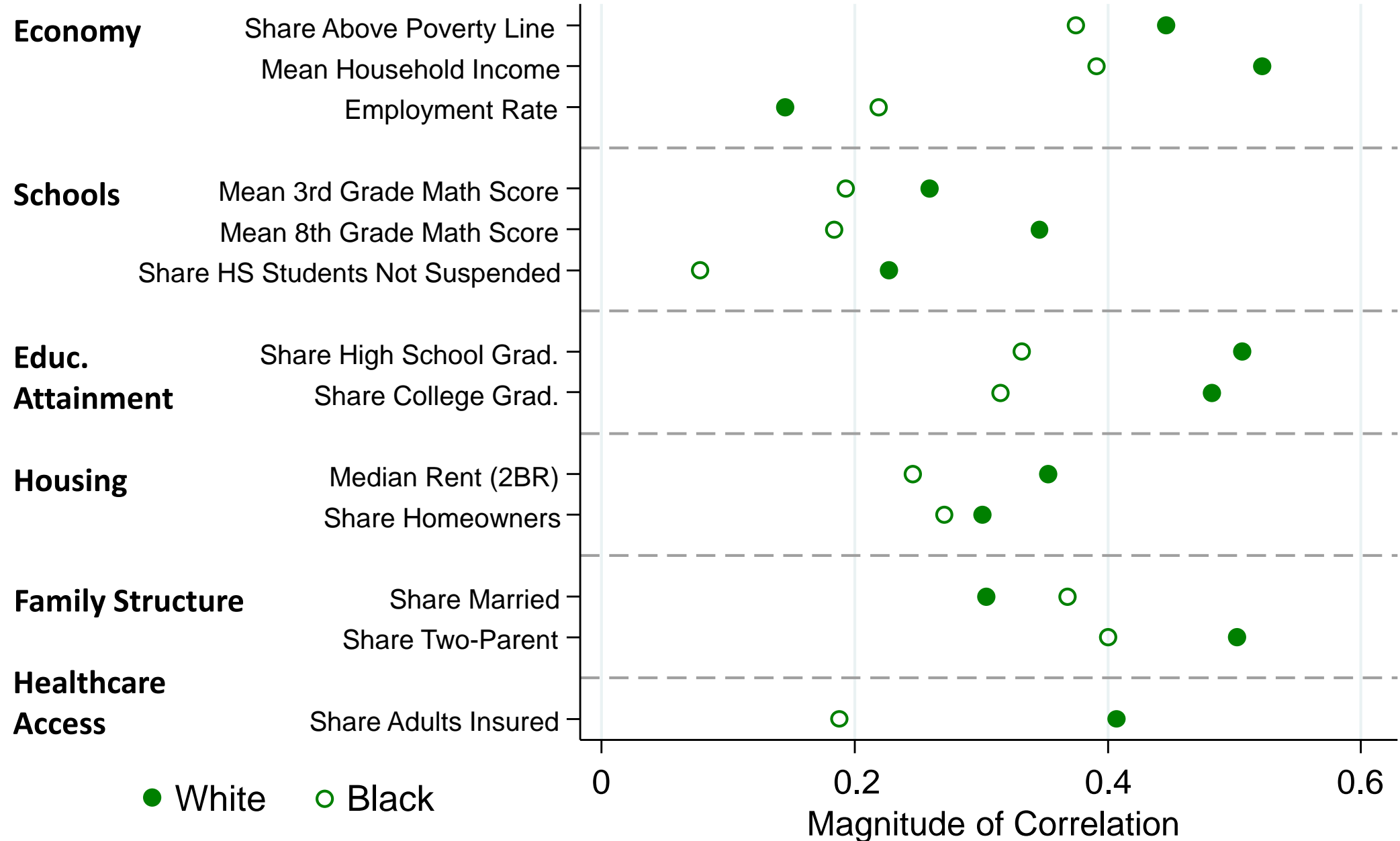
- Four key results:
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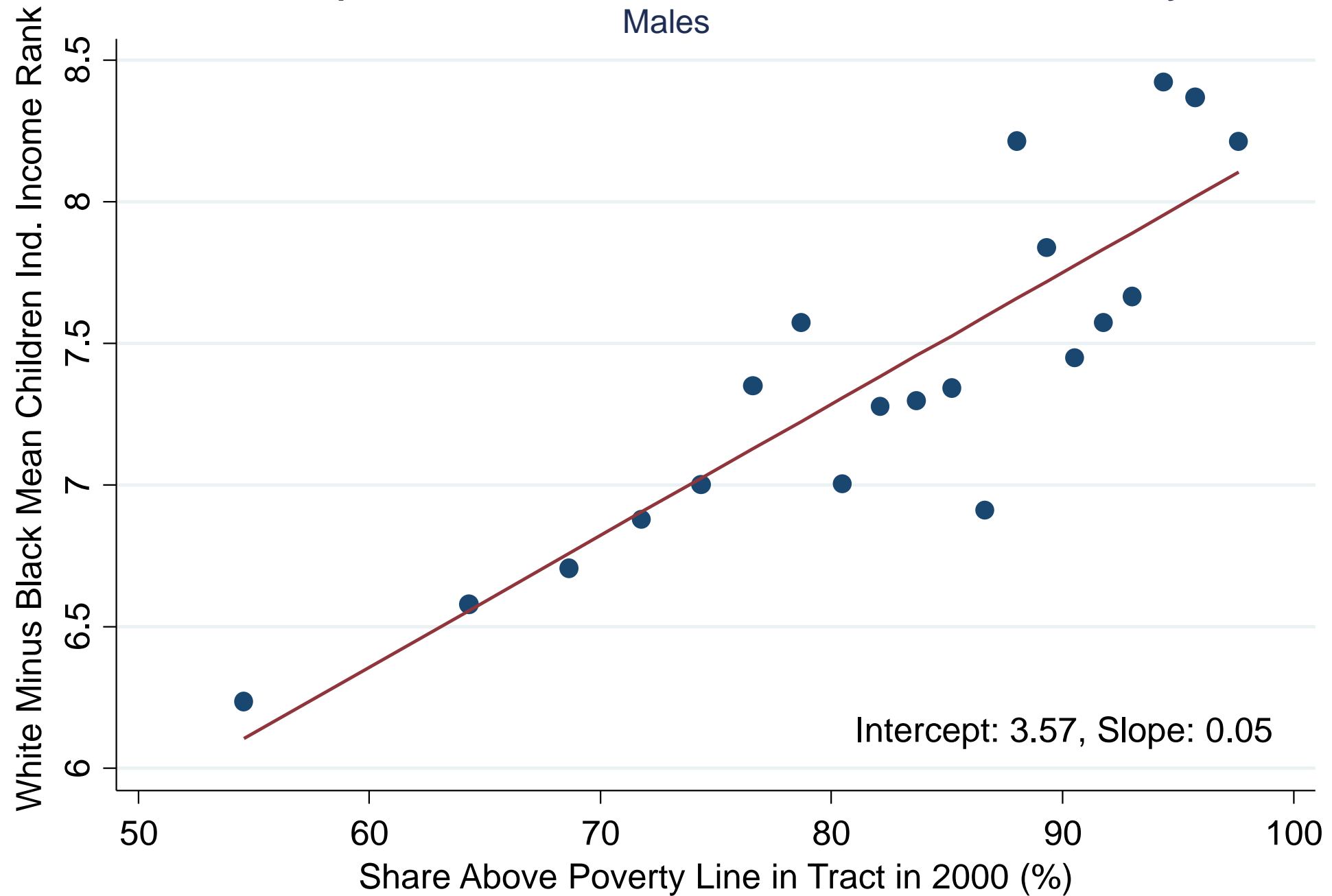
Correlations between Tract-Level Characteristics and Incomes of Black vs. White Men

Children with Parents at 25th Percentile



Black – White Gap in Individual Income Ranks vs. Share Above Poverty Line

Males



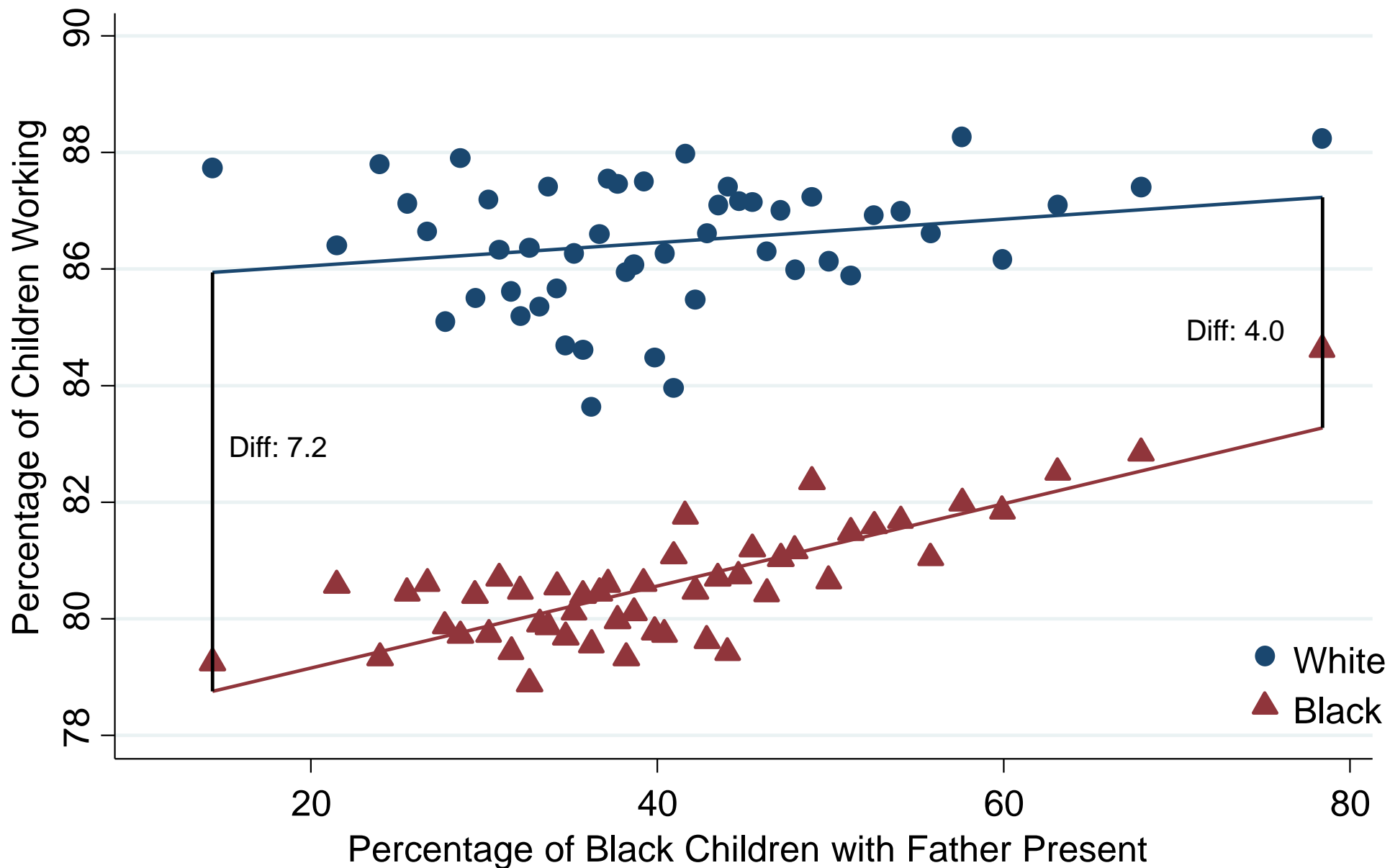
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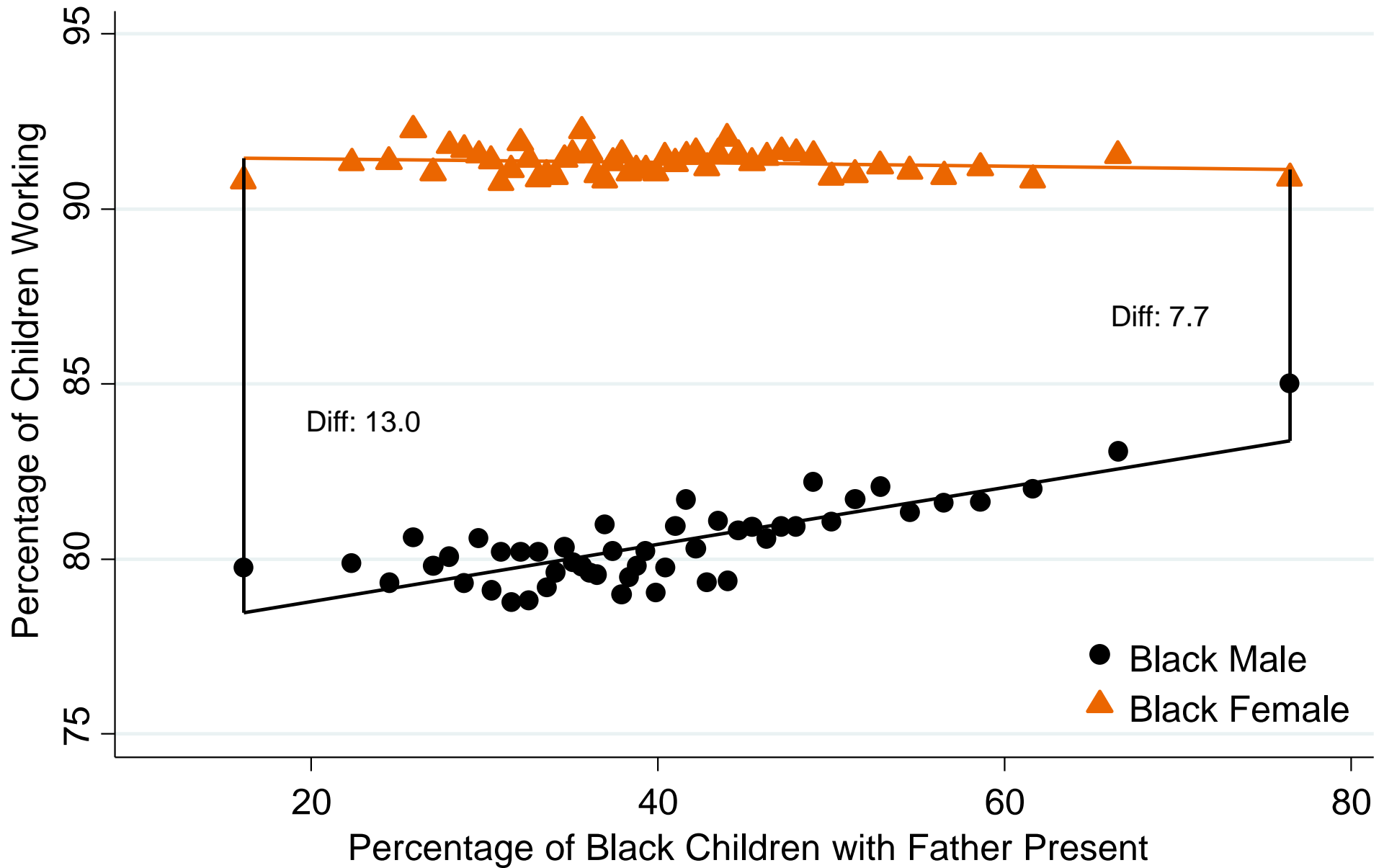
Black-White Gap in Employment Rates vs. Father Presence

Male Children with Parents at 25th Percentile - Poverty Share Less than 10%



Male-Female Gap in Employment Rates vs. Father Presence

Black Children with Parents at 25th Percentile - Poverty Share Less than 10%



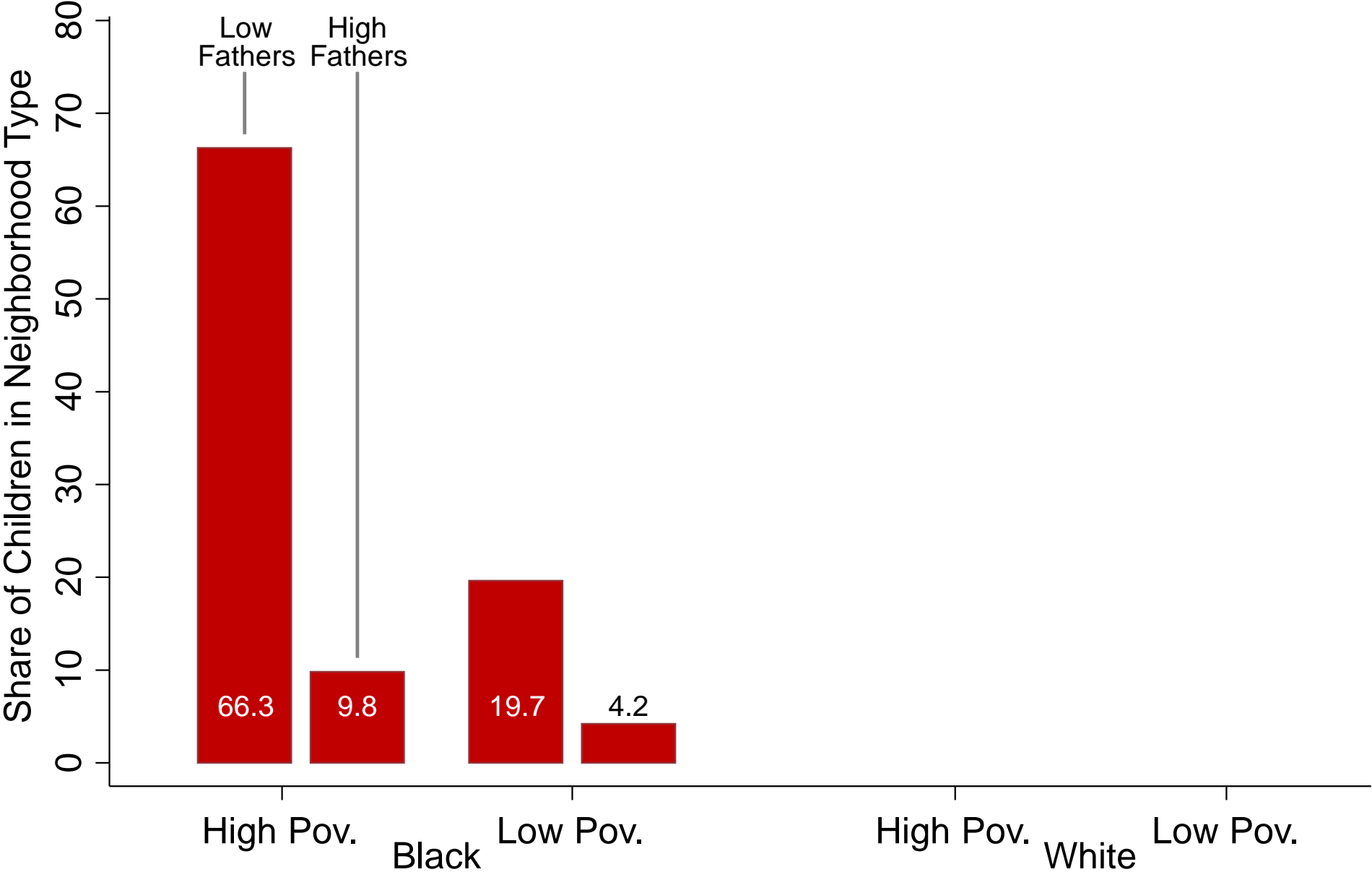
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 3. Within low-poverty areas, there are two factors associated with better outcomes for black boys *and* smaller gaps: greater father presence and less racial bias
 4. Neighborhoods have causal childhood exposure effects on racial gaps: black boys who move to good areas at a younger age do better

Summary: Impacts of Neighborhood Environments on Black Men

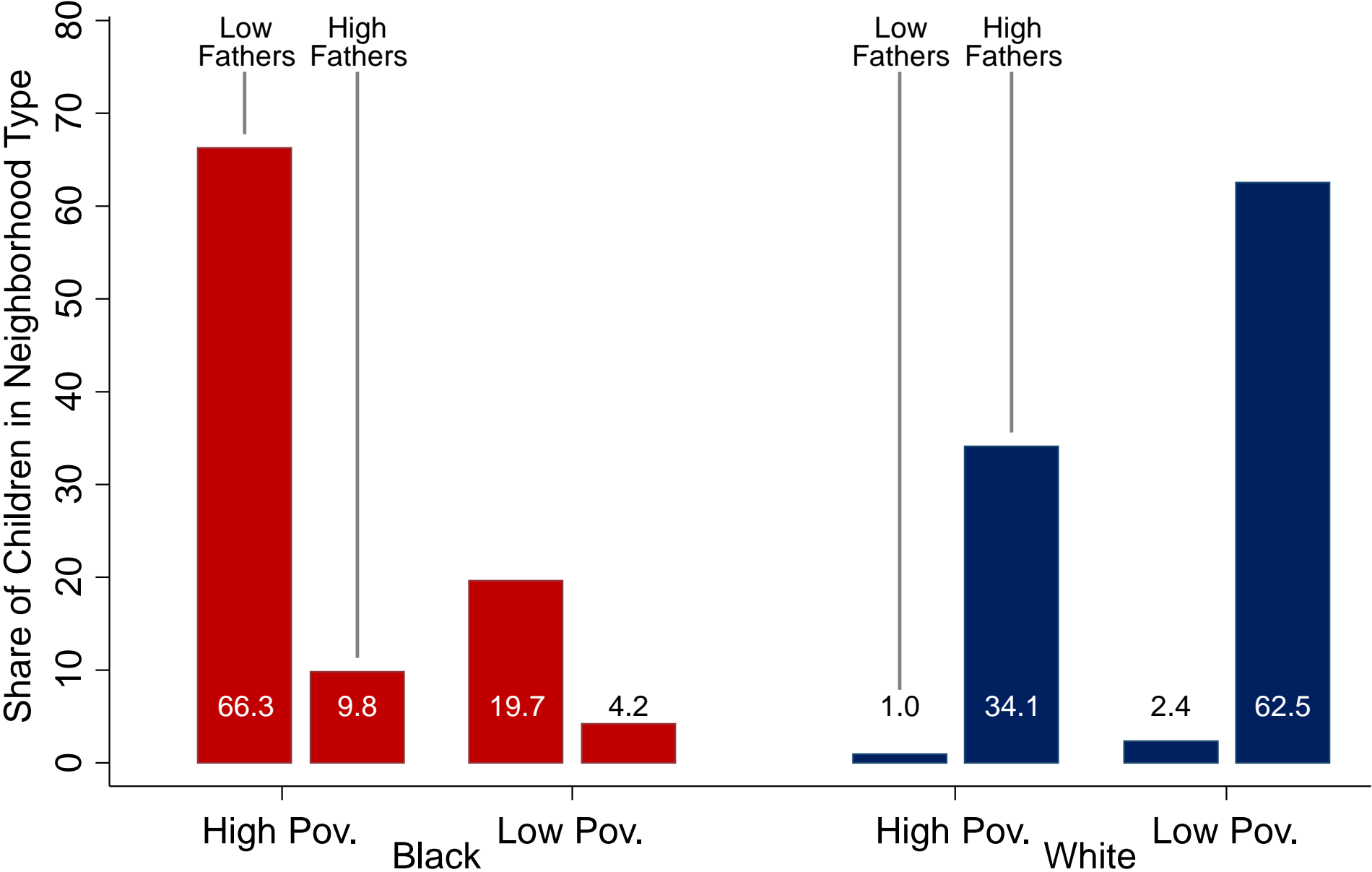
- Black boys do well in nbhds. with good resources (low poverty rates) *and* good race-specific factors (e.g., high father presence, less racial bias)
- The problem is that there are essentially no such neighborhoods in America...

Father Presence and Poverty Rates by Tract for Blacks vs. Whites



Note: Low-Poverty: Poverty Rate < 10%; High Father Presence: >50% Father Presence Among Children of Own Race

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Conclusions

1. Mobility into and out of poverty is a central determinant of racial disparities
 - Black children have much lower rates of upward mobility and greater downward mobility than white children → gaps persist across generations

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1. Mobility into and out of poverty is a central determinant of racial disparities
2. Commonly proposed policies likely to be insufficient to close black-white gap by themselves
 - Changes in transfer programs and minimum wages unlikely to have persistent effects, unless they change rates of mobility
 - Reducing residential or school segregation can improve the *level* of outcomes of both black and white children, but may not narrow gaps

Conclusions

1. Mobility into and out of poverty is a central determinant of racial disparities
2. Commonly proposed policies likely to be insufficient to close black-white gap by themselves
3. Reducing racial gaps requires policies that cut *within* neighborhoods and improves environments for specific subgroups, such as black men
 - Ex: Mentoring programs, efforts to reduce racial bias, achieving racial integration within schools, criminal justice reform [Heller et al. 2015, Devine et al. 2012]
 - Further development and evaluation of such efforts would be valuable