

Big Data and Economics

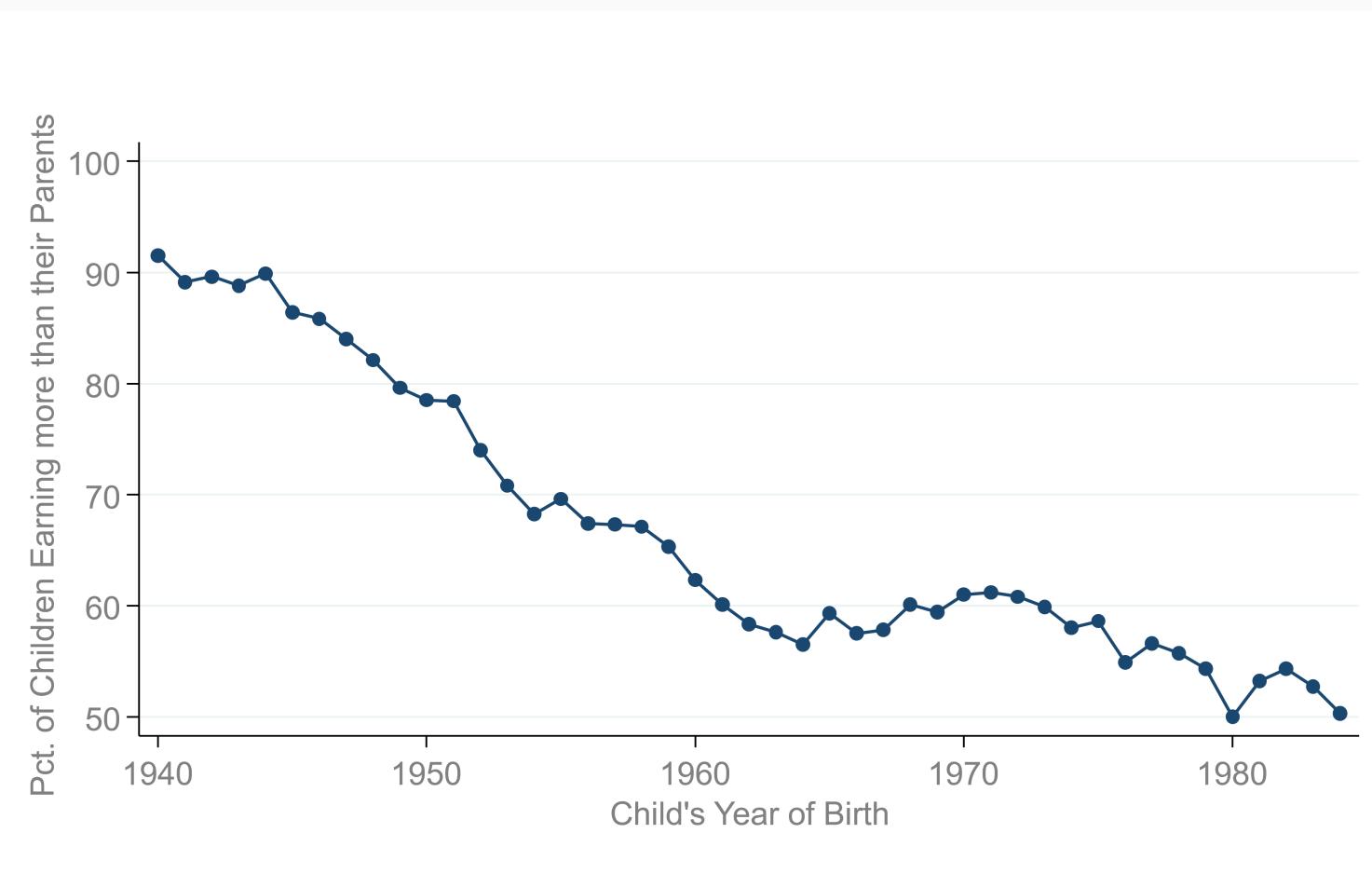
Neighborhoods and Upward Mobility

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Prologue



Source: Chetty et al. (2014)

Why is the "American Dream" Fading?

- Why are children's chances of climbing the income ladder falling in the USA?
 - What can be done to reverse this trend?
- Need to go beyond macroeconomic data to answer this question. Why?
 - Too many changes happening over time and across space to separate out the causal factors.
 - Also: only a handful of data points (classic macro problem)

Enter the Opportunity Atlas

- Created in 2018, the Opportunity Atlas offers one measure of how income mobility differs by location in the USA
 - If some areas have more mobility than others, can we learn why and apply those lessons elsewhere?
- Data sources:
 - Anonymized Census data (2000, 2010 ACS) covering U.S. population
 - Federal income tax returns from 1989-2015.
- Method: Link parents based on dependent claiming on tax returns
- Target sample: Children born between 1978-1983 (U.S. citizens and authorized immigrants who arrived as children)

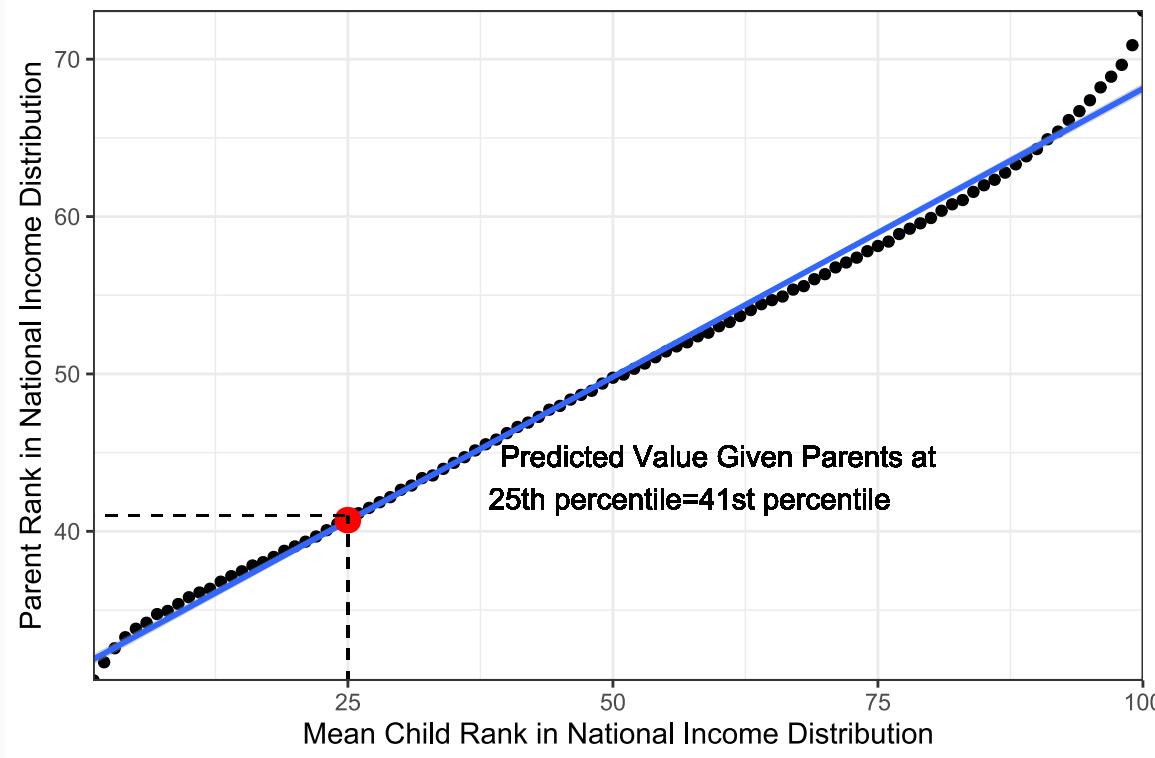
There's bound to be a mess with this much data, so they create an analysis sample

- **Analysis sample:** 20.5 million children, 96% coverage of target sample

Parent and Children Incomes in Tax Data

- Parent household incomes: average income reported on Form 1040 tax return from 1994-2000
- Children incomes measured from tax returns in 2014-15 (ages 31-37)
- But income levels differ over time! How do we compare them?
 - Use percentile ranks in the *national* distribution
 - Rank children relative to others born in same year and parents relative to other parents
- **Income percentile:** The fraction of the national income distribution that a person's income exceeds
- Take average income percentile of children by parental income percentile

Average Child Income Percentile by



Source: The Opportunity Atlas

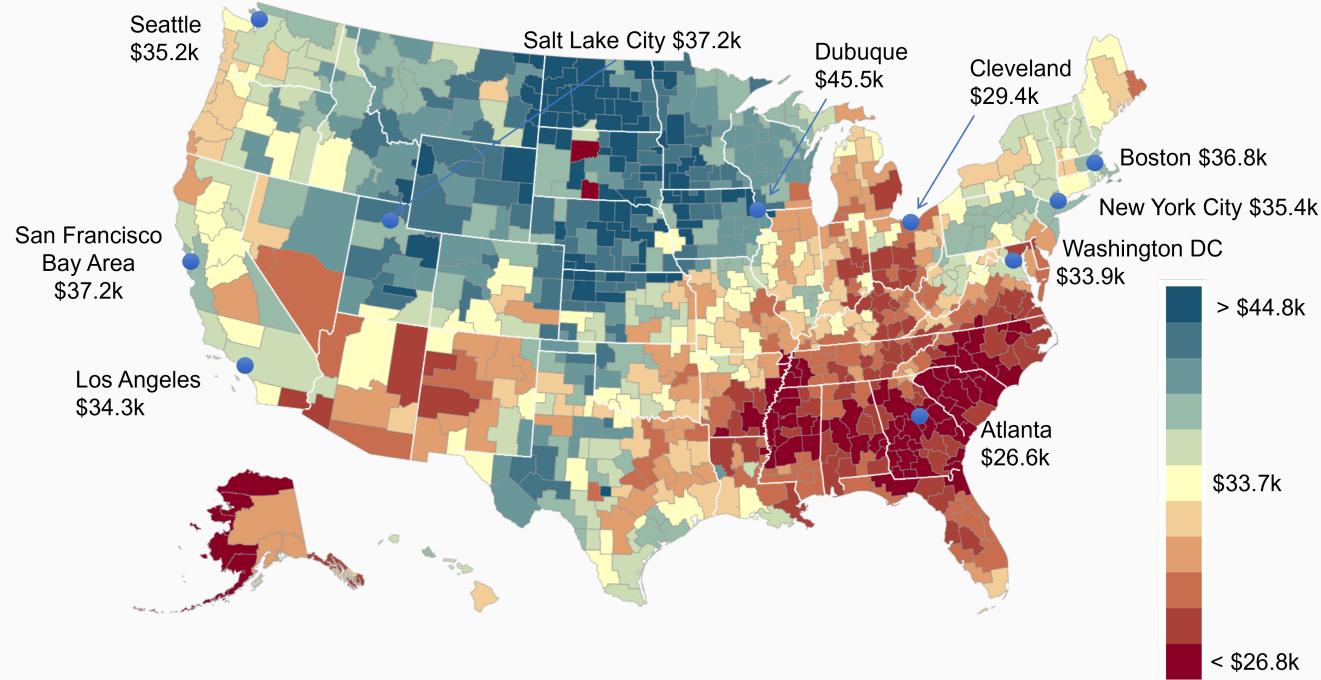
Geographic Variation in Upward Mobility

What is mobility for each Census tract?

- Run this same regression of income ranks by Census tract in the USA
 - Census tracts are small geographic areas that contain 1,200-8,000 people
- Technical detail: Weight each child by fraction of childhood (up to 23) in a given area
 - Accounts for movement across areas during childhood

The Geography of Upward Mobility in the United States

Average Household Income for Children with Parents Earning \$27,000 (25th percentile)



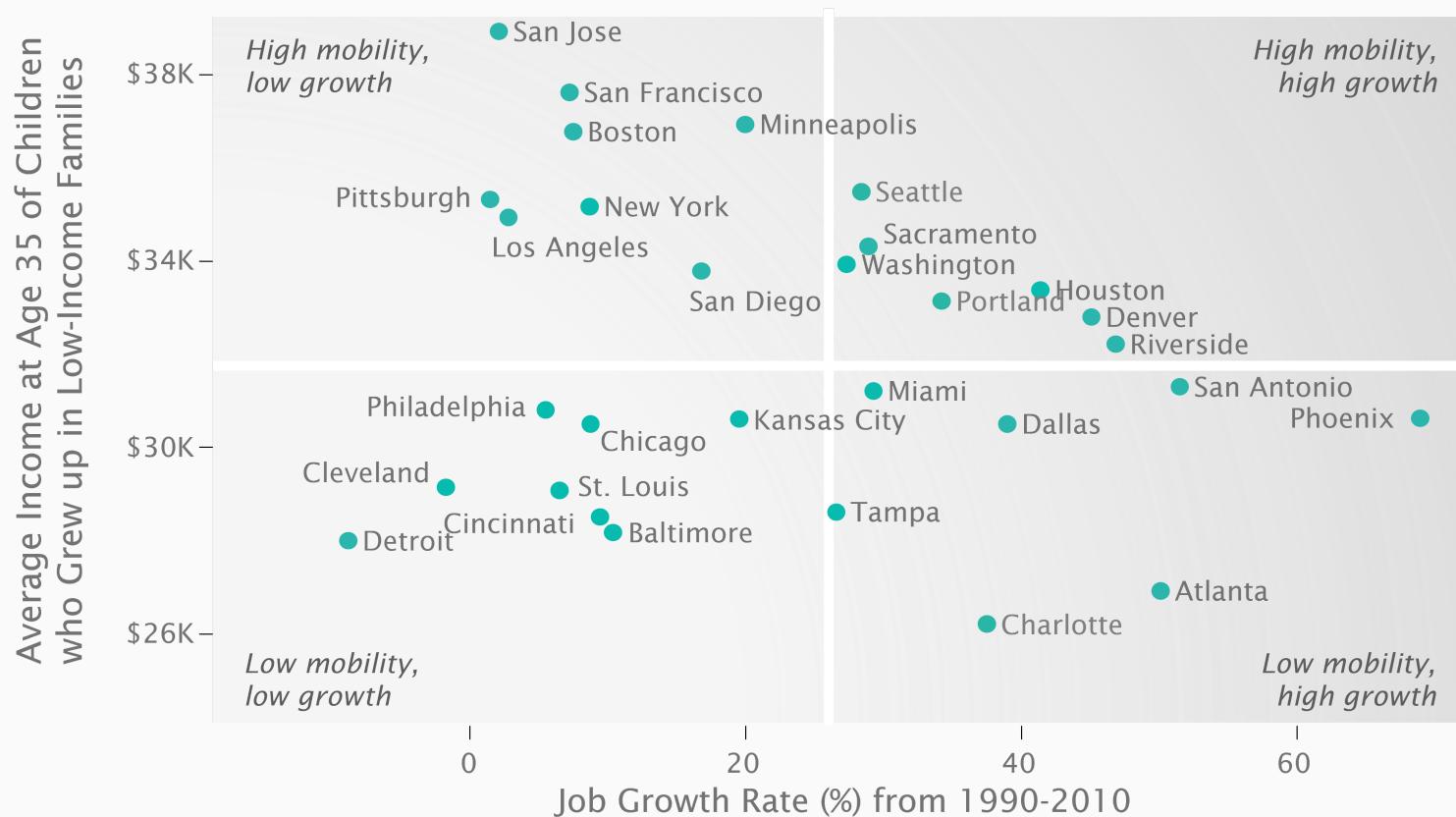
Note: Blue = More Upward Mobility, Red = Less Upward Mobility Source: [The Opportunity Atlas](#)

Characteristics of High-Mobility Areas

Why does upward mobility differ across

- Why do some areas have more upward mobility than others?
- Spatial and correlational analysis is a good place to start
- What are potential characteristics of high mobility areas?
 - Better jobs?
 - Better schools?
 - Institutional differences?
 - Culture?

Upward Mobility vs. Job Growth in 30



Note: You'll make a version of this on your problem set. Source: [Using Big Data to Solve](#)

Actual correlates

1. Segregation: Greater racial and income segregation associated with lower levels of mobility
2. Income Inequality: Places with smaller middle class have less mobility
3. School Quality: Higher expenditure, smaller classes, higher test scores correlated with more mobility
4. Family Structure:
 - Areas with more single parents have lower mobility
 - Strong correlation even for kids whose own parents are married
5. Social Capital
 - It takes a village to raise a child
 - Chetty et al. (2023) leveraged Facebook Data to create the Social Capital Atlas

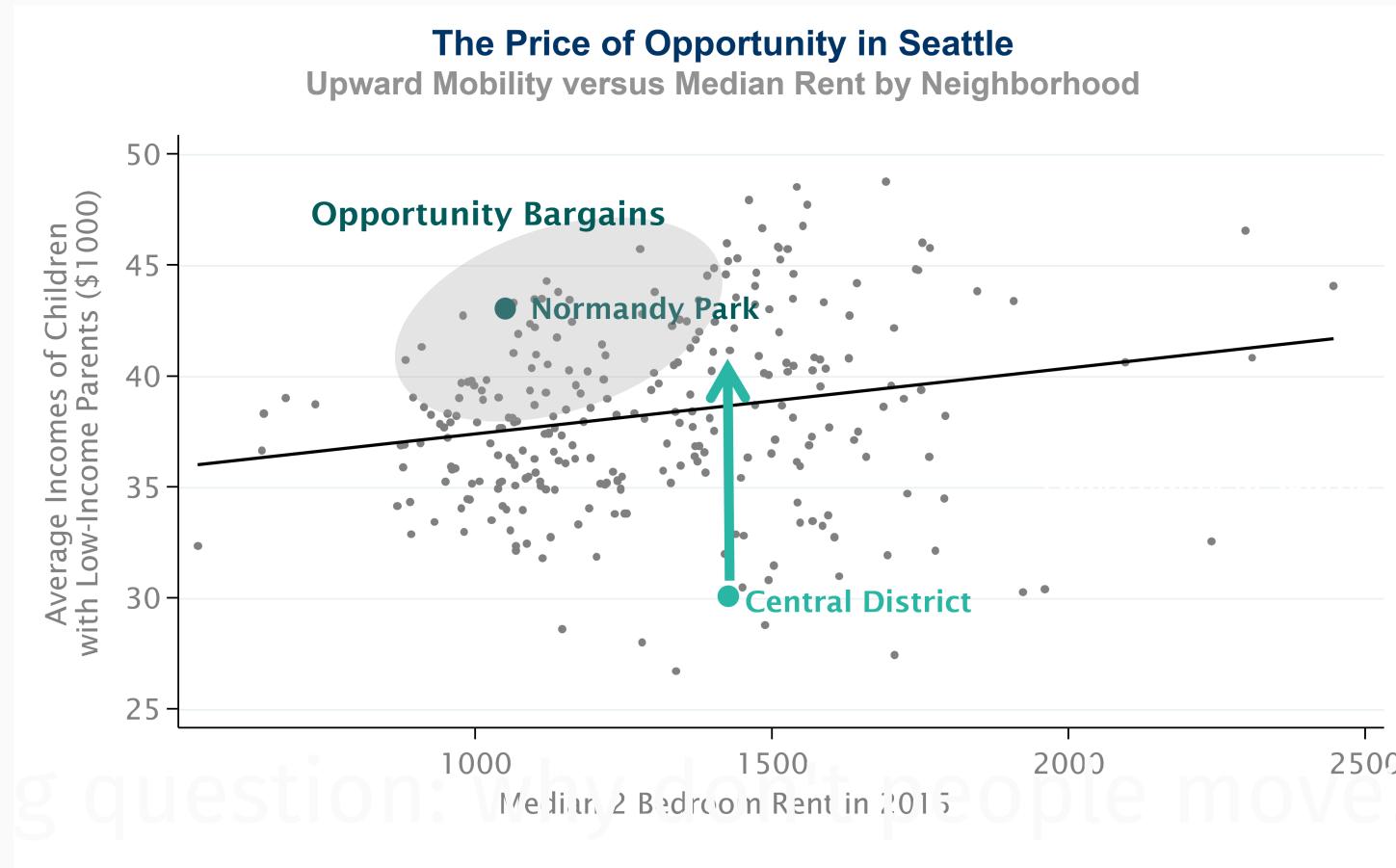
We'll look at some of these relationships (and their applications) in more detail in the coming weeks.

Spatial Correlation and Decay Big question: why don't people move?

- If some areas have more mobility than others, why don't people move to those areas?
- Is it rent?

The Price of Opportunity in Seattle

Upward Mobility vs Median Rent by Neighborhood



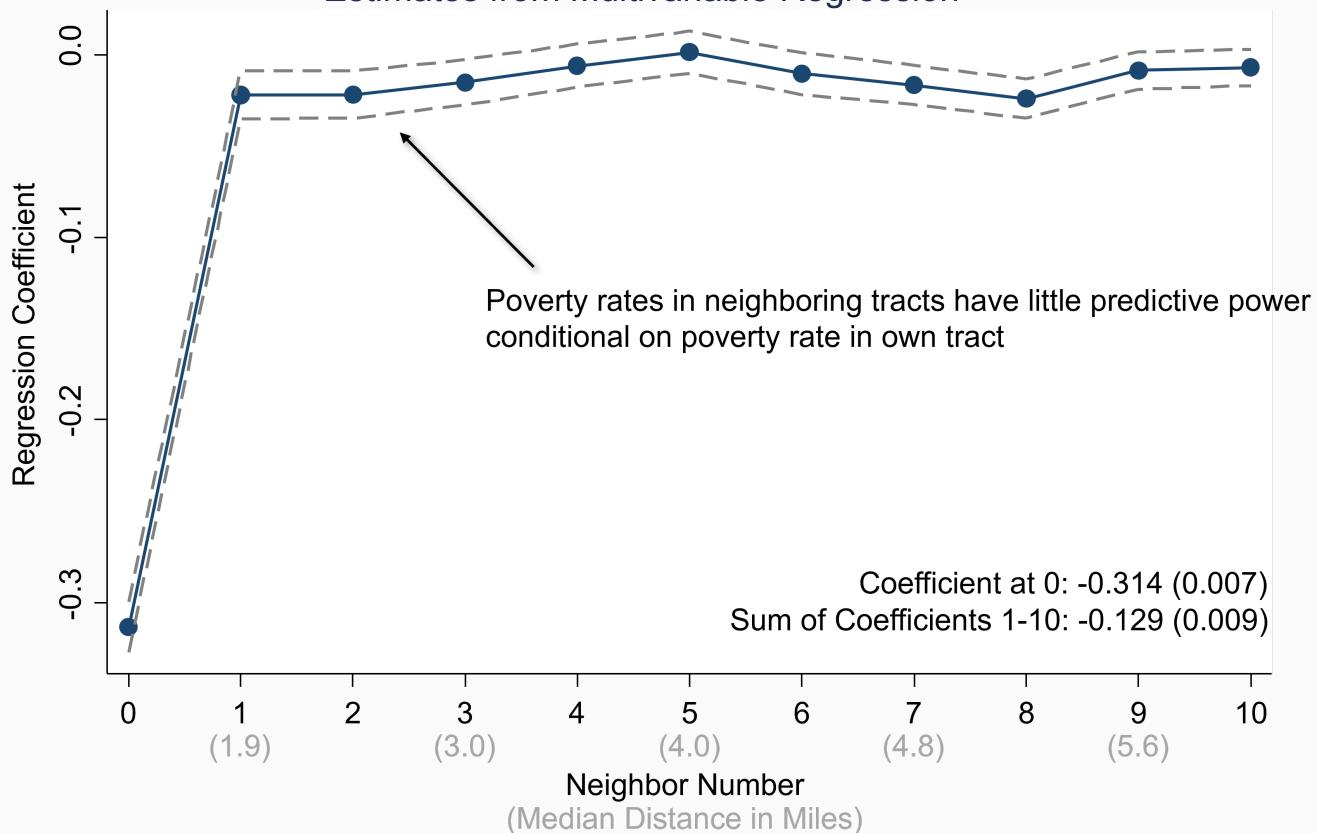
- Initial experiments indicate benefits exist from moving (we'll see later)

Well what if we invest locally?

- What if we invest in the areas that have low mobility? (place-based approach)
- Would there be spillovers between locations?
 - It is tough to improve one neighborhood (e.g. a tract), let alone many at once
 - Do we have to improve them all at once to help people?
- The answer to this question changes the policy approach

Spatial decay of Correlation between

Spatial Decay of Correlation between Upward Mobility and Tract-Level Poverty Rates
Estimates from Multivariable Regression



Toolkit

- We need to beef up our spatial analysis tools
- That's what we'll do today

Next lecture: Regression and
Opportunity Atlas
