



# Using Big Data to Solve Economic and Social Problems

Professor Raj Chetty

Head Section Leader: Gregory Bruich, Ph.D.

Spring 2019



HARVARD  
UNIVERSITY



# **The American Dream in Historical and International Perspective**

# Trends in Mobility Over Time

- Thus far, we have focused primarily on a snapshot of rates of upward mobility for children growing up in America today
- As we just discussed, a historical perspective is often useful in understanding determinants of current outcomes
- We cannot yet study trends in mobility by neighborhood, but we have made progress in understanding mobility over time at the national level

# A Historical Perspective on the American Dream

- Historically, American Dream has been defined as the aspiration that children should have higher standards of living than their parents
  - When asked to assess economic progress, children frequently compare their earnings to their parents [Goldthorpe 1987]
  - Obama (2014): “People’s frustrations are partly rooted “in the fear that their kids won’t be better off than they were”
- What fraction of children earn more than their parents, and how has this changed over time?

Reference: Chetty, Grusky, Hell, Hendren, Manduca, Narang. “The Fading American Dream: Trends in Absolute Income Mobility Since 1940.” *Science* 2017.



**SOCIAL MOBILITY MEMOS**

# **How many people are better off than their parents? Depends on how you cut the data.**

**Dimitrios Halikias** and **Richard V. Reeves** · Wednesday, August 10, 2016

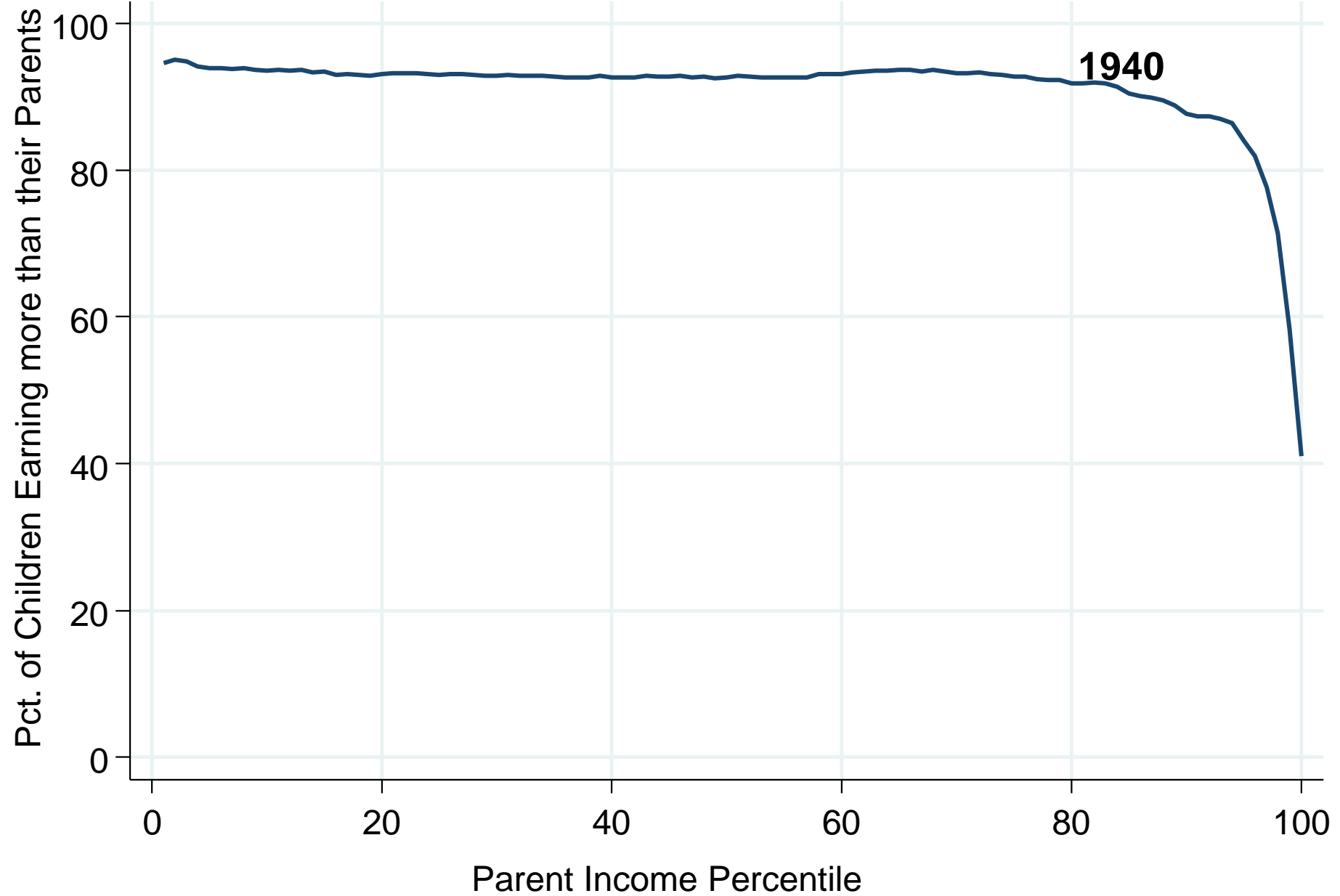


# Measuring the American Dream

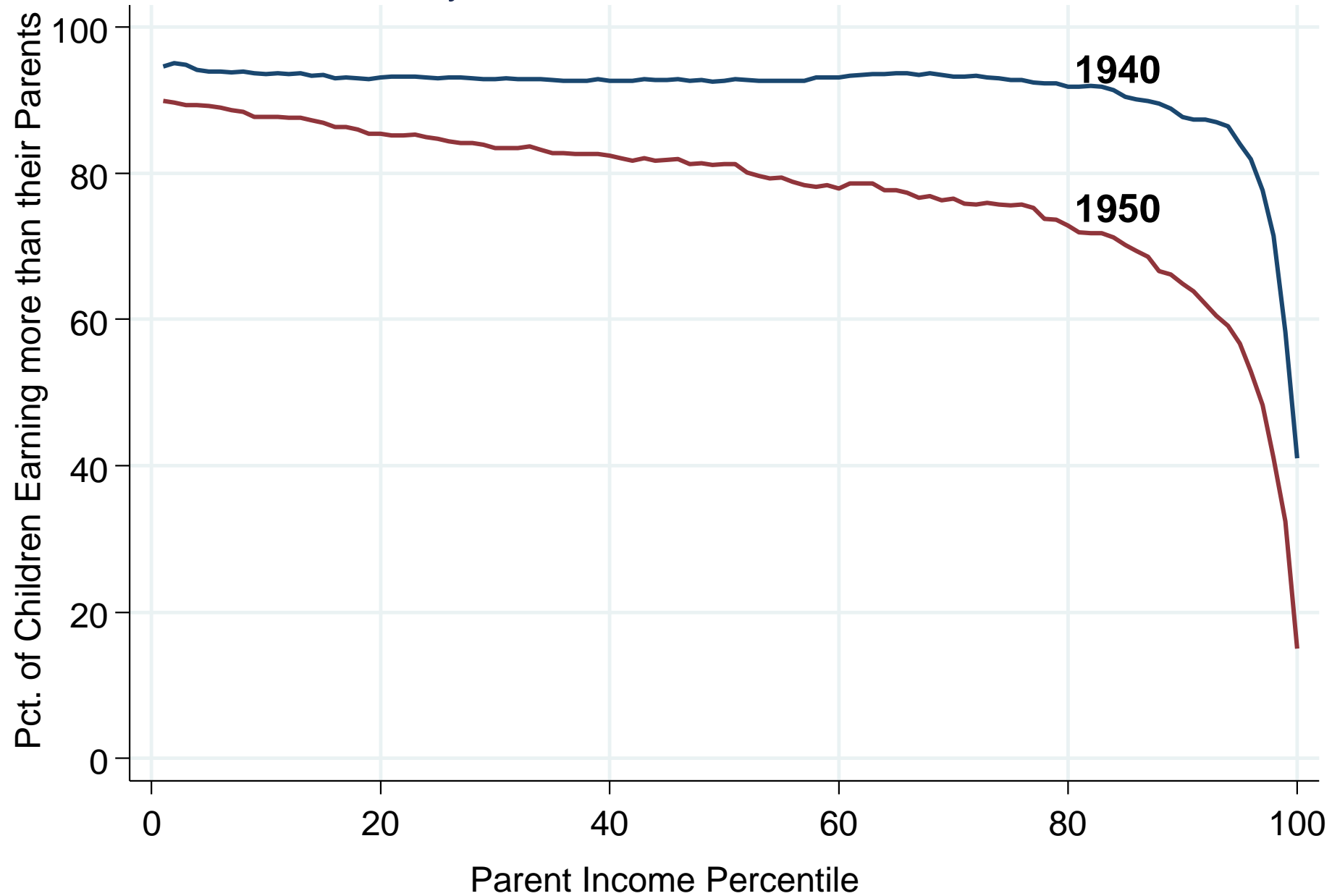
- Key challenge: don't have data linking parents to kids historically
- Chetty et al. (2017) develop a method of estimating historical rates of mobility even in the absence of parent-child links
- First describe basic results and then explain methodology

# Percent of Children Earning More than their Parents

## By Parent Income Percentile

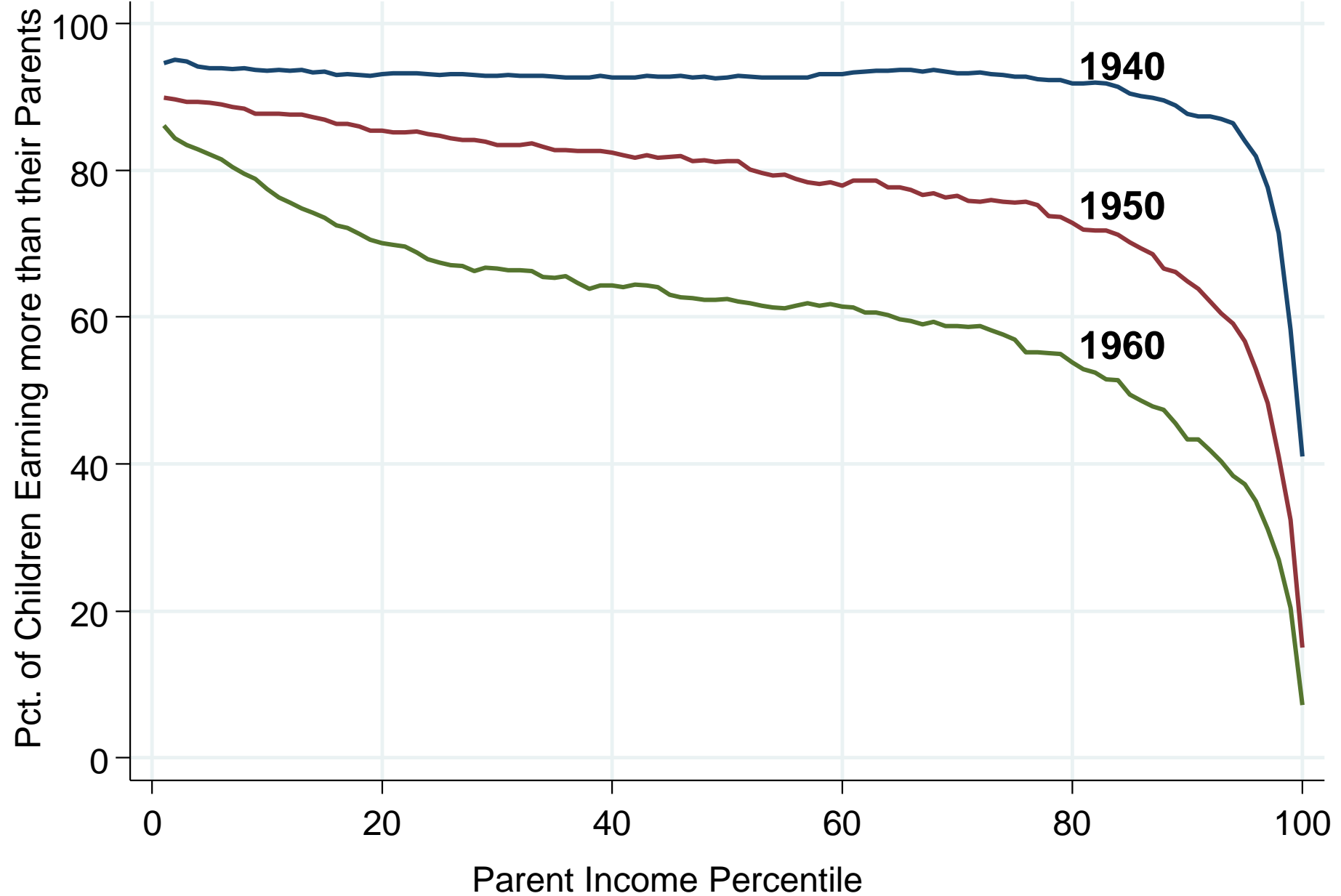


**Percent of Children Earning More than their Parents**  
By Parent Income Percentile

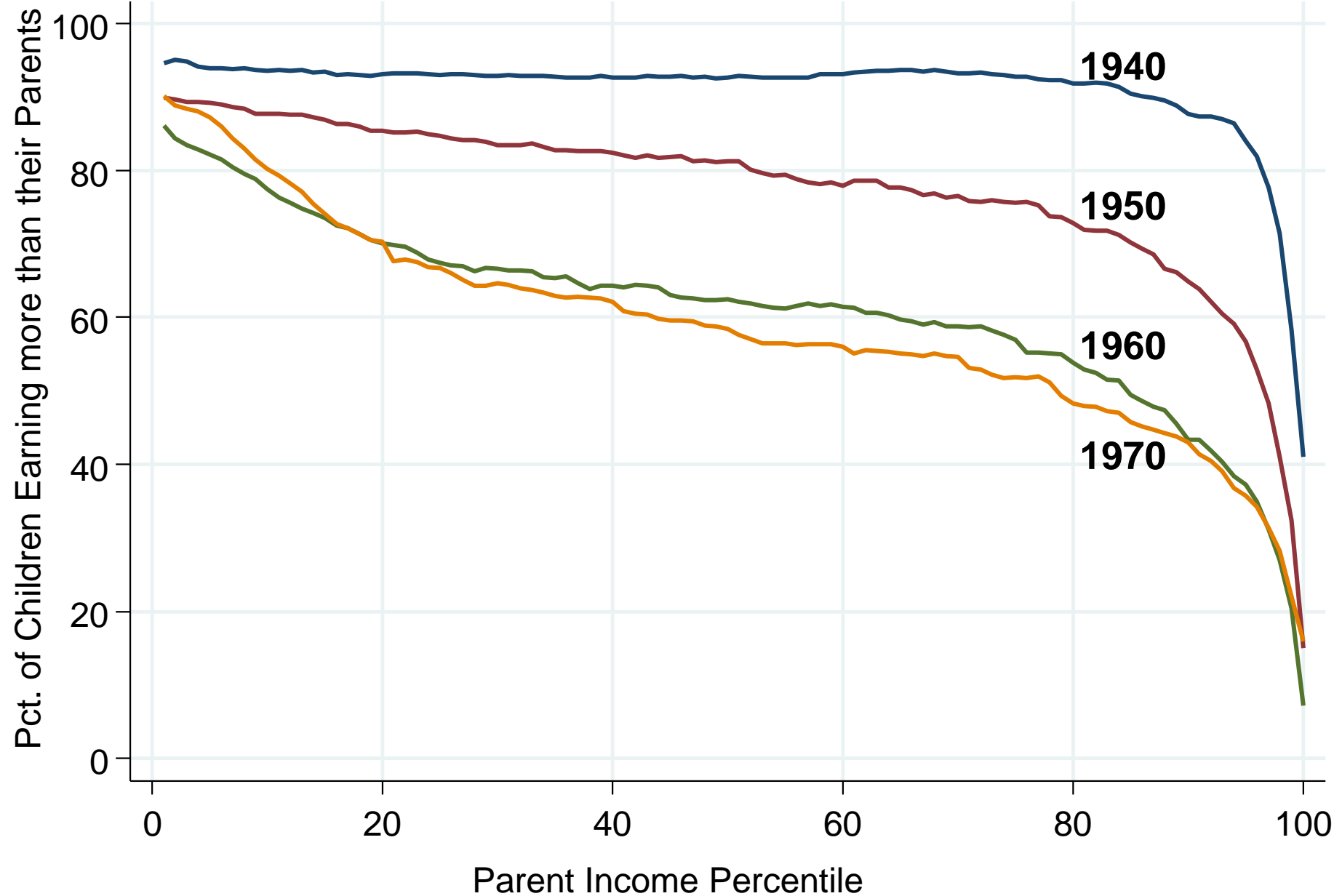




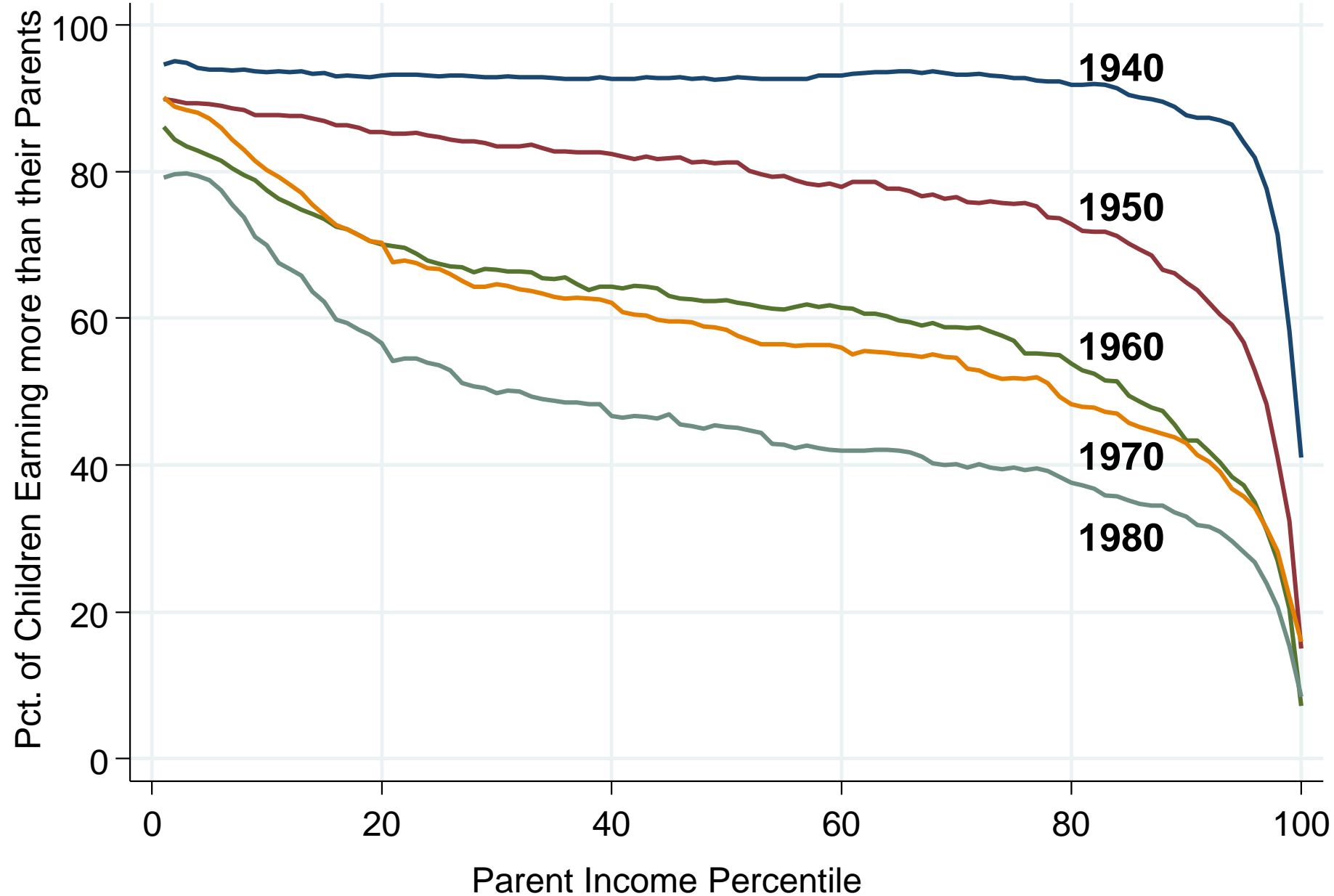
**Percent of Children Earning More than their Parents**  
By Parent Income Percentile



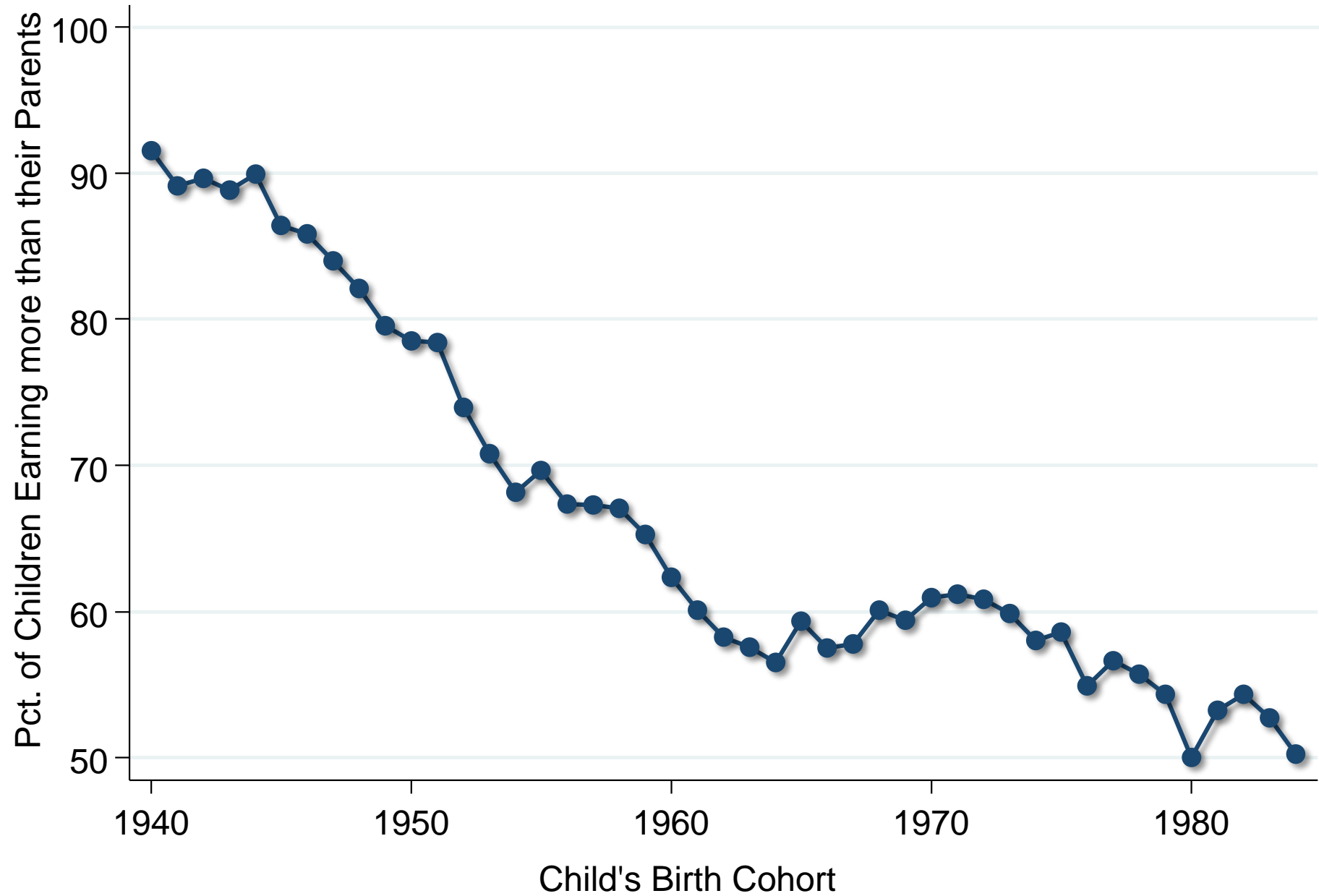
**Percent of Children Earning More than their Parents**  
By Parent Income Percentile



**Percent of Children Earning More than their Parents**  
By Parent Income Percentile



**Percent of Children Earning More than Their Parents, by Birth Cohort**

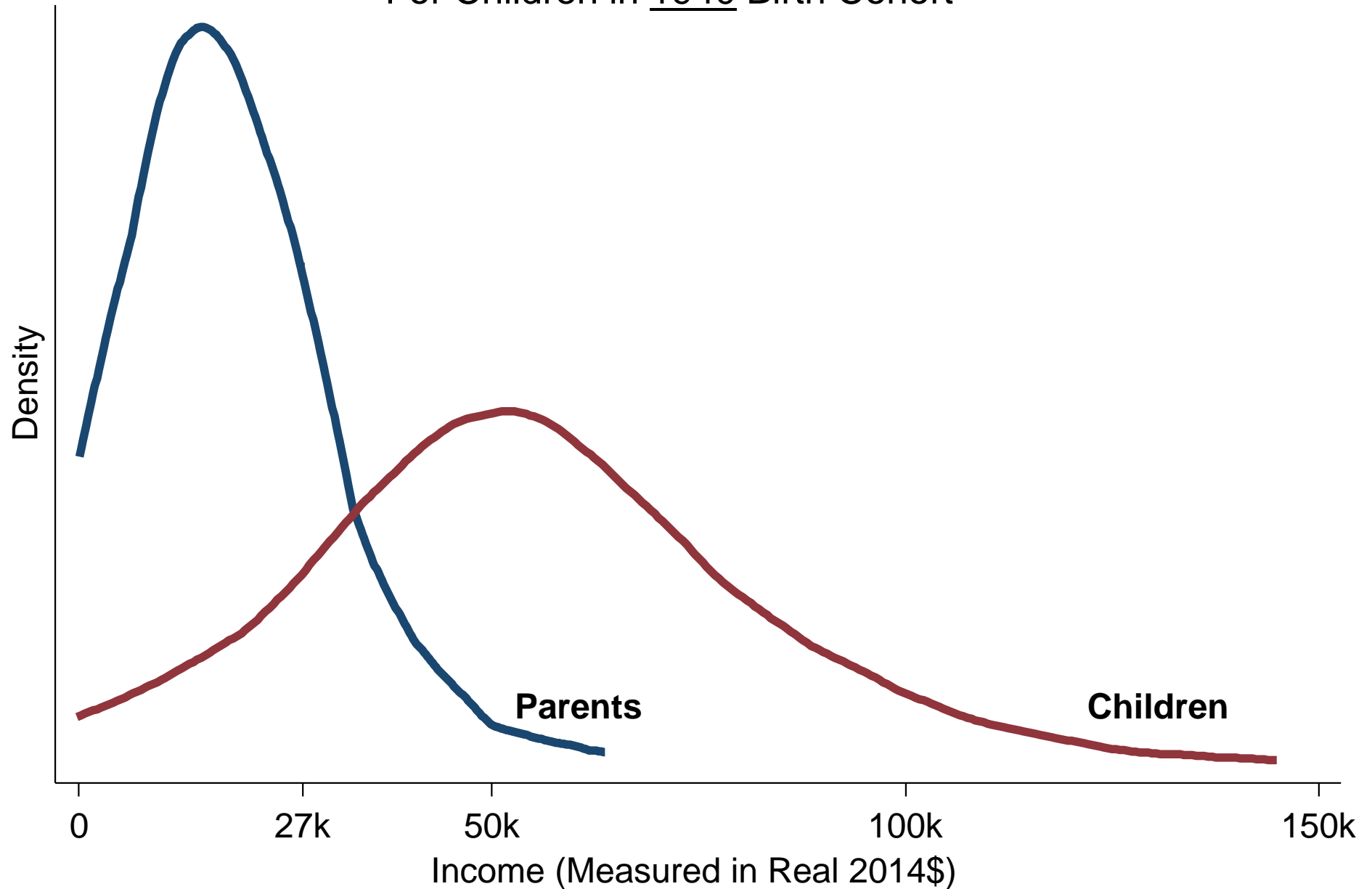


# Methodology: Constructing Historical Estimates of Mobility

- We are able to get reliable estimates of mobility even though we do not have historical data linking kids to parents
- Fundamental reason: almost **all** kids born in 1940 earned more than **all** parents → does not matter which kids are born to which parents

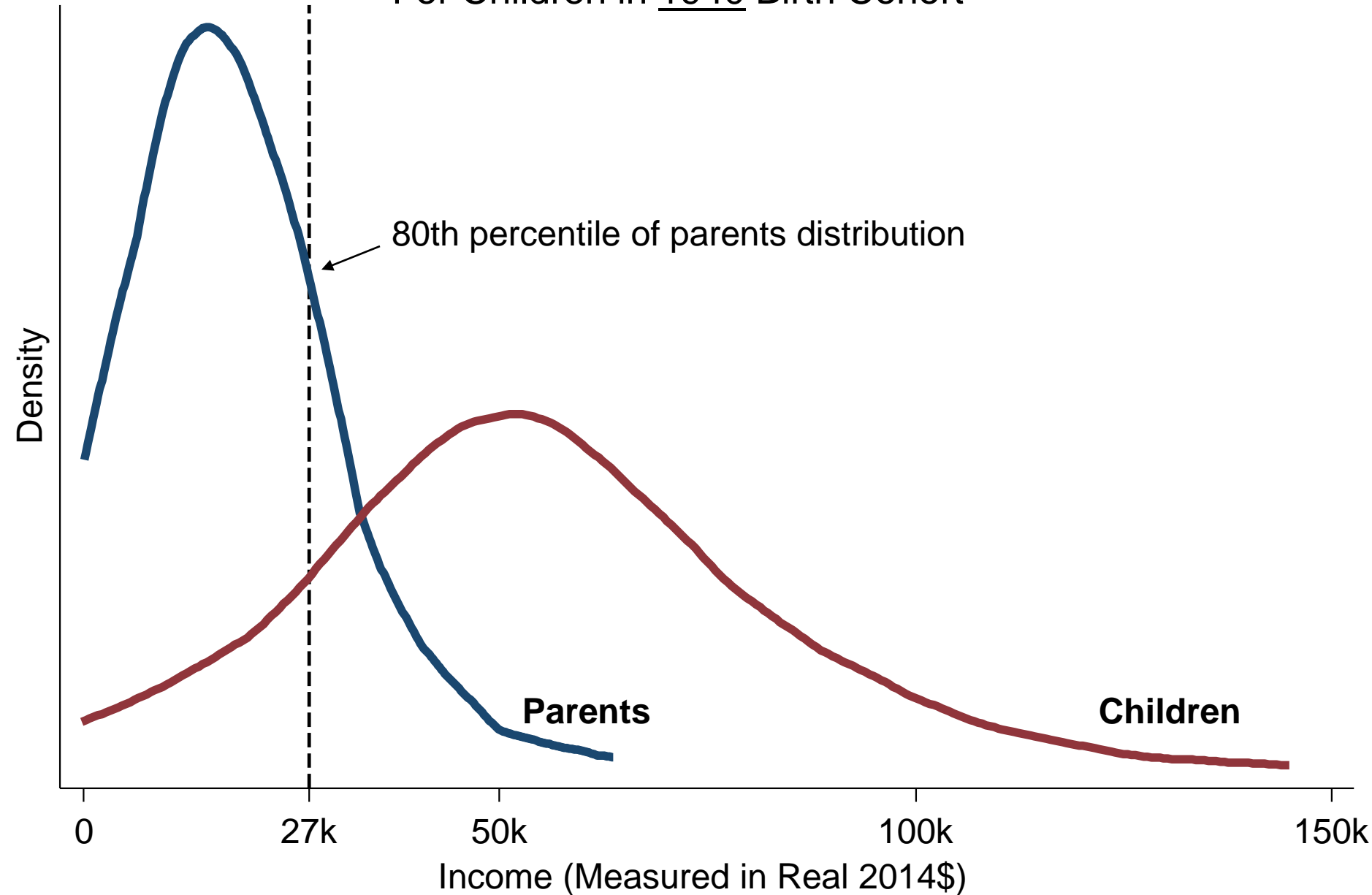
# Household Income Distributions of Parents and Children at Age 30

For Children in 1940 Birth Cohort



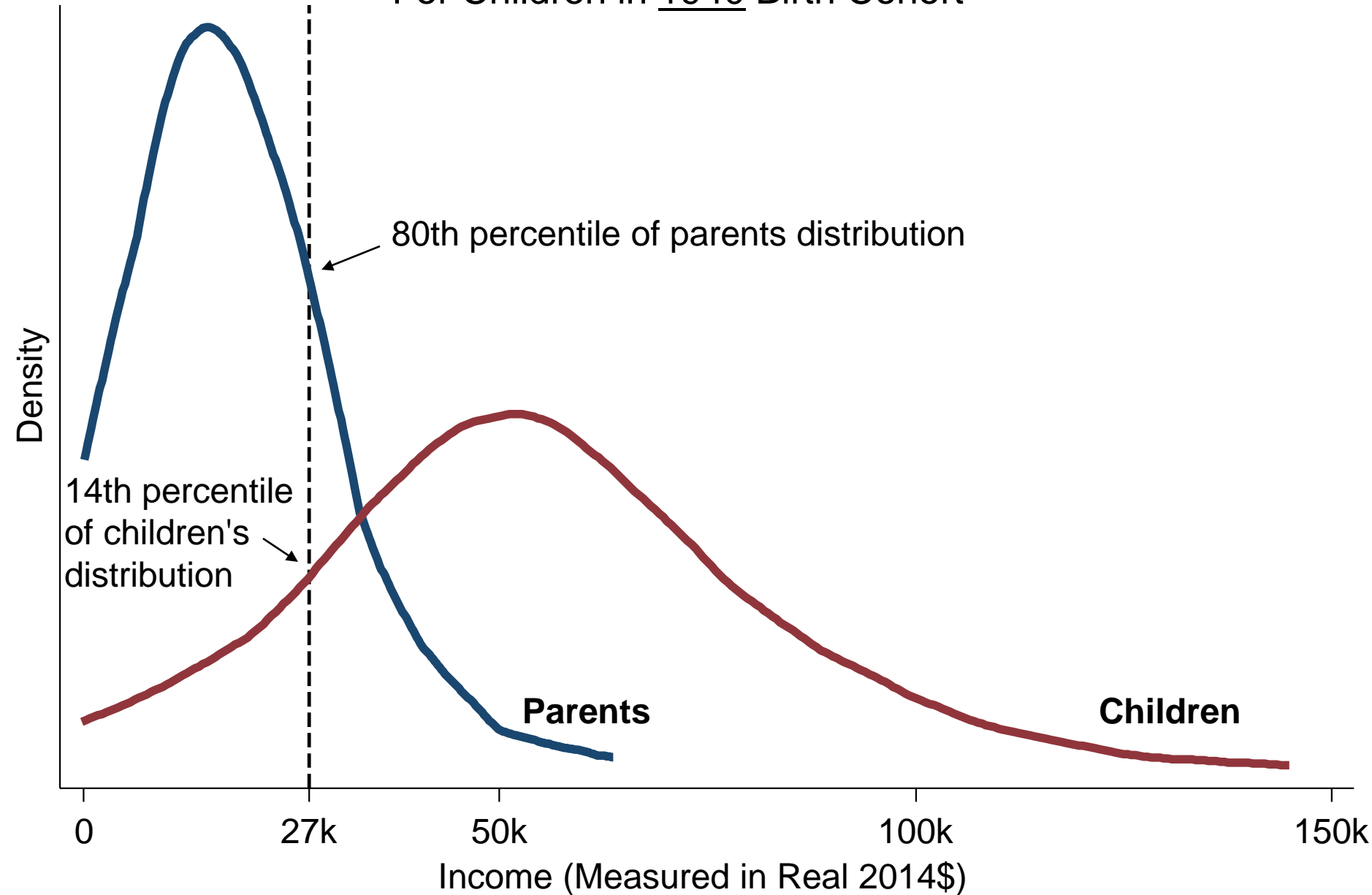
# Household Income Distributions of Parents and Children at Age 30

For Children in 1940 Birth Cohort



# Household Income Distributions of Parents and Children at Age 30

For Children in 1940 Birth Cohort

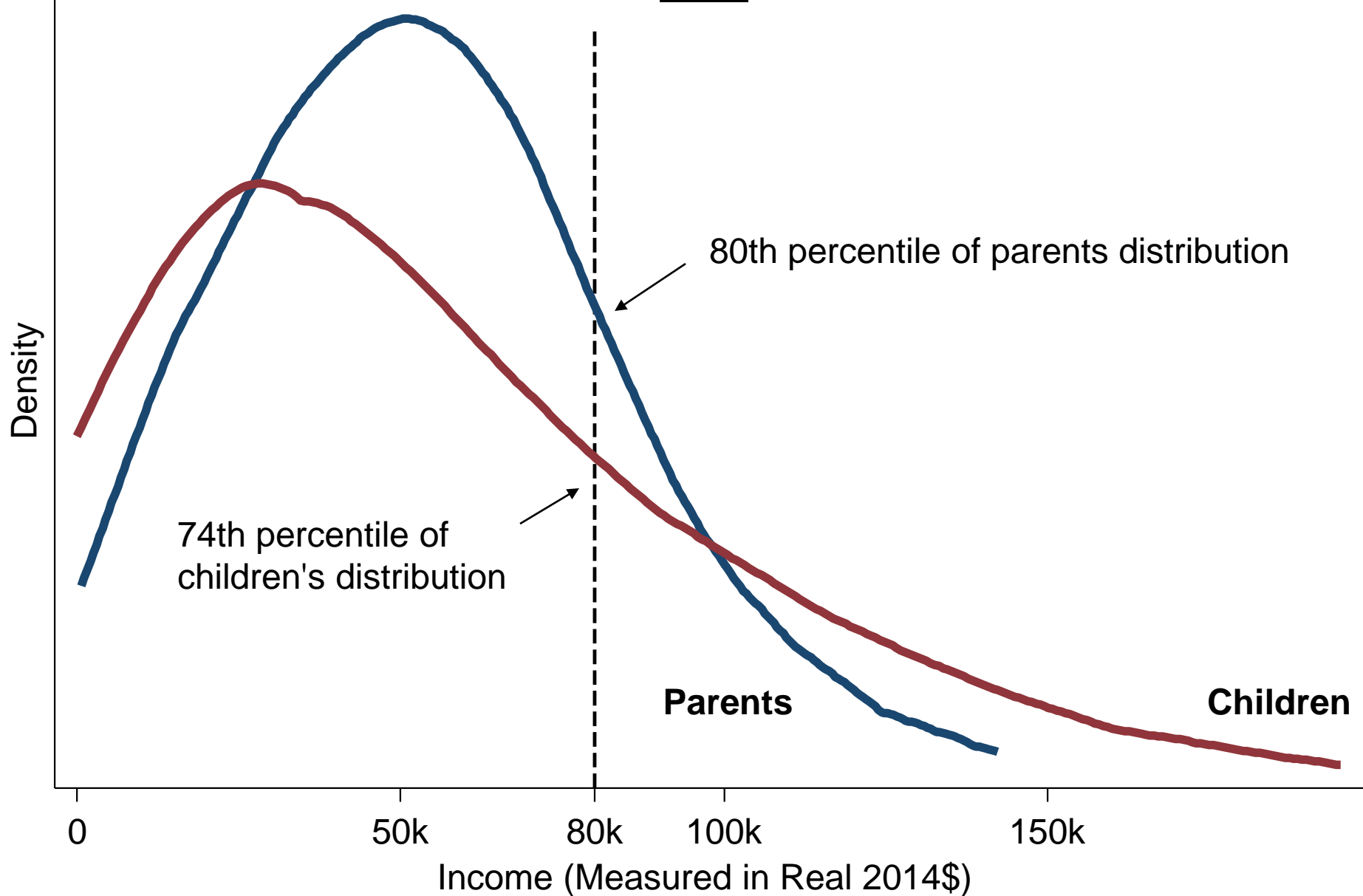




# Methodology: Constructing Historical Estimates of Mobility

- We are able to get reliable estimates of mobility even though we do not have historical data linking kids to parents
- Fundamental reason: almost **all** kids born in 1940 earned more than **all** parents → does not matter which kids are born to which parents
- This is **not** the case for kids born in 1980s, but fortunately we have data linking kids to parents for that generation

**Household Income Distributions of Parents and Children at Age 30**  
For Children in 1980 Birth Cohort

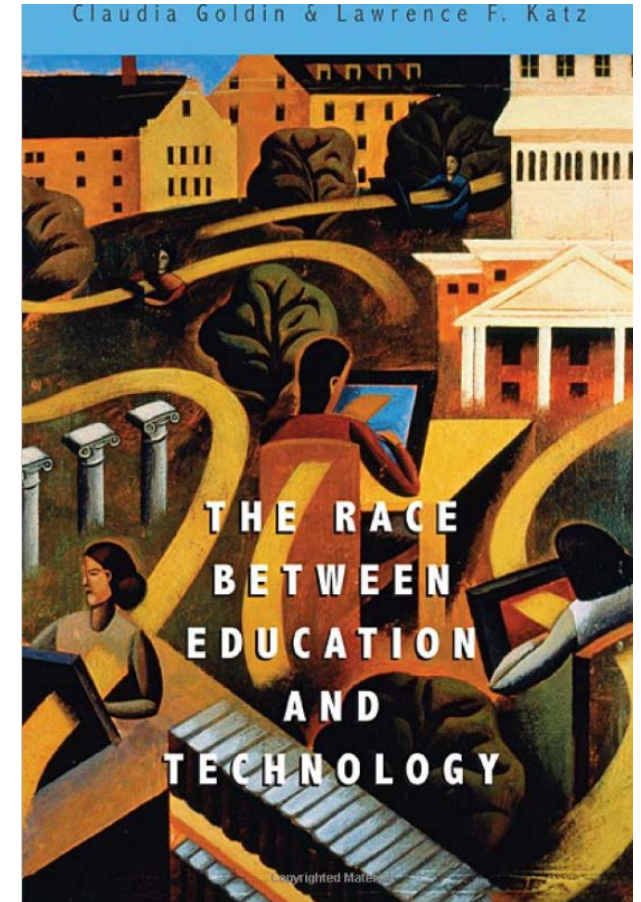
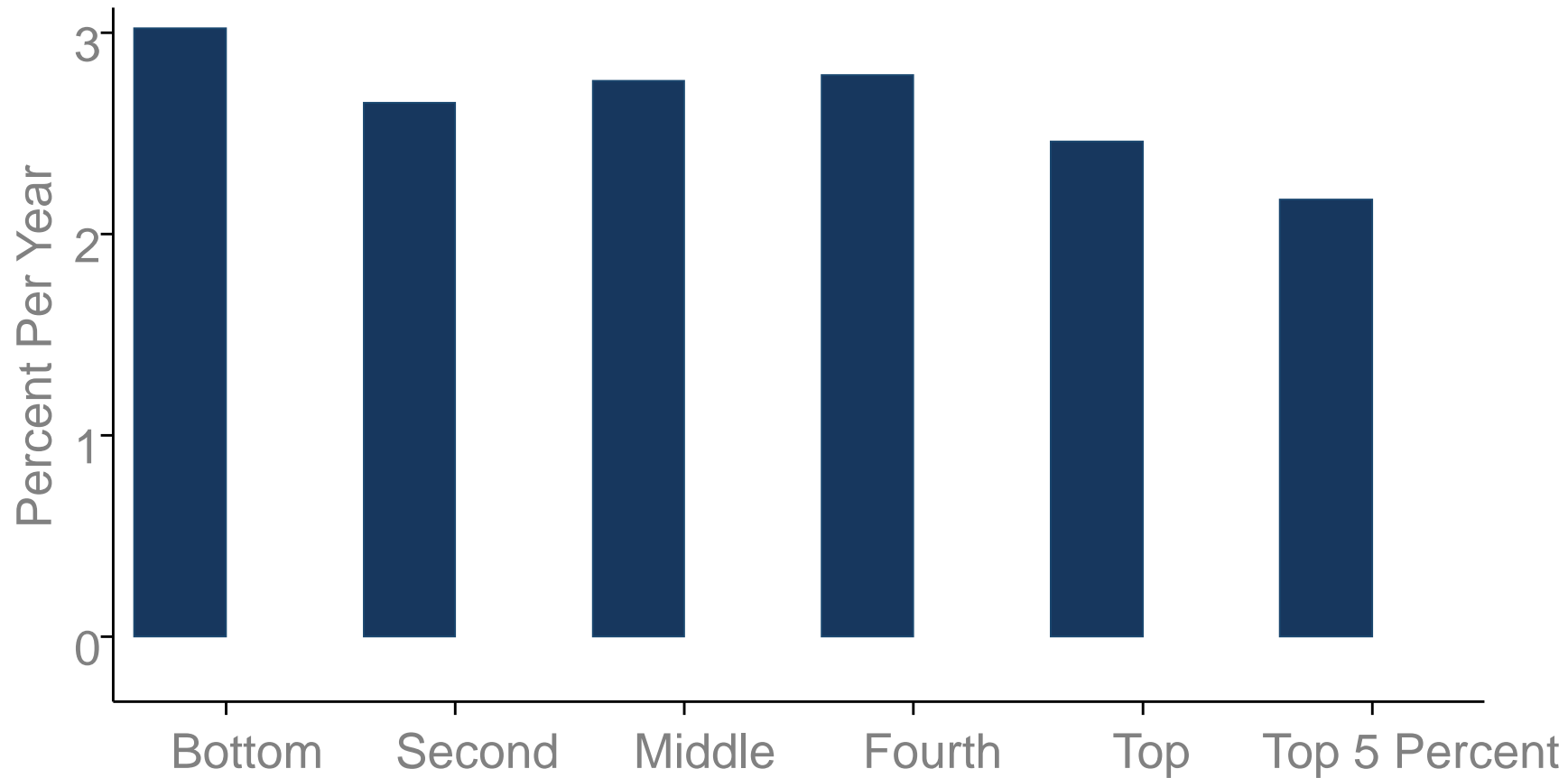


# What Policies Can Increase Absolute Mobility?

- Two major changes in American economy since 1940: lower total economic growth rates and less equal distribution of growth

# Growth in Real Mean Family Income by Income Quintile

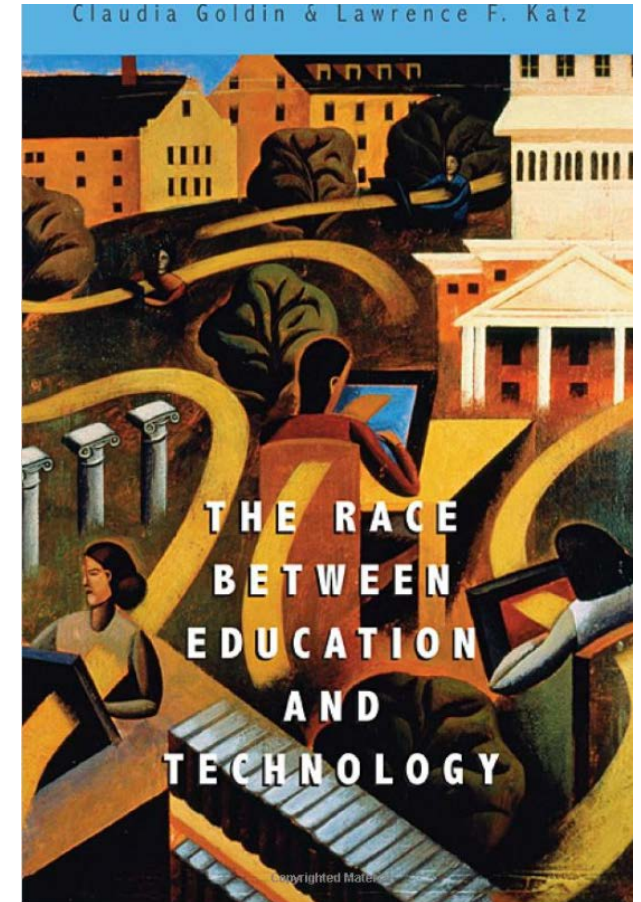
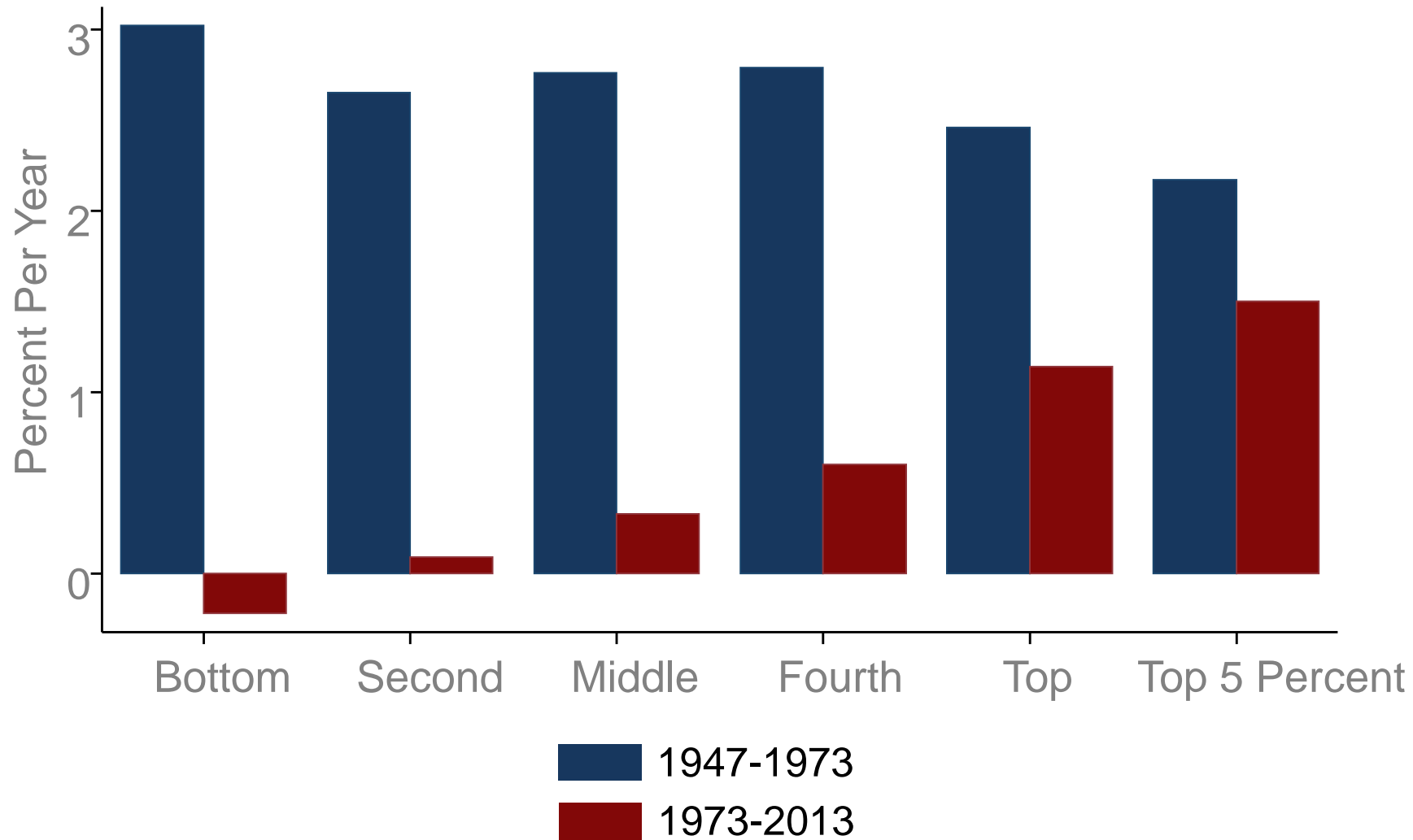
1947 – 1973



Source: Goldin and Katz (2007)

# Growth in Real Mean Family Income by Income Quintile

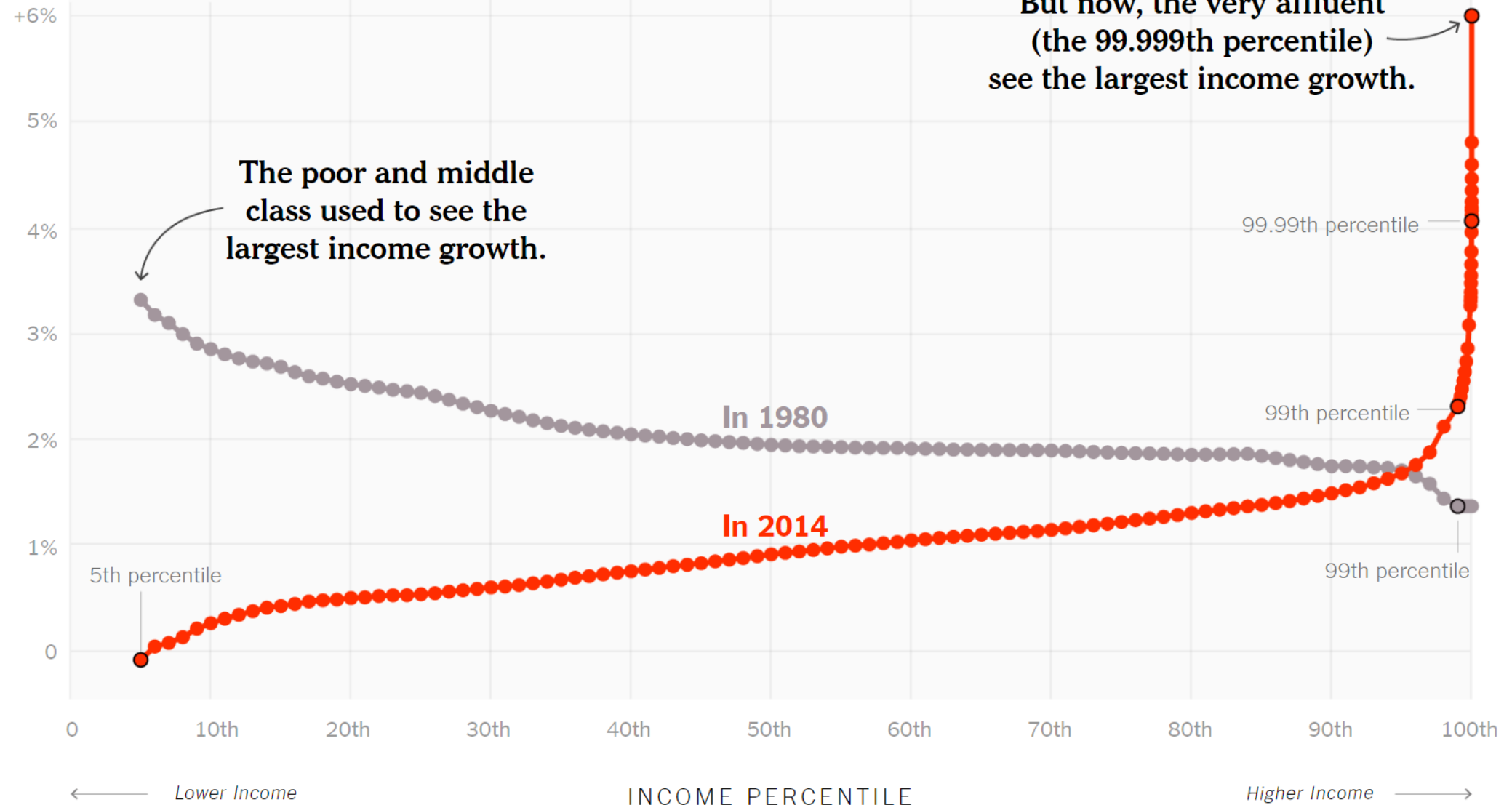
1947 – 1973 vs. 1973-2013



Source: Goldin and Katz (2007)

## INCOME GROWTH

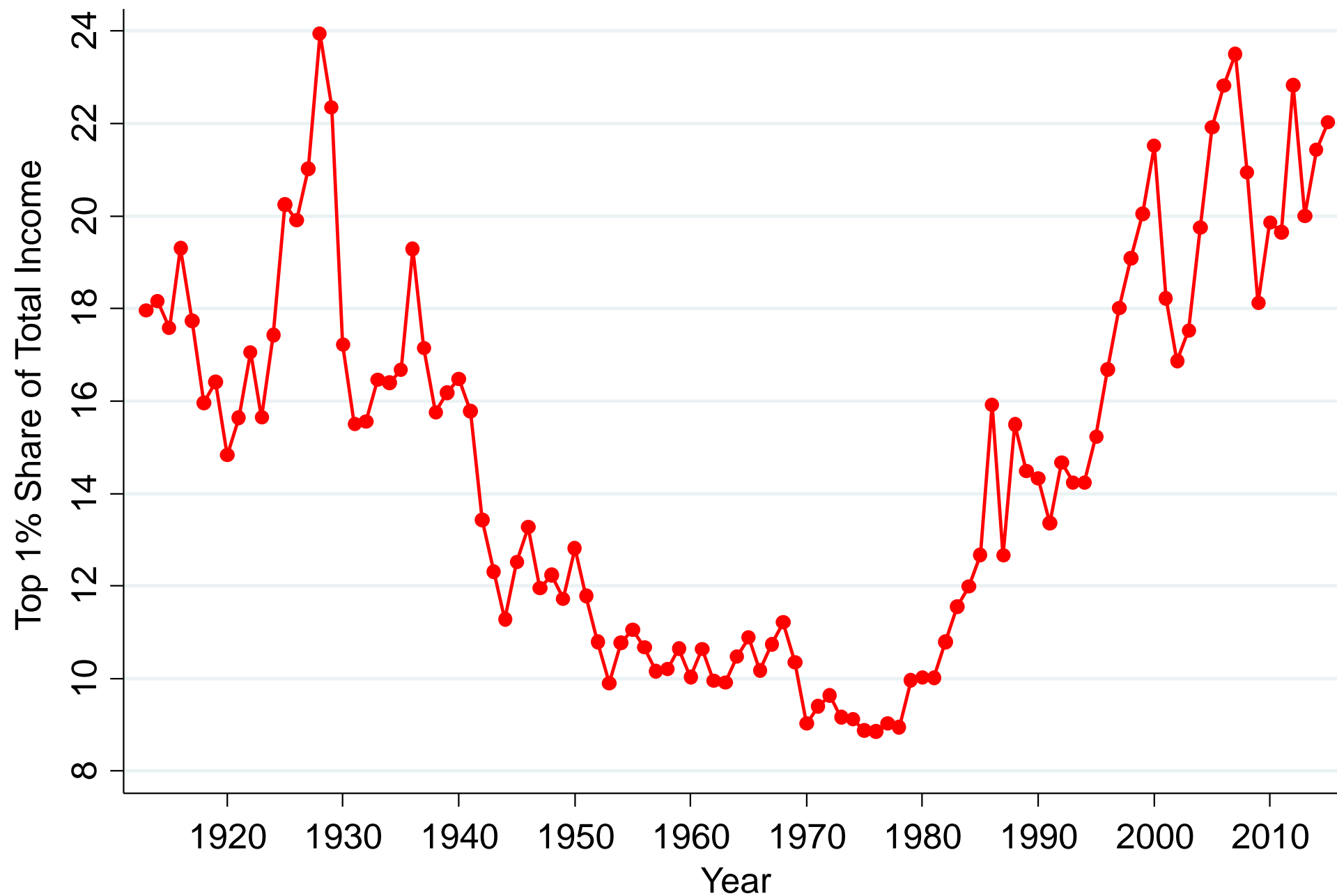
Over previous 34 years



Note: Inflation-adjusted annual average growth using income after taxes, transfers and non-cash benefits.

Source: Piketty, Saez, and Zucman (2017); Leonhardt (2017)

# Share of Income Going to Households in the Top 1%, by Year





**WE  
ARE  
THE  
99%**

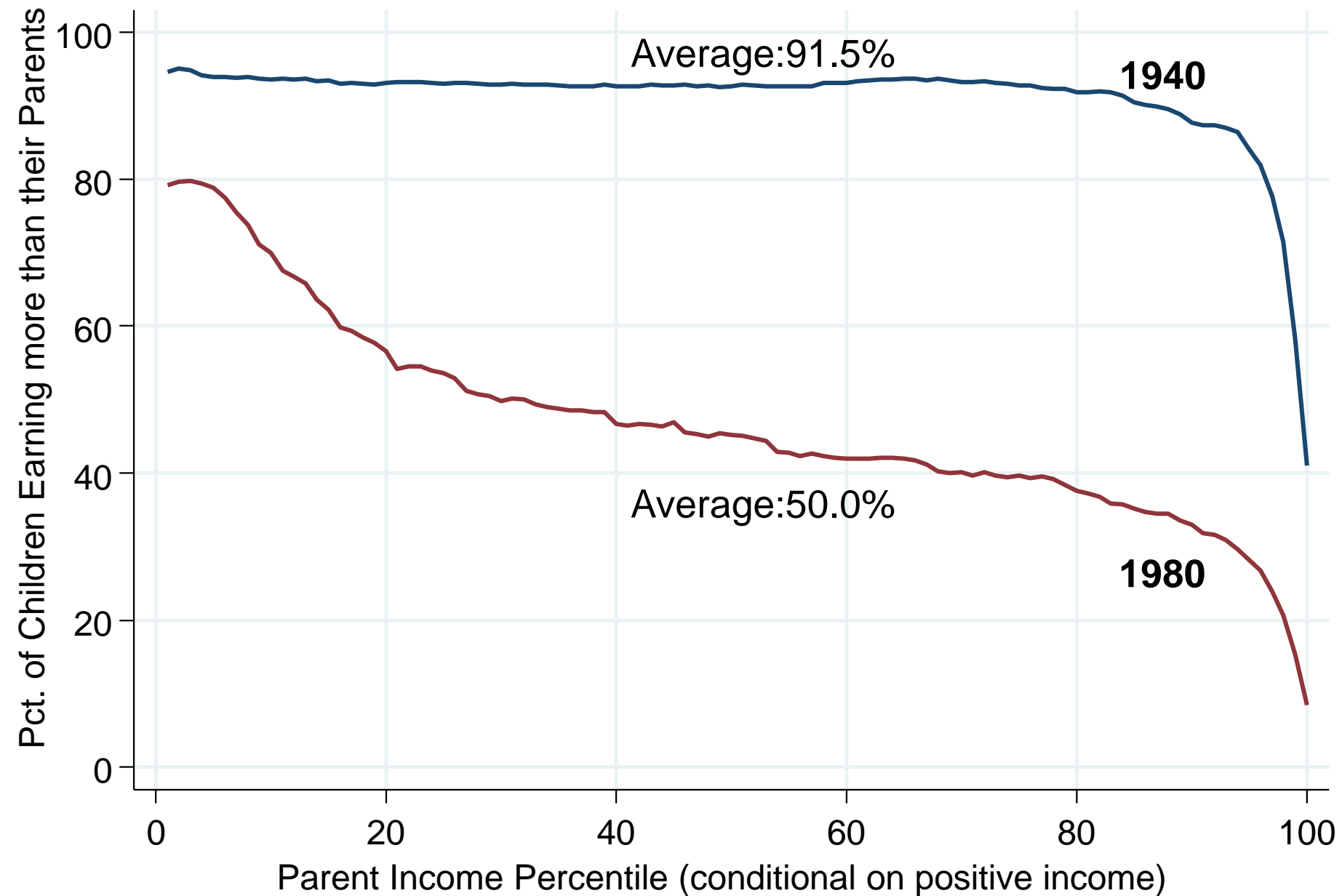




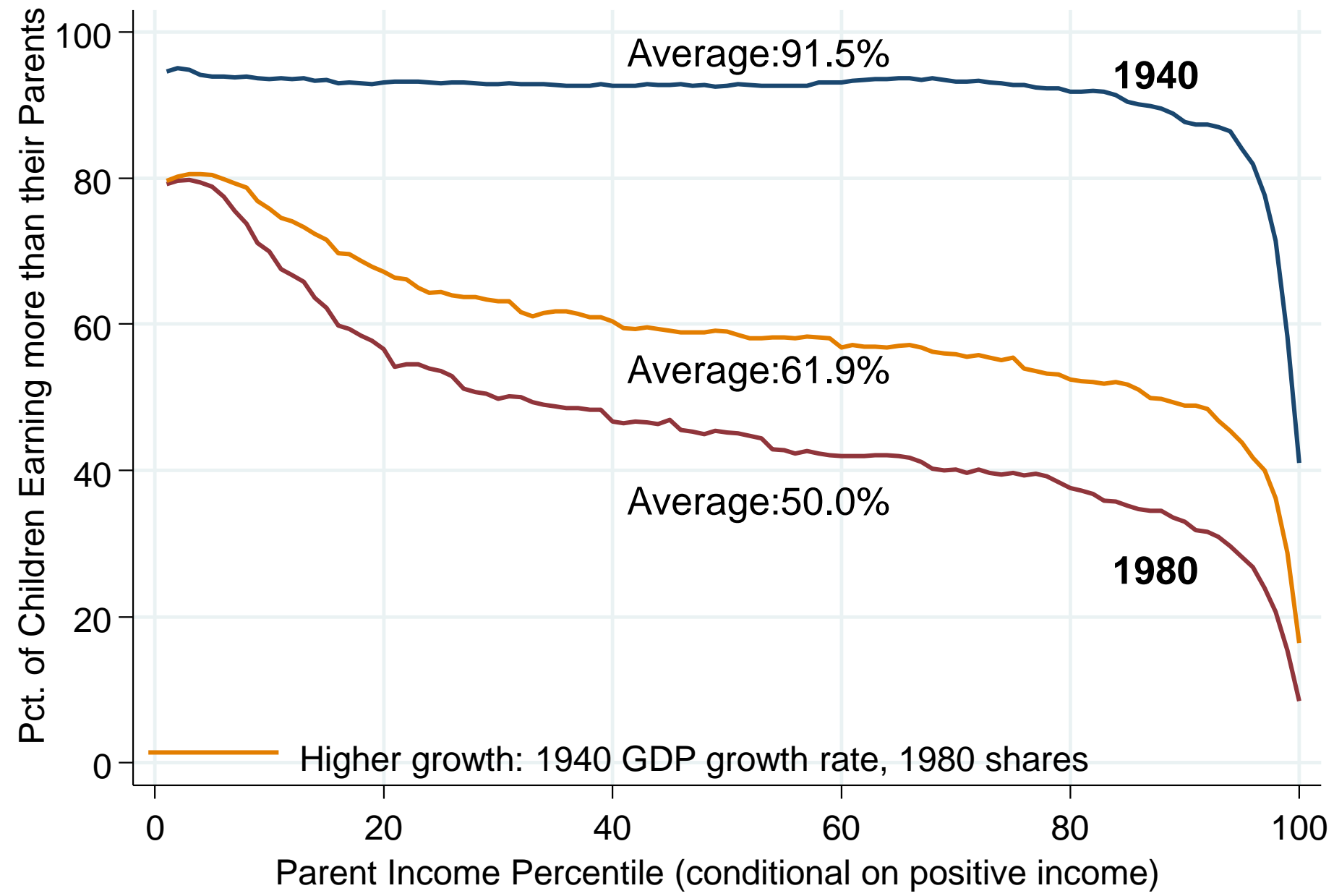
# What Policies Can Revive Absolute Mobility?

- Two major changes in American economy since 1940: lower total economic growth rates and less equal distribution of growth
- Consider two hypothetical scenarios for children born in 1980:
  1. **Higher growth:** growth rate since birth corresponding to 1940 cohort, with income distributed as it is today
  2. **More broadly shared growth:** Same growth rates as today, but distributed across income groups as in 1940 cohort

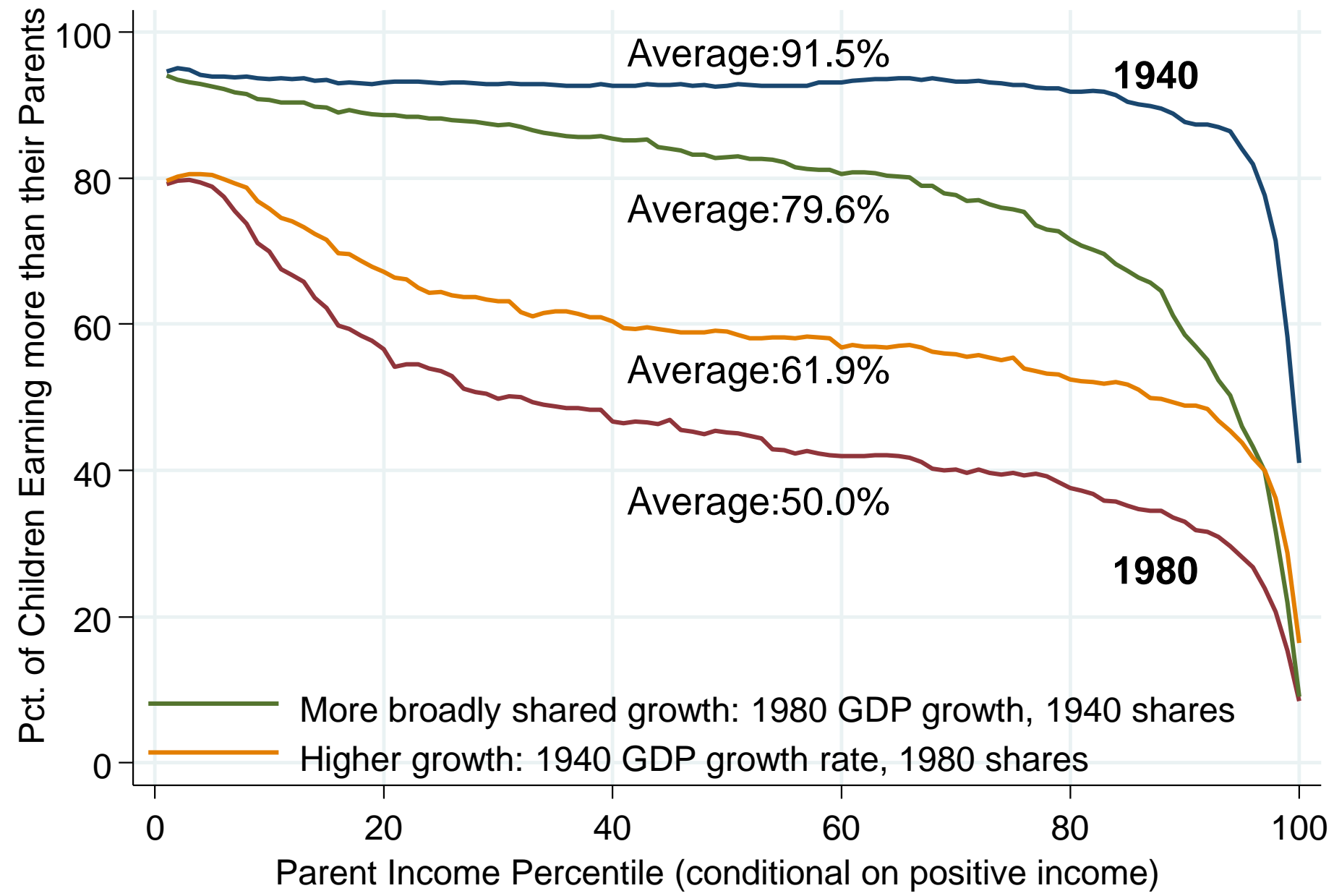
# Percent of Children Earning More than Their Parents: Hypothetical Scenarios



# Percent of Children Earning More than Their Parents: Hypothetical Scenarios

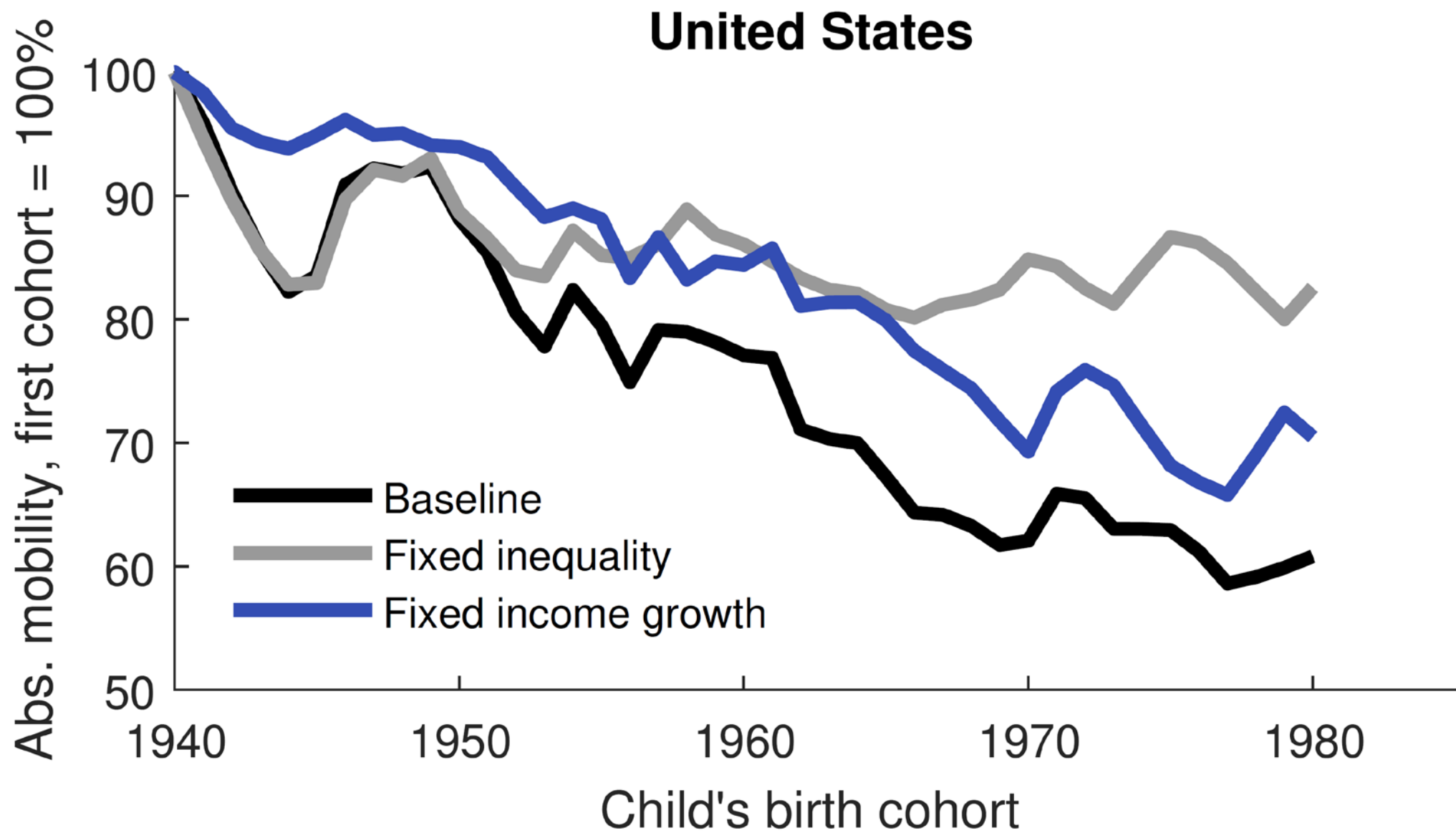


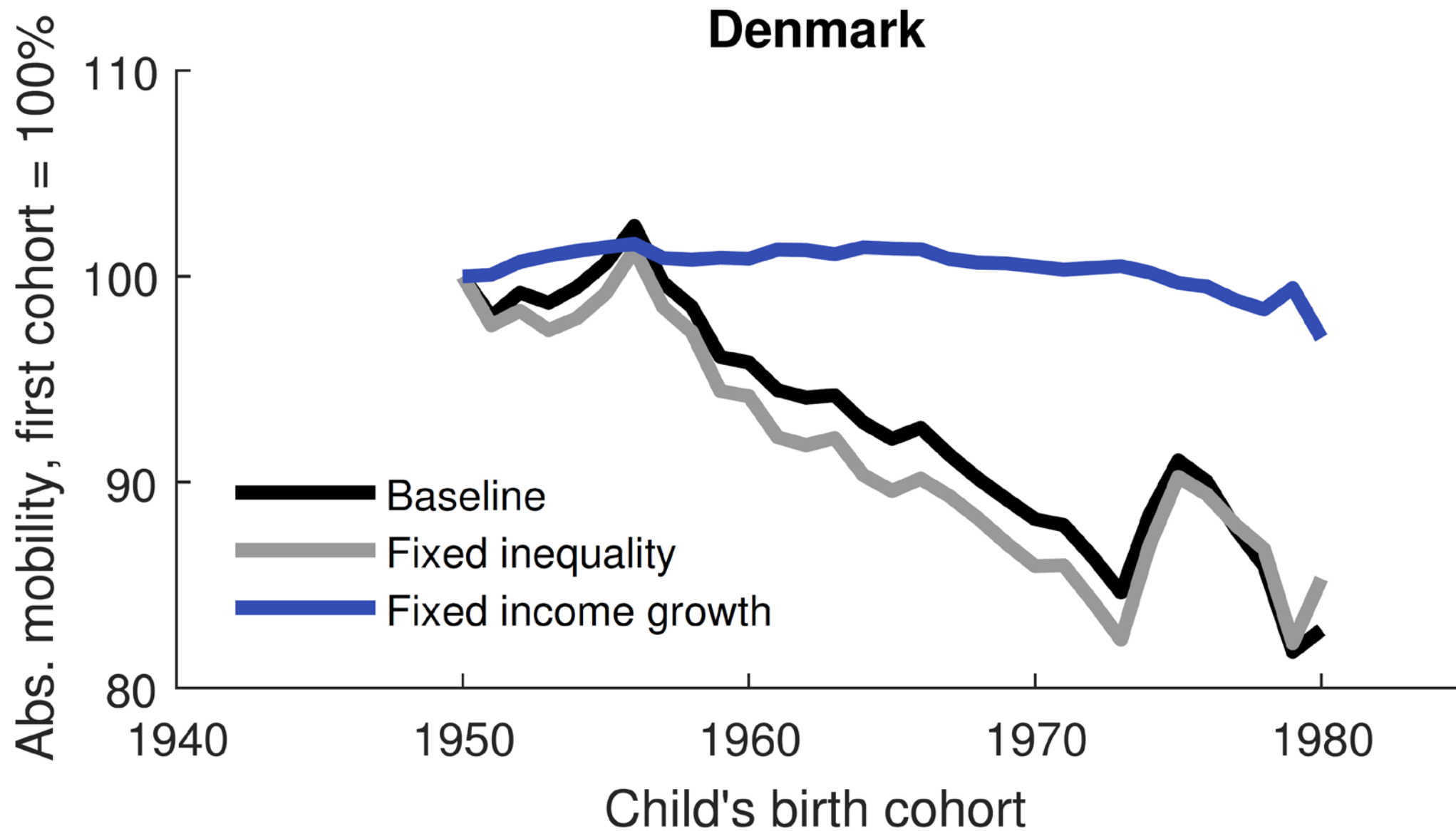
# Percent of Children Earning More than Their Parents: Hypothetical Scenarios

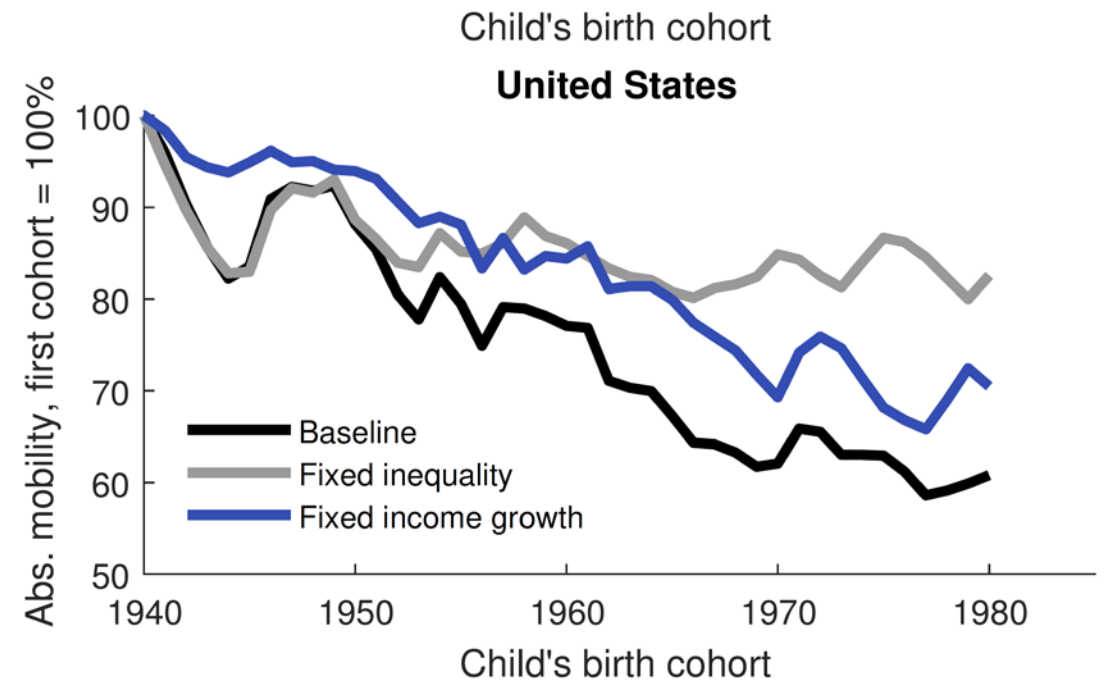
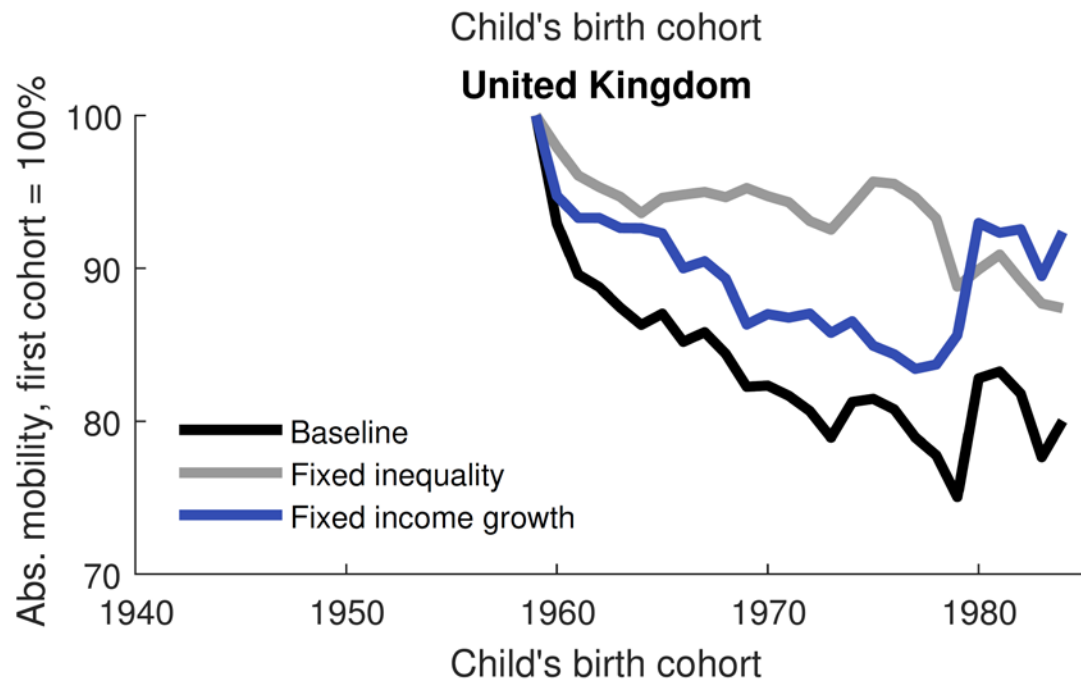
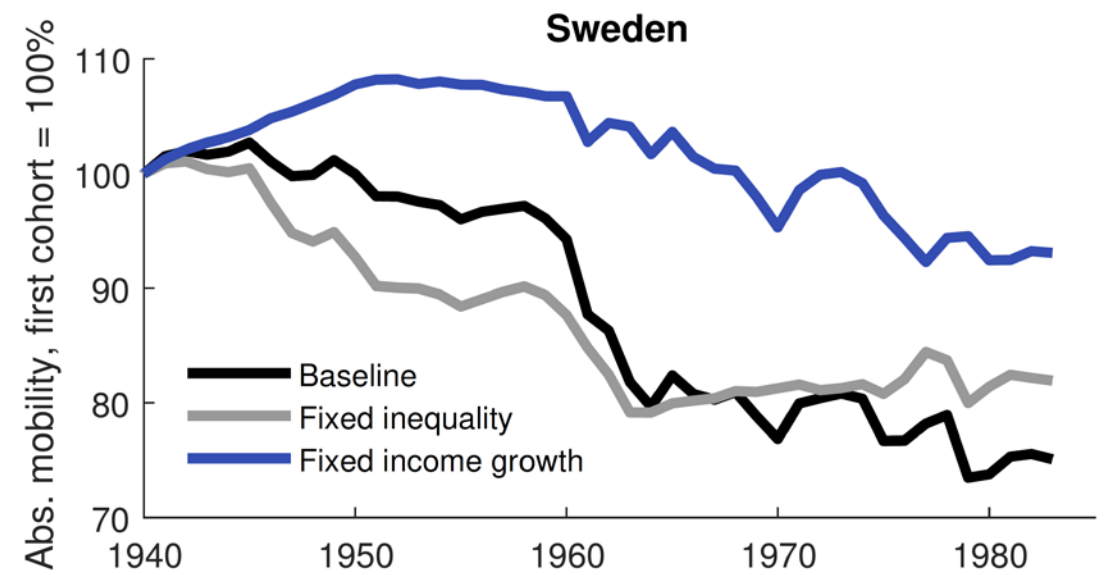
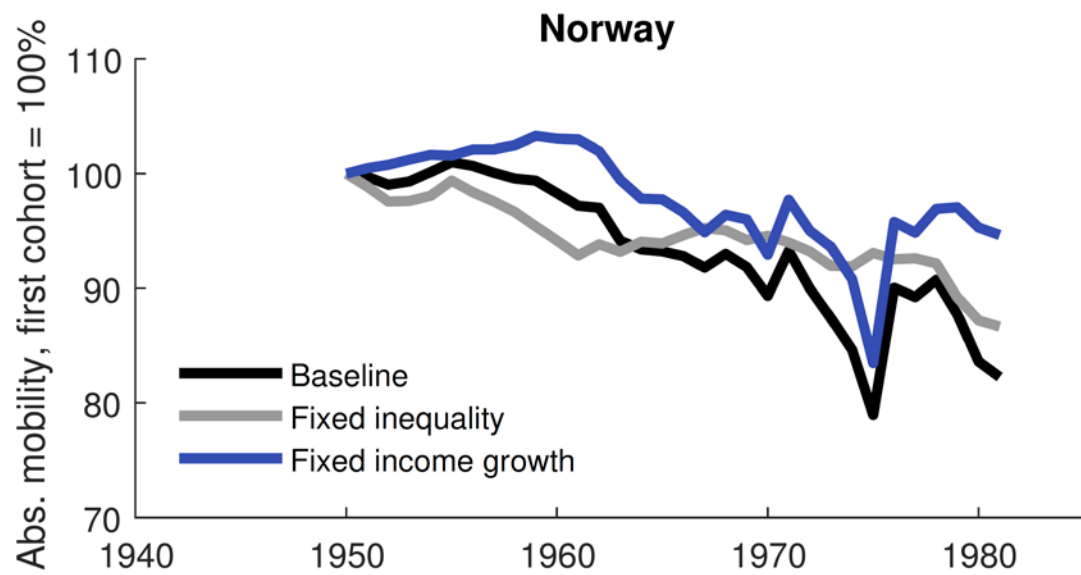


# Trends in Upward Mobility: International Comparisons

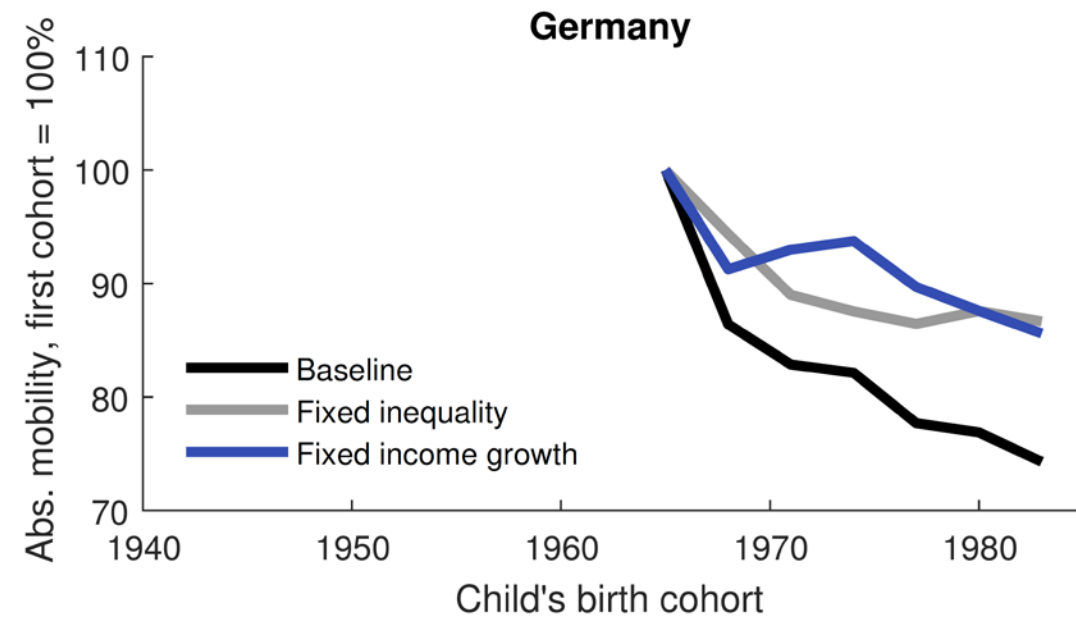
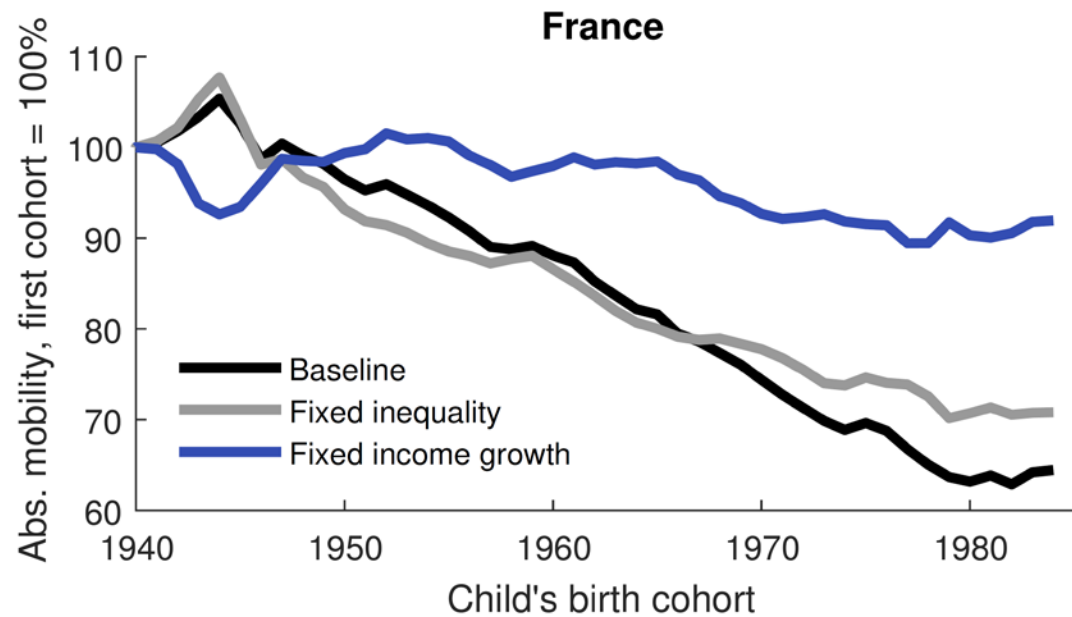
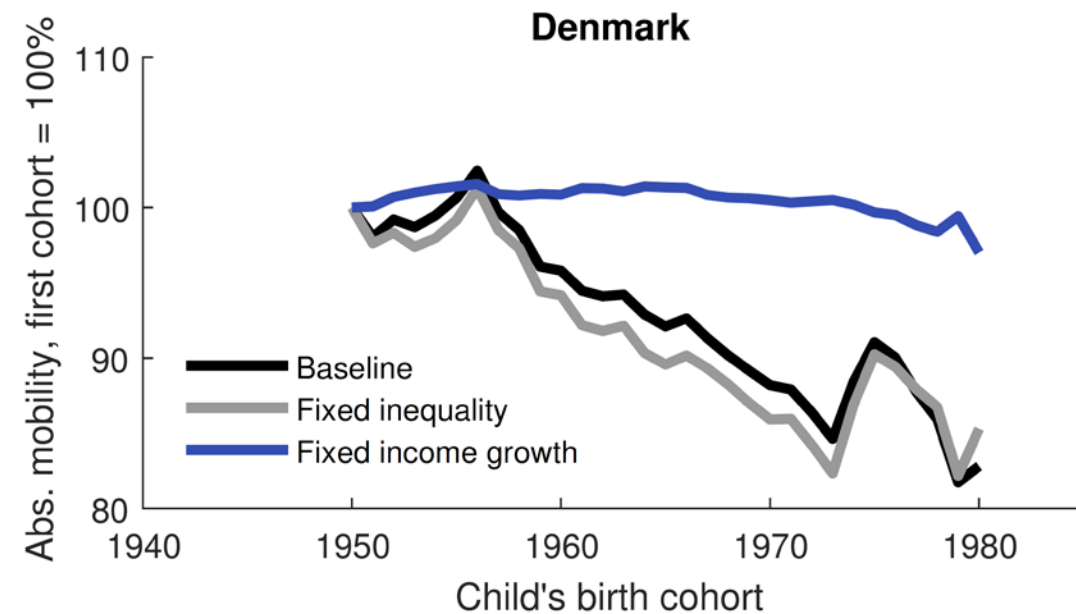
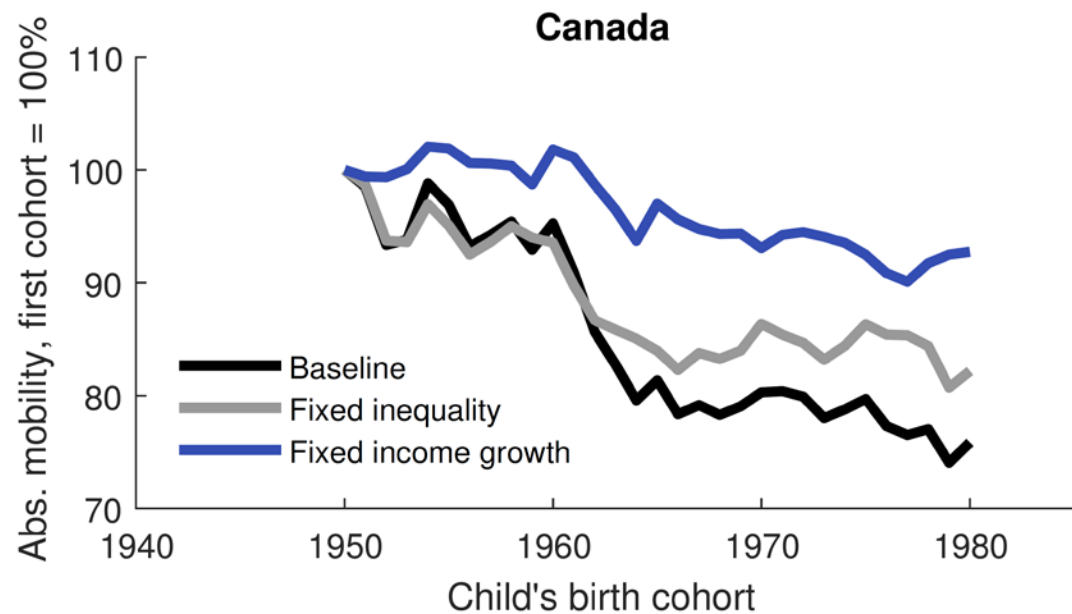
- Recap of last lecture: fraction of children earning more than their parents fell from 90% for those born in 1940 to 50% for those born in 1980
- Two-thirds of this decline was due to changes in the distribution of growth and one-third was due to slowing overall growth rate of American economy
- How does the American experience compare to other countries?
- Berman (2018) applies methodology of Chetty et al. (2017) in other countries to answer this question











# Restoring the American Dream

- Main lesson: restoring the American Dream of high rates of upward mobility will require **more broadly shared** economic growth
- Need policies that will increase incomes in the bottom and middle of the income distribution

# Restoring the American Dream

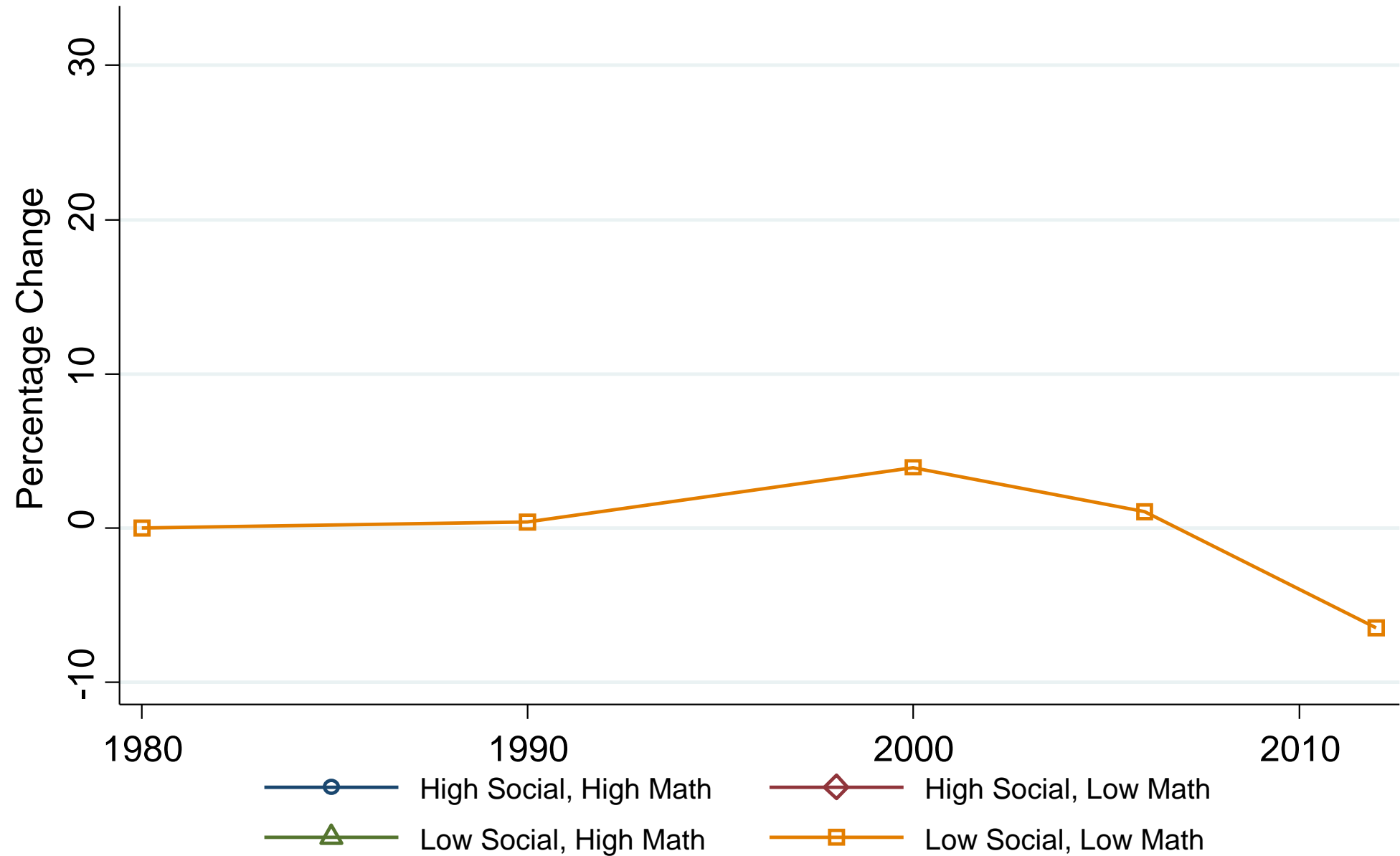
- Two broad approaches: redistribution (taxes/transfers, min wages) or increasing skills of lower-income Americans (“human capital”)
- Piketty and Saez: reductions in top income taxes and erosion of unions and minimum wages have led working-class Americans to fall behind
- Goldin and Katz: race between education and technology – need education to keep pace with technological change to increase wage rates

# Restoring the American Dream

- We will discuss both tax policy and education in greater detail in later lectures
- Important note: “education” is not just about technical skills
  - Deming (2018) demonstrates this by investigating how wage rates vary with technical and social skills over time

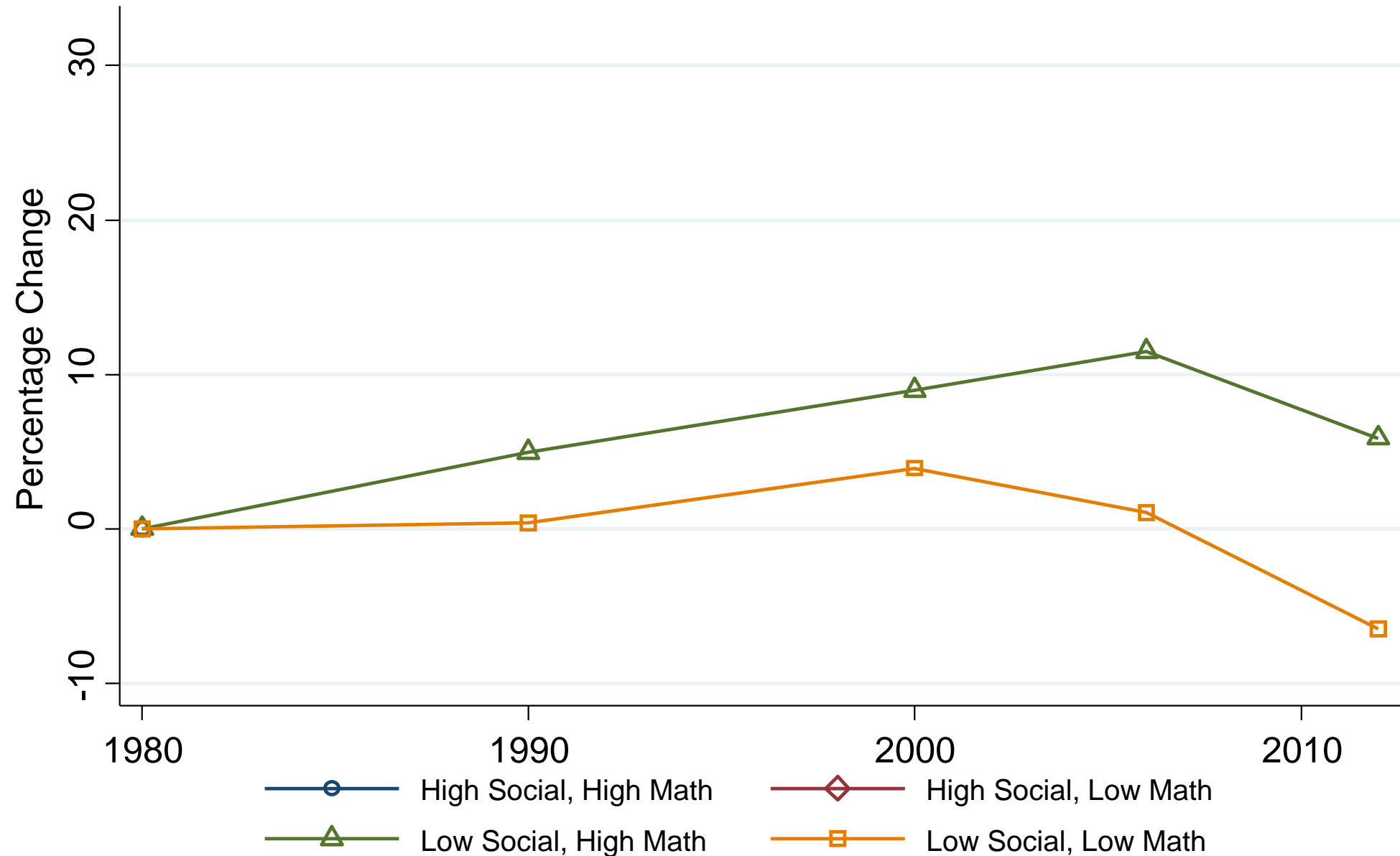
# Growth in Real Hourly Wage Rates by Occupation Task Intensity

Cumulative Percent Change Between 1980 and 2012, Relative to 1980 Baseline



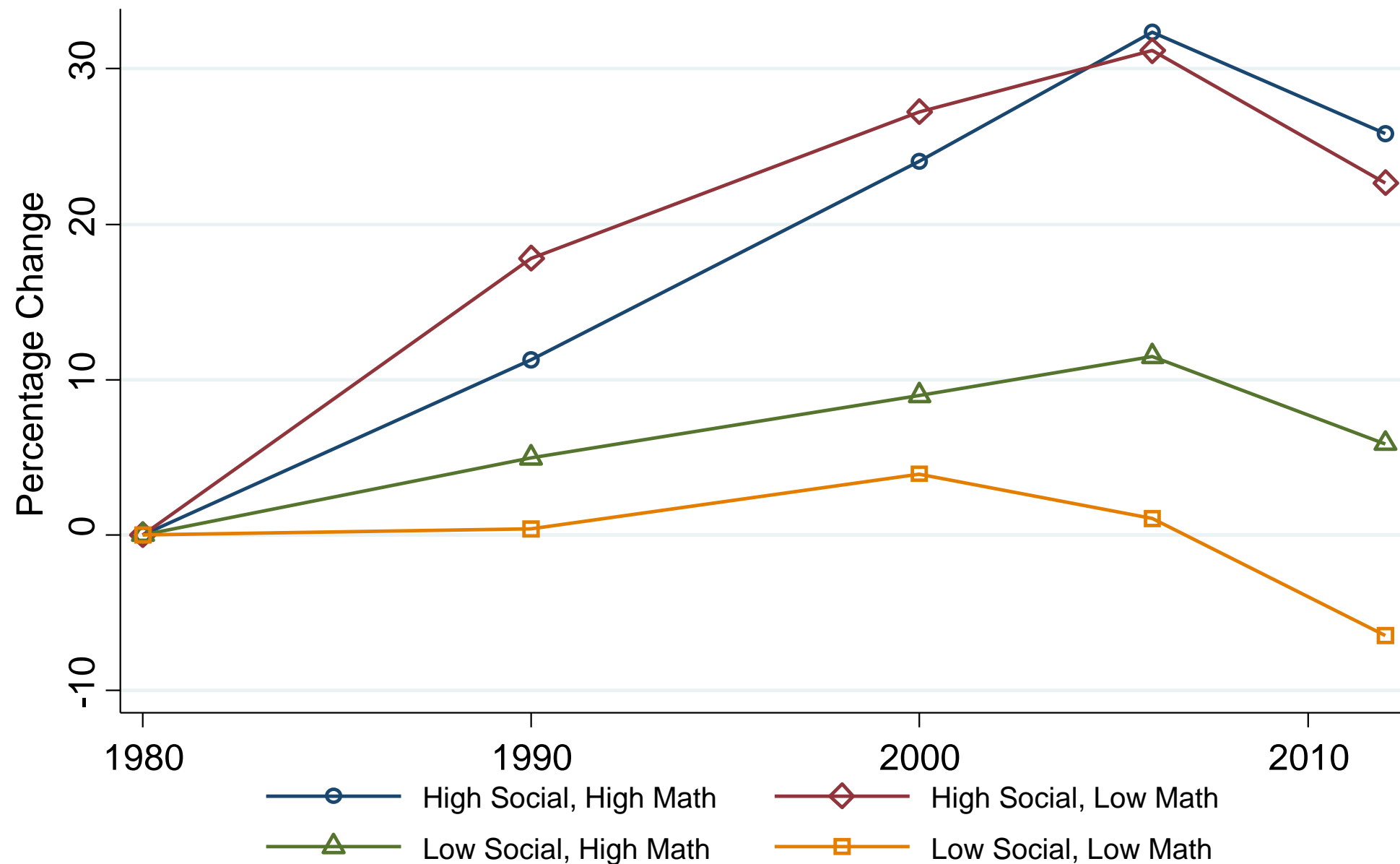
# Growth in Real Hourly Wage Rates by Occupation Task Intensity

Cumulative Percent Change Between 1980 and 2012, Relative to 1980 Baseline



# Growth in Real Hourly Wage Rates by Occupation Task Intensity

Cumulative Percent Change Between 1980 and 2012, Relative to 1980 Baseline



# Restoring the American Dream

- We will discuss both tax policy and education in greater detail in later lectures
- Important note: “education” is not just about technical skills
  - Deming (2018) demonstrates this by investigating how wage rates vary with technical and social skills over time
- Policies to improve such skills could range from changes in education and training programs to housing voucher policies



# Is Increasing Social Mobility Desirable?

- Thus far we have assumed that our goal should be to increase mobility
- But policies that increase mobility may not be desirable from an efficiency perspective
  - Random college admissions would maximize social mobility
  - But would violate principle of meritocracy and would likely reduce total economic output and growth
- Next, assess tradeoff between mobility and growth, focusing on innovation as a driver of growth