

# Education and Upward Mobility

## Economics of Public and Social Issues

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9/13/23

## Plan for today

- ▶ Correlation of Mobility and Education
- ▶ How to measure how much mobility each college provides

# Education

## Education and Upward Mobility

- ▶ Education is widely viewed as one of the most scalable pathways to upward mobility
- ▶ But there is growing concern that education no longer provides a strong pathway to opportunity in the U.S.
  - ▶ U.S. students perform worse on standardized tests on average than in many European countries despite higher spending on schools
  - ▶ Sharp differences in quality of schools across districts
  - ▶ Rising costs of college lack of access for low-income students
  - ▶ Concern that some colleges (e.g., for-profit institutions) may not produce good outcomes

## Education and Upward mobility

- ▶ How can we improve education in America?
  - ▶ Traditionally, measuring impacts of education systematically was difficult
  - ▶ Administrative data from colleges and school districts are giving us a more scientific understanding of the “education production function”
- ▶ Start with higher education, then turn to K-12 education  
*Reference: Chetty, Friedman, Saez, Turner, Yagan. “Mobility Report Cards: The Role of Colleges in Intergenerational Mobility” Working Paper 201*

## How Do Colleges Shape Income Mobility in the U.S.?

- ▶ How does the higher education system affect intergenerational income mobility in the U.S.?
  - ▶ In principle, higher education can provide a pathway to upward mobility that is not directly shaped by the neighborhood where a child happens to grow up
  - ▶ But if children from higher-income families tend to attend better colleges, higher education system may not promote mobility
  - ▶ Colleges could actually increase intergenerational persistence of income if disparities in college attendance are sufficiently large

# Effect of Higher Education System on Mobility

- ▶ Effect of higher education system on mobility depends upon three factors:
  - ▶ [Inputs] Parental income distributions by college
  - ▶ [Outputs] Students' earnings outcomes conditional on parental income by college
  - ▶ [Causal share] Portion of variation in students' earnings outcomes that is due to colleges' causal effects

## Estimating the Three Parameters: Data

- ▶ Chetty et al. (2017) estimate these three parameters using data covering all college students in the U.S. from 1999-2013 (30 million students)
- ▶ Combine information from three sources to construct an anonymized dataset:
  - ▶ Parental and Student Income from income tax records
  - ▶ College attendance from 1098-T tax data and Pell grant data
  - ▶ SAT scores from College Board

*Note: all statistics are based on college attendance (not completion)*

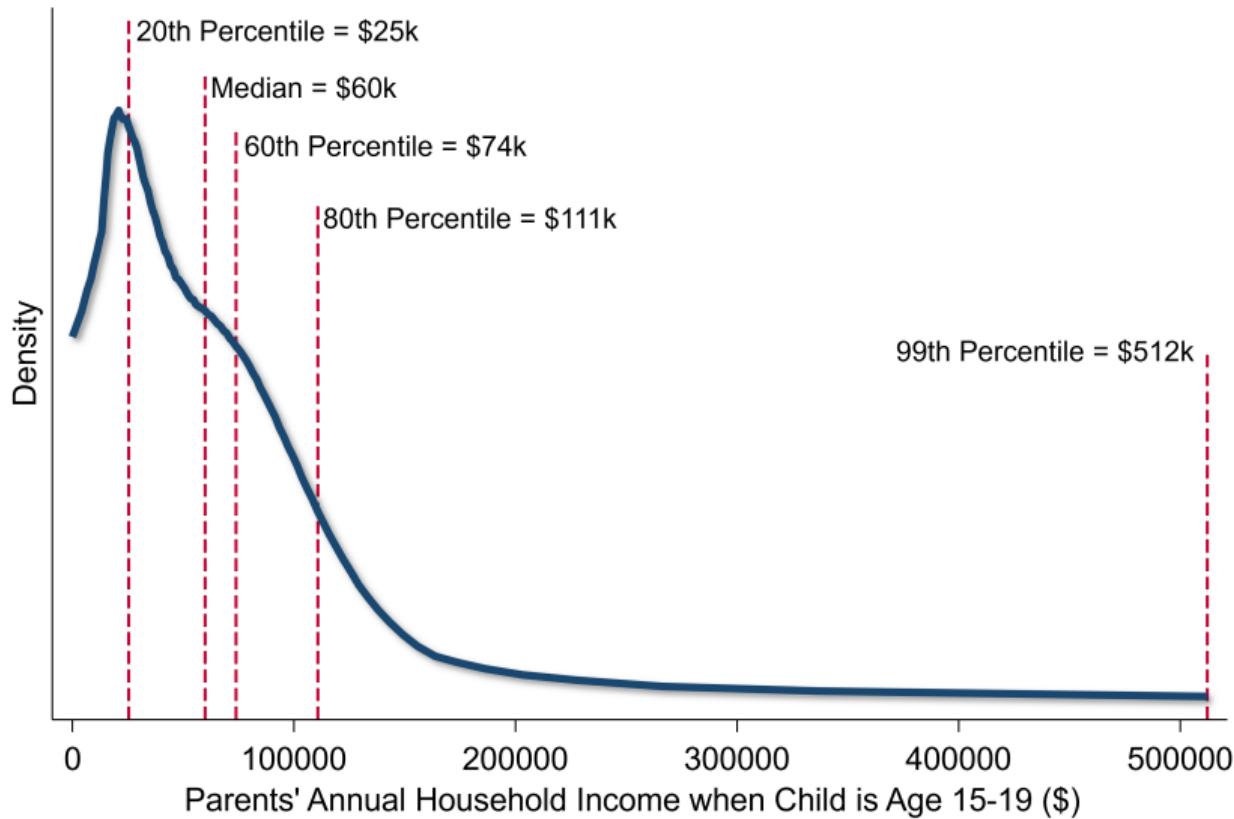
# Parents' Income Distributions by College: Income Segregation in the American Higher Education System

## Measuring Parents' Incomes

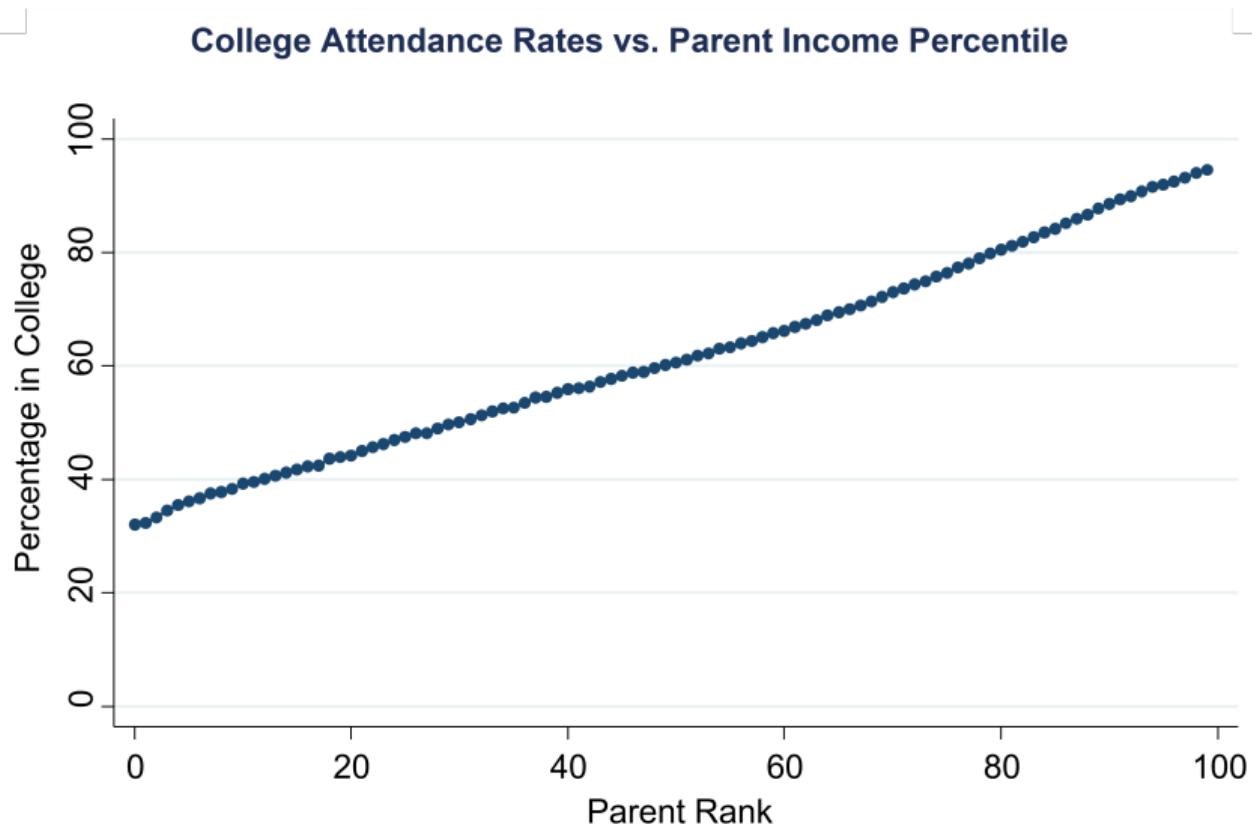
- ▶ Parent income: average pre-tax household income during five year period when child is aged 15-19
- ▶ Focus on percentile ranks, ranking parents relative to other parents with children in same birth cohort

# Parent Household Income Distribution

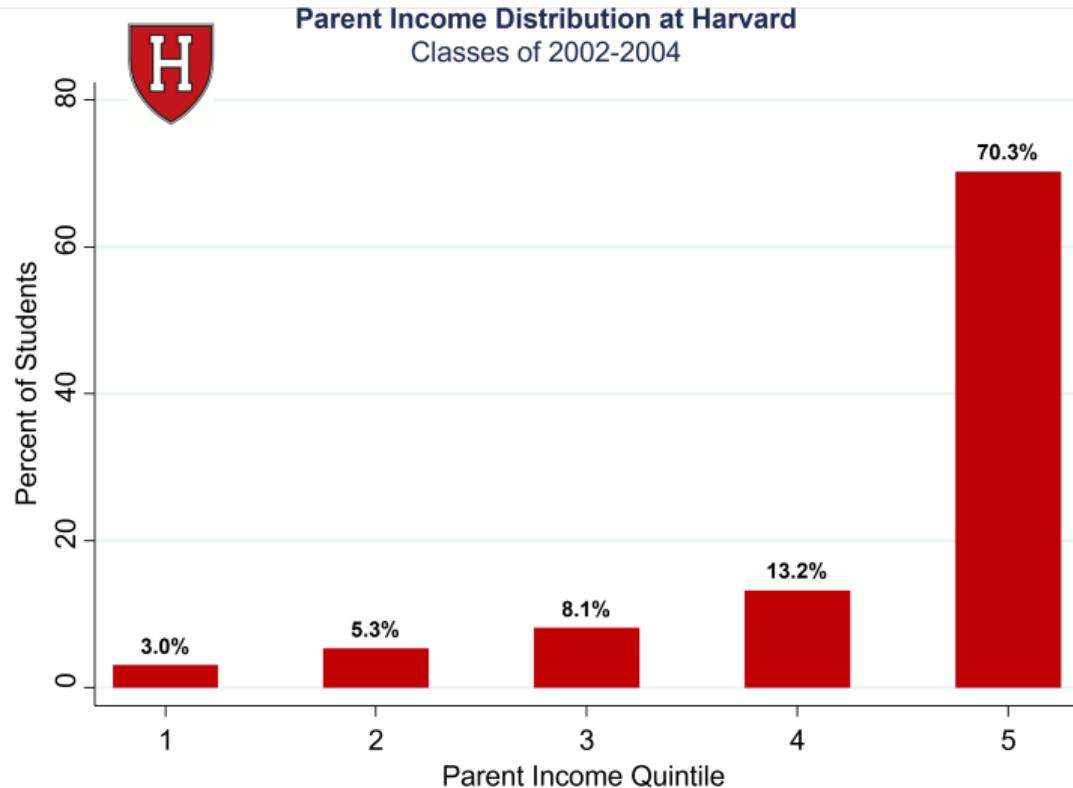
**Parent Household Income Distribution**  
For Parents with Children in 1980 Birth Cohort



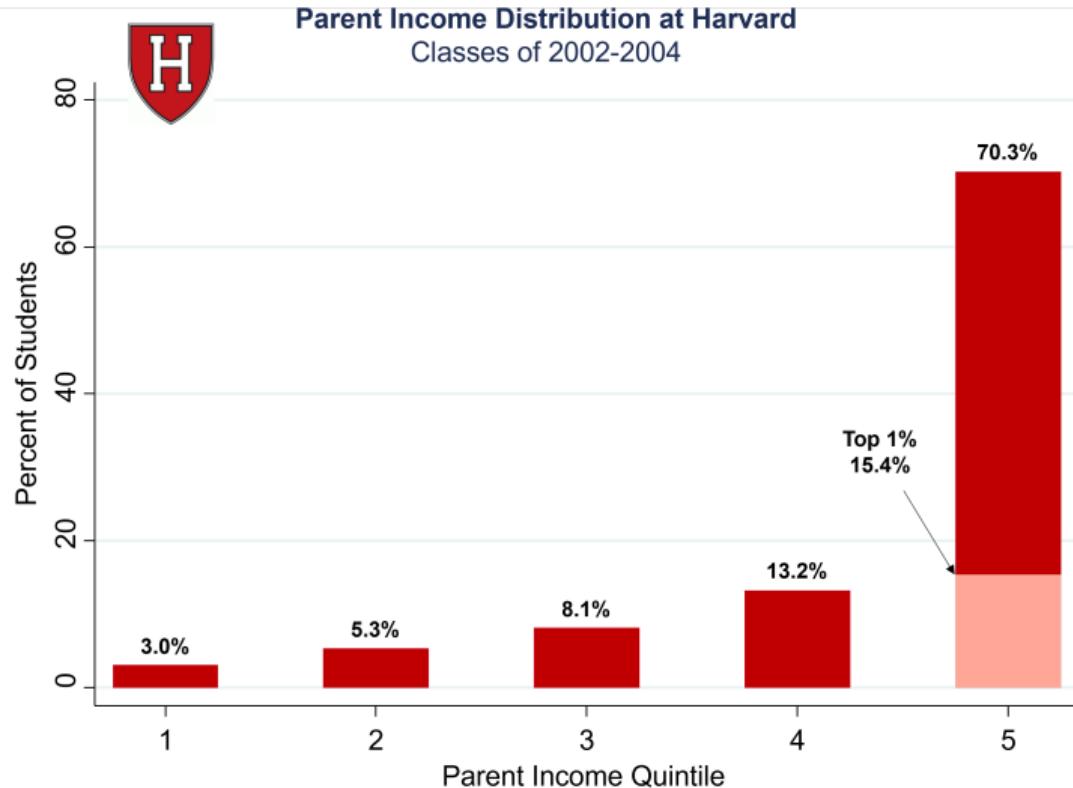
# College Attendance Rates vs. Parent Income Percentile



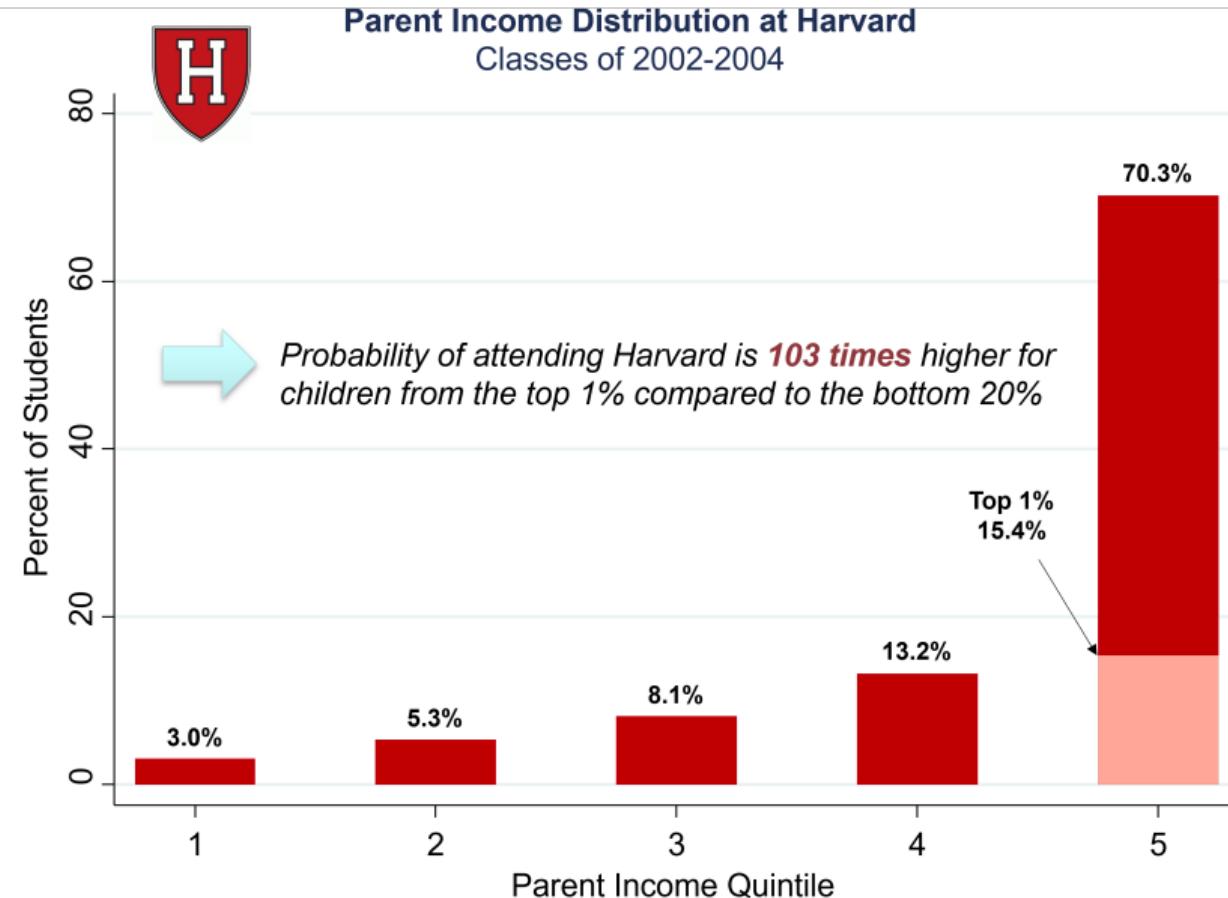
# Parent Income Distribution at Harvard



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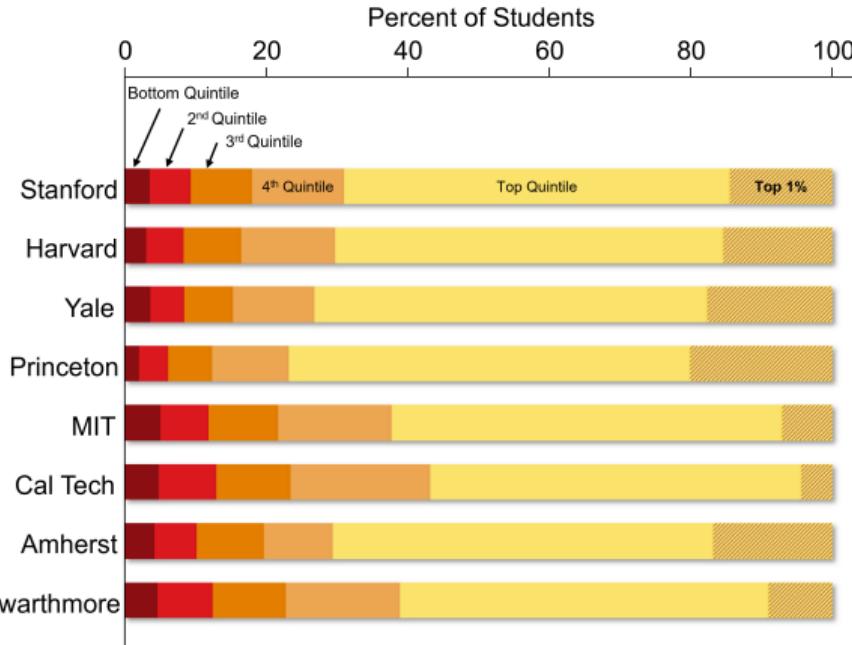


# Parent Income Distribution at Harvard



# Parental Income Distribution of Students at Some Highly Selective Colleges

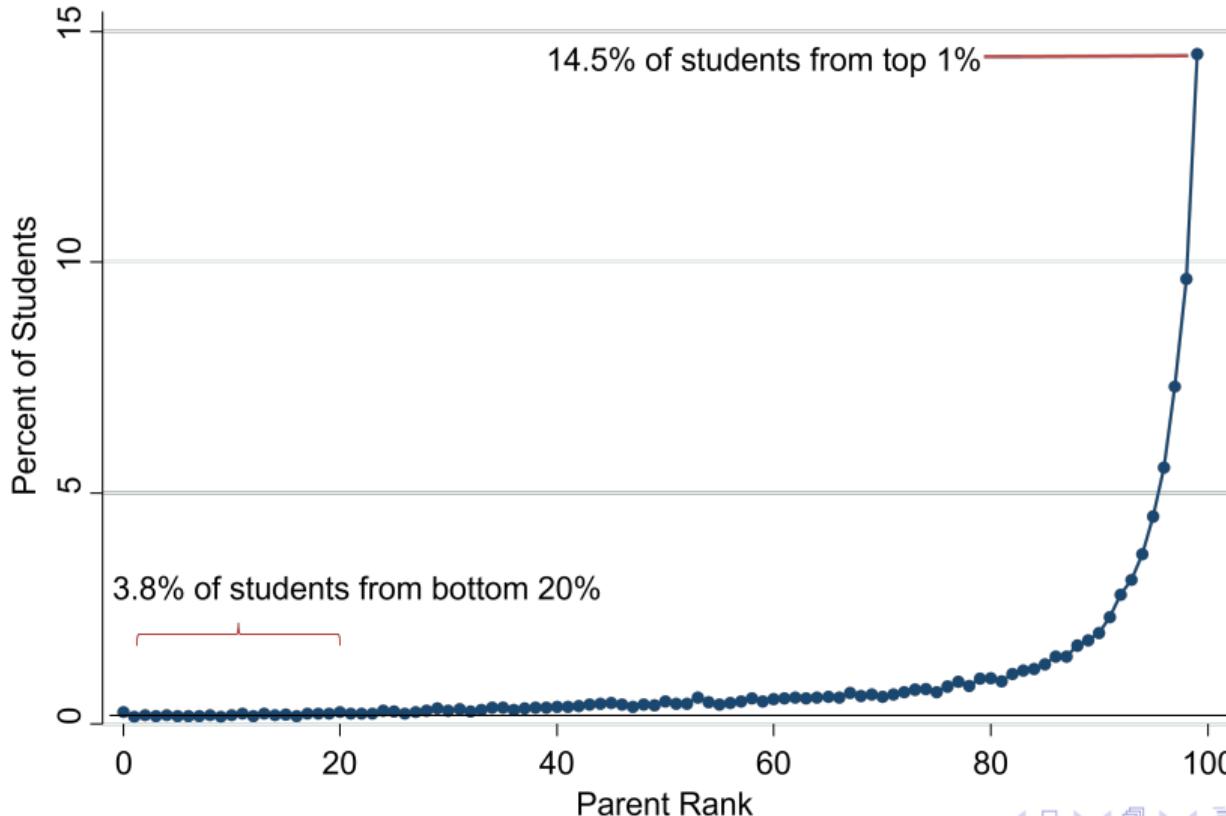
**Parental Income Distribution of Students at Highly Selective Colleges**



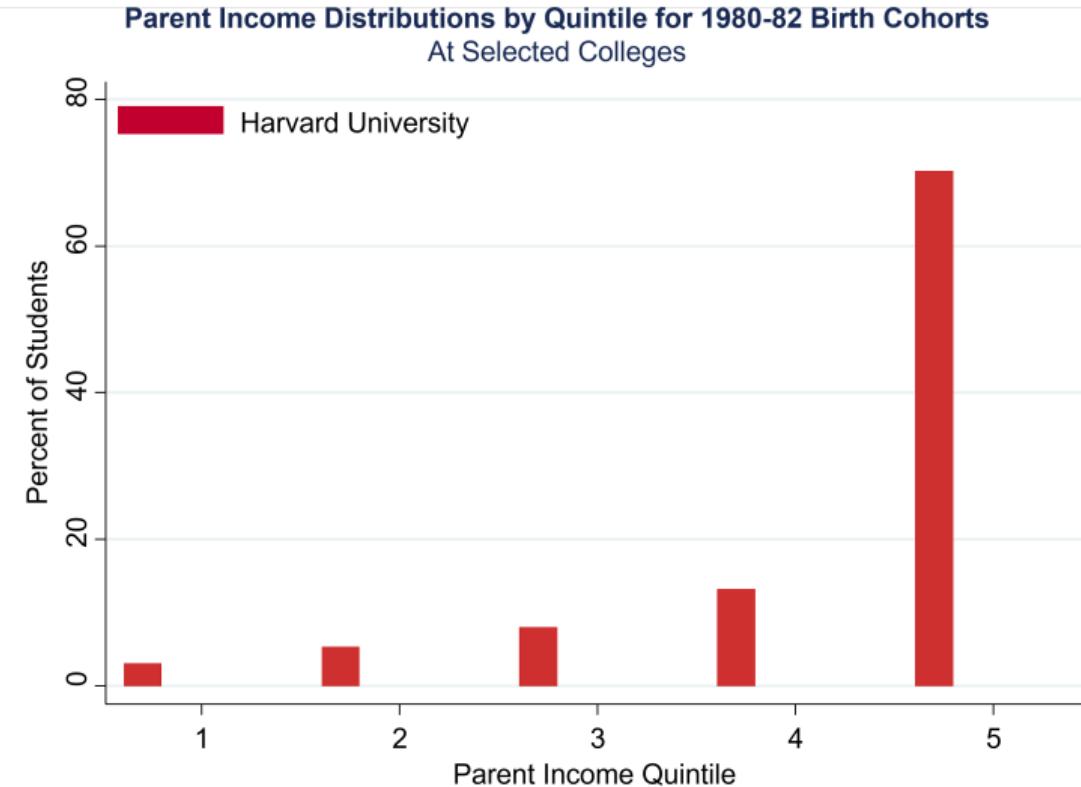
# Income Composition of Ivy Leagues

## Parent Income Distribution by Percentile

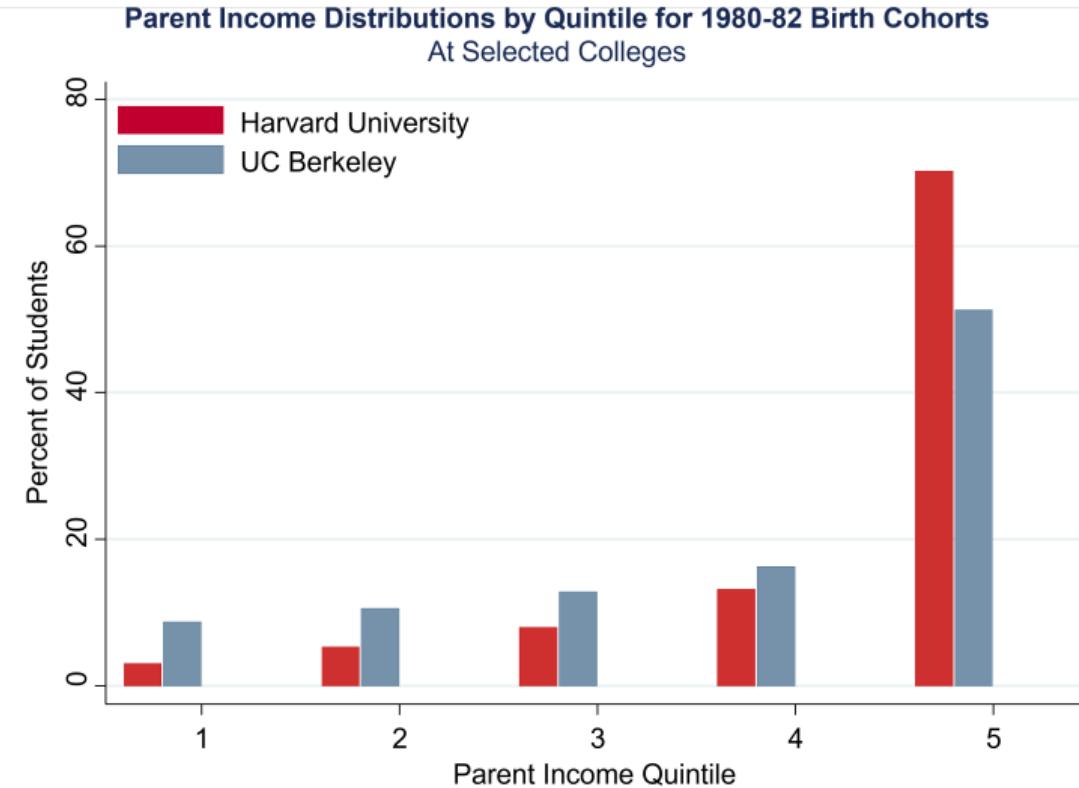
Ivy Plus Colleges (Ivy League plus Stanford, MIT, Duke, and Chicago)



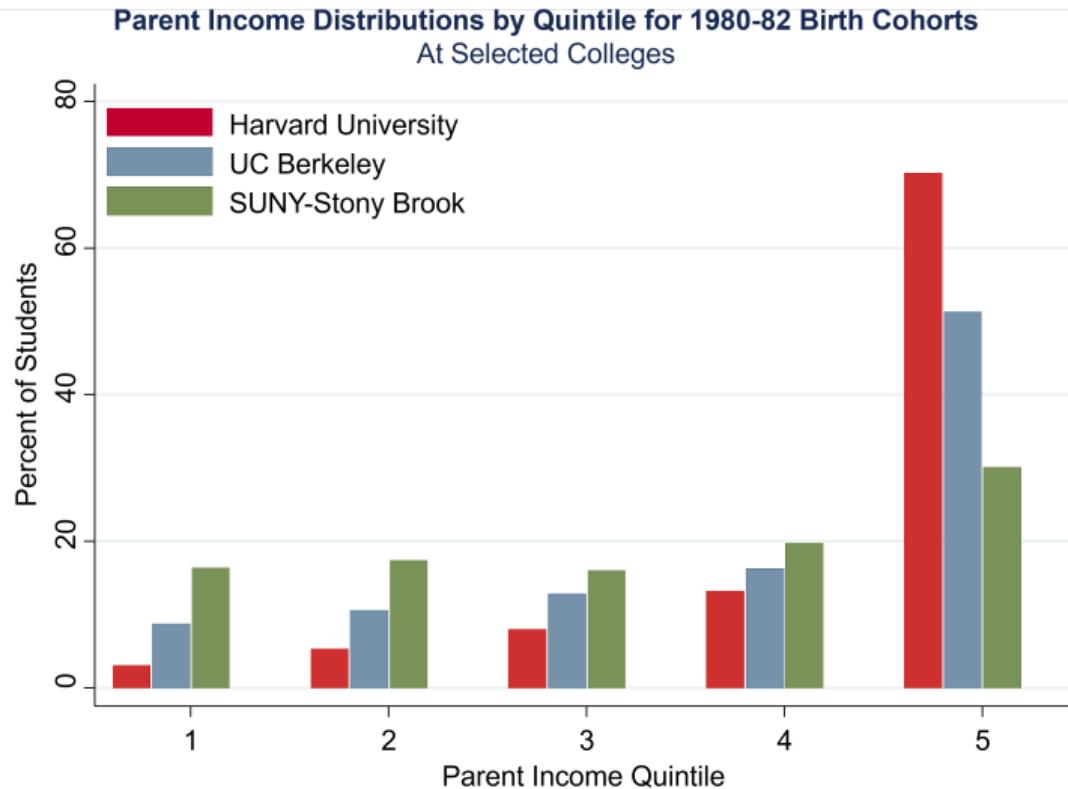
# Parent Income Distributions by Quintile for 1980-82 Birth Cohorts - Selected Colleges



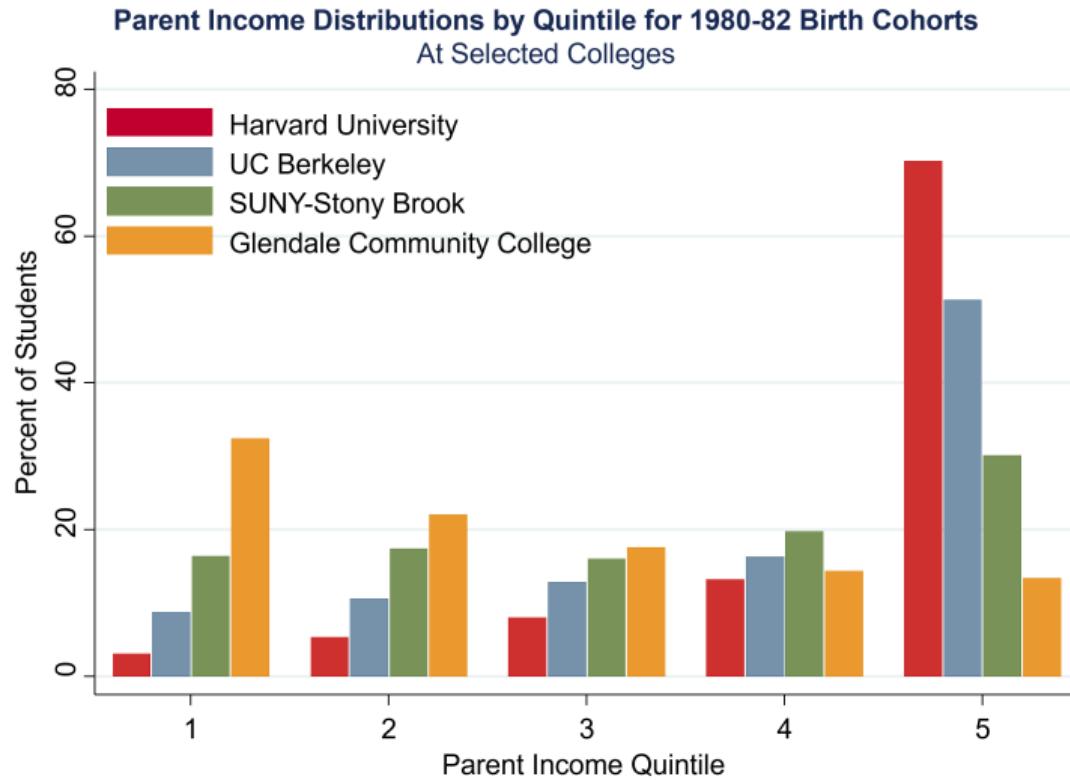
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## How does UTSA look?

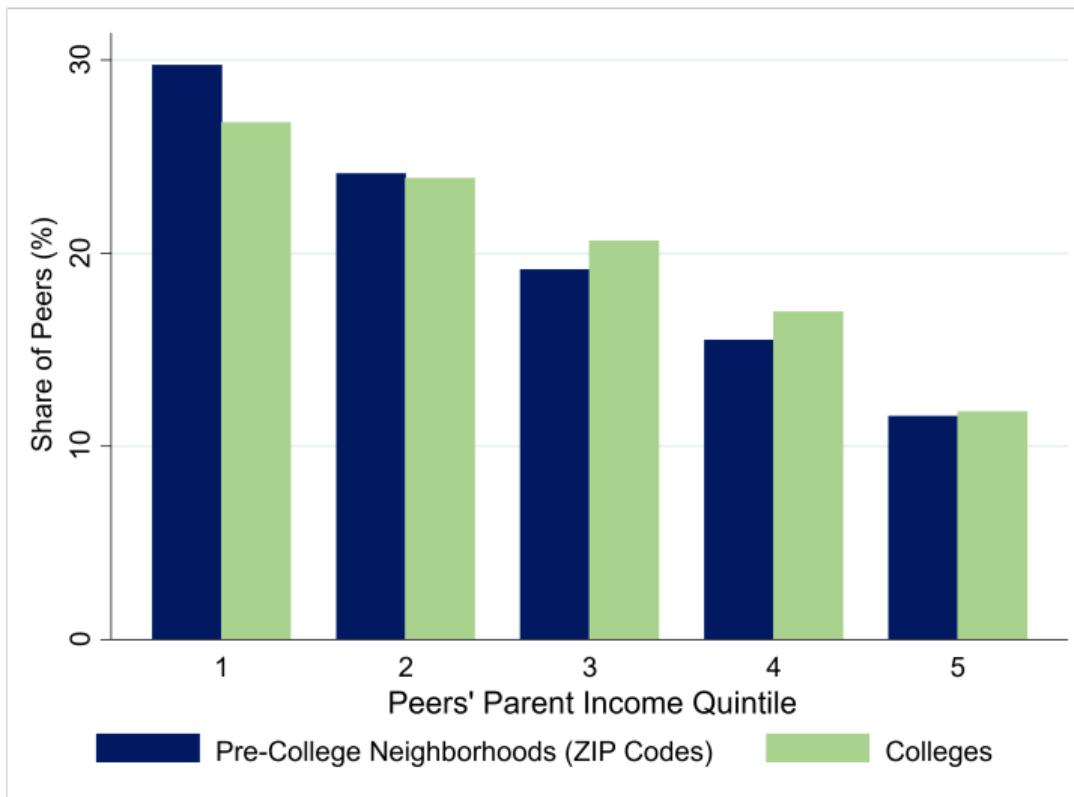
- ▶ All Schools: <https://www.nytimes.com/interactive/projects/college-mobility>
- ▶ UTSA: <https://www.nytimes.com/interactive/projects/college-mobility/university-of-texas-at-san-antonio>

## Parental Income Segregation Across Colleges

- ▶ Sharp differences in parental income distributions across colleges there is significant segregation across colleges
- ▶ Useful benchmark to quantify magnitude: compare to degree of segregation across neighborhoods
- ▶ Common perception: colleges foster greater interaction between children from different socioeconomic backgrounds than places in which they grew up

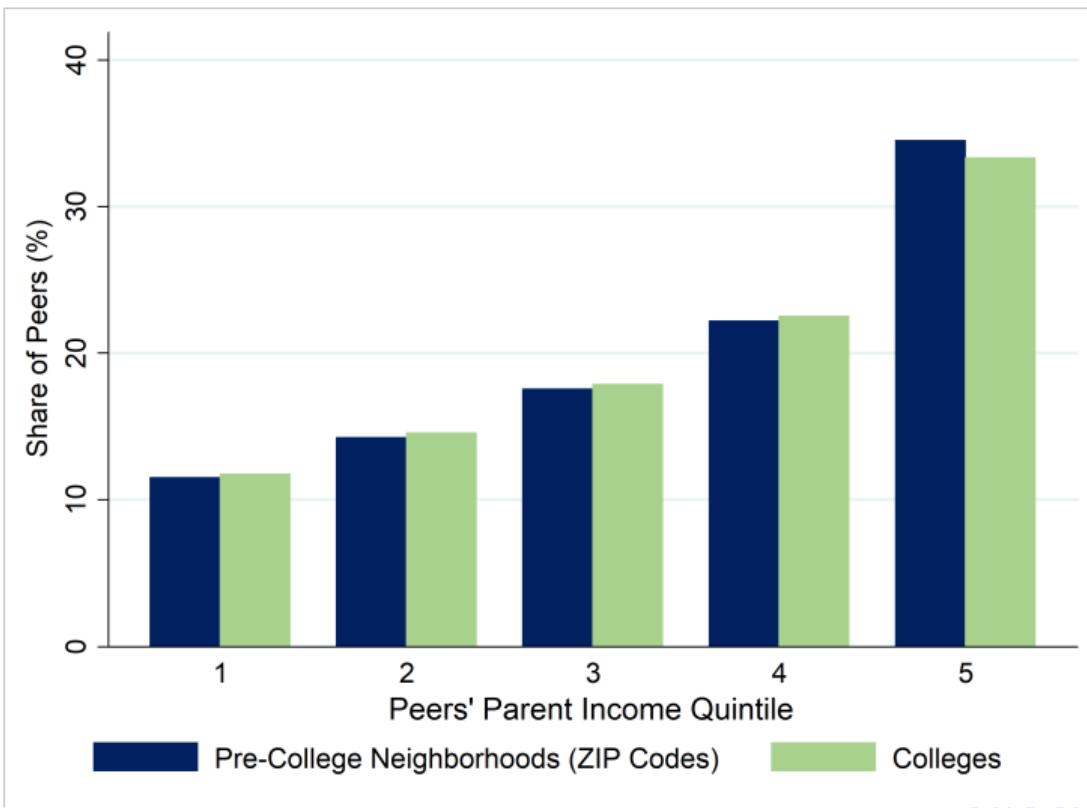
# Parental Income Distribution of Peers of Children from Bottom Quintile

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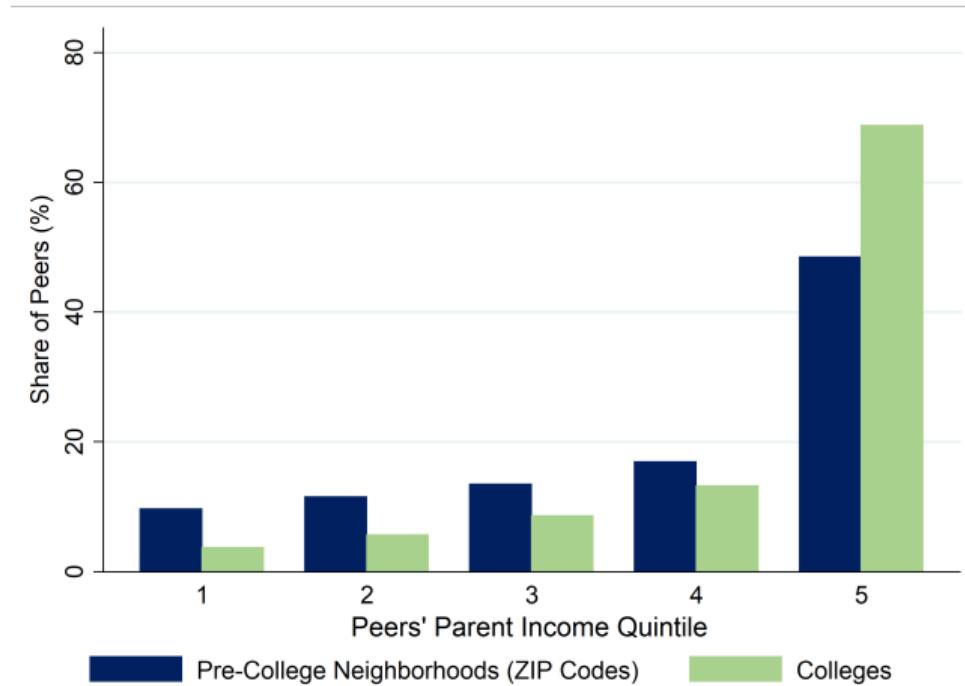
# Parental Income Distribution of Peers of Children from Top Quintile

Parental Income Distribution of Peers of Children from Top Quintile



# Parental Income Distribution of Peers of Ivy-Plus College Students from Top Quintile

Parental Income Distribution of Peers of Ivy-Plus College Students from Top Quintile

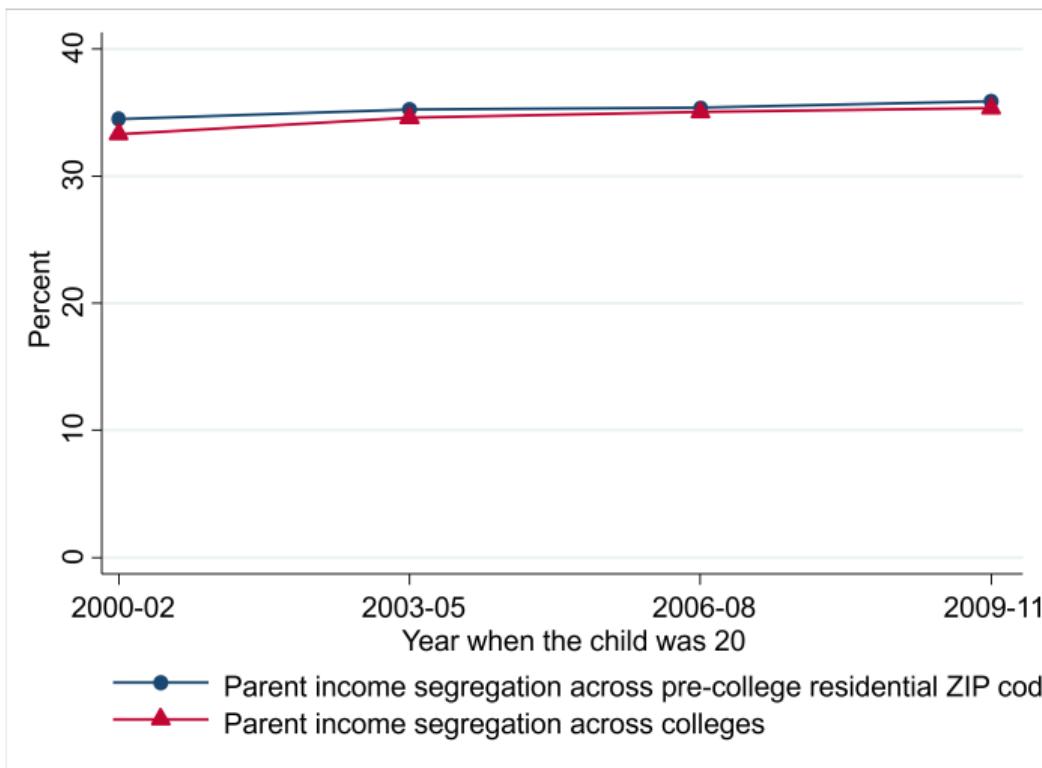


## Trends in Income Segregation

- ▶ Preceding estimates are based on children born between 1980-82, who attended college in the early 2000s
- ▶ Substantial changes in higher education system since that time, e.g. substantial changes in financial aid and tuition policies
- ▶ How has income segregation across colleges changed in recent years?

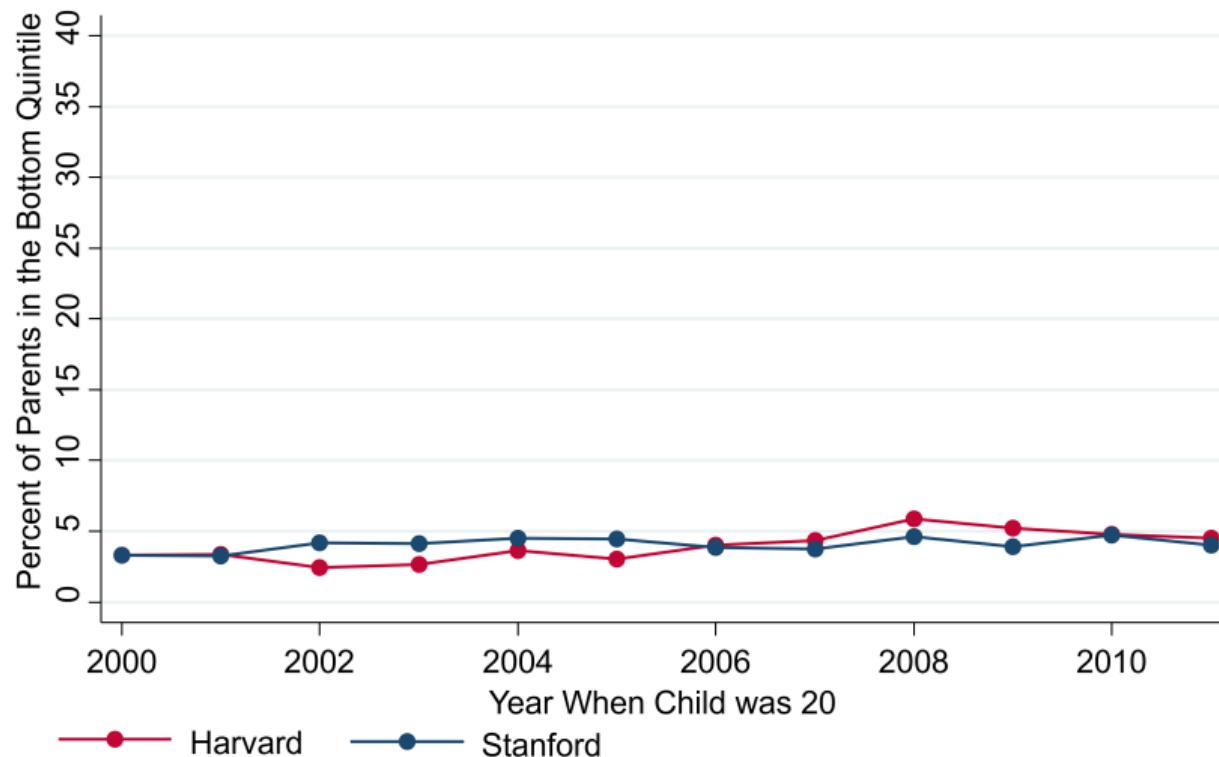
# Fraction of Peers from the Top Quintile for Children from the Top Quintile

Fraction of Peers from the Top Quintile for Children from the Top Quintile



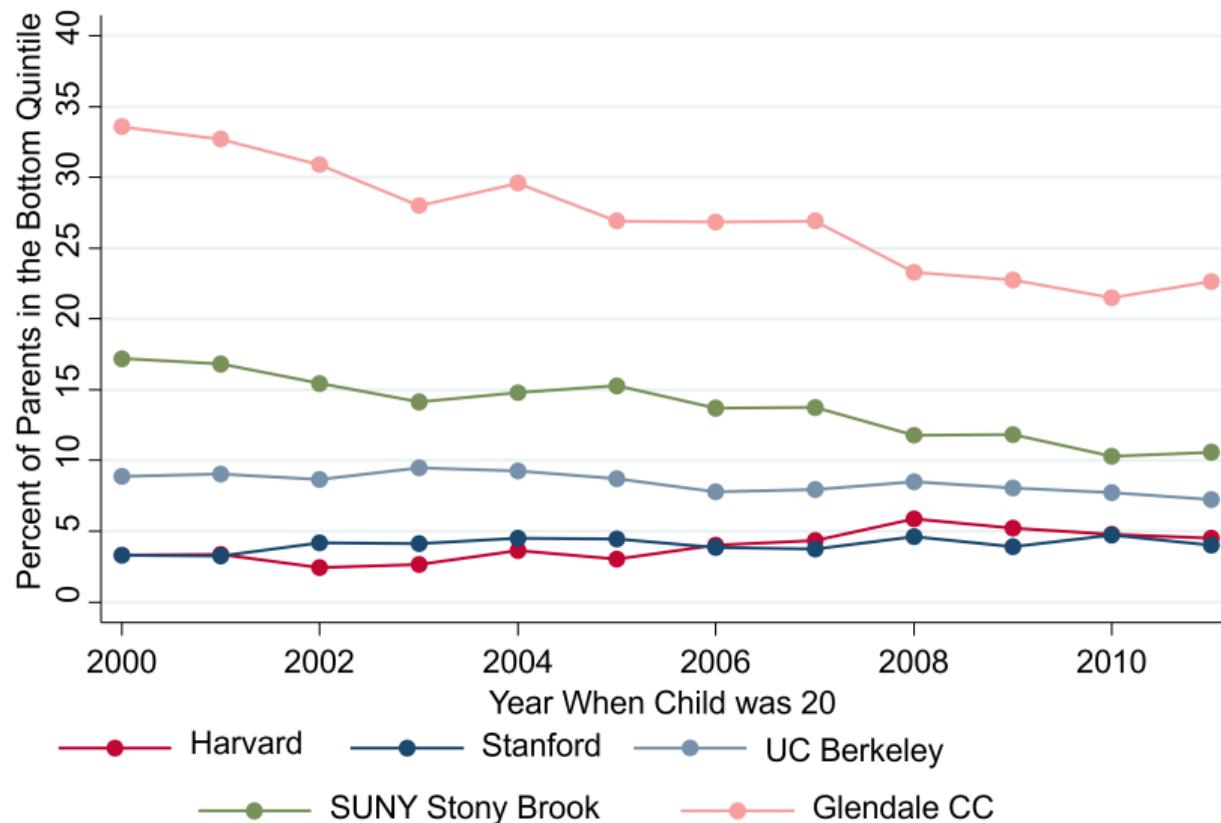
# Trends in Low-Income Access from 2000-2011 at Selected Colleges

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## Outcomes: Students' Earnings Distributions

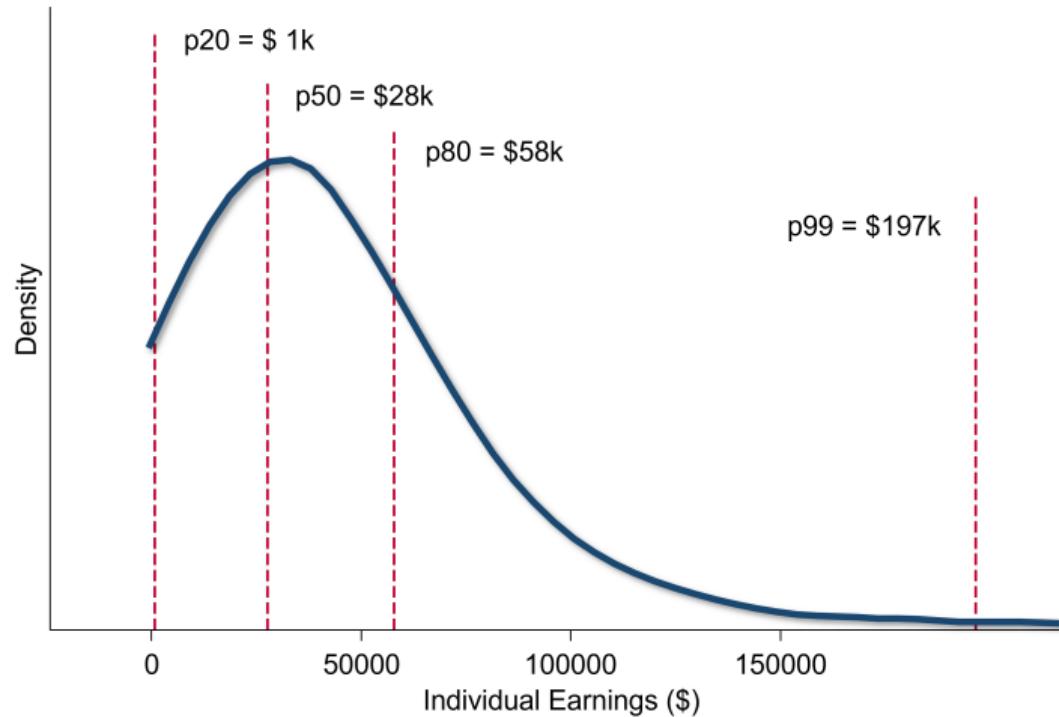
## Students' Earnings Outcomes

- ▶ Measure children's individual earnings in their mid-30s
- ▶ Define percentile ranks by ranking children relative to others in same birth cohort

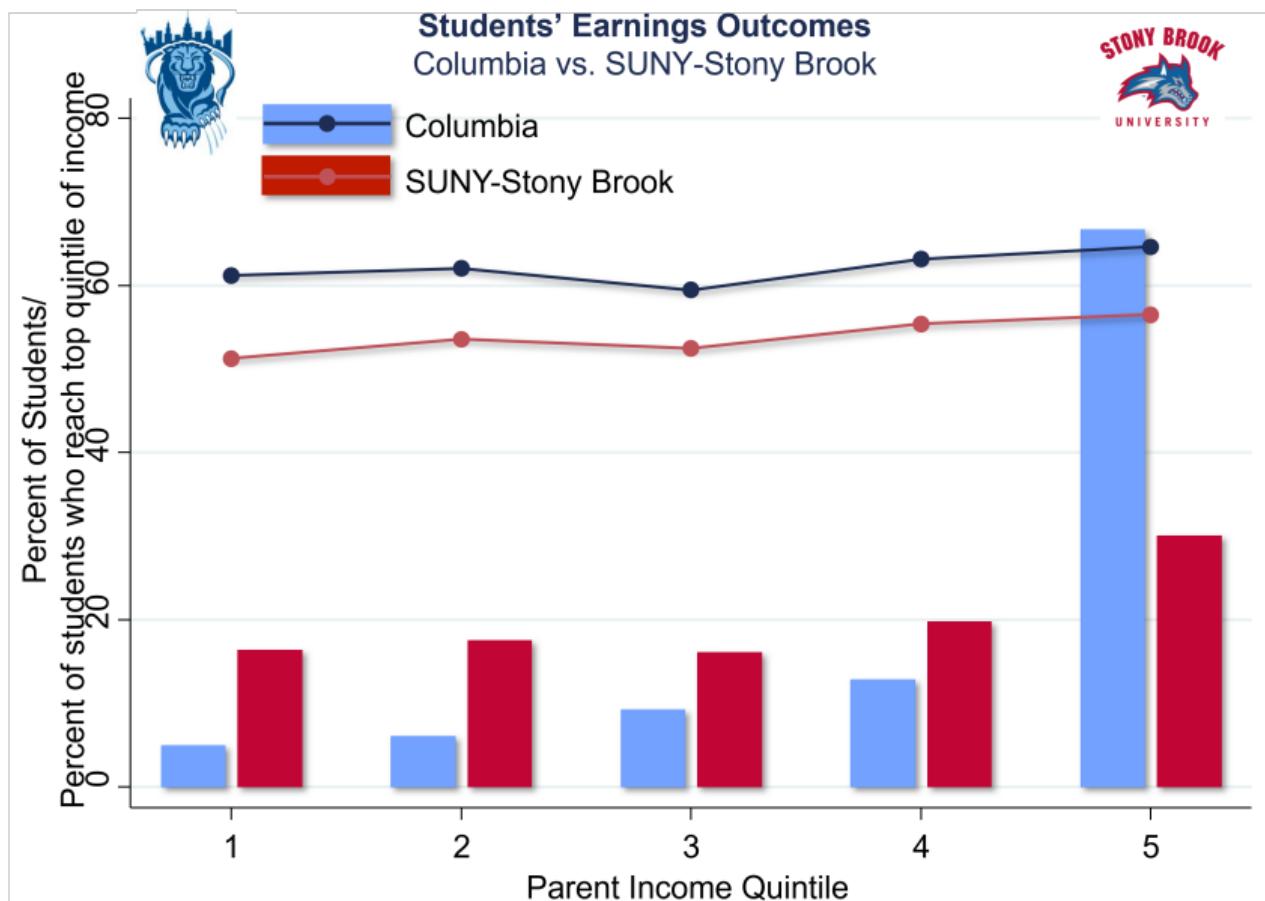
# Distribution of Children's Individual Labor Earnings at Age 34

## 1980 Cohort

**Distribution of Children's Individual Labor Earnings at Age 34**  
1980 Birth Cohort



# Students' Earnings Outcomes: Columbia vs. SUNY-Stony Brook



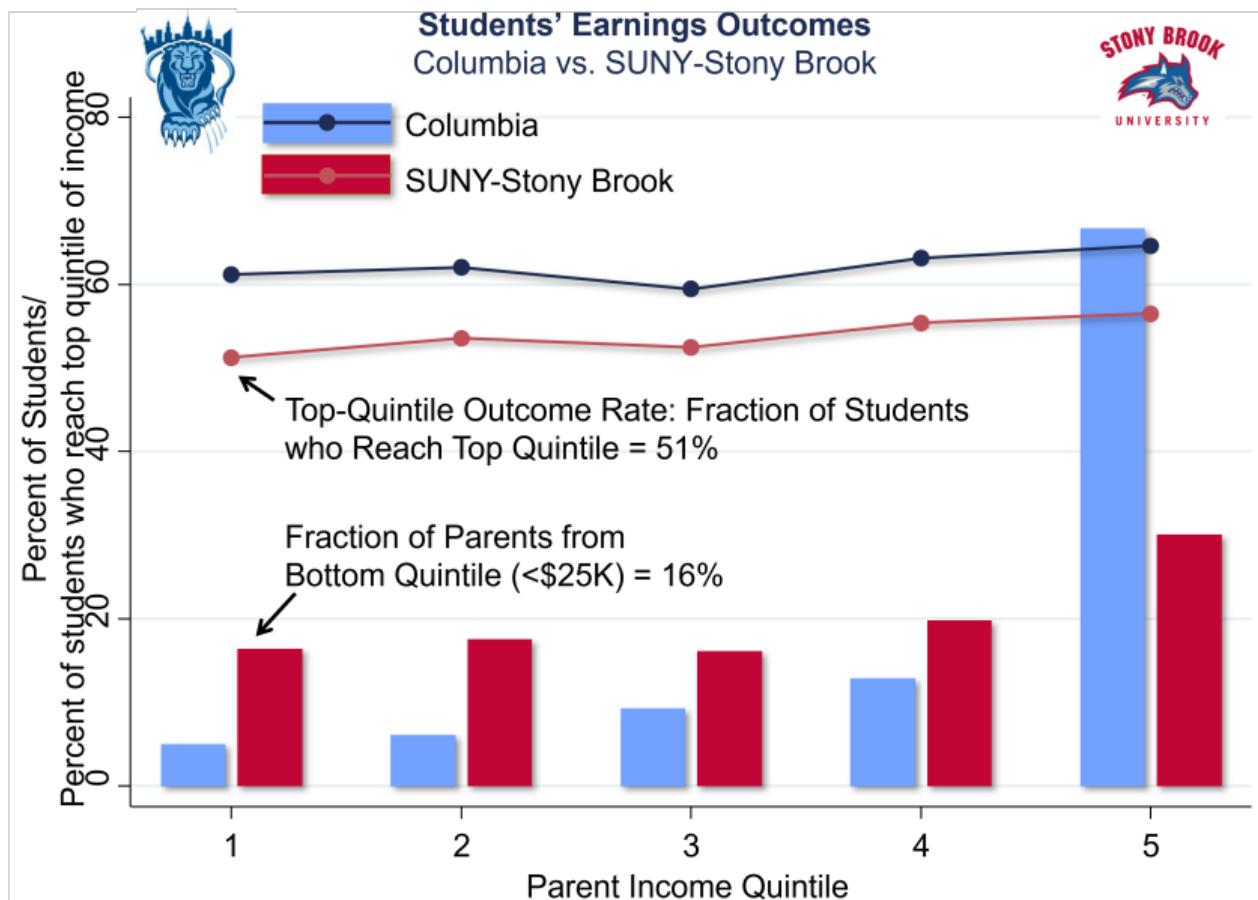
## Students' Earnings Outcomes

- ▶ Key lesson: most of the gap in outcomes between children from low vs. high-income families is explained by differences between rather than within colleges
- ▶ Raises possibility that reallocating student across colleges could potentially have a significant impact on intergenerational mobility
  - ▶ If gap in outcomes by parental income were large even within a given college, there would be little scope to have an impact through changes in college admissions policies

## Differences in Mobility Rates Across Colleges

- ▶ We can combine data on parents' incomes and students' outcomes to characterize colleges' mobility rates
  - ▶ At which colleges in America do the largest number of children come from poor families and end up in the upper middle class?

# Students' Earnings Outcomes: Columbia vs. SUNY-Stony Brook



# Measuring Mobility Rates

Define a college's mobility rate (MR) as the fraction of its students who come from bottom quintile and end up in top quintile

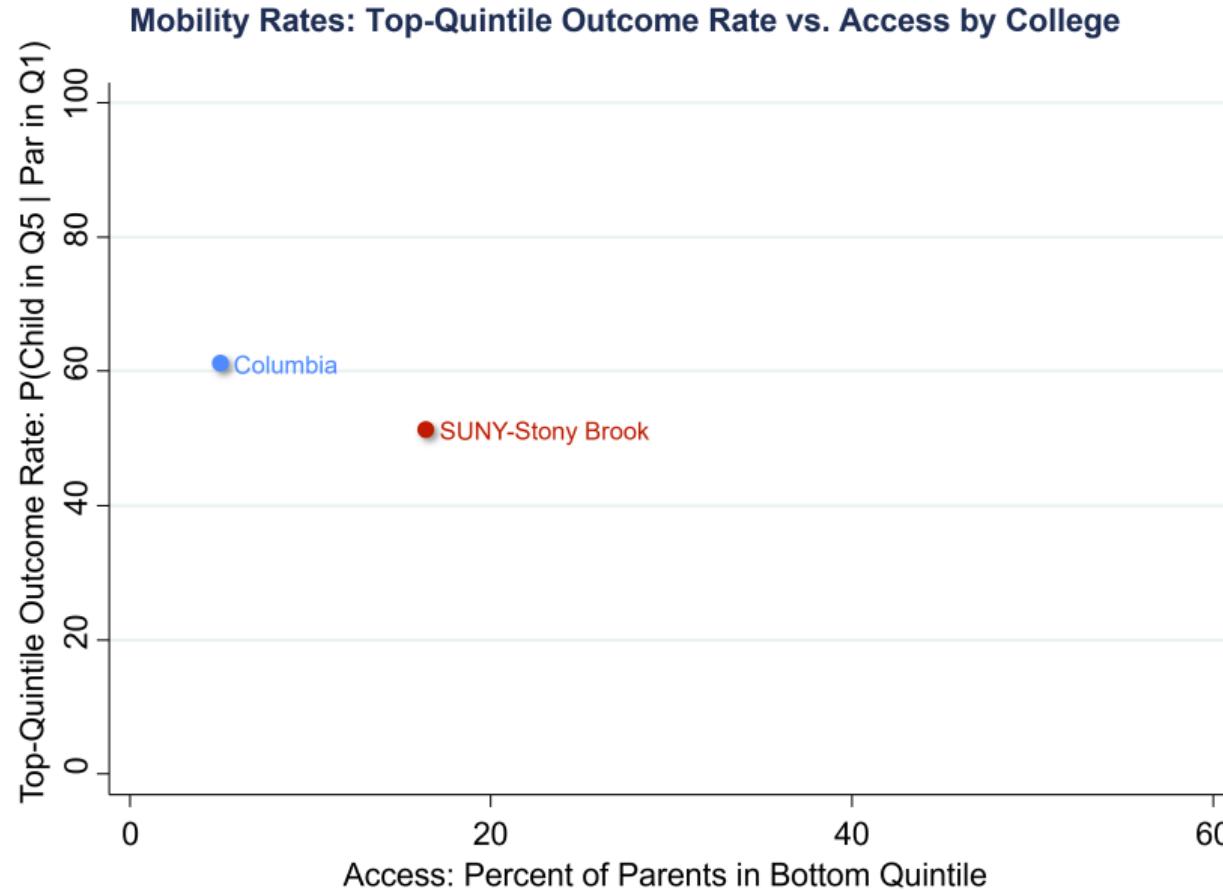
Mobility rate is:

$$\underbrace{\text{Mobility Rate}}_{\text{Frac. of Parents in Q1 and Children in Q5}} = \underbrace{\text{Low-Inc. Access}}_{\text{Frac. of Parents in Q1}} \times \underbrace{\text{Top-Quintile Rate}}_{\text{Frac. of Students who Reach Q5 Given Parents in Q1}}$$

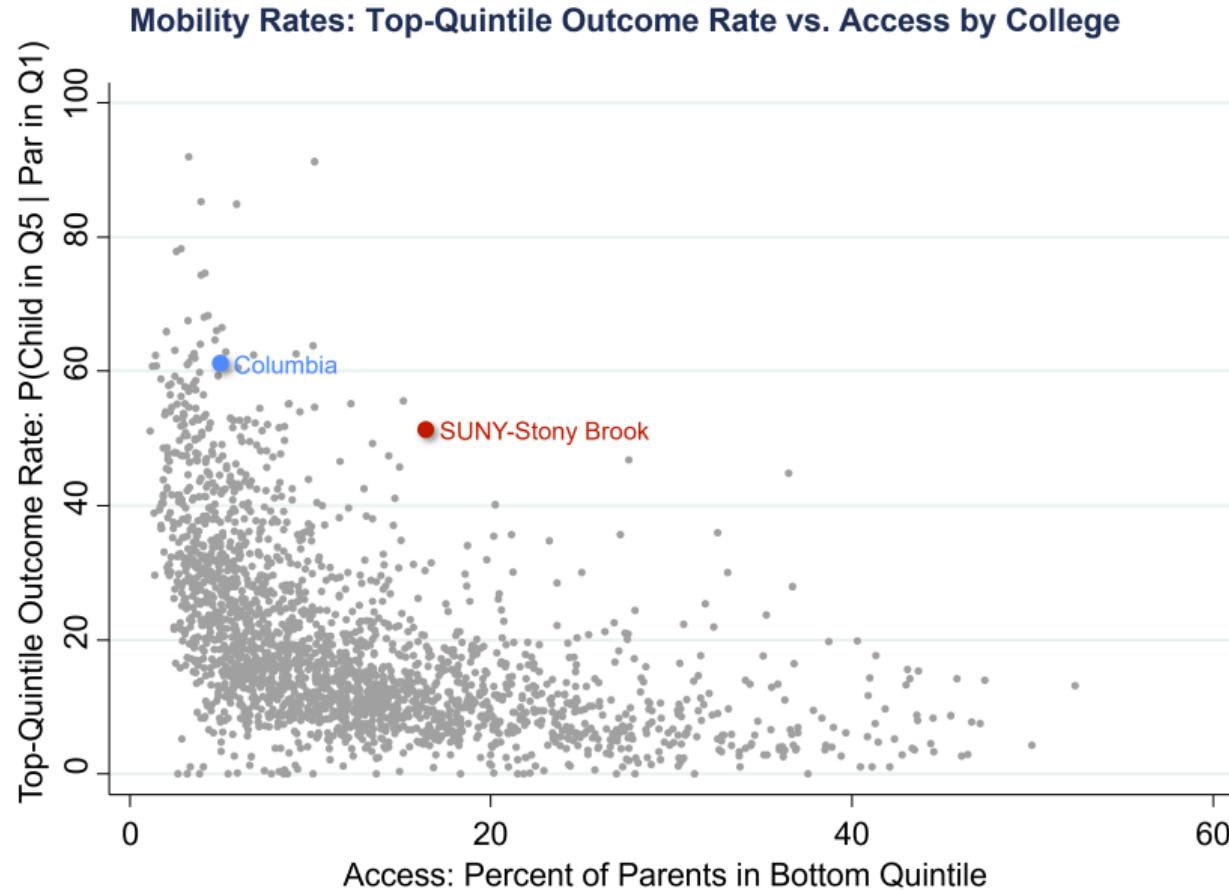
At SUNY:

$$8.4\% = 16\% \times 51\%$$

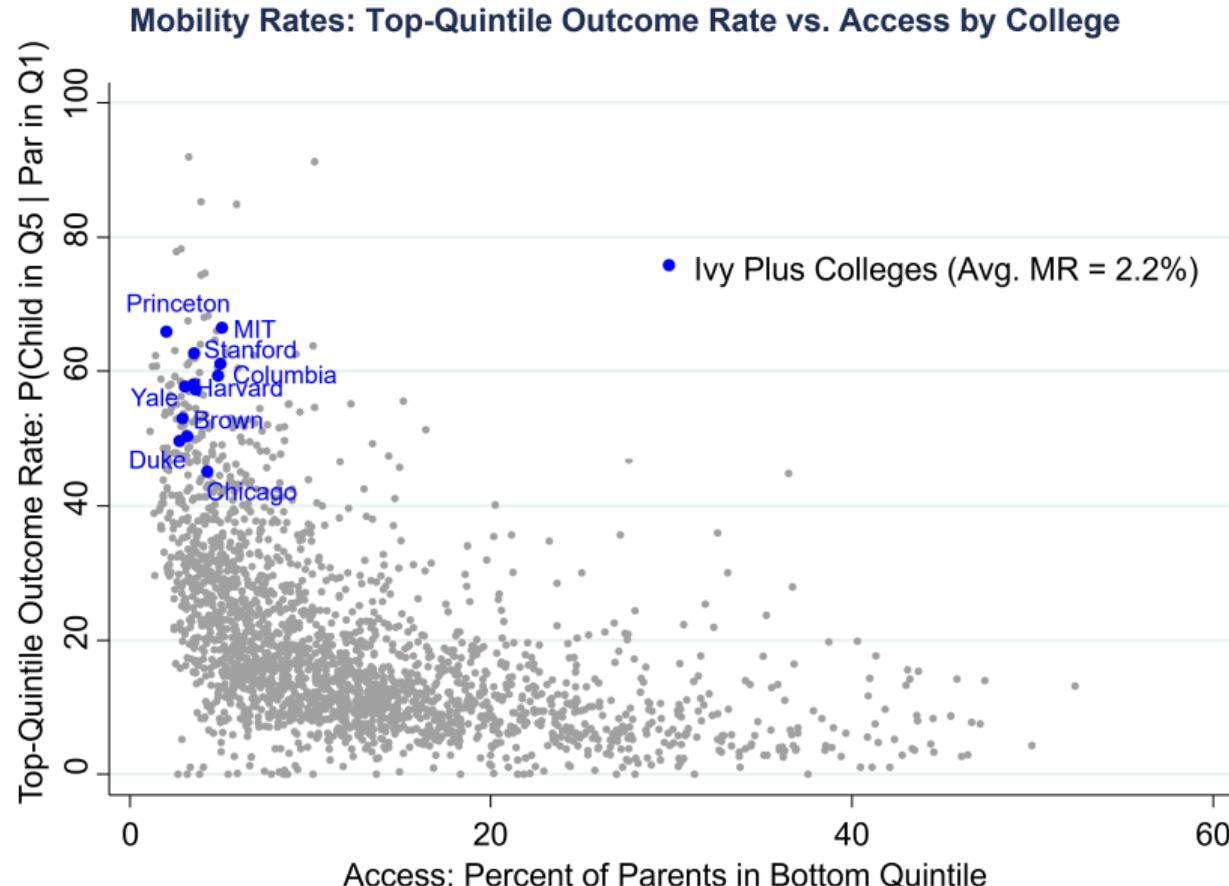
# Mobility Rates: Top-Quintile Outcome Rate vs. Access by College



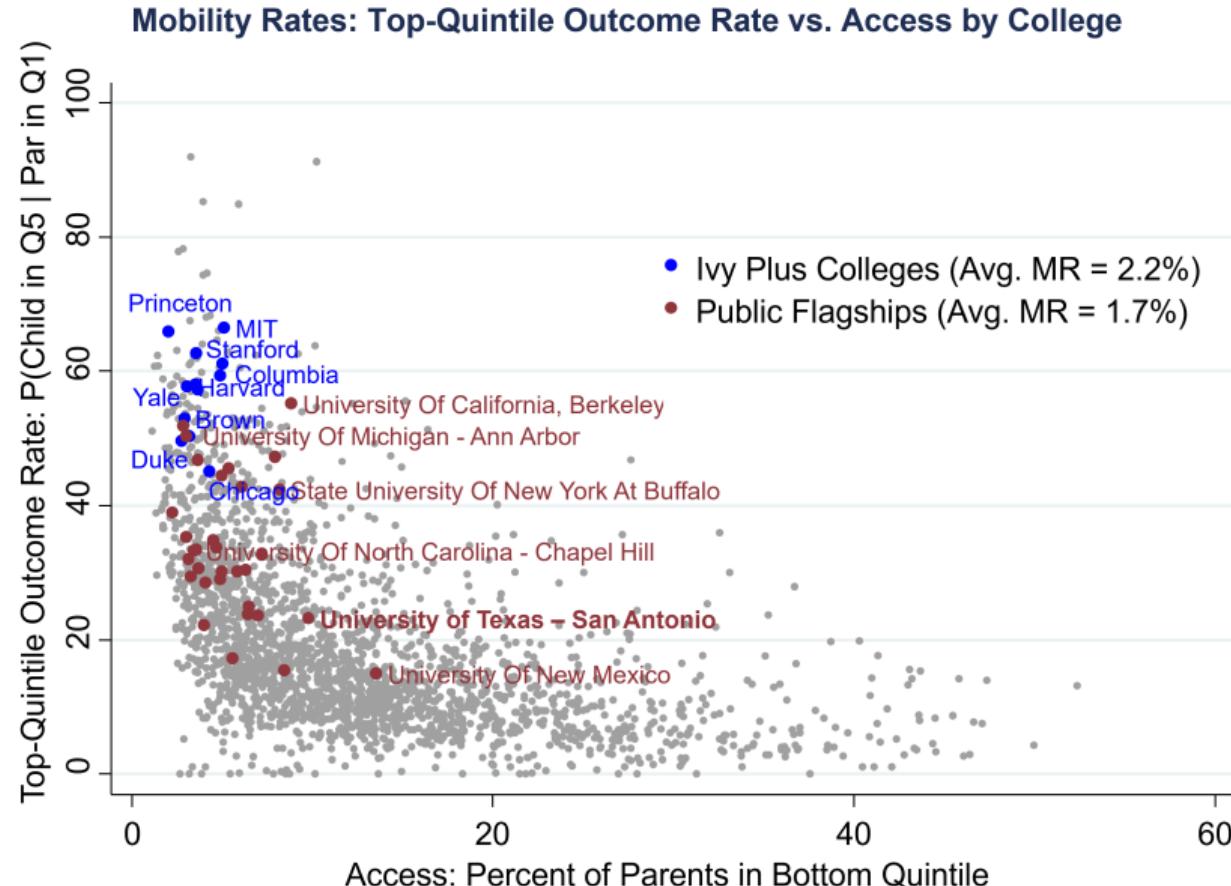
# Mobility Rates: Top-Quintile Outcome Rate vs. Access by College



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# Top 10 Colleges in America By Bottom-to-Top Quintile Mobility Rate

Fraction of Students who come from Bottom Fifth and End up in Top Fifth

## Top 10 Colleges in America By Bottom-to-Top Quintile Mobility Rate

Fraction of Students who come from Bottom Fifth and End up in Top Fifth

