Association of income inequality and migration with intergenerational mobility

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Main questions and findings

- Is there an association between income inequality and intergenerational mobility?

    - Recent increases in inequality at the top of the distribution (top 1% income share) might be negatively affecting mobility (published in Socius)

- Is there an association between international migration and intergenerational mobility?

    - Larger proportions of emigrants may free up employment opportunities for those who did not emigrate (under review)

Mobility and income inequality

- Is there an association between income inequality and intergenerational mobility?

- Income inequality: rising since the 1980s
  - Driven mostly by increased wages for highly educated workers and top earners

- Intergenerational mobility
  - Degree to which conditions at birth and childhood determine situation later in life (Roemer et al. 2003)
  - Indicates whether there is less mobility for children of low-income parents
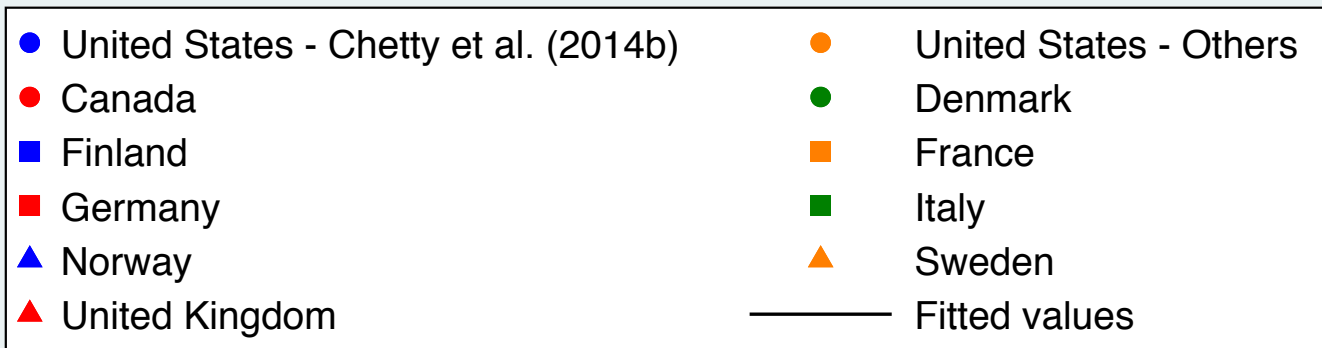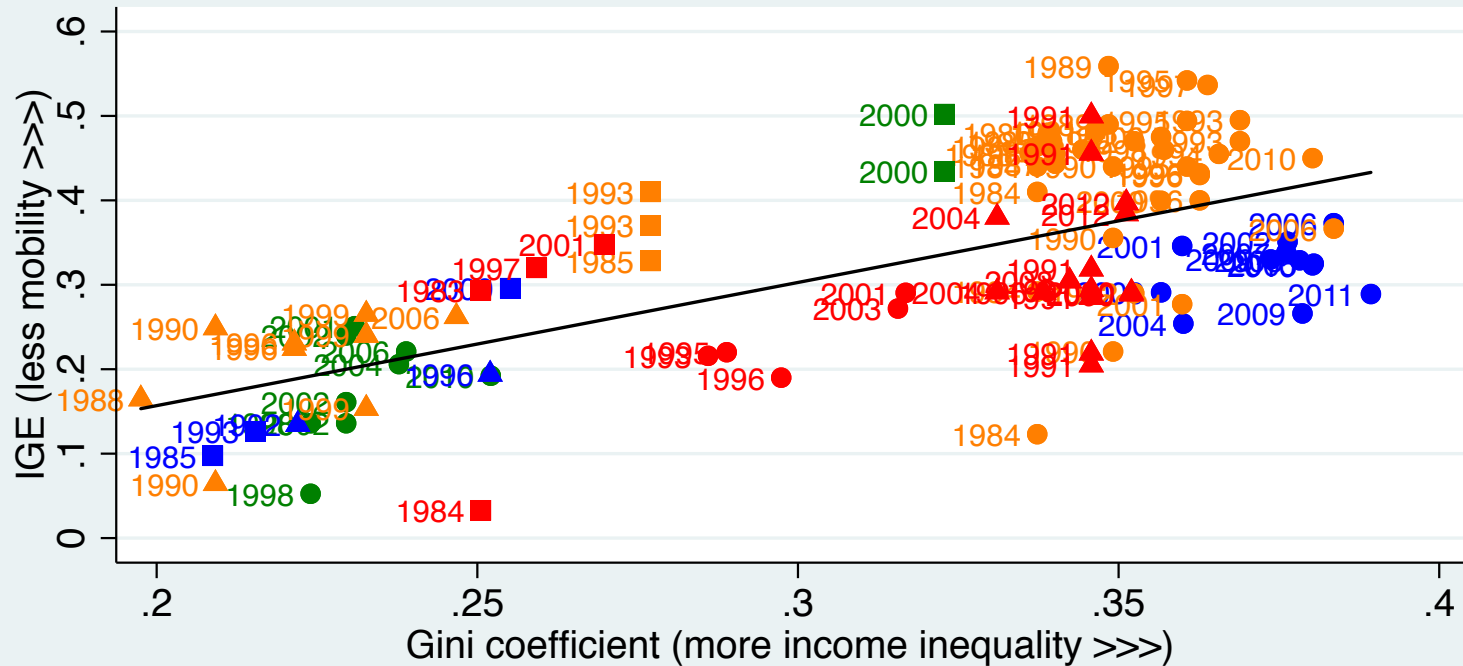
Great Gatsby curve

- Cross-country correlation between intergenerational mobility and income inequality (Corak 2013, Corak et al. 2014, Krueger 2012, OECD 2011, 2015)

- Measuring intergenerational mobility
  - Refers to how much income of children (when adults) is determined by income of parents

- Intergenerational income elasticity (IGE)
  - Estimated from regression of child income to parental income (in logs)
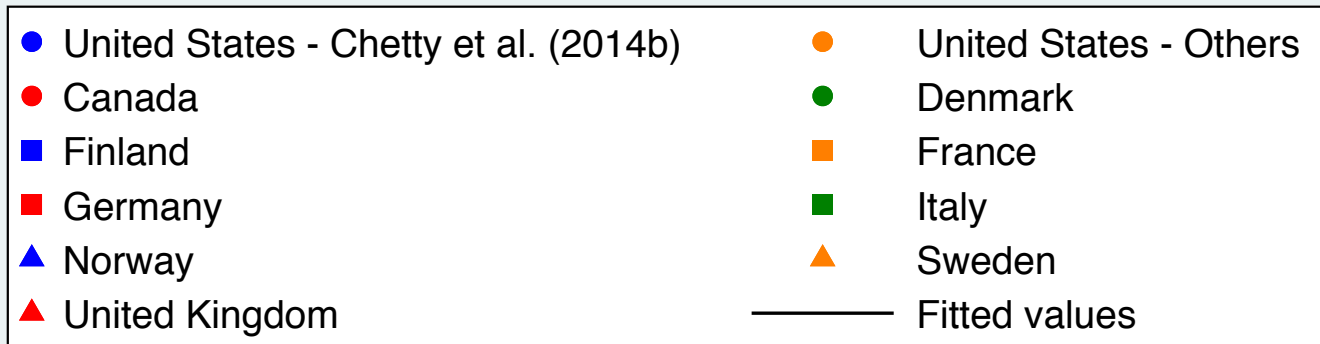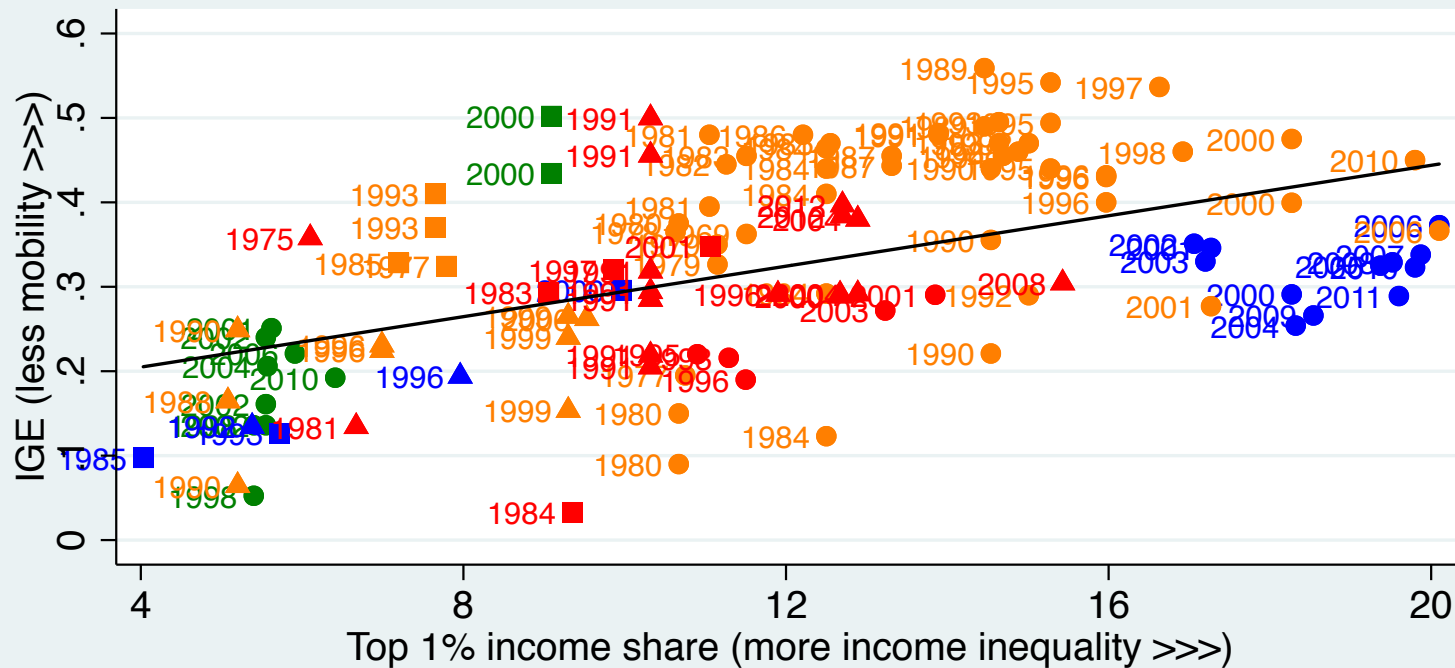 - Higher IGE means less intergenerational mobility

Great Gatsby curve: IGE & Gini

Correlation=0.666 (p=0.000; p=0.001 when clustering standard errors by study)

Great Gatsby curve: IGE & Top 1%

Correlation=0.514 (p=0.000; p=0.006 when clustering standard errors by study)

Further questions

- Do different measures of income inequality yield different results?
    - Gini coefficient
    - Top 1% income share

- Does the methodology used in estimating IGE influence these associations?

- Does within country (across time) changes in inequality also relate to changes in IGE?
    - This can be seen as a panel data version of the Great Gatsby curve (Chetty et al. 2014a, 2014b)

Great Gatsby curve across time
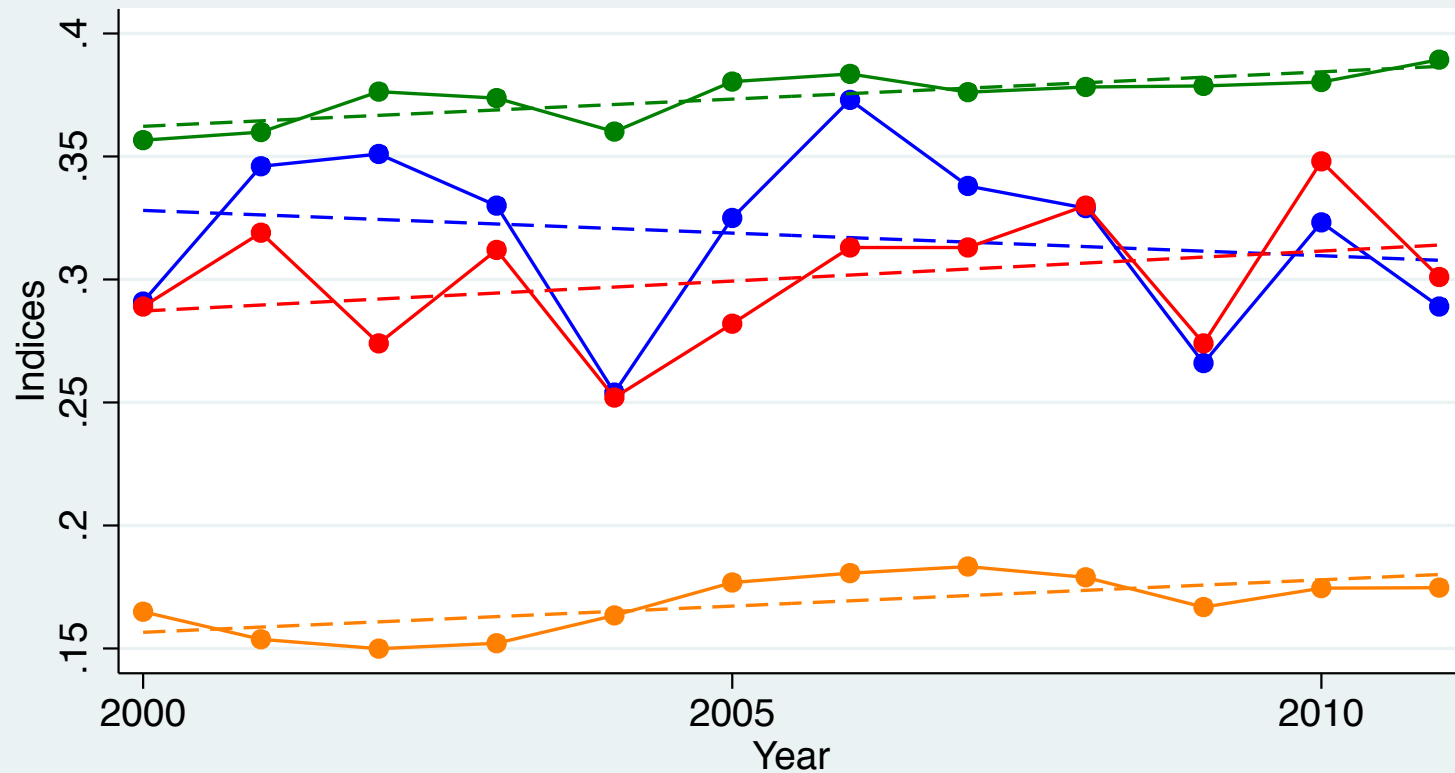
Source: Chetty et al. 2014b.

Meta-analysis

- IGE is derived from research publications
  - No official and comparable statistics

- This approach allows us to control for differences in methodology and context

- Causality is hard to establish
  - Indicators are results of complex social and economic outcomes

- We analyze correlations across countries and time, as well as within countries

Data for OLS models

- Dependent variable: **intergenerational mobility (IGE)**
  - Studies about Canada, Denmark, Finland, France, Germany, Italy, Norway, Sweden, United Kingdom, United States

- Independent variable: **income inequality**
  - Gini coefficient (Organisation for Economic Co-operation and Development)
  - Top 1% income share (World Top Income Database)

- Control for differences in data and methodology
  - Children's earnings: male, female, both
  - Parents' earnings: father, mother, both
  - Number of years of parental earnings: 1, 2, 3+
  - Age and age squared of children and parents
  - Type of children's earnings: individual, family
  - Fixed effects for countries and publications

IGE & Gini coefficient

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gini coefficient	1.434*** (0.286)	1.717*** (0.181)	1.144 (0.965)	1.150* (0.659)	1.439*** (0.173)	0.864 (0.681)
Children's earnings		X		X		X
Parents' earnings		X		X		X
# years of earnings		X		X		X
Age of children		X		X		X
Age of parents		X		X		X
Type of earnings		X		X		X
Country			X	X		X
Paper					X	X
R^2	0.377	0.535	0.533	0.620	0.720	0.760
Adjusted R^2	0.375	0.516	0.519	0.593	0.679	0.706
Observations	347	347	347	347	347	347

*** Significant at $p<0.01$. ** Significant at $p<0.05$. * Significant at $p<0.1$.

Source: OECD and mobility measures from a series of publications.

IGE & Top 1% income share

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Top 1% income share	0.016*** (0.005)	0.016*** (0.004)	0.006 (0.005)	0.005 (0.005)	0.020*** (0.003)	0.024*** (0.008)
Children's earnings		X		X		X
Parents' earnings		X		X		X
# years of earnings		X		X		X
Age of children		X		X		X
Age of parents		X		X		X
Type of earnings		X		X		X
Country			X	X		X
Paper					X	X
R^2	0.115	0.250	0.281	0.339	0.460	0.487
Adjusted R^2	0.114	0.230	0.268	0.311	0.406	0.413
Observations	554	554	554	554	554	554

*** Significant at $p<0.01$. ** Significant at $p<0.05$. * Significant at $p<0.1$.

Standardized coefficients

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gini coefficient	0.614***	0.735***	0.490	0.493*	0.617***	0.370
Top 1% income share	0.340***	0.355***	0.129	0.097	0.428***	0.515***
Control variables		Methods	Country	Methods Country	Paper	Methods Country Paper

*** Significant at $p<0.01$. ** Significant at $p<0.05$. * Significant at $p<0.1$.

Summary of findings

- **<u>Across countries</u>**, there is a correlation between income inequality and intergenerational mobility
  - Stronger bivariate associations with the Gini coefficient

- **<u>Across time and within countries</u>**, inequality does not always have significant correlations with mobility
  - In models controlled for methods, country, and paper, there is no significant correlation with the Gini coefficient

- Drivers of cross-country variations in income inequality may be different than drivers of within-country variations
  - Recent increases in **inequality at the top of the distribution** (top 1% income share) might be negatively affecting mobility
  - Instead of variations across the income distribution (Gini coefficient)

Mobility and migration

- Is there an association of intergenerational mobility with immigration and emigration?

- When estimating intergenerational mobility
  - Several years of income during the middle-age of parents need to be linked to several years of income during the middle-age of their children

- Studies on intergenerational income mobility are underrepresenting 1st and 2nd generations and undocumented immigrants (Chetty et al. 2020; Corak 2006, 2013; Grusky, Smeeding, Snipp 2015)

Generation of immigrants

- 1st generation
  - Born outside the host country

- 1.5th generation
  - Born outside the host country, immigrated at age ≤ 13

- 2nd generation
  - Born in the host country
  - Parents' born outside the host country

- 3+ generation
  - Born in the host country
  - Parents' born in the host country

Closed-population assumption

- Studies that underrepresent foreign stock have the implicit assumption that international migration is not associated with mobility
  - Authors have not explicitly mentioned this limitation

- The reality is that
  - Adequate data on income for parental generation of immigrants is more likely to be missing
  - Difficult to capture income of parents of immigrants around the world

Importance of immigration

- Ignoring foreign stock generates inaccurate estimates pertinent to public policy debates

- Due to increases in U.S. immigration after 1965, 1st and 2nd generations of immigrants compose around 25% of the population in the country
(Trevelyan et al. 2016)

Cross-national comparisons

- Differentials in 2nd generation income mobility are significant across countries

  - 1.5th and 2nd generations have higher levels of intergenerational mobility in the U.S. (Chetty et al. 2020; Farley, Alba 2002; Glick, Hohmann-Marriott 2007)

  - High levels of socioeconomic attainment in Canada, Australia, and the U.K. (Imoagene 2012; Liu 2014; Ngyuen et al. 2020)

  - Opportunities are more limited in France (Simon 2003; Algan et al. 2010), Netherlands (Crul 2000), Germany (Worbs 2003; Schneider, Lang 2014), and Denmark (Rytter 2011)

- Underrepresentation of 2nd generation could bias the results of cross-national comparisons

Immigration and emigration

- Immigration may affect intergenerational mobility for 3+ generation workers to the extent that their wages and employment are impacted (Borjas 2014; Borjas, Grogger, Hanson 2010; Card, Peri 2016; Hunt, Gauthier-Loiselle 2010; Kim, Sakamoto 2013; Ottoviano, Peri 2012)

- Emigration might benefit mobility for workers who do not emigrate (Aydemir, Borjas 2007)

Exploratory OLS models

- Dependent variable: **mobility for 3+ generation**
  - Intergenerational income elasticity (IGE)
  - Data from publications for 20 countries after 2001

- Independent variables: **migration**
  - Proportion of immigrants (primary educated)
  - Proportion of emigrants (overall and tertiary educated)
  - Database on Immigrants in OECD and non-OECD Countries (DIOC) for 2000/2001 (https://www.oecd.org/els/mig/dioc.htm)

- Control for differences in data and methodology
  - Fixed effects for publications
  - Standard errors for intragroup correlation within publications

Countries	Sample size	Percent
1 Australia	12	9.23
2 Brazil	2	1.54
3 Canada	21	16.15
4 Chile	1	0.77
5 Denmark	18	13.85
6 Finland	4	3.08
7 France	3	2.31
8 Germany	4	3.08
9 Italy	3	2.31
10 Japan	1	0.77
11 New Zealand	1	0.77
12 Norway	4	3.08
13 Peru	1	0.77
14 Singapore	1	0.77
15 South Africa	2	1.54
16 Spain	9	6.92
17 Sweden	4	3.08
18 Switzerland	1	0.77
19 United Kingdom	13	10.00
20 United States	25	19.23
Total	**130**	**100.00**

Effects on intergenerational income elasticity (IGE)

Independent variables	Model 1	Model 1 (Beta)	Model 2	Model 2 (Beta)
Constant	0.379*** (0.023)		0.356*** (0.023)	
Proportion of immigrants (primary educated)	0.036 (0.174)	0.027	0.067 (0.171)	0.050
Proportion of emigrants	−1.847*** (0.522)	−0.323		
Proportion of emigrants (tertiary educated)			−1.014** (0.464)	−0.265
Paper	Yes	Yes	Yes	Yes
R²	0.454		0.434	
Adjusted R²	0.336		0.311	
Observations	130		130	

*** Significant at p<0.01. ** Significant at p<0.05. * Significant at p<0.1.

Summary of findings

- Larger proportions of emigrants may free up employment opportunities for those who did not emigrate

- We are unaware of studies of intergenerational mobility that mentions international migration as a substantive issue

Implications of closed population

- We highlight theoretical and methodological implications of the closed-population assumption

    - Ignoring foreign stock seems unrealistic to understand intergenerational mobility in countries with significant levels of international migration

    - Cross-national comparisons are compromised, because of different openness to immigration

    - Studies should clarify that they are about the 3+ generation, not the whole population

"Lifetime income" vs. "Linked lives"

- Studies about intergenerational mobility have been focusing on associations between

  - Parental income at later years ("permanent income" or "lifetime income") (Black, Devereux 2011; Mazumder 2005)

  - And income of their children (when adults)

- However, associations are stronger between

  - Parental income when offspring was a child ("linked lives" perspective) (Chen, Song 2019)

  - And income of their children (when adults)

Possible alternative

- We should focus on parental income during the time when the offspring was a child (linked lives)

  - In line with studies about importance of childhood socioeconomic resources for intergenerational mobility (Becker-Tomes 1979; Heckman 2006; Heckman, Mosso 2014; Reardon 2011; Sakamoto, Rarick, Woo, Wang 2014; Sewell, Haller, Portes 1969)

  - This approach doesn't require several years of income during middle-age of parents to be linked to income of their children

  - This alternative permits inclusion of immigrants into the conceptualization of intergenerational mobility
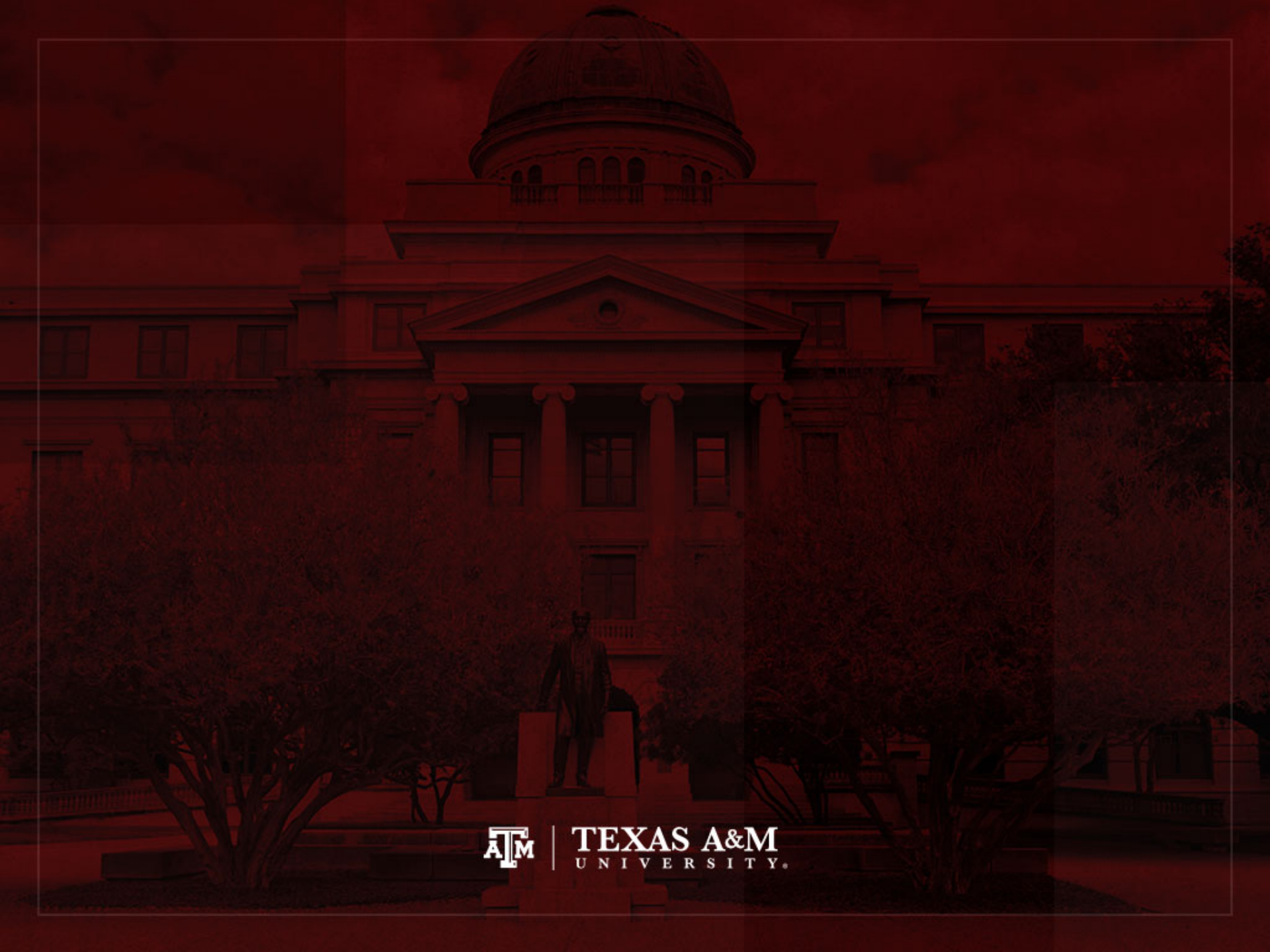
Simulations

- Complete income data for all components of the 1st and 2nd generations are unlikely to be available

- Simulation methods could use census-level information about distribution of immigrant and US-born groups in a population

  – Compute expected mobility estimates for the full population based on the group-specific rates

  – Compare these simulations with intergenerational mobility values based on only the 3+ generation

    - Similar to indirect standardization in demography

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