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Ran Abramitzky
Leah Platt Boustan
Tamar Matiashvili

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ABSTRACT

This paper provides an overview of recent empirical and methodological advances in the study of historical intergenerational mobility trends, with a focus on key measurement challenges. These advances are made possible by the recent digitization of historical censuses and new methods of historical record-linking, which have enabled researchers to create large historical samples of parent-child links. We identify three main findings. First, absolute mobility increased in the decades leading up to 1940 but has since declined, both in the US and other industrial countries. Second, recent studies on relative mobility question the classic narrative that the US has transitioned from a "land of opportunity" in the 19th century to a less mobile society today, suggesting that mobility was not as high in the past. However, estimates of relative mobility are sensitive to choices regarding sample selection and measurement. Third, we explore mechanisms underlying shifts in intergenerational mobility over time, including geographic mobility, wealth shocks, educational attainment, locational effects, and the transmission of parent-specific human capital. We conclude by suggesting avenues for future research.

Ran Abramitzky
Department of Economics
Stanford University
579 Jane Stanford Way
Stanford, CA 94305
and NBER
ranabr@stanford.edu

Tamar Matiashvili
Department of Economics
Stanford University
579 Jane Stanford Way
Stanford, CA 94305
tamrim@stanford.edu

Leah Platt Boustan
Princeton University
Industrial Relations Section
Louis A. Simpson International Bldg.
Princeton, NJ 08544
and NBER
lboustan@princeton.edu

1. Introduction

This chapter provides an overview of recent empirical and methodological advances in the study of historical trends in intergenerational mobility. Tracing out historical patterns of social mobility is important both for understanding pivotal moments in economic history and for placing modern estimates into a long-run context. Our primary focus is on intergenerational mobility in the United States, but we also review the emerging literature for other countries.

The literature covered in this chapter probes the commonly held view that the United States has been a country of opportunity and upward mobility. We focus on two aspects of intergenerational mobility: (1) Absolute mobility, or the fraction of children who enjoy higher living standards than their parents, and (2) Relative mobility, often referred to as equality of opportunity, or how much a child moves up the ranking in the income distribution relative to the ranking of her childhood household. We also consider how these measures of mobility differ between groups – including men and women, Black and white Americans, and immigrants and the US-born – and explore mechanisms that may affect this intergenerational mobility.

Until recently, studying historical mobility trends was hampered by the lack of comprehensive historical data that linked parents and children in the past. The recent digitization of historical Censuses, expansion of computing power, and development of various methods of historical record-linking enables researchers to create large historical panel datasets for the first time, linking individuals across census waves and creating parent-child links. The Census Linking project (Abramitzky et al. 2021a), followed by the Multigenerational Longitudinal Panel (Helgertz et al. 2022) and the Census Tree (Buckles et al. 2024a), made millions of links available to the broad research community. Armed with linked datasets and other creative ways to make inferences from non-linked data, research is now starting to reveal trends in the long-term evolution of intergenerational mobility in the US and other countries.

We begin the chapter by discussing inherent empirical challenges in studying historical mobility. First, historical datasets often do not include unique IDs such as Social Security Number, so finding the same individual in two datasets requires using characteristics such as first and last names,

reported ages, and birthplace. Although it is now possible to follow millions of people and their descendants over decades, linking is inevitably imperfect. It is difficult to link women because they tend to change their last names when they marry. Individuals with common names are often hard to distinguish from others with the same name and personal attributes. Issues such as enumeration errors, transcription errors, mortality, and return migration further complicate knowing the correct match with certainty. These challenges mean that match rates were low for the first generation of linked samples (around 25%) and remain between 45-65% even with recent advances in matching technology. When linking historical records, one is thus facing a tradeoff between linking the wrong person (false positives, or type I errors) and missing true links (false negatives, or type II errors).[1] False positives are concerning for studies of intergenerational mobility as they might result in artificially high mobility estimates (low persistence). Trying to improve linking algorithms to reduce false positives and increase match rates is an active area of research.

Second, comparing historical and modern mobility estimates is complicated by differences in data quality and availability. Modern studies often use income to create rank-rank correlations (following Chetty et al. 2014), but income is not systematically available in historical data before the 1940 Census. Therefore, historical studies tend to focus on occupational or occupation-based income mobility, which, in theory, can be quite different from income mobility. For example, a son may work in the same occupation as his father but experience significant income mobility within the occupation. Although some modern surveys ask questions about the father's occupation in childhood, these answers are based on recollection, making it hard to compare with actual occupation recorded in historical datasets (Jácome et al. 2024).

Third, historical estimates of both occupation and occupation-based income mobility often rely on occupation rankings, and it is not obvious how to rank occupations. The literature has used three main occupational status rankings: (1) Average income in an occupation that maps occupations into their median income using a later Census that has income, or "income score" that predicts incomes based on occupations and other characteristics (Collins and Wanamaker 2022,

[1] Linked historical data are also not representative of population, so reweighting the data to match the population is important.

Abramitzky et al. 2024a). (2) Average education level in an occupation (Song et al. 2020, Ward 2023), which has the main advantage that some measure of education can be measured in both the past and present. (3) Altham statistics (e.g., Long and Ferrie 2007, 2013, Feigenbaum 2018), which aggregate occupations into large occupation categories, and measure the strength of association between fathers' and sons' categories. Each of these occupation-based measures might capture a different aspect of mobility and may thus not reveal the same level or trends in mobility over time.

After reviewing the challenges in studying historical mobility, we then turn to the main findings from the recent literature on historical mobility. Three main findings emerge. First, absolute mobility rose in the decades before 1940 and has been falling since then, both in the US and in other industrial countries (Chetty et al. 2017, Berman 2022, Manduca et al. 2024). This decline is likely the result of declines in economic growth and rising income inequality. This literature has found an elegant way around the lack of comprehensive historical linked data by combining marginal income distributions and joint distribution of parent and child ranks (copula) to infer absolute mobility.

Second, recent work on relative mobility casts doubts on the classic narrative that the US has ossified from a "land of opportunity" in the 19th century into a less mobile society today. Depending on various methodological choices, mobility trends look very different. Some papers find that relative mobility has remained constant or declined over the past two centuries (Song et al. 2020, Mattheis 2024). Others document that intergenerational mobility was much lower in the 19th century than previously assumed, implying that, if anything, mobility has been rising over time. One factor that contributes to this revised view of mobility in the 19th century is corrections for measurement error in parental income, for example, by using multiple father occupations to proxy for permanent status (Ward 2023).

Moreover, findings based on samples of white men overstate how high intergenerational mobility may have been in the past (Jácome et al. 2024, Ward 2023). The first generation of historical linked studies often had few or no Black men in the data. This omission is significant because, as a group, Black men had significantly lower mobility than White men in the 19th and early 20th centuries (Collins and Wanamaker 2022, Althoff and Reichardt 2024). Excluding a low upward mobility

group from the sample overstated equality of opportunity. Historical linked studies also traditionally excluded women. When adding women and Black Americans into the samples, and when adjusting occupational ranking by region, race, and gender, past mobility does not appear as impressive, and the narrative of the historical US as a land of opportunity is not as accurate (Buckles et al. 2023, Jácome et al. 2024, Olivetti and Paserman 2015, among others).

Third, estimates of relative mobility vary substantially across papers because of different choices of sample and measure, often resulting in both different levels and trends in relative mobility. As the literature stands now, it is difficult to directly compare findings across papers. We conclude that measurement and data make a big difference in relative mobility estimates, which limits our ability to compare past and present intergenerational mobility. Throughout this chapter, we attempt to synthesize all the recent findings and point out the major methodological differences between papers that lead to the observed differences.

Finally, the rich literature that we describe in this chapter also explores the mechanisms underlying the shifts in intergenerational mobility over time, including geographic mobility within the US, wealth shocks, education, locational effects, and parent-specific human capital transmission. Levels of relative mobility vary substantially across US regions today (Chetty et al. 2014), and historical events shaped the changing geography of opportunity over time (Connor and Storper 2020, Althoff and Reichardt 2024, Weiwu 2024). Both historically and today, internal migration and geographic location have played a major role in enabling intergenerational mobility (Collins and Wanamaker 2014, Boustan 2016, Chetty et al. 2018a, Ward 2022, Abramitzky et al. 2021b, Derenoncourt 2022). The Great Depression affected intergenerational mobility in various ways (Feigenbaum 2015, Bailey et al. 2024, Janas 2024), but other wealth shocks had more limited effects (Bleakley and Ferrie 2016, Ager et al. 2021). A recent literature explores the distinct roles of mothers and fathers in contributing to the process of intergenerational mobility (Olivetti et al. 2018, Althoff et al. 2024, Espín-Sánchez et al. 2023).

Future research should begin by reaching an agreement on what aspect of mobility is being captured by each measure and, perhaps, on which aspect of mobility matters the most. Should we measure mobility in terms of, for example, occupational status or (predicted) income? Next,

research should explore more systematically the empirical choices that are most responsible for driving differences in relative mobility estimates, including differences in data, samples, mobility measures, linking methods or weighting procedures. Ideally, researchers should prioritize building relative mobility series that are comparable between past and present. Future research should also extend the series on absolute mobility back into the 19th and early 20th centuries.[2] Finally, we are ultimately interested in well-being, which is not fully captured by incomes and occupations. Further research is needed on intergenerational mobility of well-being operationalized using different outcomes such as wealth, consumption behavior, and health, among others.[3]

Beyond harmonizing empirical choices, future research should also expand our exploration of the mechanisms underlying intergenerational mobility and its long-term evolution. Does mobility rise or fall because of investments in public education, regional convergence/internal migration, changes in the population composition as new immigrants come in, or structural transformation from agriculture to industry and now to services? And what do the underlying mechanisms teach us about how long-run patterns of mobility arose from historical trends and events, and about ways to improve mobility in the future?

2. Methods and Challenges of Studying Intergenerational Mobility

2.1 Linking

To study intergenerational mobility, building data that creates links between parents and children is essential.[4] In the modern period, unique identifiers, such as the Social Security Number (SSN),

[2] Absolute mobility estimates rely on copula stability, or stable relative mobility across birth cohorts, which is shown to be a reasonable assumption since 1940. But this assumption might not hold in the very long run given the wildly different estimates found across papers.
[3] For novel work on historical intergenerational of lifespan, see Black et al. (2023).
[4] Some creative solutions have been used to circumvent the lack of individual links. As discussed below, Olivetti and Paserman (2015) created pseudo-links based on the typical first names of children of fathers with certain given names. Jácome et al. (2024) predict family income in childhood for survey respondents based on retrospective questions about respondents' fathers.

facilitate this process in tax records and other administrative sources.[5] Due to the universality of Social Security Numbers, there is little concern that such administrative data would underrepresent certain groups, like women or ethnic minorities. In addition, thanks to the integration of Census data with tax records, researchers have access to exact measures of income for every individual. However, the goal of this chapter and of many of the recent works on the topic is to paint a picture of long-term intergenerational mobility, which means grappling with data issues from a time when much less information was available.

In the past, exact identifying information, such as the SSNs, did not exist. Instead, researchers rely on demographic information to match people over time. Usually, a combination of name, age, and birth location is used to identify the same person in multiple data sources. For instance, James Smith, aged 32, born in New York in the 1880 Census, should be matched to James Smith, aged 52, born in New York in the 1900 Census. However, linking is seldom so straightforward. For instance, there may be multiple James Smiths, a very common name, with the same demographic information. Further, depending on the time of data collection, James Smith may have been 51 or 53 in the 1900 Census. And what if we see Jimmy Smith? Should we assume that Jimmy is a nickname for James or that the two records refer to different people?

Moreover, some demographic groups are easier to link than others, leading to issues with representativeness. As will be discussed in more detail later in the chapter, women are hard to link, as they tend to change their last names upon marriage. Issues arise with incorrect and heterogeneous spellings of ethnic minority names, complicating linking.[6] Thus, early literature focused exclusively on men, ignoring more than half of the population. More recent research has been able to present more representative estimates with considerable success.

[5] However, using NUMIDENT files from earlier periods would be under-representative of Black Americans, as farmers did not receive SSNs early on, and Black Americans were overrepresented in farming. Until 1954, self-employed farmers were not covered by Social Security.

[6] For example, Chinese immigrants and their descendants were particularly hard to match due to many naming issues. For more on Chinese name linking in the US Censuses, see Postel (2023). Espín-Sánchez et al (2022) propose a new method to link Spanish names based on their phonetics.

Two general linking approaches are most common in the literature: a fully automated approach and a machine learning approach.[7] Automated approaches, developed by Abramitzky et al (2012, 2021a) in the spirit of Ferrie (1996, 2005), use rule-based criteria, requiring matches on name, age, and birthplace (several papers widely discussed in this chapter use this approach: Song et al. 2020; Ward, 2023; Collins and Wanamaker, 2022; Althoff et al. 2024; Abramitzky et al. 2021a and 2024a). The most widely used fully automated approach is the Abramitzky-Boustan-Eriksson (ABE) algorithm used in the Census Linking Project. The ABE algorithm has many variants. For example, ABE can use exact name matches or can generate Jaro-Winkler distance between name strings, treating the lowest distance as the most likely match. The algorithm can either prioritize an individual's exact birth year or allow for a band around the birth year. It might also use extra information, such as middle initial or county of residence (ABE-Extra Information). Algorithms of this type that rely on extra information can increase match rates and accuracy with little cost to population representativeness. However, if these algorithms draw on extra information such as county of residence, they might underrepresent movers, who may have higher mobility. Weighting linked samples to reflect population attributes can substantially assuage concerns about sample representativeness (Zimran, 2019; Bailey et al., 2020).

A second commonly used approach is based on machine learning, using hand-generated links based on various record features to train an algorithm to create more matches (e.g., Feigenbaum, 2016; Helgertz et al. 2022). Recent innovations in this area include the Census Tree Project, described by Price et al. (2021) and Buckles et al. (2024a). These large, linked samples start with user-contributed data from Familysearch.com, a crowd-sourced genealogy website allowing the public to record family relationships. So far, the Census Tree Project has compiled 317 million hand-generated links and further uses these records to train a machine-learning algorithm, resulting in 700 million total links across multiple Census pairs. The machine-learning algorithm underlying the Census Tree Project is based on many attributes beyond name, age, and birthplace, including the location of residence and the names of parents, spouses, and other household members. Helgertz et al. (2022) use a similar machine-learning algorithm to create the Multigenerational

[7] Ruggles et al. (2018) review the history of census linking efforts. Abramitzky et al. (2021a) provide a comprehensive overview of the most common current linking approaches and describe the merits and pitfalls of each. Bailey et al. (2020) further offers helpful suggestions for improving the representativeness of linked data.

Longitudinal Panel, a dataset that builds on the Integrated Public Use Microdata Series (IPUMS) at the Minnesota Population Center.

2.2 Challenges with comparing historical and modern estimates

Another challenge to creating a continuous time series of intergenerational mobility is inconsistencies in the measurement of income or socioeconomic status over time. In modern data, income is available for the entire US population, which can be used to create rank-rank correlations (Chetty et al. 2014). However, before 1940, US decennial Censuses did not collect income data. Instead, historical studies focus on occupation or occupation-based income mobility, creating measures such as the income rankings of occupations. However, occupational mobility is conceptually different from income mobility. For example, within-occupation income may rise between generations, shifting the relative earnings of an occupation. Clarity on which type of mobility is measured by each paper is paramount. Furthermore, modern survey data often includes fathers' occupations based on children's recollection, which potentially allows comparisons with historical data but may be different from the actual occupation found in historical data at one point in time (Jácome et al. 2024). Finally, linked historical data are often not representative of the population, leading to a necessity to rely on weighting based on demographic characteristics.

All these issues make it difficult to directly compare findings from the past to those of the present and call for future research efforts to reconcile findings over time.

2.3 Challenges with ranking occupations

Beyond the difficulty of comparing different measures of socio-economic status over time, accurately ranking occupations is a challenge unto itself. Occupations can be ranked on the basis of average income, average education level, or other measures of status. It is also hard to know how to treat changes in these rankings over time; what regional, racial, or other heterogeneities may exist in this assignment – for example, some professions may be paid more than others in the North but not in the South, which would potentially matter more for income-based mobility than to occupational status mobility. It is also challenging to assign socioeconomic status to women

who often did not work. Various papers discussed later in the chapter have grappled with these issues in different ways, contributing to the divergence we observe in relative mobility estimates.

In the papers discussed in detail below, authors usually use one of three major ways to rank occupations: (1) Average income in occupation, such as the "Occscore" variable found in historical censuses (IPUMS) that maps occupations into their 1950 median income, or "income score" that predicts incomes based on occupations and other characteristics such as age, place of birth and state of residence (Collins and Wanamaker 2022, Abramitzky et al. 2024a). (2) Average education in an occupation (Song et al. 2020, Ward 2023), which has the main advantage that some measure of education (literacy and school attendance before 1940 and the number of school years since[8]) was measured in earlier Censuses. (3) Altham statistic (e.g., Long and Ferrie 2007, 2013, Feigenbaum 2018), which aggregates occupations into categories such as farmers, white collar, skilled and semi-skilled labor, and unskilled labor, and measures the strength of association between fathers' and sons' occupational categories. Each of these occupation-based measures might capture a different aspect of mobility.

3. Mobility in the Historical Perspective

3.1 Overview

How did intergenerational mobility change over the course of US economic development? How do these centuries-long trends compare to the rest of the world? Higher growth rates in the 19th and early 20th centuries likely promoted higher rates of absolute mobility – or the share of children earning more than their fathers – in the past, outweighing any adverse effects of higher levels of inequality. Reforms following the Great Depression and World War II that compressed the income distribution may have also increased absolute mobility. However, the forces of strong economic growth and income compression have moderated in recent years, which may have contributed to the decline in absolute mobility.

[8] Years of schooling was only added to the census in 1940. For years prior to 1940, Song et al (2020) generated occupations' literacy scores from a dummy variable (0 = illiterate; 1 = literate, can both read and write).

Myths about American exceptionalism and early work by economic historians suggest that relative mobility – or the correlation between the economic outcomes of fathers and sons – was particularly high in the 19th century (Ferrie, 2005; Long and Ferrie, 2013). Recent work provides a different view. According to recent research, relative mobility appears to have been low in the 19th century, partly due to the large differences between regions (especially between the North and South) and the fact that fathers and sons tended to live in similar locations. Relative mobility rose into the 20th century as regions converged over time. Furthermore, the earliest studies of intergenerational mobility only focused on white men due to challenges in creating linked samples. Broadening linked samples to include Black men and white and Black women suggests that intergenerational mobility was even lower than understood in the past and that mobility has increased (rather than decreased) over time.

In the following sections, we will describe these trends, as well as the recent evolution of historical intergenerational mobility estimates, as new methods have been employed to correct measurement errors in proxies for fathers' income and expand the sample to groups beyond white men.

3.2 Absolute intergenerational mobility over time

Absolute mobility refers to the proportion of children earning more than or working in higher-ranking occupations than their parents. Income is a useful measure for the study of mobility because it offers a single index of social standing. However, we lack systematic income data before 1940, so many historical studies rely on occupational mobility instead. Occupational mobility can arise either because children enter higher-status occupations than their parents or because the same occupation achieves a higher rank in the distribution over time. In his seminal work, Treiman (1977) argued that the relative prestige of occupations had remained constant over time, suggesting that the second channel is not quantitatively large. Song et al. (2020) further verify this claim by showing that the rank order of occupations, based on the educational backgrounds of workers, remained broadly stable over the 19th and 20th centuries.[9] Based on this assumption of stability, Song et al. (2020) then create a rank-ordering (one to 100) of occupational status based on the

[9] With the exception of farmers (see Collins and Wanamaker 2022, Abramitzky et al. 2024a, Espín-Sánchez et al. 2023).

average educational attainment of men who hold a given occupation in the sons' birth cohort, mimicking the approach known as Treiman's rank. Here, upward mobility is defined as a son having an occupation that is 7.5 or more points above his father. Downward mobility is defined similarly.

Song et al. (2020) study the evolution of absolute and relative occupational mobility over time for cohorts born between 1820 and 1980. Using Census data for the 1820-1900 cohorts, the authors link fathers to children (see Appendix Table 1 for details about the sample and the linking procedure). Starting from 1900, they create a complementary measure using survey evidence, as individual details in more recent Censuses (1940 and onwards) had not yet been released.

The authors find that, among non-farm families, absolute occupational upward mobility increased between the 1830-1900 birth cohorts and then decreased after the 1940 cohort. The estimated increase in absolute mobility for the 1830-1900 cohorts is likely an understatement of the true increase because their sample excludes children raised on farms and may have later moved to higher-status occupations in urban areas. The authors' goal is to compare the manufacturing and service economy over time, and they acknowledge that "a large proportion of upward mobility was driven by the outflow of children of farmers, as the number of agricultural jobs shrank throughout the 19th and 20th centuries."

The trend in absolute mobility over two centuries observed by Song et al. (2020) is consistent with the shorter series of income absolute mobility for the modern era by Chetty et al. (2017). Chetty et al. (2017) develop a novel method to estimate absolute mobility, circumventing the need to link all children to their parents. Using 1% and 5% decennial Census samples and the Current Population Surveys, they first estimate the *marginal* income distributions of parental and child generations when each group was about 30 years old. Crucially, the "parents" are defined as individuals who had children between 1940 and 1984 when they were aged 16 to 45. Using forward and backward links between Censuses, the authors then record household income when the parents were between the ages 25 and 35.[10] The "child" generation's marginal income distributions are

[10] For details on how these are calculated across cohorts, see page 2 of Chetty et al. (2017).

then measured as income at age 30 for individuals born between 1940 and 1984. Notice that this step has no direct link between parents and children.

Then, using linked parent-child data based on IRS dependent claims, the authors construct *joint* parent and child income distributions (*copulas*) for 1980-1982 birth cohorts to back out the parent-child occupation rank relationship. Then, assuming that this copula is stable – i.e., that relative mobility remained stable – they combine the copula from the 1980s birth cohorts with earlier marginal income distributions to calculate absolute mobility. In their paper, Chetty et al. (2017) suggested that no matter what assumptions one might make regarding copula stability, their derived upper and lower bounds of absolute mobility suggest the same trend of falling mobility. Berman (2022), discussed later in further detail, found that, indeed, empirically, "historical panel data are effectively unnecessary for estimating absolute mobility," as these copulas proved to be stable over the relevant period for a series of developed economies.

Chetty et al. (2017) estimate that, on average, more than 90 percent of children born in 1940 earned more than their parents, whereas only 50 percent of children born in 1980 managed to do so. Taken together, the studies trace out a pattern of rising absolute mobility in both income and occupational status, in the 19th century, peaking in the 1940s, and declining thereafter. The increasing rates of absolute mobility in the 19th and early 20th centuries were driven both by structural transformation (shifts from farming into higher-paying manufacturing jobs) and high growth in the early manufacturing economy. What caused absolute mobility to decline in recent decades?

Chetty et al. (2017) study two most likely contributors to this decline: slowing economic growth and rising inequality. Chetty and coauthors create a set of hypothetical income distributions for children born in 1980, using 1940 growth and inequality numbers. They find that if the 1980 cohort had experienced a similar growth rate as the 1940 cohort, 62 percent of children (rather than 50 percent) would earn more than their parents – a moderate improvement. However, if growth was the same but, instead, income inequality was at the 1940 rates, 80 percent of children would earn more than their parents. Thus, while both forces are important, rising inequality may be the main culprit behind lower absolute upward mobility experienced by recent generations.

The patterns of absolute mobility since 1940 align with historical trends in income inequality documented by Goldin and Katz (2008) and Autor et al. (2020).[11] Inequality was high in the 19th century, lower in the middle of the 20th century, and higher once more at the end of the 20th and beginning of the 21st century. One of the main drivers of the late 20th-century increase in inequality (1950-2005) has been skill-biased technological change. Computerization and other advances increased the demand for skills requiring higher levels of education, which was not matched by a rising supply of college-educated workers, especially in the 1980-2005 period (Autor et al. 2020). This shift in demand resulted in large wage differentials between the college-educated and non-college-educated, although, in more recent years, inequality has been driven by wage differences *within* the college-educated. Furthermore, the prevalence of unions is much lower today than it was in the mid-century, and the real value of the federal minimum wage has declined since 1970, contributing to rising inequality (Farber et al., 2021; Lee, 1999; Autor et al., 2016).

Cross-country evidence suggests that redistributive policies that result in lower inequality, such as those in Scandinavian countries, may not be enough to alleviate falling rates of absolute mobility. Berman (2022) examines the evolution of absolute intergenerational mobility in ten countries, including the US, over the 20th century and accounts for the drivers of declining inequality.

Berman (2022) finds that absolute mobility has been declining in all ten countries (Figure 1), but the drivers of the decline are different. Consistent with Chetty et al. (2017), Berman (2022) finds that the decline in the US (and Australian) absolute mobility is driven by inequality. In other countries, it is being driven by declining growth.

[11] The longest series for income inequality in the US are based on income tax records studied in Piketty and Saez (2003) and Piketty, Saez, and Zucman (2018). More recently, studies have challenged the levels and starkness of changes in income inequality both before 1960 (Geloso et al. 2022) and after (Auten and Splinter, 2023). For series based on Census data and other sources, see Goldin and Katz (2008) and Autor et al. (2020).

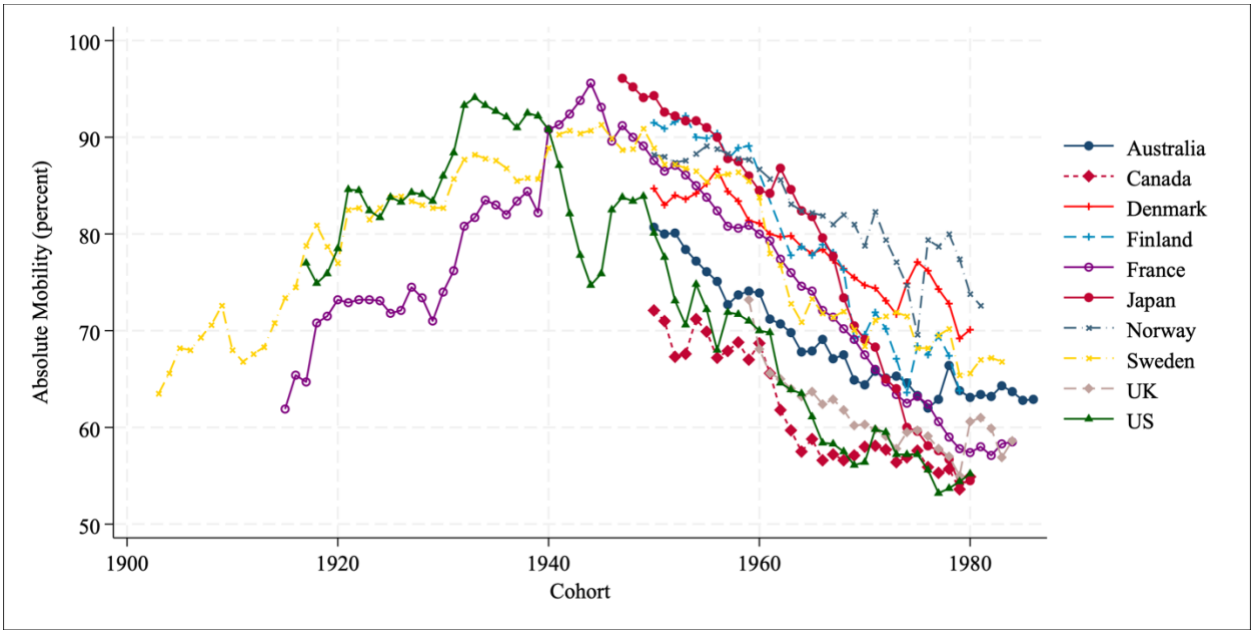

Figure 1. Absolute Mobility in the US compared to Australia, Canada, Japan, and select European countries.

Source: Berman 2022. Appendix Table H.1, used to create Figure 4 in Berman 2022. Copyright American Economic Association; reproduced with permission of the Journal of Economic Perspectives American Economic Review.

Notes: The figure shows absolute mobility by country over the 20th century. The countries that have estimates in the first half of the century show increased mobility in the 1900-1940 period. All countries have been characterized by decreasing mobility since the mid-century.

Although absolute mobility seems to have been declining worldwide, the exact levels of absolute mobility, and the estimates of the severity of the decline, are still debated. Manduca et al. (2024) is the most recent paper studying absolute mobility in the US and several other countries.[12] These authors argue that estimating absolute income mobility for a subset of the population, such as those aged 30-35, using the marginal income distribution of the entire population, may lead to misleading results, as income distributions evolve with age. For instance, absolute mobility in the United

[12] Using linked administrative datasets from five countries, the paper confirms the assumption in Chetty et al. (2017) and Berman (2022) that using marginal income distributions paired with the copula constructed in just one point in time from a linked dataset are enough to accurately measure absolute mobility.

Kingdom appears to be 10-15% higher in Manduca et al. (2024) than in Berman (2022).[13] This correction may also make the downward trend in some countries less steep.

3.3 Relative intergenerational mobility over time

The study of relative mobility has been at the forefront of recent historical and contemporary work on intergenerational mobility. Unlike absolute mobility, which reflects changes in both inequality and economic growth, the relative mobility measures more directly reflect children's opportunities conditional on their parents' socioeconomic status. There is a long tradition of studying rates of relative mobility in both economics and sociology.

Early work attempting to measure intergenerational mobility in recent cohorts relied on evidence from representative surveys that include retrospective questions.[14] Now, with access to full-count decennial population Censuses linked to IRS tax records, researchers have been able to calculate relative intergenerational mobility for a set of modern birth cohorts, leveraging data from the entire population.

The standard approach for measuring relative mobility has also changed in recent years. Solon (1992) and the literature predating Chetty et al. (2014) often used income or log income correlations. However, using this cardinal scale, the coefficients were sensitive to outliers and zeros. Chetty et al. (2014) popularized the concept introduced by Dahl and DeLeire (2008) of the rank-rank relationship between parents' and children's outcomes – a measure that economists have widely adopted since and that is used in most papers covered in this section.

The rank-rank correlation focuses on comparing people's positions in the income ranking (ordinal) instead of their actual income (cardinal). The percentiles of income distributions are called *ranks*.

[13] See Figure 1 of Manduca et al. (2024) for estimates that make this adjustment.

[14] Solon (1992) and Chadwick and Solon (2002) use the Panel Study of Income Dynamics (PSID) to study intergenerational mobility for sons and daughters, respectively. Solon (1992) finds an intergenerational log-log income correlation of 0.4 for the 1968 cohort. Lee and Solon (2009) estimate that relative mobility measured by father-son income correlation was largely constant for the 1952-1975 birth cohorts. Mazumder (2005) combines multiple years of fathers' income to address measurement error and instead finds an intergenerational income elasticity of 0.6. Black and Devereux (2011) survey this earlier literature.

Thus, the parent-child percentile correlations are often referred to as rank-rank correlations. If **X** is a vector of ranks of parents' incomes and **Y** is a vector of associated children's ranks, the magnitude of r(**X, Y)**, the correlation coefficient in ranks, determines the strength of intergenerational *immobility* or *persistence*. A higher correlation coefficient suggests that a parent's economic or occupational standing strongly correlates to his child's standing, whereas a lower correlation coefficient suggests that this relationship is weaker.

In this section, we provide an overview of new findings on changes in relative intergenerational mobility over time. We highlight the process of scientific innovation that has rapidly advanced our understanding of historical relative intergenerational mobility, including newly available historical data, new measurement techniques, and a new focus on increasing representativeness.

We begin by presenting and comparing estimates of intergenerational mobility for specific demographic groups as reported by a series of papers using different methodologies. We try, whenever possible, to point out the sources of discrepancies. We start with white father-son pairs, the group covered by the largest set of studies (as discussed in Section 2).

White Men

As research has progressed, conclusions about the intergenerational mobility of white men over time in the US have changed substantially over the past few years. Initially, intergenerational mobility appeared to have been high in the 19th century and to have declined over time, mirroring the pattern for absolute mobility described above. This conclusion was based on measures of occupational status derived from national rankings. However, mobility appears to have been substantially lower in the 19th century when incorporating regional differences in occupational status into measures of fathers' and sons' social status. By these measures, mobility is not as high because sons are likely to have lived in the same region as their fathers, and regional economic differences (especially between North and South) were large and persistent in this period. When considering the region-adjusted estimates, it appears that the past was a period of *lower* mobility than the present, which contrasts with narratives about declining mobility and opportunity over time.

Whether or not to adjust occupation ranks by region and race depends on what the researcher is trying to measure. If, on the one hand, the object is predicting occupational status, we may want to assign the same rank to a white plumber in New York and a Black plumber in Ohio. The original OCCSCORE variable is an example of such a measure – assigning the same score to all plumbers in the US assumes the plumbers of New York and Ohio have the same socioeconomic status. On the other hand, if the researcher wants to measure income, she may want to adjust by region and race. Various "income score" measures (e.g., Abramitzky et al. 2021b, Collins and Wanamaker 2022, Saavedra and Twinam 2020) are examples of this approach, reflecting the empirical pattern that the incomes of plumbers are higher in New York than in Ohio and for white men than for Black men. Adjusting occupation ranks by region and race may thus have consequences in historical comparisons: high levels and declining trends in persistence over time found in studies that adjust ranks by region and race might partially be attributed to increased migration across states, and to relative economic convergence between Black and white men and between the South and the rest of the country.[15]

Figure 2 reports relative mobility estimates from a series of recent papers. The first takeaway from this figure is that more recent mobility estimates suggest that mobility was lower in the 19th century than previously understood, implying that mobility has not been falling (at least as quickly) over time as previously thought. Largely, the differences lie in the entities being measured. Song et al. (2020) uniformly rank occupations based on educational attainment across the United States without adjusting for region. Song and co-authors find that rank-rank correlations were low (that is, mobility was high) for the 1830-50 birth cohorts, and then correlations rose over time (mobility diminished). Mattheis (2024) similarly ranks occupations without adjusting for regions but recomputes the rankings in each Census sample, assuming a constant level of status for each occupation. Ward (2023, OLS), Collins and Wanamaker (2022), and Abramitzky et al. (2021b, 2024a) use similar measures but allow for between-region or state differences.[16] Their estimates

[15] Whether to adjust for regional differences also raises the question of whether to account for nominal income or real income, as cost-of-living adjustments, while useful, are not without controversy. On the one hand, such adjustments account for cost-of-living differences, but the cost-of-living differences can themselves exist due to quality-of-life differences. Thus, these adjustments can complicate comparisons across groups and locations.

[16] Collins and Wanamaker (2022) also report mobility estimates from later decades using survey data (OCG and NLSY79), but are calculated in terms of observation rather than birth cohorts, making it difficult to harmonize with the rest of our series in Figures 2 and 3.

of rank-rank correlations are all higher than those of Song et al. (that is, mobility appears to be lower in the 19th century), suggesting that locational differences in occupational rankings mattered. Furthermore, these three estimates are all close to each other, implying that the choice of occupation-based ranking method is less consequential. Note also that different papers made different reweighting decisions on demographic characteristics such as age, state of residence, or birthplace. Reweighting might result in differences in levels and trends of estimates (for more details on this, see Appendix Table 1).

A second pattern that is apparent in Figure 2 is that the choice of method (e.g., OLS vs. IV) has a material effect on our understanding of mobility levels. Ward et al. (2023, IV)'s estimates are considerably higher than Ward et al. (2023, OLS) and all other estimates. What is the difference? Ward (2023, IV) instruments for the father's occupation in one year with an observation of the father's occupation from a second Census period while otherwise keeping occupational measurement and sample construction the same. This instrument is correlated with the father's true occupation in the first period but uncorrelated with measurement error in that Census year. Ward argues that substantial measurement error can be introduced by only measuring fathers' occupation status in one period if fathers shift between occupations over time. In turn, measurement error in the independent variable will bias the correlation estimates downward. Ward documents that fathers' occupations were highly unstable across Censuses in this era, and a single observation of a father's occupation – as used in other studies – is not an accurate proxy for the family's socioeconomic status. As for Mazumder (2005) and Mazumder and Acosta (2014) in the modern period, Ward shows that addressing measurement error in the father's occupation corrects attenuation bias, leading to higher rank-rank correlation estimates.[17] Ward shows that the IV measure performs as well as averaging three fathers' occupation observations, although the latter requires more linked data.

Classical measurement error in sons' (dependent variable) occupation does not affect the magnitude of the point estimates. However, measuring sons' outcomes in two periods may have a different benefit. Mattheis (2024) finds that using multiple sons' observations can attenuate non-classical linking errors that can also lead to attenuation bias. Using a misclassification model that

[17] Zhu (2024) uses Ward (2023, IV) estimator to reassess occupational mobility in Victorian England and also finds significantly lower social mobility than estimated previously.

relies on repeated linking of sons, he finds that the historical rank-rank relationships for white men were 50-100% higher than the OLS results, attributable to the non-classical measurement error induced by incorrectly linked data.

A third point that becomes clear in Figure 2 is that the details of estimation and data construction matter, so estimates cannot be directly compared to each other without care. For example, Althoff et al.'s (2024) estimates are close to Ward's (2023 OLS), but the Althoff paper estimates regression equations that include mothers' and fathers' information (instead of only fathers) and that use both parental income and human capital (education, literacy) to predict sons' outcomes. Likewise, Jácome et al. (2024) rely on novel data collected from surveys reporting the respondents' own income and their recollection of their fathers' occupation when they were young. Using surveys with recall questions eliminates the need to link parents and children. Thus, survey-based estimates will not suffer from attenuation bias due to false links or (perhaps) to fathers' occupational change (if children report their parents' "permanent status"). However, as noted by the authors, given the different nature of the method and data limitations, comparing the magnitudes of the results with those from papers based on direct father-son links should be done with caution.

Not only do different estimates suggest different *levels* of mobility, but they also imply that mobility has *trended* differently over time. Prior to the 1870 birth cohort, Ward (2023) documents an increase in mobility (a decline in father-son persistence from a high level), while Song et al.'s (2020) estimates suggest a small decrease. This discrepancy is likely driven by occupation ranking measurement choice. Mattheis (2024), who also does not adjust occupation ranking to region, documents a decrease in mobility in this period similar to Song et al. From the 1870-1920 birth cohorts, most intergenerational mobility measures exhibit similar trends, suggesting that mobility remained stable during this period (compare Song et al. (2020), Ward (2023, OLS), Mattheis (2024), Althoff et al. (2024), Abramitzky et al. (2021b), and our estimates prepared for this chapter based on the method from Abramitzky et al. (2024a)). Ward (2023, IV) is an outlier, documenting three decades of sharp decline in mobility (an increase in persistence) from 1880 onward.

What about the more recent period? Song et al. (2020) use a sample of men in the 1940 Census paired with the 1973-1990 Current Population Survey-ASEC, the 2000 Census long form, and the

2001-2015 American Community Survey. Using this more limited sample, they extend the time series out to 1980 and document very stable relative mobility. Jácome et al. (2024) base their estimates on survey data and find mildly increasing relative mobility in the modern period (a decline in persistence).[18]

Overall, due to significant differences in measurement, methodology, linking, and samples between the various series, comparing levels of relative mobility in the past across papers is challenging. Estimates are widely divergent before 1870, largely because accurately predicting income is harder further back in history. From the 1870-1920 birth cohorts, estimates are more consistent (with the exception of Ward 2023 IV) and suggest father-son rank-rank correlations between 0.25-0.43. These levels of relative mobility are moderate-to-high in historical and international comparison. Intergenerational mobility for white men remained somewhat stable between the 1870 and 1920 cohorts – although even here, Ward's IV estimates would tell a different story. In the end, Figure 2 highlights the need for future work to harmonize these and all other demographic group series.

[18] However, Jácome et al. (2024) caution against drawing strong conclusions for their post-1950 estimates as the share of the data with missing fathers' information increases over time, leading to potential sample selection issues.

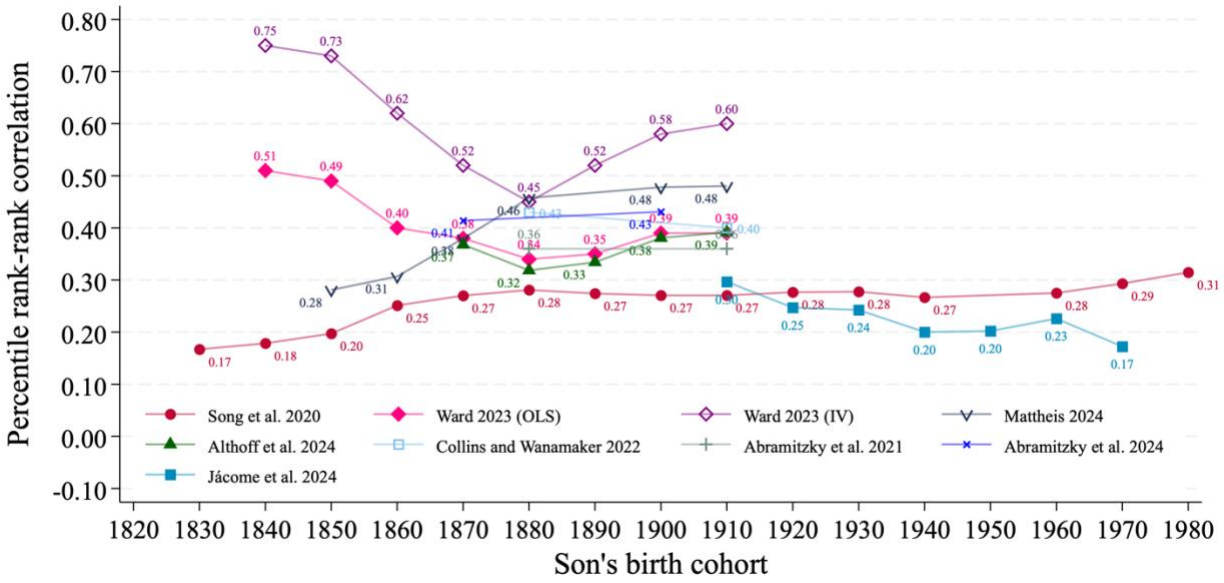

Figure 2. Intergenerational Persistence of White Men

Sources and Notes: Song et al. (2020) – Figure 2 of the paper; Ward (2023) – Figure 7 (OLS refers to the traditional way of measuring father's occupation with a single observation. IV instruments for the first observation with a second one); Althoff et al. (2024) – Figure A.7 (the estimates are the square root of R^2 reported in the figure; parents' human capital is measured using both occupation and literacy); Mattheis (2024) – Figure 5; Collins and Wanamaker (2022) – Figure 3; Abramitzky et al. (2021b) – Figure 2; Abramitzky et al. (2024b) – prepared for this chapter based on Abramitzky et al. (2024a). Jácome et al. (2024) – Table A.7. Note that birth cohort here refers to the year the parent-son dyad is reported and may not be the true birth year for all children (refer to Appendix Table 1 for more details on sample ages.)

Black Men

The levels and trends of intergenerational mobility have been starkly different for Black men than for white men throughout US history.[19] Figure 3 presents various estimates of relative mobility for Black men. Before discussing these patterns in detail, it is important to note that the differences between estimates produced by various methodologies are even higher for Black men than for white men, complicating any direct comparisons of estimates between papers. As we will see,

[19] For interracial differences in mobility in more recent cohorts, see Chetty et al. (2020b); for a historical perspective on interracial differences, see, for example, Durlauf et al. (2024), who study the evolution of interracial differences since the Civil War, focusing on occupational mobility and using novel mobility measures.

regional adjustments will have paramount importance for this subgroup, given that a large share of the Black population lived in the low-mobility South at the beginning of the period. Linking methods are also more challenging for Black men, who usually have lower match rates than white men.

Regional adjustments are central to understanding Black mobility patterns. Starting with Ward's (2023) OLS methodology (one observation for each father), we see that ranking occupations with region adjustments results in substantially lower estimates of mobility (higher intergenerational persistence). The same pattern is apparent in Ward's IV results. Combining the IV methodology and the regional adjustment results in the uncommon phenomenon of rank-rank associations that are greater than one – a result that is attributed to the fact that most Black families at this time were in the bottom quartile of the rank distribution, compressing the distribution.

Comparing Ward's adjusted OLS and IV estimates here to those for white men in Figure 2, which are all adjusted by region, we can see that Black men were significantly less mobile than white men throughout this period. Starting with the 1880 cohort, father-son persistence fell for Black men. Mobility rose for Black men during this period while holding stable for white men.

We can compare Ward's (2023) OLS estimates with regional adjustments to other papers. Collins and Wanamaker (2022) use different linking procedures and find somewhat lower intergenerational persistence (higher mobility) between 1870 and 1920 and confirm the rising mobility in this period. Althoff et al. (2024) find even lower persistence (higher mobility). Jácome et al. (2024) extend the series forward to the 1980 birth cohort and document a substantial increase in intergenerational mobility for Black men over the 20th century.

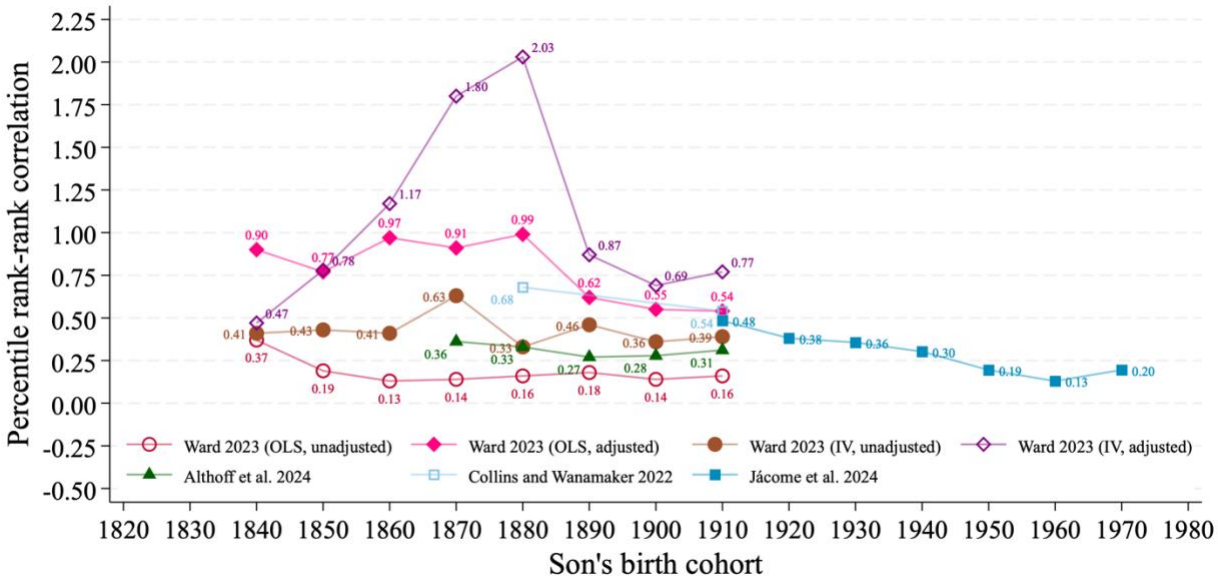

Figure 3. Intergenerational Persistence of Black Men

Sources and Notes: Ward (2023) – e-mail communication (OLS refers to the traditional way of measuring father's occupation with a single observation. IV instruments for the first observation with a second one; unadjusted means that the estimates have not been adjusted for regional differences); Collins and Wanamaker (2022) – Figure 3; Althoff et al. (2024) – Figure A.7 (the estimates are the square root of R^2 reported in the figure; parents' human capital is measured using both occupation and literacy); Jácome et al. (2024) – e-mail communication. Note that birth cohort here refers to the year the parent-son dyad is reported and may not be the true birth year for all children (refer to Appendix Table 1 for more details on sample ages.)

White Women

Having reviewed historical intergenerational mobility estimates for men, we turn to the nascent literature tracking intergenerational mobility for women. Given that many women change their last names at marriage, the standard algorithms for linking individuals across historical datasets have excluded women from their samples. Measuring intergenerational mobility for women is at the current research frontier and has been based on genealogical links (Buckles et al. 2024a, Buckles et al. 2023, Espín-Sánchez et al. 2023), social security registration cards (Althoff et al. 2024), and marriage certificates from a limited set of states (Eriksson et al. 2023).

Figure 4 plots intergenerational mobility estimates for white women. The earliest estimates from linked data come from Buckles et al. (2023). For married women, the authors measure the rank-rank correlation between women's fathers and husbands because married women seldom had occupations of their own. Results obtained from these proxy measures also implicitly capture assortative mating. For single women, the authors instead consider the rank-rank correlation between women's fathers and women's own occupations. For both single and married white women, the authors find that intergenerational persistence moderately declined (mobility increased) between the 1840 and 1880 birth cohorts; thereafter, mobility held steady or decreased slightly over three subsequent decades. This pattern generally held for both the IV and OLS estimates. Interestingly, mobility always appears higher when comparing single white women to their fathers rather than when comparing married white women's husbands to the women's fathers, which again reflects high assortative mating. That is, women married men who were similar in status to their fathers, even if women's outcomes before marriage, or if unmarried, were not as tied to their own fathers' outcomes. In their updated work, Buckles et al. (2024b) use a novel measure of the average socioeconomic status of nearby household heads to capture both men's and women's own status and find similar results. This way, they circumvent the issues by measuring women's status differently from men's.

Mobility trends for white women are reasonably similar across methods and samples and suggest that women's mobility increased throughout the 19th century and then remained stable between the end of the 19th century and 1940. Olivetti and Paserman (2015), who examined women's fathers and husbands using a pseudo-linking methodology, report similar estimates to those of Buckles et al.'s (2023) son-in-law estimates in the late 19th century. Althoff et al.'s (2024) estimates for all women are slightly lower but still similar to Buckles et al.'s (2023) unmarried estimates. Jácome et al. (2024) find improving mobility for white women over the whole 20th century, with relatively small differences by marriage status.

Olivetti and Paserman (2015) circumvented earlier limits on linking women over time across historical sources by creating pseudo-matches between women and their fathers based on first

names.[20] They paired groups of fathers with groups of daughters based on the daughters' first names, birth years, and states of birth. That is, the occupational status of all fathers with daughters named Katherine, born in Virginia in 1850, would be compared to the occupational status of all husbands of women with the same name, age, and birth state. This insight relies on the idea that first names contain information on their families' socio-economic status. For instance, fathers with the highest occupational status in 1850 were most likely to name their male children Edward and their female children Emma.

Althoff et al. (2024) incorporate parental human capital into their estimation, using a combination of household income rank and both parents' literacy rates. Althoff et al. (2024) show increasing intergenerational human capital mobility across the 19th century by considering children's literacy and school attendance outcomes. Further, they find that mothers had a particularly large role in this human capital transmission.

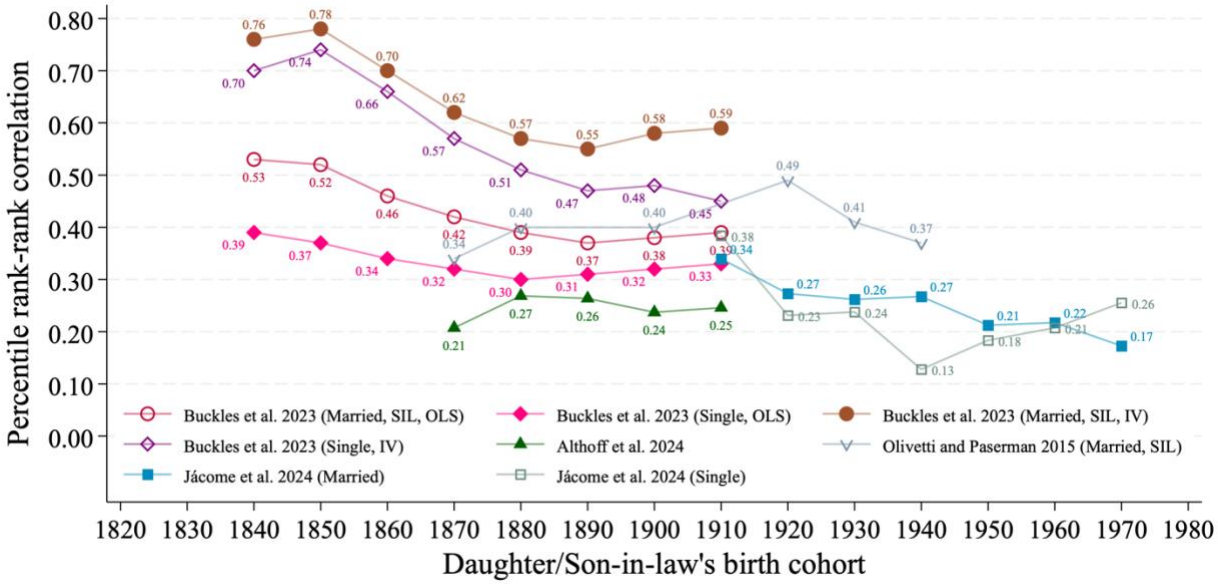

Figure 4. Intergenerational Persistence of White Women

[20] For a detailed overview of examples of name-based pseudo-matches, potential limitations and biases, and ways to circumvent these, see Santavirta and Stulher (2024). For novel econometric research on pseudo-links, revisiting Olivetti and Paserman (2015), see D'Haultfoeuille et al. (2022), who find lower volatility in intergenerational mobility in the early 20th century and offer tighter confidence sets for intergenerational mobility estimates.

Sources and Notes: SIL stands for Son-in-Law. Buckles et al. (2023) – Figure 7 (Married uses women's husbands' occupation. Single uses women's own occupations. Both OLS occupation estimates); Althoff et al. (2024) – Figure A.7 (the estimates are the square root of R^2 reported in the figure; parents' human capital is measured using both occupation and literacy); Olivetti and Paserman (2015) – Figure 1 ("eyeballed" estimates; one percent IPUMS Census samples). Jácome et al. (2024) – e-mail communication. Note that birth cohort here refers to the year the parent-son dyad is reported and may not be the true birth year for all children (refer to Appendix Table 1 for more details on sample ages.)

Black Women

Just as for men, looking at white women alone does not provide a representative picture of the intergenerational mobility of all women. Only a few papers study intergenerational mobility across sex and race, so we have fewer estimates for Black women (Figure 5). In addition, the estimates are disparate, suggesting that more research is necessary to paint a clear picture of Black women's mobility over the 19th and 20th centuries.

Although comparing levels across these papers is less informative, comparing estimates within each paper to those of white women is interesting. Buckles et al. (2023) suggest that Black women were significantly less mobile than white women with some rank-rank estimates above one, while Althoff et al. (2024) estimates imply that Black women were highly mobile, on par with or even more mobile than white women. Jácome et al. (2024) find that Black women started at lower levels of mobility, but their rank-rank correlation slopes mostly converged with white women over decades. Despite these differences, trends in all three papers suggest that intergenerational mobility had been improving or mostly stable for the period between 1880 and 1970.

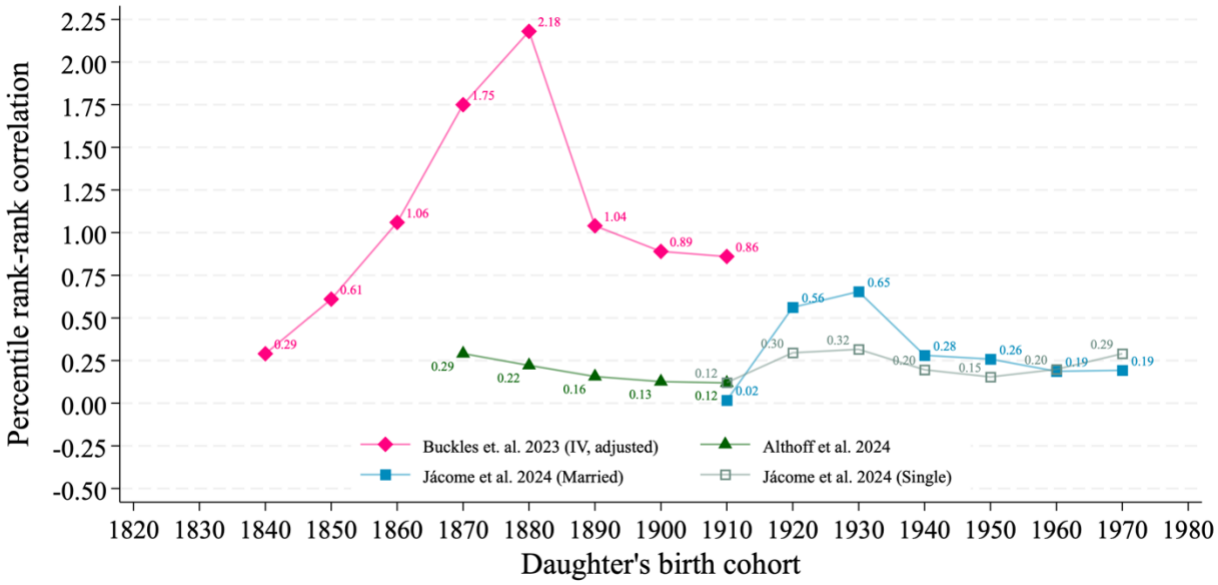

Figure 5. Intergenerational Persistence of Black Women

Sources and Notes: Buckles et al. (2023) – e-mail communication (combines estimates for single women, using her own occupation, and for married women, using husbands' occupations). Occupation scores are also adjusted for sex, unlike all other Buckles et al. (2023) figures. Althoff et al. (2024) – e-mail communication. Jácome et al. (2024) – e-mail communication (We drop the 1910 estimate due to a small sample size resulting in negative rank-rank correlations). Note that birth cohort here refers to the year the parent-daughter dyad is reported and may not be the true birth year for all children (refer to Appendix Table 1 for more details on sample ages.)

Combined Estimates

Finally, in Figure 6, we bring together estimates from papers that report intergenerational mobility for a group close to the full population (Black and white men and women). Both IV and OLS trends from Buckles et al. (2023) suggest falling intergenerational persistence (improving mobility) in the 1850-1890 period, followed by two decades of stability). Jácome et al. (2024) demonstrate a continued downward trend in persistence (increasing intergenerational mobility) in the 1910-1940 period, followed by stability through the 1970 cohort. Buckles et al. (2023) OLS estimates for the 1910 cohort are only somewhat higher than those of Jácome et al. (2024) in the single year of overlap (1910 birth cohort).

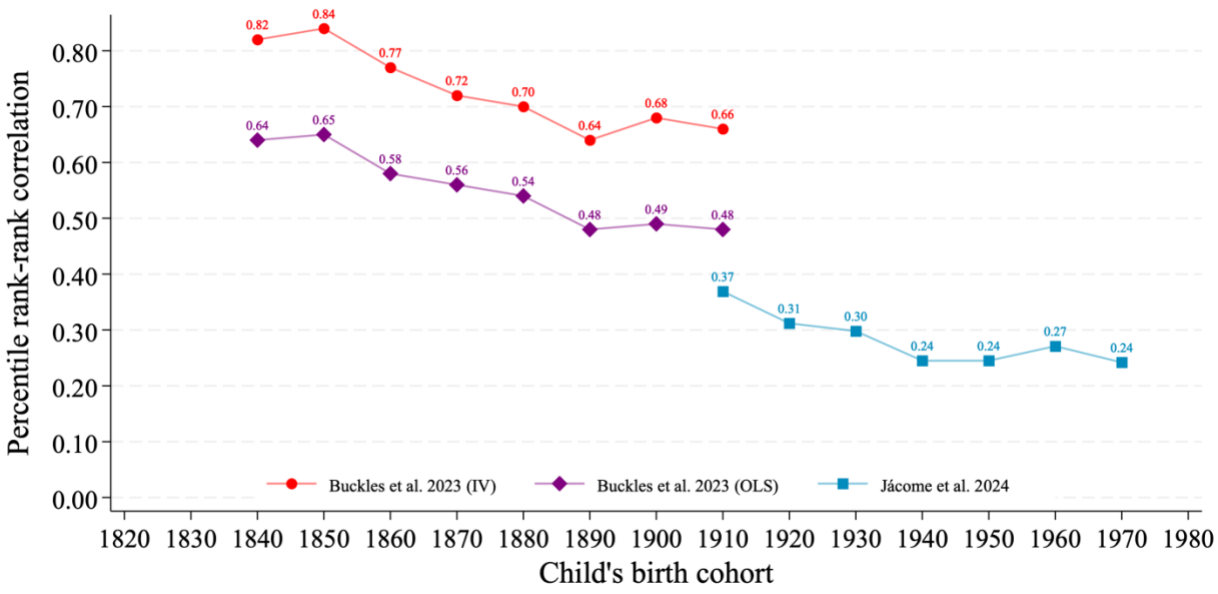

Figure 6. Intergenerational Persistence for All

Sources and Notes: Buckles et al. (2023) – Figure 8 (IV), private communication (OLS); Jácome et al. (2024) – Table A.3. Note that birth cohort here refers to the year the parent-son dyad is reported and may not be the true birth year for all children (refer to Appendix Table 1 for more details on sample ages).

Moving forward toward more recent cohorts, several important strands of literature have estimated more modern intergenerational mobility, often using creative workarounds to the lack of access to the full-count data from the more modern Censuses.[21] Aaronson and Mazumder (2008) use 1950-1980 decennial Census subsamples. Because these Census years do not include identifying information, they create synthetic "parents" from the previous generation based on the state of residence and age of the children. According to their estimates of intergenerational elasticity (IGE), intergenerational mobility was increasing for birth cohorts in the 1950s but has declined since then, especially for cohorts born in the late 1950s and 1960s. These findings are consistent with Jácome et al. (2024) findings for the trends in IGE, but not the rank-rank correlations. They attribute the discrepancies between their IGE and rank-rank correlations to lower data quality starting in the 1960s. Building on these findings, Davis and Mazumder (2024) confirm that there was a large drop in intergenerational mobility measured in rank-rank slopes or intergenerational elasticities using the National Longitudinal Surveys, which allows them to track a substantial number of

[21] Full-count Censuses only become available 72 years after enumeration, according to the 72-Year Rule (for more information and history, see e.g. https://prologue.blogs.archives.gov/2022/01/20/census-records-the-72-year-rule/).

respondents over time and their parents. They also find the drop was larger for men than women. For those born around 1960, they find a rank-rank correlation of 0.36.

For the birth cohorts of 1964 to 1979, Weiwu (2024) documents that the rank-rank correlation was 0.295 for white children and 0.217 for Black children in administrative tax data. Separating by gender, women exhibit slightly lower mobility. Rank-rank correlations are 0.288 and 0.302 for white men and women and 0.207 and 0.222 for Black men and women.

Chetty et al. (2014) study income intergenerational mobility of all children born in 1980 and find a rank-rank correlation of 0.34. Further, sons and daughters exhibited very similar intergenerational mobility – 0.349 and 0.342, respectively – a fact that was not true in much of US history. In their recent work, Chetty et al. (2024) find that for the cohorts born between 1978 and 1992, intergenerational mobility declined by 30% for white children – earning increased for children of high-earning parents but decreased for those of low-earning parents. At the same time, earnings increased for Black children from all backgrounds, resulting in a 30% reduction in the white-Black earnings gap for children from low-income backgrounds.

Overall, the literature has not yet reached a consensus about intergenerational mobility patterns over the two centuries. One challenge to making general statements is that studies estimate different measures of mobility – mobility in occupational *status* versus mobility in occupation-based *income* – that may not trend together. The types of adjustments to be made in each case are different, and so are the measures to be used. In addition, the literature needs to reach a consensus on how to measure and rank occupations. With these discrepancies in mind, we hesitate to draw any specific conclusions about the level or trends in relative mobility over given time periods. But, taken together, the evidence does cast doubt on the common narrative that the US transitioned from a very high-mobility society to a low-mobility society over the 20th century. Even the estimates that suggest decreasing mobility only document moderate changes.

4. Insights from Regional Studies

Recent studies exploring historical intergenerational mobility suffer from various measurement issues, including linking challenges and difficulty measuring socio-economic status. Several papers, in an effort to improve on these shortcomings, focus on specific states or regions for which data exist to overcome some of these problems. This subsection explores these papers and their conclusions.

4.1 Directly Measured Income Instead of Occupation-based Income

Intergenerational mobility based on occupation-based income alone may not paint a complete picture. However, further inquiry is often limited because measures like income and years of education were not reported in the decennial Censuses before 1940. Feigenbaum (2018) addresses this issue by focusing on the 1915 Iowa Census, the only state to our knowledge to have collected both income and education before 1940. The paper links fathers from the 1915 Iowa Census to sons in the 1940 Federal Population Census to observe income and education mobility. Feigenbaum finds that income mobility was high in early 20th-century Iowa. For sons born between 1898 and 1912, he finds a rank-rank coefficient of 0.17, which is lower than almost every nationwide, occupation-based estimate in Figure 2.

Feigenbaum (2018) suggests some reasons behind potential measurement error or idiosyncrasy of estimates in Iowa vis-à-vis the rest of the country. First, Iowa in 1915 was almost entirely white, making these estimates more akin to the white father-son estimates reported in Figure 2 than the combined estimates in Figure 5. Second, although income may be a better proxy for socioeconomic standing than occupation, the same measurement error induced by only using one income observation would create attenuation bias.

4.2 Marriage Certificates to Track Women

Eriksson et al. (2023) use marriage certificates from Massachusetts between 1850 and 1920 to create a link for women between their childhood and adult households. Marriage certificates contain both a woman's maiden and married surnames, allowing links to previous and subsequent Censuses to be made.

The authors find that women were more mobile than men in the 1850-1870 cohort (occupational income rank-rank coefficient of 0.210 for women versus 0.231 for men). Persistence dropped for both genders, but the gap remained for the 1900-1920 cohort (coefficient of 0.182 for women versus 0.201 for men). They rank occupations based on the levels of wealth associated with each occupation in the early Censuses and use husbands' occupations as a proxy for women's socioeconomic status.

These findings contrast with the estimates in Figures 3 and 5, where women in both cohorts appeared less mobile than men. These differences may be due to the potentially more comprehensive linking of women in Eriksson et al. (2023) or regional differences between Massachusetts and the rest of the country.

4.3 Was the US exceptionally mobile? Intergenerational mobility worldwide

Several studies have reported estimates of intergenerational mobility in various countries and time periods in the past. We attempt to document some of the most prominent findings from this literature and compare them to those of the US. Although more mobile than some countries, the US was perhaps not as exceptional in occupational mobility in the past as widely assumed.

We begin by discussing several papers that report comparable statistics and plot these together. Most of these papers report Altham statistics, a two-way odds ratio statistic based on parents' and children's occupation matrices (Altham 1970; Altham and Ferrie 2007; Modalsli 2015). When reliably ranking occupations in a comparable way is impossible, this statistic allows for grouping occupations into large categories and observing the likelihood of children being in a different category than their parents.[22] Like rank-rank correlations, a higher Altham statistic signals a higher association between parents' and children's occupations and, thus, lower mobility.

[22] The occupation matrices in these papers are divided into White Collar, Farmer, Skilled/Semiskilled, and Unskilled. Moving into white collar work was easiest in the US and Argentina, followed by Britain, Norway, and Canada, and then by Sweden. According to this metric, both the US and Britain experienced significant increases in mobility over the following century.

Figure 7 plots Altham statistics obtained from various papers by country and birth cohorts. Antonie et al. (2022) present estimates for Canada,[23] Berger et al. (2023) for Sweden and Norway, Peréz (2019) for Argentina, Britain, Norway, and the US, and Long and Ferrie (2013) for Britain and the US. Although the US seemed to have considerably higher intergenerational mobility than Britain and Norway at the end of the 19th and beginning of the 20th century (lower occupational persistence), these mobility rates were only marginally higher than Sweden or Canada and were slightly lower than Argentina. Over the next century, intergenerational mobility in Britain, Sweden, and the US declined (persistence rose), but the gap between the three countries substantially narrowed, indicating a larger decline in the US. Norway stands out as the only country where persistence declined. The decrease in mobility in the US documented here contrasts with the mobility estimates obtained from rank-rank relations, as observed in Figure 2. This discrepancy may be due to the nature of the Altham statistic, which measures purely occupational status, rather than occupation-based income, but also focuses on broad occupational categories and does not capture within-sector movements. For example, the share of the labor force in white-collar work rose substantially over this period (7-8% for 1850 fathers to 28% for 1949-1954 fathers (Pérez 2019; Long and Ferrie, 2013). Although sons of blue-collar workers may be less likely to move to white-collar jobs today relative to the past, the difference could be made up, for example, by more frequent movements within the white-collar sector. Another factor that may explain this difference is that most of the rank-rank correlations reported above allow for regional differences in occupation ranking, while the Altham statistic uses uniform ranking. For example, Ward (2023, Appendix I) also calculates Altham statistics, which cannot be adjusted for demographic characteristics. When using this measure, Ward too documents rising immobility in occupational status, which contrasts with his rank-rank IV estimates documenting largely increasing mobility in the 19th century.

[23] See Antonie et al. (2024) for a follow-up work on Canadian intergenerational mobility 1871-1901. This work does not report Altham statistics, so we did not include it in the accompanying figure.

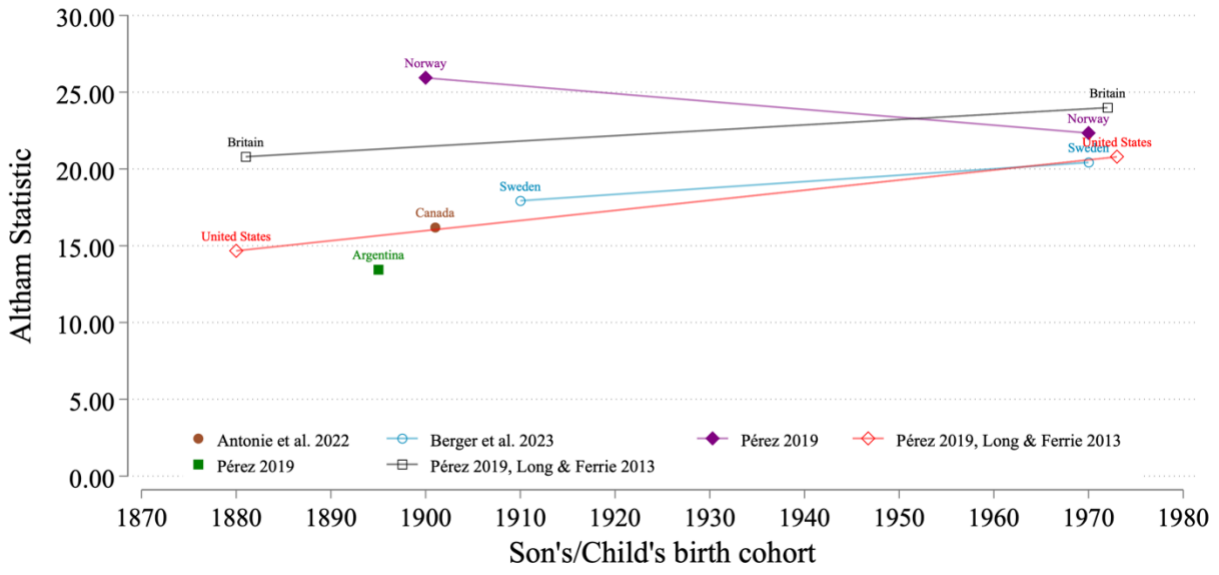

Figure 7. Intergenerational Mobility Across the World

Sources: Antonie et al. 2022 – Table 5; Berger et al. 2023 – Figure 1; Pérez 2019 – Table 2; Long and Ferrie 2013 – Table 2.

Several other studies have investigated intergenerational mobility in various countries over long periods of time using different methodologies. Below, we describe some of these.

In perhaps the longest-run study, Barone and Mocetti (2021) connect several generations of residents of the Italian city of Florence using pseudo-links between 1427 and 2011 based on surname. They find that pseudo-ancestors' earnings in the 15th century had a significant predictive power of pseudo-descendants' earnings in 2011 – descendants of families who were at the 90th percentile of the earnings distribution in 1427 enjoy earnings that are 5% higher than those of descendants of families who were at the 10th percentile in 1427. Thus, intergenerational mobility, or lack thereof, can persist in the face of the most dramatic changes that have taken place over the last centuries.

In a similar vein, Clark (2014) tracks family names over many generations (often centuries) in many countries to show that the correlation between family names and economic outcomes is strong and comparable across many cultures in different times, including modern Sweden,

fourteenth century England, and Qing Dynasty in China. These patterns suggest that mobility levels are lower than previously estimated and resistant to policy changes.

Belloc et al. (2024) also use data from Florence in the Middle Ages and document the existence of multigenerational persistence beyond the immediate effects of parents on children. If multigenerational persistence were entirely due to the parent-child relationship with a true estimate of β, the estimates, for example, for the grandparent-grandchild relationship, would be β^2. However, Belloc and co-authors document that grandparent-grandchild estimates are significantly higher than the iterated estimates, suggesting that grandparents directly affect their grandchildren's outcomes (consistent with Mare 2011 and Ferrie et al. 2016). In this context, broader family effects beyond direct parent-child relationships could have been driven by the Florentine marriage market, which established interfamilial networks and participation in political activity.

Espín-Sánchez et al. (2022) study the role of mothers and fathers in 18th-century Spain. The paper measures parents' social standing by whether parents used honorifics *don* or *doña,* which signaled high status. The authors follow families over time by observing the parents' status when they marry, when their children get married, and the children's status when they get married. The paper finds highly gendered mobility transmission, with fathers' status being more predictive of sons', and mothers' status of daughters'.

Turning to developing countries, Asher et al. (2024) find evidence of persistence in estimates of educational intergenerational mobility in India in the 20th century. Their measure calculates the expected education rank of children whose parents attained below-median education. By this metric, mobility in India has been low since the late 1950s, the earliest data used by the study, and has not changed across decades, despite the significant increase in average education and income levels, with some variation by caste and religious group.

The studies cited above all demonstrate strong persistence in social status across generations in historical settings outside of the US. By contrast, other studies demonstrate that mobility can shift as a result of historical events and policy changes.

Lippényi et al. (2013) study the evolution of intergenerational mobility in Hungary between 1865 and 1950 using subsamples of marriage records – one of the only studies to focus on Central Europe. The data cover almost a century and allow the authors to study the effects of historical events, including World War I, World War II, and the Great Depression, only to find very little effect of the major events. The authors analyze the association between the occupational class of fathers and their sons (the grooms). They create mobility tables for each five-year cohort, enumerating the number of sons who end up in the same occupational classes as their fathers. The diagonal terms in these tables represent immobility – staying in the same class as one's father. Off-diagonal terms represent upward or downward mobility. They then calculate odds ratios between origins (fathers) and destinations (sons). They find that intergenerational mobility increased over this period, even though the occupational structure remained predominantly agricultural. The results also suggest that the modernization process breaks down barriers and increases social mobility.

Chen et al. (2015) study educational intergenerational mobility in China for cohorts born between 1930 and 1985. They use survey data and direct regression coefficients between fathers' and sons' educational attainment, as well as rank-rank regression coefficients to estimate educational intergenerational mobility. They find that intergenerational mobility rose for the cohorts educated after the 1949 Communist revolution but fell for those educated after the post-Mao (Deng Xiaoping-era) reforms in the late 1970s. The change in social mobility is consistent with the timing of changes in political and economic policies, first towards, and then away from, the command economy, as well as the expansion of educational institutions.

Studying patterns of intergenerational mobility in different settings informs us about the paths that individual societies took to arrive where they are today. Investigating a variety of settings offers the opportunity to test the general mechanisms behind shifts in mobility, including economic growth, structural transformation, expansion in public schooling, and other policy changes. However, more research of this nature is still needed to study various contexts and identify general patterns in mobility.

5. Lessons from US history on the mechanisms of social mobility

This section will focus on the mechanisms behind the historical pattern of upward mobility in the US.[24] In general, what are the forces that can result in long-term shifts in mobility? Why are there persistent differences between groups? We will explore the spatial patterns of mobility, the role of internal migration and wealth shocks, and attempts to quantify the share of intergenerational mobility ascribed to each parent, but we emphasize that the literature has not fully answered these questions.

5.1 Spatial and Geographic Patterns of Mobility

Although the US has always been characterized by uneven levels of mobility across regions ("lands of opportunity"), the geography of opportunity has changed over the century, largely following geographic shifts in economic activity. Connor and Storper (2020) show that in the early 20th century, intergenerational occupational mobility was lowest in the South, low in the Plains and Mountain states, and higher in the West, Midwest, and Northeast, where economic growth was highest. In the late 20th century, the lowest levels of intergenerational mobility remain in the South, while the Plains and Mountain states have experienced a "reversal of fortune," now enjoying the *highest* levels of intergenerational mobility.

One possible explanation for the higher mobility rates in the Plains and Mountains states today is the high rates of upward mobility for boys born in rural areas. Connor et al. (2023) show that boys born in rural areas benefit from two-parent households and robust social networks there, although girls in these locations exhibit lower mobility, perhaps due to more conservative gender norms. Spatial segregation also plays a role in determining intergenerational mobility. Andrews et al. (2017) find that historical racial segregation explains a large portion of observed spatial heterogeneity in intergenerational mobility. Chetty et al. (2014) also emphasize the correlation between residential segregation and upward mobility. Along with low levels of segregation, areas

[24] This section will largely focus on empirical findings in the literature, but theoretical literature also attempts to explain the mechanisms behind changes in intergenerational mobility. Most recently, Nybom and Stuhler (2024) create a dynamic model of intergenerational mobility, evaluating the potential effects of structural changes on long-run trends in mobility.

with lower income inequality, better primary schools, higher social capital, and lower rates of single parenthood also exhibit greater upward mobility today.

Institutions and policies that promoted segregation shaped the geography of opportunity in American cities. Weiwu (2024) studies how interstate highways led to the suburbanization of white families, whereas Black families experienced barriers to leaving the city because of housing market discrimination. This infrastructure policy-induced change in segregation then affected the mobility of Black and white children.

In the US, Black Americans' mobility has evolved on a distinctive trajectory directly tied to slavery and post-slavery Jim Crow institutions. Althoff and Reichardt (2024) follow Black families across censuses between 1850 and 1940 and supplement those census records with neighborhood- and surname-level data from 2000 and 2023, respectively. They then compare Black families who were enslaved vs. free prior to the Civil War and find that differences between these two groups in education, income, and wealth persist through generations. A large part of this persistence can be explained by state-specific institutions: formerly enslaved Black families continued to live in states that imposed Jim Crow restrictions, whereas formerly free Black families were less likely to do so. Thus, repressive institutions of the past continue to affect lives today.

5.2 Internal Migration

Internal migration played a vital role in historical intergenerational mobility. As discussed earlier, income in the United States historically had a strong regional component. Especially when evaluating income mobility, changes in internal migration can lead to large observed differences – if the Ohio plumber from the earlier example moved to New York, she would mechanically increase her intergenerational mobility by the factor of the regional income difference, even though she performs the same work.

Ward (2022) shows that, during this era, internal migration, particularly from low to high-income regions, facilitated upward mobility. Examining pairs of brothers, Ward compares those who migrated between 1910 and 1940 to those who stayed behind. Brothers had similar incomes before

migration. After migration, the brother who moves enjoys a 17.4 log point increase in income, a return to migration that is 3-4 times larger than receiving an additional year of schooling.

Collins and Wanamaker (2014) and Boustan (2016) explore the returns to internal migration for Black Americans during the Great Migration. Collins and Wanamaker (2014) use the 1910 and 1930 linked Censuses, and Boustan (2016) links the 1920 to 1940 Census. Both studies find that, although there was positive selection into migration, economic gains to the migrants were large. Migrants who left the South earned around 100 percent higher income than men who stayed behind. Indeed, they find that the convergence of Black and white economic attainment in this period was largely due to migration. Internal migration was thus a vital channel for upward mobility, particularly for the poor, in a period of rapid industrialization and large rural-to-urban flows.

By contrast, Derenoncourt (2022) shows that upward mobility for Black Americans in the North suffered after the Great Migration. Mobility fell in cities that received large flows of migrants, particularly because white households moved to the suburbs, reducing public investment and, thus, the opportunities offered for economic advancement.

Internal migration plays an important role today, too. Comparing children who move at different ages, Chetty and Hendren (2018b) document significant effects of moving from poorer to more affluent neighborhoods on intergenerational mobility. For children in low-income families, each year of childhood exposure to a one standard deviation wealthier county increases income in adulthood by 0.5%.

5.3 Wealth Shocks

Large national shocks like economic downturns or political turmoil have uncertain effects on upward mobility. On the one hand, these aggregate shocks could act as “great levelers” (Scheidel 2017) if the rich have the most to lose, and shocks lead to wealth compression. On the other hand, the rich might be able to protect themselves from adverse events using their networks, leaving the poor to suffer most during a shock and deepening inequality.

Feigenbaum (2015) studies the effect of the Great Depression on intergenerational mobility. He uses a difference-in-differences framework to compare residents of cities that experienced varying degrees of economic downturn before and after the Depression decade. He finds a stronger correlation between fathers' and sons' earnings in cities that faced larger downturns during the Depression years. Sons of rich fathers in more affected cities were more likely to move elsewhere, thereby insulating themselves from this large economic shock.

Janas (2024) also studies the Great Depression in the context of education and mobility. The paper compares brothers at different stages of the life course during the onset of the Great Depression. Younger brothers were making high school enrollment decisions when the Depression began, while their older brothers had already made this choice. He finds that the sons of blue-collar workers were more likely to enter and stay in school at the onset of the Depression, resulting in long-term income gains, likely due to lower opportunity costs of remaining in school.

The Great Depression was a particularly adverse event for women's intergenerational mobility. Bailey et al. (2024) study sons and daughters of fathers who lived through the Great Depression in Ohio and North Carolina. They find no effect of the severity of the Great Depression on sons' occupational mobility but a negative effect on daughters, who were less likely to go to school during the Depression, possibly due to heightened needs for domestic work.

Ager et al. (2021) study another large wealth shock in US history: the emancipation of enslaved persons after the Civil War. Following the war, hundreds of thousands of Southern slaveowners lost significant portions of their wealth held in the form of enslaved people. The authors link slaveowners from before to after the war (1860 to 1870) and also link their children and grandchildren in 1900 and 1940. Ager and co-authors find that households exposed to a larger wealth shock during the war indeed had lower wealth in 1870 but that their children and grandchildren had similar occupation-based wealth levels or income levels in 1900 and 1940 to the offspring of less affected households. The authors then explore the means households used to recover after such a large wealth shock. The authors conclude that inherited ability, entrepreneurial skills, or specific human capital are unlikely to explain the recovery of slaveholders' sons'

socioeconomic standing. Instead, slaveholders' sons used social networks, including through marriage, to recover from their losses – quantitative and qualitative evidence suggests that better-off former slaveowners may have transferred resources to those that were harder hit.

Bleakley and Ferrie (2016) study the opposite case: a positive wealth shock due to a land lottery. In 1832, the State of Georgia held a Cherokee Land Lottery, in which winners received over 18,000 parcels of land. Almost every adult white male participated in the lottery. The winners received close to the median level of wealth in the area. The selection was random. The authors trace the participants over time and find that, although winners had slightly more children, they were not more likely to send their children to school. The sons of winners had no better outcome in wealth, income, or literacy than those of non-winners. Further, the winners' grandchildren had no higher literacy or school attendance. These results suggest that financial resources may play only a limited role in the correlation between the income of parents and children; rather, parents may pass along other attributes that are correlated with income.

5.4 Education

Changes in education policies, quality of education, or societal norms around education also contributed to changes in intergenerational mobility. Card et al. (2022) show that while parents' and children's educational attainment were, on average, highly correlated for those born in the 1920s, this pattern had wide geographic differences. They find that public school quality and resource differences have a large effect on educational attainment, contributing to the geographic variance.

Public school quality is, in turn, determined by local policies that then indirectly affect intergenerational mobility. Zheng and Graham (2022) use a macroeconomic model connecting neighborhood choice, school quality, and public-school funding regime to show that the common US structure of financing public schools through local property taxes exacerbates high rates of intergenerational persistence by providing higher schooling quality to high-income students.

Post-secondary education also plays an important role in determining intergenerational mobility. One recent strand of the historical literature has focused on the role of access to education in elite colleges as one way to increase mobility, especially for children from low socioeconomic backgrounds. Chetty et al. (2020a) showed that students from low-income families today achieve high mobility after attending selective colleges but that there are very few low-income students at elite schools. Low-income students have had low access to elite colleges for over a century (Abramitzky et al. 2024c). Bleemer and Quincy (2024) focus on the decline over time in the returns of college education.

Although elite education may be a vessel for upward mobility for some children from low socioeconomic backgrounds, elite universities still disproportionally benefit high-status students. Studying Harvard students in the 1920s and 1930s, Michelman et al. (2022) find that high-status students benefitted the most from networking opportunities with other high-status peers, such as through random roommate assignments. Low-status students, however, did not gain from these connections.

5.5 Parent-specific Transmission of Mobility

Most studies covered in this chapter focus on the association between children's outcomes and their fathers' income or occupation because, historically, women seldom held their own occupations. However, due to strong assortative mating, these father-child associations do not necessarily imply that the fathers are the loci of human capital transmission. Several papers indeed find that mothers play a central role in determining their children's education levels.

Focusing on children born in the 1870-1910 period, Althoff et al. (2024) reveal that maternal human capital, measured by literacy and schooling years, was a stronger predictor of child outcomes than paternal human capital. This transmission likely occurred through homeschooling provided by mothers. This finding is especially pronounced during periods and in locations in which children lacked access to public schools. The authors document that as children across US counties gained access to schooling (particularly Black children and daughters), intergenerational mobility increased due to the declining predictive power of maternal human capital. The authors

contend that the observed increase in mobility is often overlooked when studies focus solely on fathers, highlighting the importance of mothers, particularly in early US history when schools were not universally accessible.

Espín-Sánchez et al. (2023) also study the role of mothers in intergenerational mobility, looking at adults in the 1940 Census and linking them back to their parents in the 1920 Census and grandparents in the 1900 Census. They develop a new econometric technique using maternal grandfathers' socioeconomic status, as well as some additional tests using maternal uncles, to account for both the maternal and paternal contributions to mobility. Consistent with Althoff et al. (2024), they find that, broadly, mothers played a larger role in intergenerational transmission but that the maternal effect diminished over time, reflecting the shifts in the forms of human capital accumulation from parents to formal educational facilities through public school reforms.

Going further up the family tree and again using pseudo-links based on first names, as in Olivetti and Paserman (2015), Olivetti et al. (2018) study the effect of paternal versus maternal grandparents on grandchildren's mobility in the 1850-1940 period. They find that the maternal grandfathers' socioeconomic status was more predictive of granddaughters' outcomes, while paternal grandfathers' status was a better predictor of grandsons' outcomes. These results reinforce the relationship between intergenerational transmission of economic status and gender.

6. Mobility of Immigrants

Immigrants have always played an important role in the US economy. What do we know about the mobility of immigrants and their children?

Abramitzky et al. (2014) construct panel data that follow immigrants and US-born across Census waves and show that immigrants who stay in the United States do not catch up with the US-born in terms of occupation-based income within a single generation. Rather, a substantial gap remained even after thirty years after immigrants first arrived.

The children of immigrants, however, tell a different story. Abramitzky et al. (2021b) consider the children of immigrants historically and today and compare immigrants' children's mobility trends with those of the children of US-born parents. Historically, the paper links the 1880 Census to the 1910 Census and the 1910 Census to the 1940 Census. Due to the limitations described above, this sample only includes sons.

Abramitzky et al. (2021b) find that both today and in the past, children of immigrant parents were more upwardly mobile than children of US-born. On average, US-born parents' sons at the 25th percentile of the income distribution in the late 1800s to early 1900s improved their economic status to the 40th percentile in adulthood. Sons of immigrants from almost all countries outperformed those of US-born parents, with those hailing from Portugal and Italy reaching almost the 60th percentile.

The authors find that one factor that contributed to the upward mobility of immigrants' children was immigrants' locational choices – immigrants were more likely to settle in places providing more opportunity to everyone. A second driver of this mobility differential was immigrants' under-placement in the income distribution. While immigrants may have arrived with human capital that would have otherwise placed them in a higher income bracket, language barriers or other frictions with converting foreign education and experience often hampered them from realizing their potential. Yet, by transmitting their human capital to their children, who did not face the same constraints, their children achieved better placement. Lowrey et al. (2021) find similar results for the educational attainment of second-generation descendants of European immigrants and extend the analysis to the third generation. Third-generation immigrants' gains exceeded even those of second-generation immigrants. Duncan et al. (2020) also show that Mexican Americans make significant progress in educational attainment between second and third generations after immigration.[25]

Yet, despite substantial convergence across the generations, there is still some persistence in initial earnings gaps. Those ethnic groups that earned more when they first immigrated continued to earn

[25] Zhao and Drouhot (2024) observe similar trends among post-World War II migrants to Western Europe, where considerable catch-up and assimilation occurred by the third generation.

more by the third generation, and vice versa (Ward 2020). For example, of all immigrant-origin countries in 1880, Spanish and Italian immigrants had the highest earnings upon immigration. The children and grandchildren of this cohort continued to earn more than the children and grandchildren of the other immigrant group in later census years. Studying Mexican immigrants from 1880 to 1940, Kosack and Ward (2020) find no convergence between Mexican immigrants' descendants and non-Mexican whites in the US, even by the third generation.

What about immigrants today? Using Opportunity Insights data, Abramitzky et al. (2021b) are able to follow the children of immigrants who came to the United States in the late 1970s and early 1980s. Many immigrants in this period hailed from poorer countries than the US. Despite wide variation in income gaps between immigrants and the US-born for different sending countries, ranging from earning -40 log points to +20 log points compared to the US-born, the children of immigrants have almost always been more upwardly mobile than the children of US-born parents in the same income category.

The greater mobility of children of immigrants is particularly significant in families with lower incomes. Sons and daughters born to US-born parents at the 25th percentile of income distribution in 1980 generally ascended slightly above the 45th and 40th percentile, respectively, in their adult years. The offspring of immigrant parents from all nations tend to surpass that of white US-born parents' children, save for sons of parents from the Caribbean (Haiti, Trinidad and Tobago, and Jamaica) and daughters of parents from some European countries (Hungary, Germany, and the UK). Notably, the children of immigrants from Hong Kong, China, and India raised in the 25th percentile typically reach nearly the 65th percentile as adults.

Villarreal and Tamborini (2023) find that second-generation and third-plus-generation Hispanic men experience lower intragenerational earnings growth (a flatter age-earnings profile) than their white native counterparts over the course of their earnings history. They follow men over their careers by linking the CPS household roster to annual earnings contained in the Social Security Administration's Summary Earnings Records (SER). However, Villarreal and Tamborini do not link men to their childhood homes or otherwise control for parental income.

Recent work by Borgschulte et al. (2024) explores the causal effect of immigration on native intergenerational mobility. Using a shift-share instrument based on existing immigrant enclaves, they find that a higher inflow of immigrants into commuting zones results in higher intergenerational mobility for the local native-born. Particularly, higher immigration raises education levels of poorer native-born children through higher high school completion rates but lowers college graduation rates for wealthier native-born children. Hunt (2016) finds similar effects of immigration on native-born high school completion, especially for Black Americans, citing increased competitive pressure as the main mechanism.

More research is needed to assess how much of the upward mobility of immigrants can be explained by selection (see, for example, Lazear 2021; Abramitzky et al. 2012 study immigrant selection in the context of Norwegian immigration during the late 19th and early 20th century).

7. Conclusion

This chapter reviews the literature on historical patterns of social mobility. We focus on new work on mobility patterns in the United States, comparing them to other countries when possible.

We attempt to document throughout the chapter that measurement and methodological decisions matter for intergenerational mobility estimates. First, papers should clearly state the entity they are measuring – occupational *status* or some proxy of income. Based on the entity being measured, authors should carefully consider whether and how to adjust rankings for different demographic characteristics, such as region of residence or race, when ranking occupations. Measuring occupational status mobility, for example, might imply fewer adjustments than measuring income mobility. Second, the standard in the literature now is that, due to the inevitable imperfection of any linking, linked samples should be reweighted to match the demographic characteristics of full-count censuses, and papers should document robustness to different linking approaches. Third, we show how measurement error in father's and son's income caused by linking issues, and proposed ways of alleviating it, can alter estimates. Fourth, while much effort has been devoted to linking white men, future research should attempt to incorporate women and Black Americans, who, due to several methodological advances, now have significantly higher linking rates than before.

Next, we sought to reconcile and summarize trends of historical intergenerational mobility. Historical trends in absolute mobility in the US – or the share of children who earn more than their parents – are clearest in the data. Absolute mobility was high in the 19th and first half of the 20th centuries and has declined since 1940. Rising income inequality appears to be the most important cause of this decline in the United States, primarily driven by skill-biased technological change.

Evidence for long-run patterns of relative mobility in the US – or the correlation between parent and child income – is more conflicting. Some earlier studies (e.g., Song et al. 2020) suggest stable or declining relative mobility in the last two centuries. Other estimates (e.g., Ward 2023, Buckles et al. 2023) draw a more optimistic picture – relative upward mobility today may be higher today than it was at the end of the 19th century. With ever-improving measurement and sample representativeness, both the levels and directions of trends have been updated. Correcting for differences in region-specific occupation rankings, attenuation bias, and inclusion of women and Black men are all promising directions toward more accurate estimates of mobility.

Children of immigrants have experienced higher upward mobility than the children of the US-born through US history. Both in the past and today, children of immigrants earned more than the children of US-born parents who grew up in a similar socio-economic environment. This pattern holds across almost all sending countries. We are currently working with a consortium of researchers comparing the upward mobility of immigrants in the US and other destination countries.

The literature on historical patterns of intergenerational mobility is growing rapidly, following improvements in data availability for parent-child pairs. New work in this area should start by developing a consensus on linking methods and how to measure occupation. Currently, large differences exist between papers in both levels and trends of intergenerational mobility estimates, owing to the methodological differences. For example, Ward (2023) and others show significant differences in intergenerational mobility estimates that may arise by correcting for regional differences and gathering multiple observations on fathers' occupations (or other aspects of socio-economic status) to address measurement errors. More work expanding the literature beyond

occupation-based mobility could also be beneficial. Do we observe similar trends when looking at wealth? What about education?

Further, within-occupation exploration of intergenerational mobility could be interesting – for example, farmers constituted a large share of the labor force in the 19th century, but current literature does not differentiate between farmers with different productivities, incomes, or endowments. Large within-farmer differences existed, and sons may have achieved very different levels of income and consumption than their parents despite staying in the occupation. With the many revolutionary agricultural changes in this period, it would be interesting to see the role intergenerational persistence played in innovation adoption and resulting productivity.

Much work remains to be done to show the role of various mechanisms behind secular changes in intergenerational mobility. So far, the study of mechanisms has focused on the role of geography, regional differences, internal migration, and public education. Other long-run changes may be important in explaining shifts in intergenerational mobility, such as long-run changes in the returns to education, changes in the social safety nets, and further public investments in education, infrastructure, and public health at all levels of government. Similarly, changes in financial and monetary policies that are known to affect wealth distribution and inequality could have profound effects on intergenerational mobility. These forces have yet to be studied.

The literature has examined two large shocks to income and wealth distribution – the emancipation of slaves and the Great Depression. However, other political events may be important, too. For example, what was the role of the New Deal government investments and the post-World War II GI Bill in funding education and home ownership for the middle class? Did the unraveling of New Deal programs contribute to falling mobility?

The effects of other types of large shocks on intergenerational mobility remain to be studied. Environmental shocks, for example, could be of particular interest both in retrospect and as we look to the future. Boll weevil, a devastating agricultural pest, reduced cotton productivity in the 1900s US South, generating large shifts in the types of planted crops (Lange et al. 2009). Also, in the South, the Dust Bowl in the 1930s was an environmental catastrophe that had large effects on

agricultural productivity and, subsequently, the population of affected areas (Hornbeck, 2012). Events that had such large effects on local economies also likely affected intergenerational mobility, but this remains to be studied.

Exploring non-US contexts can also create ample opportunity to study the mechanisms behind changes in intergenerational mobility. Studying developing countries, both in the past and today, we can ask: How do industrialization and structural transformation affect mobility? What about the changes in financial structures? Did globalization alter opportunities and change mobility patterns?

Finally, this young literature has uncovered an important puzzle: why do we not observe substantial and sudden shifts in intergenerational mobility, especially after dramatic economic regime changes? During Mao's China, we would have expected much higher intergenerational mobility than before, given the self-proclaimed communist goal to grant equality to all. Yet, the change in educational mobility was not as extraordinary pre- and post-Mao as we might have predicted (Chen et al. 2015). Did the same pattern hold in the USSR, for instance? And if so, why did bigger changes not occur? Studying these dramatic shifts in economic regimes can teach us about the scope for reshaping the fundamental parent-child links in society.

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Appendix Table 1. Studies examining the long-term evolution of intergenerational social mobility, their data, sample, and takeaways.

Paper	Data & Sample	Takeaways	Mobility Measure	Linking Method	Weighting
Song et al. 2020	Data: Linked historical Census data 1850–1880, 1880–1910, 1910–1940; linked contemporary data using Census 1940, CPS, Census 2000, ACS 2001–2015. Various Surveys. Sample: White Father-Son Pairs. Ages: sons aged 0-17 in the "parent" census; sons aged 30-47 in the "son" Census.	Intergenerational mobility decreased for the 1830-1880 cohorts and stayed stable over the following century. The overall change was less pronounced within the non-agricultural population.	Occupation score based on average education in occupation.	Sons' and parents' birthplace required to match exactly. +-3 years difference in age across census observations was allowed. For names, the linking method required that Soundex phonetic codes for first and last name match exactly, keeping the potential match with the closest name distance.	Sample weights for survey data.
Ward 2023	Data: Linked historical Census data 1850-1940 using the Census Linking Project. Panel Study of Income	Intergenerational mobility for the 1840 cohort stood at 0.83, more than four times the figure reported in Song et al. (2020), suggesting that including	Adjusted Occupation Score (as in Song et al. 2020): Occupation Score within Race and Region. IV: use father's second observation as instrument for first.	Census Linking Project, conservative: exact first and last name string matches (nonstandardized); first name, last name, and birthplace combinations	Census data weighted to match the adult son population's characteristics

	Dynamics (PSID) 1968-2019. Sample: Father-Son Pairs, including Black Americans. Ages: One-father observation sample: sons aged 0-14 in "parent" census; sons aged 25-55 in the "son" census. Two-father observation samples: fathers aged 25-55. sons aged 0-14 in the first "parent" sample; fathers age closest to 40 (within 25-55 bound) for second observation.	Black Americans and multiple fathers' occupation measurements reversed our understanding of intergenerational mobility in early America. While the correlation decreased to 0.63 by the 1880 cohort, it increased again to 0.7 for the 1910 cohort. By the 1960 cohort, the estimate had dropped to 0.44, and in 1980, reached 0.37, broadly in line with Song et al. (2020)'s estimate of 0.31 and Chetty et al. (2014)'s estimate of 0.34.	Robustness: Altham statistic. He finds that using multiple fathers' observations still matters. Averaging sons' multiple observations does not make a difference. IV results are similar to using multiple fathers' observation averages. Adding non-Black minorities does not affect results. Unchanged results using imputed earnings based on race/region/occupation. Results similar when looking at different sons' ages.	unique within +-2 years of birth year. Robustness: uses names to infer socioeconomic status. Results close to the IV method. Use first names for women's names – small differences, suggests less mobility. Use less conservative linking measures, resulting measurement error alleviated using IV.	on race, age, occupation category, residence region, urban location, and internal migrant status. Robustness: no difference when weighting using father's rather than son's demographic information. No difference accounting for family size.

Jácome et al. 2024	Data: 15 different surveys that necessarily include: (1) current family income; (2) father's occupation in childhood; (3) race; (4) region of birth or childhood. Sample: Representative Father-Child pairs, including Black Americans and other minorities; women. Ages: respondents aged 30-50.	Intergenerational mobility for the entire sample increased between the 1910s-1940s cohorts, thereafter remaining stable through the 1970s cohorts. Starting with the 1930s cohorts, their estimates are close to Song et al. (2020)'s estimates. Married white women's ability increased over the entire period, while single white women experienced gains in the 1910-1940 period, and saw backsliding thereafter. Black men saw consistent increases in mobility over the entire measured period. Black women saw a significant decrease in mobility in the between the 1910-1930	Self-reported income of children – Predicted income of parents based on reported fathers' occupation. Robustness: When using occ.-occ. or occ.-predicted income (for men), the persistence decline is more limited. If using pred. income – pred. income instead of self-reported income – pred. income, results are similar. This suggests that rise in male mobility comes from within-occupation improvements in earnings of sons compared to fathers. Results change little when using different parental income measures, such as IPUMS occscore or nearest Census income. Results are	No Linking: Father and Child information included in same surveys.	Sample weights and re-weighting to be representative of sex x race shares.

		cohorts, significant improvements in the 1930-1960 cohorts, and mild worsening by the 1970 cohort, particularly for single Black women.	similarly robust to using father's education, among others. Results also remain same when looking at different sons' ages to account for potential life-cycle bias.		
Buckles et al. 2023	Data: Linked historical Census data 1850-1940 using. Sample: Black and White, Men and Women. Ages: One-father observation sample: sons aged 0-14 in "parent" census; sons aged 25-55 in the "son" census. Two-father observation sample: second father observation up to 20 years away from first.	Looking at the entire sample, intergenerational mobility was increasing between 1830-1890 cohort, and stayed the same in the 1890-1910 cohorts. For White Father-Son pairs, intergenerational mobility increased rapidly in the 1840-1880 period, but started to decrease in the 1890-1910 period. Women's intergenerational mobility was increasing in the entire 1834-1910 period.	Adjusted Occupation Score (as in Song et al. 2020): Occupation Score within Race and Region.	Census Tree: combines Family Tree data (user-made genealogy links); uses subset to train a machine-learning to apply to the data to create links; supplements with Census Linking Project and Census MLP. Compares to conservative Census Linking Project within paper and finds similar intergenerational mobility estimates. Robustness: estimates similar when using Census	Authors use a probit model to predict inclusion in the linked sample based on demographics, migration, broad occupation categories, and geography. Robustness: unweighted

				Linking Project or Family Tree alone.	estimates are mostly similar, but differences emerge in the 1840-1860 periods between Census Tree and Census Linking Project.
Althoff et al. 2024	Data: Social Security Applications Data (applications started in 1935); Linked historical Census data 1850-1940. Sample: Black and White, Men and Women. Ages: sons aged 13-16 in "parent" Census;	Intergenerational mobility for the 1870-1910 cohorts seems to have been stable for all groups. The levels of intergenerational mobility appear to be slightly higher than found by other papers, but comparable.	LIDO (Saavedra and Twinam, 2020) – adjusted occupational income score, adjusted using machine learning based on industry, occupation, and demographics (including location). Robustness: using occscore instead of LIDO results in similar, but smaller estimates.	Three-stage linking: linking SSN applicants to census records: first and last name with spelling variations, state of birth, and year of birth within +– 5 years. Linking applicants' parents to census records: based on household information obtained from above match.	Weights similar to Buckles et al. (2024).

	sons aged 20-54 in the "son" Census.			Census records over time: based on SSN matches to Census above.	
Abramitzky et al. 2021b	Data: Linked historical Census data. Sample: White Men. Ages: sons aged 0-16 in "parent" Census; both sons and fathers aged 30-50 when measuring labor market outcomes.	Intergenerational mobility for white men measured for 1880 and 1910 cohorts remained stable.	Income score predicted using occupation, state, age and occupation-by-region fixed effects. Robustness: using actual income for the later (1910-1940) cohorts; using alternative adjustments and samples.	Census Linking Project: exact matches by full (nonstandardized) name and age. Sample restricted to individuals whose first and last names are unique within +– 5 years of birthyear. Robustness: alternative name and age band matching, alternative weighting year. Using Expectation Maximization algorithm (Abramitzky et al. 2020).	Unweighted. Robustness: Weighted to match population characteristics on age, state of residence, birthplace, and occupation. Robust to both father or son Census characteristics.
Collins and Wanamaker 2022	Data: Linked historical Census Data; OCG Surveys; NLSY79. Sample: White and Black Men.	Interegenerational mobility for white men measured for 1870 and 1920 cohorts remained stable. Black men's mobility higher but	Income score based occupation, within Race, Region, and Gender.	Ferrie's (1996) linking method intersected with Abramitzky et al. (2021a): (1) Exact match on last name, first four letters of first name,	Inverse propensity score weights, as in Abramitzky et al. (2021a)

	Ages: sons aged 0-17 in the "parent" Census; sons aged 20-47 in the "son" Census.	increasing over the same period.	Robustness: Alternative income score assignment procedures,	place of birth, race, +-5 year age bin. Closest match on age chosen (if <10 potential matches) (2) Same as (1), but allows for standardized names and must be exact match within +– 2 year age bin.	robustness checks, Buckles et al. 2023, and Althoff et al. 2024.