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THE GILDED AGE AND BEYOND: THE PERSISTENCE OF ELITE WEALTH IN AMERICAN HISTORY

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ABSTRACT

Is the top tail of wealth a set of fixed individuals or is there substantial turnover? We estimate upper-tail wealth dynamics during the Gilded Age and beyond, a time of rapid wealth accumulation and concentration in the late 19th and early 20th centuries. Using various wealth proxies and data tracking tens of millions of individuals, we find that most extremely wealthy individuals drop out of the top tail within their lifetimes. Yet, elite wealth still matters. We find a non-linear association between grandparental wealth and being in the top 1%, such that having a rich grandparent exponentially increases the likelihood of reaching the top 1%. Still, over 90% of the grandchildren of top 1% wealth grandfathers did not achieve that level.

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Extreme wealth inequality has reemerged as a pressing concern in the United States, with the share of wealth going to the top reaching levels not seen since the Gilded Age of the late 19th and early 20th centuries (Kopczuk and Saez, 2004; Piketty et al., 2018; Saez and Zucman, 2016; Smith et al., 2023; Williamson and Lindert, 1980). This raises a fundamental question: are the families at the top of the wealth distribution fixed, or is there significant turnover? If the same families maintain their extreme wealth across generations, it could reflect the presence of an entrenched elite that accumulates wealth exponentially, as warned by Piketty (2014). On the other hand, high turnover would suggest a more dynamic economy with greater opportunities for upward mobility.

Despite the growing body of research on economic mobility, our understanding of top-tail wealth dynamics in the United States remains limited. This is largely due to the stringent data requirements for estimating upper-tail mobility. Researchers need data that (1) includes enough observations to precisely identify the top tail (i.e., top 1%), (2) tracks families within and across generations, and (3) reliably measures wealth. Modern-day survey data that capture wealth, like the Panel Study of Income Dynamics or the Survey of Consumer Finances, are either too small or too short in duration.[1] Income tax records are both large and longitudinal, but they do not directly measure wealth. While recent advances have been made in backing out wealth from income tax records, tax data are not yet multigenerational, and therefore may miss the importance of extreme "generational wealth" held by families like the Rockefellers and Vanderbilts and their descendants.[2] Thus, a historical perspective on wealth mobility is particularly useful.

In this paper, we use linked census data (1850-1940) of tens of millions of people to estimate the persistence of being extremely wealthy throughout an individual's lifetime, from parents to children, and from grandparents to grandchildren. This period covers the Gilded Age (1870-1913) and beyond, an important era of American history. The Gilded Age mirrors today's rise in inequality in many ways: rapid technological advance and the dominance of big business helped a small elite accumulate massive fortunes. This concentration of wealth led to concerns over fairness and opportunity and was a force leading to the introduction of antitrust laws in 1890 and 1914, the modern estate

[1] Additionally, there is concern that the PSID is not representative of the top 1% of wealth (Pfeffer et al., 2016).

[2] Researchers have backed out aggregate wealth shares by capitalizing different income streams (the "capitalization method") (Saez and Zucman, 2016; Smith et al., 2023). However, capitalizing income is less accurate for pinpointing individual wealth.

tax in 1916, and progressive income taxes in 1913.[3] Today's policies targeted at curbing inequality have their roots in this period.

To build the data, we take advantage of recent breakthroughs in census linking that allow us to track a much larger number of people across censuses. This is particularly useful for studying small subgroups like the top 1%. We use new links from the Census Tree (Buckles et al., 2023) to merge full-count historical Census data (1850-1940) (Ruggles et al., 2024), creating three distinct datasets. First, we have an intragenerational dataset that follows about 85 million individuals over a 10-year period. This sample is about 100-1,000 times larger than those used in past studies to estimate wealth mobility between 1860 and 1870 (Ager et al., 2021; Dupont and Rosenbloom, 2022; Kearl and Pope, 1984; Steckel et al., 1990), and about 4,000-15,000 times larger for the entire 1850-1940 period. Second, we have an intergenerational dataset with 34 million children linked to their parents. Third, we have a multigenerational dataset of nearly 15 million grandchildren linked to their parents and grandparents, which is the largest 3-generational sample to our knowledge. We then weight the linked data to be representative using inverse probability weights, and specifically weight it to be representative of top wealth families (Bailey et al., 2020). With these large datasets, we provide the first comprehensive, large-scale analysis of mobility among the top 1% across the entire United States.[4]

To proxy for the upper tail of wealth, we use real estate or personal property values from the Census (available 1850-1870 and 1930-1940), measures which others have used to proxy for wealth (Ager et al., 2021; Derenoncourt et al., 2023; Sutch, 2016; Soltow, 1975).[5] An immediate and serious concern is measurement error. Although we lack comprehensive net wealth data in all periods, we show with census and PSID data that churn in top real estate values is similar to churn in overall net wealth. We also do extensive tests to address important measurement issues discussed in the historical

[3]Financing World War I was a key driver for passing the modern estate tax in 1916, but there were long-standing concerns over building wealth during the period (Eisenstein, 1955).

[4]Using the 19th Century data, others have examined the wealth accumulation of individuals for smaller geographic regions or subgroups (Ferrie, 1994; Galenson and Pope, 1989). Previous research has looked at downward mobility for descendants of the Plantation Elite in the South (Ager et al., 2021; Dupont and Rosenbloom, 2018); our study expands the focus to estimate entry into the elite, covers the entire United States, and extends the time period beyond the Civil War. Rockoff (2008) examines mobility of the very rich by linking rich lists of individuals (akin to the Forbes 400) between 1892 and 1902.

[5]The 1850 Census contains information on real estate wealth, and the 1860 and 1870 Censuses contain information on real estate and personal property wealth. The 1930 and 1940 Censuses record home values, but only for home owners. Chetty et al. (2020) also use home value reports in the American Community Survey to proxy for wealth.

literature, such as linking error (Bailey et al., 2020), transcription error (Abramitzky et al., 2021; Ghosh et al., 2023), and reporting/recording error (Ward, 2023).

Besides measurement error, a limitation of the property values is that they were not recorded between 1870 and 1930 − during the critical Gilded Age period. To bridge this gap, we use an alternative proxy that is emblematic of the Gilded Age: the presence of multiple live-in servants in the household. Employing live-in servants has long been recognized as a measure of high status and wealth (Veblen, 1899; Airoldi and Moser, 2024; Querubin et al., 2013; Sutch, 2016) as it requires one to be rich enough to employ them, and a large enough home to house them. Between 0.1% and 0.6% of households had multiple live-in servants, depending on the year. A clear advantage of this measure is that enumerating servants is far less likely to contain error than property valuations. However, this servant proxy also has disadvantages, like that it captures cultural/consumption preferences in addition to wealth. Nevertheless, we find that the servant proxy yields similar levels of downward mobility from the top compared to real estate and personal wealth proxies, in years where both measures are available.

We uncover several new findings about the dynamics of the wealthy elite. First, the top tail is not a fixed group. Rather, there was a substantial turnover. About 85% of the top 0.1% fall out of this category within ten years, and 72% of those in the top 1% of wealth fall out of this category within ten years. The rate of downward mobility out of the top 1%, based on age-adjusted ranks, survives a battery of robustness checks. It holds when using the multiple live-in servants proxy, where 71% of those with multiple servants in one census do not have them in the next. It also holds when using an average of nearby neighbor's wealth, which, due to averaging, may be less prone to reporting errors than individual self-reported wealth (Logan and Parman, 2017). It holds when using an average of two prior wealth reports, which further reduces measurement error (Solon, 1992); and it holds when limiting the sample to households where we can link multiple people (e.g., both husband and wife) across censuses, which reduces concerns about false positives (Bailey et al., 2020). While high turnover may be surprising and could be overstated due to the poor data quality, it is consistent with recent evidence with high-quality wealth data from Norway that only 17% of the top 1% remain there decades later (Ozkan et al., 2023).[6]

[6]Based off Figure 5b in Ozkan et al. (2023) where 61.5% of the top 0.1% are in the top 1%, while 12% of the 99-99.9% are there. A weighted average (0.1(61.5)+0.9(12)) of the two is 17%. This finding is also consistent with modern US data, albeit from a much smaller sample from the Panel Study of Income Dynamics. We

When turning to the analysis of the multi-generational data, we find that 93% of grandchildren with a grandfather in the top 1% of wealth are not themselves in the top 1%. This high rate of downward mobility also survives several robustness checks, including for a sample where *both* paternal and maternal grandparents are in the top 1% (86% downward mobility rate). It also holds when limiting the sample to only genealogical links from the Family Tree, which are less likely to contain false links than the overall Census Tree.

Our findings challenge the notion of a persistent, entrenched wealthy elite and instead suggest a more dynamic picture of the extreme upper tail during this period. This finding supports the view that exceptional wealth stems from outlier entrepreneurial ability, and/or luck, which do not necessarily transmit across generations (Sutch, 2016). Additionally, many of the very rich may have spent a significant portion of their wealth on consumption or philanthropy, resulting in their descendants being well-off but not extremely wealthy. The results hold during a period of low relative mobility for the overall population (Jácome et al., 2025; Ward, 2023) indicating that high turnover in extreme tails occurs even in times of reduced overall mobility.

While most fall out of the top tail, extreme wealth still matters. The data reveals a highly nonlinear relationship between a grandfather's wealth rank and the likelihood that a grandchild is in the top 1%. Grandfather's wealth weakly predicts being in the top 1% across most of the wealth distribution, but the likelihood increases sharply at the top of the grandparental wealth distribution. We find that 13.5% of top 0.1% wealth grandfathers are in the top 1%, compared to only 4% of descendants of 98th percentile wealth grandfathers. That is, it helps to have a filthy rich grandfather rather than a merely rich one. Similar non-linearities in wealth mobility have been observed across two generations in Sweden (Björklund et al., 2012; Black et al., 2020) and Denmark (Boserup et al., 2018), and across three generations in Sweden (Adermon et al., 2018). We are the first to show this multigenerational relationship in the United States. Advantage did not just show up in wealth proxies: we also find non-linear relationship between grandfather's rank and top-coded wage income and having a college degree in 1940. These results mirror the modern-day non-linear relationship between parental income rank and attending an elite university (Chetty et al., 2020).

do not directly compare our results to the PSID because of concerns over the representativeness of the PSID for top wealth (Pfeffer et al., 2016).

This paper's contribution is that it is the first large-scale study of upper-tail wealth mobility that spans both one and multiple generations in the United States, contributing to the large literature on the evolution of American wealth inequality (Derenoncourt et al., 2023; Dray et al., 2023; Kopczuk and Saez, 2004; Kuhn et al., 2020; Piketty, 2014; Saez and Zucman, 2016; Smith et al., 2023; Williamson and Lindert, 1980). Most existing research estimates the trend in cross-sectional wealth inequality without estimating movement into and out of the top tail. Our intragenerational results suggest that cross-sectional wealth inequality is overstated relative to multi-year wealth inequality, similar to research that shows annual income inequality overstates permanent income inequality (e.g., Kopczuk et al. (2010); Splinter and Larrimore (2024)). Our across-generational estimates add to a small literature on post WWII wealth mobility that is mostly based on the PSID (Charles and Hurst, 2003; Pfeffer and Killewald, 2018), and thus does not focus on top-tail dynamics.[7] In contrast to *wealth*, many high-quality *income* mobility estimates exist based on tax data (Auten et al., 2013; Chetty et al., 2014; Guvenen et al., 2021; Splinter and Larrimore, 2024), but top-tail income and wealth dynamics may differ due to the more extreme wealth distribution and also due to inheritance (Adermon et al., 2018; Black et al., 2020; Boserup et al., 2018).

This paper contributes to the literature on historical intergenerational and multigenerational mobility, which often relies on occupational-based measures that can miss extreme outliers.[8] For instance, John D. Rockefeller Sr. would be assigned same income as all other "managers."[9] We replicate the analysis using occupation ranks and show that they fail to identify the same nonlinear benefit from descending from the super rich. Our finding of high turnover in the top 1% might be surprising, given research showing that elites recover from war and revolution (Ager et al., 2021; Alesina et al., 2020). However, our study differs because we can measure elite status of *both* ancestors and descendants. Others with smaller datasets identify elite ancestors and then estimate whether descendants above average or in the top quartile, but do not estimate whether descendants are themselves in the top 1%. Because we observe both those who start and end as elites, we show both downward mobility out of the top 1% and upward mobility into top 1%. These

[7]Others have used rich lists, like the Forbes 400, to estimate mobility (Gomez, 2023), which captures a more extreme tail (roughly the top 0.0003%) than the top 1%.

[8]For recent examples, see Abramitzky et al. (2021); Bleakley and Ferrie (2016); Buckles et al. (2023); Collins and Wanamaker (2022); Dupont and Rosenbloom (2022); Feigenbaum (2018); Jácome et al. (2025); Long and Ferrie (2013); Olivetti and Paserman (2015); Parman (2011); Tan (2023); Song et al. (2020); Ward (2022, 2023). See Feigenbaum (2018) for a comparison of income and occupational mobility for linked data between 1915-1940. We differ by using wealth proxies and focusing on the upper tail.

[9]His occupation was listed as "oil merchant", which would be "Managers, officials and proprietors (not elsewhere classified)." in OCC1950 codes.

upward mobility results relate to papers who research the socioeconomic background of elite professionals, like academics (Airoldi and Moser, 2024; Abramitzky et al., 2024), civil servants (Moreira and Pérez, 2022), and legislators (Dal Bó et al., 2009; Thompson et al., 2019).

Finally, we also show how top-tail mobility varies across space, which contributes to research on *where* in the US the land of (extreme) opportunity was (Chetty et al., 2014, 2018; Connor and Storper, 2020; Tan, 2023). Our findings reveal significant spatial variation in top-tail mobility and show that this variation was not stable over time. For example, individuals in the South experienced limited downward mobility compared to those in the North before the Civil War; however, this regional pattern flipped after the war and the resulting wealth destruction. Additionally, we find that individuals who happened to have grandparents in more dynamic areas of the country, particularly cities in the Northeast and Midwest, were more likely to enter the top tail. However, we emphasize that these patterns across space, and all results in this paper, are descriptive rather than causal, as the primary goal is to provide the first statistics on top-tail mobility across the entire United States.

I. Brief historical background

Following wealth compression during the Civil War, the Gilded Age (1870-1913) was a period of rapid wealth accumulation, as the ratio of private wealth to GDP increased from 200% following the aftermath of the Civil War to almost 500% before World War I (Dray et al., 2023).[10] Technological improvements combined with a growing population, driven in large part by immigration, allowed entrepreneurs to scale up their businesses and amass fortunes in natural resources (oil, coal, and timber), transportation (rail, trams, and autos), finance, agriculture or food processing (tobacco, sugar, meat-packing), and real estate (Rockoff, 2008; Watkins, 1907; King, 1915).[11] While estimates of wealth inequality during this period are scarce due to limited data availability, most suggest that inequality

[10] The dating of the Gilded Age varies: Rockoff (2008) uses 1870-1899, whereas Sutch (2016) uses 1870-1917. The term comes from a 1873 novel by Mark Twain and Charles Dudley Warner.

[11] As Klein (1921) colorfully wrote at the time: "Dynastic Europe is dead, but the dynasties in America flourish. There are more dynasties in the United States than ever existed in the old world; and their wealth-power is greater than all the King-power combined. Theirs is the power of life and death over the whole human race. There is the Dynasty of Oil and the Dynasty of Copper, the Dynasty of Beef and the Dynasty of Coal, the Dynasty of Steel and the Dynasty of Railroads, the Dynasty of Gas, Electric Light and Traction, and the Dynasty of Ships, the Dynasty of Tobacco, the Dynasty of Rubber, the Dynasty of Sugar, the Dynasty of Telephone and Telegraph, and the Dynasties of a hundred other things in essential use by the people."

was rising between 1870 and 1913 (Alfani, 2023; Piketty, 2014; Lindert and Williamson, 2016), despite a narrowing of the Black-white wealth gap (Derenoncourt et al., 2023). After the introduction of the income tax in 1913, more accurate data on top shares of wealth became available, which suggests the top 10%, 1%, and 0.1% held a greater share of wealth between 1913 and 1929 than at any other point since then, including today (Saez and Zucman, 2020).

The rapid accumulation of wealth did not go unnoticed. Many rich households displayed their wealth in the form of large opulent estates that employed many servants, resembling the European aristocracy (George, 1879; Veblen, 1899). Much of this wealth accumulation occurred in the growing cities of the Northeast and Midwest, as the South lagged in the transition to a modern economy after the Civil War (Dray et al., 2023; Williamson and Lindert, 1980). Many journalists highlighted the stark contrast between the elite's extravagant wealth and the poor's harsh living and working conditions (Riis, 1890; Sinclair, 1906). These works helped galvanize public support during the Progressive Era to curb inequality through measures such as trust-busting, progressive income taxation, and estate taxes.

Wealth and income inequality began to decrease at the start of the Great Depression but remained high. Saez and Zucman (2020) estimates the top 1% wealth share fell from 48.7% in 1929 to 39.0% in 1940, both higher than 34.9% in 2022.[12] Important for our study's data, which relies on home values as a wealth proxy in 1930 and 1940 as discussed in the next section, home values crashed during the Great Depression between 1929 and 1934, before slightly recovering by 1940. There was a 25% drop in home values in cities between 1930 and 1940, with a starker 67% drop in Manhattan, particularly in high-end properties (Fishback and Kollmann, 2014; Nicholas and Scherbina, 2013). As our study covers both more turbulent decades (e.g., Great Depression and the Civil War), and the more stable pre-Civil War decade and Gilded Age, it will be important to test how churn in the top tail changes over time.

[12]Estimates based on data from https://wid.world/country/usa/, accessed June 2024. Geloso et al. (2022) argue that top *income* shares are lower than Piketty, Saez, and Zucman's estimates, with most disagreement in the decline rate occurring after World War II. Research has yet to update top *wealth* shares pre-World War II.

II. Data

II.A. Linked Data

The data are created from a combination of the complete-count censuses between 1850 and 1940, provided by IPUMS-USA (Ruggles et al., 2024), and the Census Tree links (Buckles et al., 2023). We measure upper-tail dynamics using three distinct data structures: intragenerational (tracking the same individual over 10-year spans)[13], intergenerational (tracking parents and their children)[14], and multigenerational (tracking parents, their children, and their grandchildren). Because the proxy for elite households varies by census year due to availability, we construct separate "wealth samples" (using wealth proxies in the 1850-1870; 1930-40 censuses) and "servant samples" (using servant proxies in the 1880-1940 censuses).

To construct these datasets, we first merge (or "chain") multiple Census Tree links together to track a person over their entire life.[15] This is the "intragenerational dataset." We track people for more than 10 years, but our analytical sample will focus on 10-year changes because our preferred wealth measures discussed in the next section (real estate and personal property) are available at 10-year intervals. Our target population is 25-55-year-old individuals at first observation.

To create the intergenerational dataset, we take a person in the intragenerational dataset and simply merge in their father's and mother's information when they are a child in the same household. Because the intragenerational dataset tracks people more than 10 years apart, we can compare a parent's wealth to his child's wealth when the child is an adult 20, 30, or 40 years later. This is our "intergenerational dataset."

Finally, we build the multigenerational dataset by locating multigenerational linkages within the intergenerational dataset. That is, we find the subset where the child in a parent-child link also becomes a parent in a later parent-child link. We provide comprehensive details on the dataset construction in Appendix B. For these across-generational datasets, we focus on children aged 0-14 at first observation who can be traced to their subsequent adult outcomes within the 25-55 age range.

[13] Specifically, the ten-year links are 1850-1860, 1860-1870, 1870-1880, 1900-1910, 1910-1920, 1920-1930, 1930-1940.

[14] The parent-child links track individuals from childhood to adulthood in 1880-1910, 1900-1930, 1910-1940, 1920-1940

[15] The Census Tree releases only pairwise links between 2 censuses (e.g., 1850-1860 or 1850-1870), but not a single dataset that tracks a person throughout their entire life.

One issue with this approach is that the enslaved cannot be linked because they are not enumerated by name. We follow the approach of Ward (2023), where we append a sample of 1870 and 1880 Southern-born Black individuals to our linked samples, and assume that they started at the bottom of the wealth distribution 10 years prior. We also do this for the intergenerational and multigenerational datasets, where if we observe a Black adult in the South in 1870 or 1880, we assume their parent or grandparents were outside the top 1%. See Appendix B for more details.

The final sets of linked samples are shown in Table 1. Note that an individual may be observed more than once in the intragenerational dataset; for example, if they both linked between 1850-1860 and 1860-1870, they would counted as two observations. However, the intergenerational datasets contain unique observations where the son or daughter is only observed once as a single row in the dataset. For these samples with multiple descendant observations, we prefer child or grandchild outcomes when they are closest to age 40.

Table 1: Sample sizes for analysis

Dataset	**Number of Individuals**
Intragenerational sample	85,656,167
1) Wealth sample (1850-1860, 1860-1870, 1930-1940)	34,610,665
2) Servant sample (1900-10, 10-20, 20-30, 30-40)	78,774,354
Intergenerational sample	
3) Servant sample (1880-1940 censuses)	34,003,181
Multigenerational sample	14,687,376
4) Wealth sample (1850-1870 for G1, 1930-1940 for G3)	6,862,377
5) Servant sample (1880-1940 censuses)	7,824,999

While the data are large, there are two important limitations when using linked historical census data (Bailey et al., 2020). First, because the censuses are fuzzily matched on observable characteristics like first name, last name, birth year, and birthplace, some individuals may be falsely linked to people with similar name, age, and birthplace combinations (the "John Smith" problem). This issue of false positives is extremely important for our research question because false positives mechanically increase the rate of downward mobility from the top. We will show how our results are robust to samples that we are more confident in the linkage, such as where multiple people within the household are linked across censuses, or when using only genealogical links made on FamilySearch, which are flagged in the Census Tree linked data.

The second problem with linked data is that linkages are nonrandom, which leads to concerns about the representativeness of the sample. To address this issue, we follow the suggestion of Bailey et al. (2020) and use inverse propensity weights such that the datasets are representative of observable characteristics (see Appendix B.2 for discussion). For this model, we include observables like age, race, marital status, relationship to household head, and geographical features. Importantly, we include indicators for whether someone in the top 1% or has multiple servants, and *interact* these indicators with the demographic and geographic variables.[16] We do this to ensure that the top 1% in our linked sample is representative of the top 1% on observable characteristics. We discusses our proxies for elite wealth in the next section.

II.B. Proxies for wealth based on real estate and personal property

We use a variety of proxies for wealth shown in Table 2. The best information on wealth comes from the 1860 and 1870 Censuses, which record self-reports of the value of real estate and personal property. Many have used these variables to estimate wealth inequality in the 19th Century, and these estimates are then compared to the inequality estimates based on income tax data that start in 1913 to estimate the trend in wealth inequality between the 19th and early 20th centuries (Soltow, 1975; Piketty, 2014; Sutch, 2017). Real estate property is the gross value of one's real estate portfolio. Personal property includes most all other property (cash, stocks, bonds, livestock, etc) and in 1860, this means that it included wealth in the form of enslaved individuals.[17]

Table 2: Wealth proxies available in the US Census

Proxy ↓\Census →	1850	1860	1870	1880	1900	1910	1920	1930	1940
Continuous proxy									
Real Estate Property	Y	Y	Y						
Personal Property		Y	Y						
Home Value								Y	Y
Servant proxy									
Live-in Servants				Y	Y	Y	Y	Y	Y

[16] As discussed in the next section, the top 1% is based on real property in the 1850 Census, the sum of real and personal property in the 1860 and 1870 Censuses, and home values in the 1930 and 1940 Censuses. We calculate top 1% by age cohort (rounded to nearest 5 year).

[17] The 1870 Census does not include reports of less than 100 dollars and also does not include clothing. Because we largely focus on the top tail, this restriction does not impact estimates.

After 1870, the next wealth proxy appears in the 1930 and 1940 US Censuses, which reported home values. The 1930 Census included only non-farm households, while the 1940 Census added farm households but excluded agricultural land values, potentially missing extreme wealth in agriculture. However, agriculture was a minor source of wealth for most wealthy Americans in the late 19th and early 20th centuries, with historical rich lists (1892 and 1902) showing less than 1.7% of wealthy individuals deriving wealth from agriculture (Rockoff, 2008). To address this limitation, we use alternative proxies like the servant-based measure.

Fortunately for us, we can directly test whether missing home values for farms affect results thanks to a flawed ordering of questions in the 1930 Census. The question about living on a farm − which should have stopped enumerators from recording the home values− came *after* the home value question. As a result, 16% of individuals on farms in our dataset have observable home values. IPUMS removed these home values from the publicly-available data to adhere to the original census instructions. So to obtain these values, we retrieved the original Ancestry.com transcriptions, and add farm home values back into the dataset for a robustness check. This check will show that rich homes on farms, if anything, had greater downward mobility than non-farm households, likely because agriculture was a declining industry. This result supports our general argument that most individuals dropped out of the top 1%.

Dealing with non-ideal data. The use of home values or real estate as a proxy raises questions about its accuracy in capturing total net wealth, particularly for the top percentiles.[18] There are two related issues: first, real estate values fail to capture net wealth; second, even the property values we do observe measure the underlying values with error.

First, while real estate values fail to capture total net wealth, it is unclear whether it would bias us toward higher or lower churn in the top 1%.[19] Home values were more equally distributed than total wealth, which might cause us to overstate churn because it is easier to jump into or fall out of the top. At the same time, home values may be

[18] One issue is that real estate property is reported at gross rather than net value. Steckel (1994) argues that since mortgages required large down payments and had short terms, the gross value in the 1850-1870 censuses likely reflects net value. Supporting this, Snowden (2003) notes that in 1890, 72% of homes were owned outright; however, in 1940, this figure was 55%.

[19] Estimates by Saez and Zucman (2016) show that housing wealth, net of mortgages, made up only 20-25% of total household wealth from 1913 to 1940, indicating that other important components of wealth like bonds, equities, and business wealth (partnerships or sole proprietorships), are not always observed.

more stable than other assets, causing us to understate churn. We can test how a limited view of overall wealth affects mobility estimates. For 1860-1870, we will show differences in mobility estimates using total observed wealth versus just real estate property. For modern data, we will also show in PSID data that persistence in the top 1% is similar when using either total wealth or housing wealth. The results from both of these tests suggest we are unlikely to overstate churn in the top tail.

The second issue is that values we do observe written in the Census measure the "true" underlying values with error. Respondents often rounded their estimates of property values as Census enumerators were instructed to accept "near and prompt estimates" as "exact accuracy may not be arrived at." To assess these errors, Steckel (1994) links federal census reports to Ohio and Massachusetts property tax lists and argues that misreporting was more common at the bottom of the distribution than at the top. Nevertheless, we will test the robustness of results to measurement error to reduce noise, like averaging multiple wealth reports (Solon, 1992) or averaging the wealth reports of close-by neighbors, as proxied by order of enumeration of the census sheet (Logan and Parman, 2017).

Creating individual wealth ranks. We use individual wealth when measuring movement into and out of the top 1%.[20] To ensure consistency with the intergenerational mobility literature (Chetty et al., 2014), we percentile rank wealth by year and age group (rounded to the nearest five years). One issue to note is that our proxy for wealth is often based on real estate and home values, but a substantial fraction of young individuals do not own real estate. In 1930, for instance, 86% of 25-year-olds did not own property. Assigning percentile ranks to the bottom of the wealth distribution is inherently ambiguous, as it is unclear whether non-homeowners should be placed at the minimum (0), maximum (86), or middle (43) of the percentile range. While we assign the maximum, given this ambiguity, we focus our analysis on transitions to the top percentiles that are not impacted by this issue.

[20]From the 1850-1870 Censuses, wealth was reported individually. For parents (heads of household and their spouses), we sum their individual wealth. In the 1930 and 1940 Censuses, home values are reported for the entire household. We assign this value to the parents. For all others (children, grandchildren, other relatives, servants, etc.) are assigned zero home value. While there were no top-codes in the original manuscripts, IPUMS top-codes these variables at about 1 million dollars, which applied to 487 individuals (top 0.00001%) in the 1870 full-count census

II.C. Live-in servants as a proxy

The continuous wealth proxies are only available in certain years and leave a large gap between 1870 and 1930. Starting with the 1880 Census, it is possible to identify live-in servants because of a newly added question about each individual's relationship to the household head, of which "servant" was a category.[21] We identify upper-class households as those that have *multiple* live-in servants, as many middle-class families hired a single live-in servant (Dudden, 1986), despite a full-time servant earning a wage income at the 24th percentile (annual income of $600 in 1940). Indeed, Figure A.1 shows many households across the 90-98th percentiles of the 1930 home value distribution had one servant, but having multiple live-in servants only became more common above the 98th percentile.

A key question is whether having multiple live-in servants accurately captures the upper tail of the wealth distribution. We provide four pieces of evidence in Figure A.2 to show that live-in servants capture the upper tail well, but still with some error. First, the share of households with live-in servants (0.1-0.6% between 1880-1940) is *temporally* correlated with the share of wealth going to the top 1% before 1950.[22] Second, there is a *spatial* correlation between high housing wealth and servants at the state level: states that had a high 90th percentile of home values also had a higher share of households with live-in servants, with a R-square of 0.67. Third, 80% of the top 400 taxpayers in 1923-1924 linked to the 1920 Census had multiple servants (Marcin, 2017). Finally, there is a sharp increase in the likelihood of having multiple servants at the top percentiles (98th+) of home values, while there is not for the top percentile of earning scores. A clear drawback of the servant proxy is that only 15 percent of households in the top 1 percent in 1930 were observed with multiple servants, indicating that many rich families did not have multiple servants.

[21] Before 1880, it is not possible to distinguish between employees of the household head or roomers/boarders. For the 1850 to 1870 Censuses, IPUMS-USA reconstructed the relationship to the household head based on enumerator ordering within the household, ages, and surname. It is not possible to differentiate between boarders or servants within the earlier data. We define live-in servants based on the IPUMS variable RELATE, and include those listed as employees of the household head and hold one of the following occupations based on OCC1950 codes (in parenthesis): teacher (93), private dressmaker (633), taxi cab drivers and chauffeur (682), private household service workers (700-720), attendants (731), charwomen and cleaner (753), cook (754), practical nurses (781), and waiters/waitresses (784). If the household head is a clergyman, or operator of a boarding or lodging house, then we do not code them as having multiple servants.

[22] The share of households with multiple servants started at 0.4% in 1880, increased to 0.6% in 1900, and then dropped over time to about 0.1% in 1940. Improvements in household technology, increased education, and increased demand for clerical and sales jobs led many servants to transition to clerical work by 1950.

While the servant proxy is far from perfect, we emphasize that it is an improvement upon existing occupational-based measures to estimate upper-tail dynamics. For instance, imputing income based on occupation and observable characteristics like race and location (similar to (Collins and Wanamaker, 2022)) suggests that rich households did not hire many more servants than lower-income households (see Panel D in A.2), which contrasts with the home value measure. Income scores mostly identify white northeastern physicians or lawyers as elite, but this often misses rich entrepreneurs.

III. Within-lifetime Mobility

III.A. Baseline results

Our first finding is that there is a high degree of turnover at the top of the wealth distribution, even in just ten years. Figure 1 presents transition matrices that pool wealth transitions across 1850-1860, 1860-1870, and 1930-1940, offering a comprehensive view of the upper-tail dynamics. We will later show how transitions vary by decade.

First, Figure 1a shows the transition rates of those who start in the different percentile groups (bottom 90%, 90-99%, 99-99.9%, top 0.1%). This is the "forward-looking" transition matrix. We find that 15% of those who start in the top 0.1% remain there a decade later, meaning 85% fall out of this top group. Looking at the next richest group (99.0-99.9%, we find that 73% end in the bottom 99% (43% in bottom 90 and 30% in the 90-99). When we combine the 99.0-99.9% and top 0.1% groups, most (73.0%) of the top 1% fall out of this category after ten years.

It is important to measure not only where the wealthy end up ("forward-looking" transitions), but also where they came from ("backward-looking" transitions). Figure 1b shows this backward-looking transition matrix. Similar to the forward-looking transitions, we find that about 84% of those in the top 0.1% came from outside the top 0.1% ten years earlier. Notably, 42.7% of the top 0.1% came from the bottom 90%, or 57.3% came from the top 10%, suggesting that most were already relatively wealthy a decade prior. Unfortunately, our wealth data limits our ability to divide the bottom 90% consistently over the whole period, as many people reported zero property value.

We also find high turnover at the top when we use a different measure: the number of live-in servants (see forward-transition matrix in Figure 1c and backward-transition matrix in 1d). This result is important because the servant measure is far less likely to be subject to measurement error when reporting and recording wealth. However, recall that this measure covers a different time period (1900-1940) than the wealth data (1850-1870; 1930-1940) due to the data availability.

The forward-looking servant transition matrix shows (Figure 1c) that 41% of those with 3+ live-in servants had none a decade later, indicating substantial downward mobility from the top. Many people with 3+ live-in servants downsized to 1 or 2 servants, with only 26% maintaining 3+ live-in servants. However, there is an issue with interpreting the forward-looking matrix. Because the share of households with live-in servants declined over time, it is possible that the forward-transition matrix overstates the amount of downward mobility. But the backward-looking transition matrix, which is not affected by this downward trend, also shows significant change at the top. About 46% of those with 3 or more servants had one or fewer ten years earlier (31% with none, 15% with one), indicating significant upward mobility.

The evidence so far suggests that the top tail is a fluid group, which might lead to the naïve conclusion that initial wealth does not matter. However, this is not the case. Figure 2a shows that initial wealth rank strongly predicts ending up in the top 1%. The binscatter plot, which divides initial wealth ranks into 0.1 percentiles, reveals two key findings. First, there is a clear non-linear relationship between initial wealth and ending up in the top 1%. Those who start wealthy are much more likely to be wealthy, relative to lower percentiles. Second, as the transition matrices showed, the highest value in Figure 2a is less than 0.40. This means that less than 40% of the top 0.1% stayed in the top 1%. Initial wealth boosts chances of reaching the top 1% but does not ensure it.

These high turnover results might be because the wealth data mostly span turbulent decades: the 1860s (Civil war) and the 1930s (Great Depression). The Civil War caused significant wealth destruction, partly due to the freeing of the enslaved, and the Great Depression compressed the home value distribution, the primary proxy for wealth in the 1930s. Figure 2b plots the binscatter relationship between initial wealth rank and ending in the top 1% by census year, zooming in on individuals who started in the top 10% to make the differences across years more transparent. In all decades, there is a non-linear relationship between initial wealth and ending in the top 1%. Also, in all decades, the majority of those initially in the top 1% fell out of it. The highest retention rate is indeed in the relatively stable 1850-1860 decade, where about 55% of those in the top 0.1% ended in the top 1%. Still, in all decades, a significant portion of people in the top percentile came from outside of it.

III.B. Robustness Checks

The result that a majority of people in the top 1% (72.0% to be exact) fell out is surprising at first and could be due to poor data quality. We conduct several robustness checks on the rate of falling out of the top 1%, as shown in Figure 3. All the checks consistently indicate that about 70% of the top 1% fell out.

First, our main proxy uses all available wealth information in each census, including personal property in 1860 and 1870, but only real estate proxies in 1850, 1930, and 1940. We could use consistent measures based solely on real property across the entire sample. When doing this, the rate at which individuals fall out of the top 1% does not change much (71.4% in Figure 3).

We can also check if our limited view of net wealth biases mobility estimates by using the Panel Study of Income Dynamics (PSID), which includes both total net worth and housing wealth.[23] Figure 4 plots the rates of downward mobility from the top 10% and the top 1%. Note that the top 1% error bars are wide as the PSID is too small to provide significant precision. Two main points arise. First, downward mobility rates are remarkably similar when using total or solely housing wealth, suggesting that the limited information in the census records does not miss a group of people who remain in the top percentiles due to non-housing wealth. Second, the rate of downward mobility is also high in the PSID, where, according to the relationship between 2011 and 2021 wealth reports, about 50% of people in the top 10% in 2011 are no longer there 10 years later, and 70% of the top 1% are no longer there. Interestingly, the rate of downward mobility in the PSID (70.1%) is statistically the same as the historical census data (72.0%), suggesting that mobility at the top has remained stable over the past 150 years. However, given concerns over the representativeness of top wealth in the PSID (Pfeffer et al., 2016), further research is needed on how upper-tail mobility has changed in the long run.

A second concern is that individuals may not report their wealth accurately. This could be due to mistakes or rounding when estimating their wealth, or by intentionally lying about it. To address this, we use a different proxy for the top 1%. Because census takers recorded information by walking door to door, we can estimate very local neighborhood wealth based on nearby neighbors' wealth reports. We do this by averaging the wealth reports of the six closest neighbors on the census sheet (three above and three below the

[23]See Appendix D for details on the PSID sample.

household, excluding the individual).[24] We then percentile rank these average values. We find that 77.4% of those initially in the top 1% of neighborhood values are not in the top 1% ten years later. This result suggests that our main finding − that most of the top 1% fall out − is not purely due to errors in individual reports.

We can also implement a different check for the importance of measurement error based on averaging two prior wealth reports (Solon, 1992). We can only do this for the 1860-1870 linked sample, where we can also link individuals back to their real property report in 1850.[25] After retrieving the 1850 wealth report, we average it with the 1860 wealth report, and then percentile rank these averages. After this averaging, we find that 73.2% of those in the top 1% of average 1850-1860 wealth fall out of the 1870 top 1%. This can be compared to the 1860-1870 estimate of 77.4% (reported later), indicating that averaging does lower the rate of downward mobility by about 4 percentage points. Either way, the magnitude supports our finding of high turnover in the top wealth group.

Another major concern is that linking error causes us to overstate the amount of turnover at the top (Bailey et al., 2020). To address this issue, we do a simple check where we limit the sample to links that we are much more confident that they are correct. This subsample is of households where we can link at least 2 people in the same household across censuses. For example, it is much less likely that both husband and wife are incorrectly linked, compared to just linking a husband. When limiting the sample to this group, we find a lower rate of downward mobility (68.8%). Because this magnitude is similar to our baseline result, it suggests that our finding of high turnover is not just due to linking errors.

A major limitation of the 1930 home value data is its exclusion of farm home values. However, as previously noted, home values were mistakenly recorded for approximately 15% of farms due to enumerator error. Incorporating these values into the dataset reveals a nearly identical rate of downward mobility (72.4%) compared to the sample that excludes farm home values (72.3%, based on 1930-1940 links). Of course, this is partially because we are not adding a lot of people back in. But Figure A.8 further shows that conditional on initial home value, downward mobility was greater between 1930-1940 for those starting on farms than for those on non-farms. Therefore, if anything, we are likely slightly understating the extent of downward mobility between 1930-1940 because of missing farm home values.

[24]Everyone besides the household head and spouse is assigned zero neighborhood wealth.

[25]We maintain the age restrictions, requiring individuals to be at least 25 in 1850 and at most 65 in 1870.

We also measure downward mobility when limiting the sample to key occupations that are highly paid (Physician, Lawyers, Managers/Officials/Proprietors). These are the same occupations that are ranked at the top of income scores based on 1940 or 1950 income data. We find substantially *less* downward mobility than the wealth measures, where about 20-25 percent of those who listed their occupation as lawyer or physician were not in that same occupation 10 years later. Interestingly, there is much more downward mobility for the manager category, perhaps because it is difficult to classify the occupation, or because it was a risky category. It is unsurprising that occupational downward mobility is less than wealth mobility, given stability of occupations, but these rates are still relatively high and reflect that recorded occupations are not stable throughout the life cycle Ward (2023).

Another less obvious threat to our results is transcription error. While transcribing wealth might seem straightforward, historical censuses can be difficult to read due to poor legibility or scan quality (Abramitzky et al., 2021; Ghosh et al., 2023). To check for transcription error, we compare two different transcriptions of the same data: one by IPUMS-USA for their older public-use samples (1% 1850, 1.2% 1860 and 1870, and 5% 1930 Census), and the main one done by Ancestry.com for the complete-count versions.[26] After linking the two datasets, we find significant discrepancies in transcribed wealth for the top 1%. We estimate that between 6% and 12% of the top 1% in the Ancestry.com data would have been placed in the bottom 99% if we had used the older IPUMS transcription. This type of error could cause us to overstate the rate of falling out of the top 1%, but it does not appear to strongly bias our estimates. We recalculate the downward mobility rate for the sample linked to these older IPUMS transcriptions after dropping individuals with different transcriptions. After re-ranking this subsample to get a new top 1%, we find a similar rate of people falling out of the top 1% (0.712 according to the bottom row in Figure 3). More details on this analysis are in Appendix C. In general, this result suggests that researchers should be aware that extremely high outlier wealth could be due to transcription errors.

Based on all of our robustness checks, we consistently find that 70-75% of the top 1% changes in a ten-year period. This high rate of turnover is surprising and despite the robustness checks in Figure 3 one may still suspect that data quality issues cause us to substantially overstate the rate of turnover. This is possible, but also note that higher quality data from Norway, which suffers less from linking, digitization and reporting

[26] We cannot check 1940 because the IPUMS-USA 1% sample does not include names. We use the ABE method to link the census manuscripts and are able to use more observables to link, such as microfilm number, because we are linking the same underlying source.

error, also shows that a majority of the top 1% fall out over the course on someone's life (Ozkan et al., 2023).

III.C. Spatial and temporal variation

So far, our analysis has shown that between 1850 and 1940, about 70% of those in the top percentile fell out of this group over a ten-year period. This could potentially mask significant heterogeneity by decade or across space.

In particular, downward mobility may be high because our wealth proxies cover key periods of wealth compression, during the Civil War and Great Depression. Figure 5 shows how the rate of downward mobility changes across time, both for the wealth and servant measure. The rate of falling out of the top 1% remains relatively consistent across periods, ranging from 71.4% between 1850 and 1860, to 77.4% during the Civil War, and 72.3% during the Great Depression. For households with servants, the downward mobility rate is similarly high, with 65-76% of people having 2+ servants in one census no longer having them in the next.

Having examined temporal patterns, we turn our attention to spatial differences. In Figure 6, we plot the rates of downward mobility by the state at first observation, separately for the 1850-1860, 1860-1870, and 1930-1940 periods. For full information, we also include rates of upward mobility into the top 1%, as well as the odds ratio for staying in the top.

Figure 6a at the top left shows downward mobility from the top 1% between 1850 and 1860. Downward mobility was least in the Deep South (besides Minnesota). For example, while our main rate was that 70% of individuals fell out of the top, only 31% of individuals in Alabama did. In contrast, the northeast had some of the highest rates of downward mobility, where 86% of the top 1% in Maine fell out, and 84% of those in New York.

This regional pattern completely flips between 1860 and 1870 due to the Civil War's impact on Elite southern families. Now the South, which was a place of relatively high stability for the elite, had substantial downward mobility (see Figure 6b). In the South, 85-98% of the wealthy dropped out of the top 1%. Border states that had enslaved populations but did not secede, like Missouri, Kentucky, and Maryland, had lower rates of downward mobility. Northern states had the lowest rates of decline, with Indiana, Ohio, and Michigan around 50%, and Connecticut now proving the most stable at 39%. The contrast between 1850-1860 and 1860-1870 shows that places of elite stability are not the same over time, which is unsurprising given the extent of the Civil War's destruction.

Figure 6c shows downward mobility during the Great Depression. During this period, the entire country experienced high rates of downward mobility, reflecting the widespread impact of the Great Depression. Mountain states like Montana and South Dakota had particularly high rates, with 87% and 95% of their wealthy falling out of the top 1%. This aligns with evidence that the Mountain states were hit especially hard by the Great Depression (Rosenbloom and Sundstrom, 1999). The Southern states, while still showing high rates of downward mobility, do not have greater downward mobility than the rest of the country.

So far we have focused purely on downward mobility rates, but upward mobility − or places of great opportunity − is also important for understanding who is in the top 1%. Figures 6d, 6e and 6f show upward mobility rates or the fraction of people in the bottom 99% who moved into the top 1% after ten years. Places of opportunity change before and after the Civil War, where the South had relatively high wealth accumulation and entry into the Elite before the War, but not afterward. After the Civil War, California, the northeast corridor, and Chicago stand out as areas where people are more likely to enter the top 1% both between 1860–1870 and 1930–1940. In contrast, Deep South states consistently showed lower upward mobility rates after the Civil War, suggesting fewer chances for people to join the top 1%.

Figures 6g, 6h and 6i present odds ratios by state, which combine upward and downward mobility rates to show places of stagnation at the top versus places of greater churn.[27] First, the odds ratios before the Civil War show that California had the lowest odds ratios, which reflects the great churn of fortune during and after the Gold Rush. The lowest odds ratios were places of less churn, like Maine and North Carolina.

During the Civil War, the odds ratios were the lowest in the South, largely because of the destruction of wealth. For instance, South Carolina's odds ratio of 13 means those starting in the top 1% had 13 times greater odds ending there than those starting outside it. The highest ratios were in Maine and Indiana, reflecting stagnant economies with low mobility in both directions. New York had an odds ratio in the middle of the distribution,

[27] The odds ratio is calculated by dividing the odds of staying in the top 1% by the odds of entering the top 1% from below.

indicating some stability for those at the top but also opportunities for others to enter, reflecting a more dynamic economy.

The odds ratio map changes dramatically during the Great Depression. The South, previously characterized by low odds ratios with high churn at the top, became relatively rigid. It now showed the highest odds ratios for entering the top wealth group, due to lower rates of both upward and downward mobility.

IV. Intergenerational mobility

This section briefly examines what happens to the next generation using the intergenerational sample that links children to their parents. Thus, we start to understand the importance of "generational wealth" for remaining in the top, but we will spend more time on this result for our 3-generational sample. This is because the wealth proxies have a 60-year gap between wealth in 1870 and home values in 1930, which is too large to estimate intergenerational persistence without bias from selective attrition due to mortality. Instead, we report mobility estimates based solely on the live-in servant proxy, which is available between 1880 and 1940.

Our main finding is that most children raised with live-in servants had none as adults (Figure 7a). Based on this forward-looking matrix, 91% of children with one servant had none as an adult, 76% raised with two servants had none as an adult, and 62% raised with three or more servants had no servants as adults. These downward mobility rates are higher than one-generation transition matrices we showed before, which is as expected due to convergence to the mean across generations.

Figure 7b shows the origins of elites who had servants in their homes, revealing significant upward mobility from less elite backgrounds. Most individuals with servants as adults came from households without servants. Notably, 61% of those with three or more servants grew up in homes with no servants at all. Only 16% of adults with 3+ servants also had 3+ servants in their childhood homes. This high level of mobility at the upper tier of society is particularly striking given that the servant measure is less prone to measurement error than other wealth proxies. We spend more time on what happens to the next generation in the next section.

V. Multigenerational Mobility

We now turn to the multigenerational samples that track families from grandparent to grandchild. We use two samples: one linking grandparental wealth in 1850-1870 to grandchild wealth in 1930-1940, and another connecting grandparental servants (typically 1880) to children (typically 1910) and grandchildren (typically 1940).

V.A. Downward mobility across 3 generations

The transition matrices across three generations in Figure 8 shows that an overwhelming majority of the descendants of the very rich were not also in the top 1%. Panel A shows that only 3.1% of those with grandfathers in the top 0.1% remained in this elite group. 8.8% ended up in the next highest category (99.0-99.9%), and 17% ended between the 90-99%. These findings suggest that sustaining high economic status over multiple generations is challenging, with extreme generational wealth dissipating rapidly. Panel C, using the servant-based measure, supports the same conclusion: most individuals whose grandfathers had three or more servants did not have any servants in their household.

The backward-looking transition matrices in panels B and D reveal that most economic elites did not come from elite backgrounds. Among grandchildren with top 0.1% home values in 1930 or 1940, 64% had a grandfather in the bottom 90% of the wealth distribution. Only 3% came from similarly high-status backgrounds, and 11.4% had grandfathers in the top 1% (8.5% from the 99.0-99.9 group). The servant-based measure shows a similar pattern. These findings suggest that the Gilded Age, despite its high inequality, provided opportunities for great wealth from relatively modest backgrounds.

We conduct several robustness checks to test the sensitivity of our estimates on downward mobility from the top 1% (see Figure 9). Our baseline estimate is that 93.1% of individuals with grandfathers in the top 1% are no longer there. This result holds if one uses only real estate property values in the 1850-1870 censuses (rather than the sum with personal property) or uses the servant-based measure. We also examined downward mobility for those starting in the top 0.1% or top 10%. Downward mobility is higher the more exclusive the percentile, which is as expected given convergence to the mean across generations. Nonetheless, we still find that over 80% of people who descended from advantaged families no longer maintain the same economic position.

We also address some types of measurement error by averaging grandparental wealth and re-ranking the average, but still find high rates of downward mobility. We also find high downward mobility when using the neighbor-based measure.

It is possible that having both sets of grandparents in the top 1% significantly reduces the chances of downward mobility. However, when we limit the sample to this group, the downward mobility rate is 87%. Thus, most individuals who descended from wealth through both their mother and father are no longer in the top 1%. In Appendix Table A.5, we use the live-in servant measure to test whether grandparental wealth predicts grandchild wealth *in addition to* parental wealth, a common question in the literature (Braun and Stuhler, 2018; Ferrie et al., 2021; Long and Ferrie, 2018). We find evidence of a "grandparent effect," where having an elite grandfather in addition to an elite father improves the odds that a grandchild is elite by 3.8 times.

One potential concern is that linking grandparents and grandchildren across three generations requires at least two census links, which increases the likelihood of false matches. These false positives would cause us to overstate downward mobility. However, when we restrict the analysis to high-quality links from the Family Tree, which are more accurate than Census Tree links, we continue to find substantial downward mobility from the top (92.0%).

For comparison with more common occupational-based approaches in the literature (Long and Ferrie, 2018; Ward, 2020), we also include estimates of "falling out" of specific highly-paid occupation categories in Figure 9. These estimates focus on grandsons, as most granddaughters did not report an occupation. We find that 97.5% of those with physician grandfathers did not become physicians themselves. Similarly, 94% of those with lawyer grandfathers did not become lawyers. Of course, measurement error in occupation data might bias these results.

Figure 10 displays rates of downward mobility, upward mobility, and odds ratios by grandfather's state of residence. The map reveals high rates of downward mobility across all U.S. states. Massachusetts shows the lowest estimate where 84% of grandchildren of top 1% grandfathers are no longer in that category. On the other hand, states in the Deep South exceed 95%. This widespread downward mobility indicates that the high rate of downward mobility across 3 generations is not solely due to wealth destruction in the South after the Civil War. Areas of upward mobility were generally concentrated in the Northeast and California, similar to the one-generation map.

The odds ratio map, which calculates how grandfather elite wealth improves chances of ending in the top 1%, again shows that relatively stagnant economies had higher odds ratios. Maine and West Virginia had some of the highest odds ratios, reflecting both little upward mobility to the top and little downward mobility from the top. Interestingly, the border states of Kentucky and Missouri also show higher odds ratios than the rest of the South, likely because they avoided major wealth destruction from the Civil War. Lower odds ratios are in the South, where high downward mobility occurred, and in coastal regions and Illinois, where upward mobility was more common.

Our approach to estimating mobility is purposely parsimonious, focusing on accurately capturing the rate of downward mobility. Using the full dataset, we analyze predictors across three generations for a grandchild reaching the top 1%, including region, city size, education, race, and age (see Appendix Figures A.9 and A.10). The most notable finding is that larger family sizes, which dilute inheritances, slightly reduce the likelihood of top 1% status, though the effects are minor and insignificant. Factors like living in large cities or high-paying parental occupations are more predictive. The results suggest that inheritance splitting has limited impact on downward mobility, but this is suggestive as we do not identify causal coefficients.

V.B. Elite wealth still matters

Figure 11 shows that wealth "matters" multigenerationally, but only for extremely high levels of wealth. We plot the binscatter relationship between grandparental wealth rank and the grandchild being in the top 1%. It reveals a strong non-linear relationship between grandparental rank and reaching the top 1%. The results show that below the 90th percentile, the relationship between grandfather rank and being in the top 1% is relatively flat. A 1-unit increase in a grandfather's wealth rank is associated with about a 0.009 percentage point increase in being in the top 1%. Between the 90th and 99th percentile, the association increases nearly 30 times. In this range, a 1-unit increase is associated with a 0.25 percentage point increase in the grandchild being in the top 1%. The association further steepens between the 99th and 100th percentiles. Moving from the 99th to the 100th percentile is associated with a 7 percentage point increase in the likelihood of the grandchild being in the top 1%, again nearly 30 times stronger than between the 90 and 99th percentiles. Overall, the slope between the 99th and 100th percentiles is about 800 times steeper than below the 90th percentile.

Figure 11b focuses in on the non-linearity in the top 10 percentiles of the wealth distribution. In our data, 1.9 percent of individuals with a grandfather at the 90th percentile ended up in the top 1%, which is double the average for the group. This percentage increases to 3.7% for those with grandfathers at the 98th percentile. For grandchildren of those at the 99.9th percentile, the percentage rises to 9.9%, and for those at the very top (100th percentile), it reaches 13.5%.[28]

These findings show that elite wealth, even within the top 1%, matters. However, the relationship is not deterministic. Even among grandchildren from the wealthiest backgrounds, the vast majority did not maintain a position in the top 1%.

Home values and servants are not the only proxies for identifying the elite in the 1930 and 1940 Censuses. We can also use extremely high wage income (for wage workers) and top levels of educational attainment. Wage income was top-coded at 5,000 dollars, which applied to about 1% of grandsons in our dataset, allowing us to estimate the relationship between grandparental wealth rank and the likelihood of a grandson having a top-coded wage income. However, business and farm income are not recorded, which is an important limitation. Additionally, elite education is measured by whether one has a college degree, which applied to about 7% of grandsons and granddaughters in our dataset.

Figure 12 shows a sharp non-linear relationship between a grandfather's wealth rank and the likelihood of obtaining a college degree and becoming a top wage earner. Therefore, the advantage does not simply apply to home values. We estimate that 28% of grandchildren with a top 0.1% wealth grandfather earned a college degree—four times the population average. For wage income, 12% of these grandchildren earned $5,000 or more, which is 12 times the population average. These findings reaffirm that generational wealth is important for grandchild outcomes, especially for descendants of the wealthiest.

V.C. Comparison to occupational-based measures of the elite

Our approach using wealth advances the historical mobility literature because we can distinguish between wealthier and less wealthy individuals within the same profession. In contrast, most of the literature relies on occupation-based proxies. It is important to understand what mobility patterns we miss when using occupational-based measures. To

[28] Averages are rounded so the 99.9th percentile includes grandfathers between 99.85 and 99.949 percent of the distribution, comprising about 6,200 grandchildren. The 100.0th percentile includes people between 99.95 and 100.00 percent, representing about 3,100 grandchildren.

do so, we compare our wealth results with alternative status measures used in prominent studies: (1) Median income by occupation from the 1950 Census (the OCCSCORE variable from IPUMS; see Olivetti and Paserman (2015)), (2) Human capital, such as literacy and education, by occupation (e.g., Song et al. (2020)), and (3) average wealth by occupation from the 1860–1870 censuses. We also examine recent methods that use additional information like age, race, and location, to predict relative status. These include: (4) Predicted income using industry, demographics, and occupation based on 1950 Census (LIDO score as in Saavedra and Twinam (2020))[29], (5) Average human capital levels by occupation, race, and region (e.g., Ward (2023)). For each, we assign scores to both grandfathers and grandsons, and replicate the binscatter relationship between grandfather's rank and the grandson (due to the use of occupation) being in the top 1%.

Figure 13 shows that occupation-based measures fail to capture the non-linear relationship between a grandfather's rank and a grandchild's likelihood of reaching the top 1%, with outcomes being noisier than those from wealth-based measures. Scores like OCCSCORE, the Song score, and occupational wealth show minimal differences between descendants of high- and extremely high-status grandfathers. Adding race and region, as in the Adjusted Song Score, does little to improve predictions, though ranking groups by wage income instead of literacy or education yields better results. Overall, existing occupation-based measures cannot reproduce our main findings.

VI. Conclusion

We use linked census data to provide the first descriptive statistics on persistence in the top tail of the wealth distribution for the entire United States between 1850 and 1940. We highlight two major findings. First, there was substantial turnover at the top where the overwhelming majority of incumbents in the top tail fell out of it, even within the lifetime. Second, elite wealth still "matters" as being raised in an extremely advantageous household is associated with an exponentially increased likelihood of ending there. Yet, more than 90% of those with a grandfather in the top 1% were not themselves in the top 1%. Overall, the results suggest that the extreme tail of American wealth was not a fixed group, even during a time of low relative mobility for the overall population (Jácome et al., 2025; Ward, 2023).

[29] LIDO standards for Lasso Industry Demographic and Occupation score.

References

Abramitzky, R., L. Boustan, K. Eriksson, J. Feigenbaum, and S. Pérez (2021). Automated linking of historical data. *Journal of Economic Literature 59*(3), 865–918.

Abramitzky, R., L. Boustan, E. Jácome, and S. Pérez (2021). Intergenerational mobility of immigrants in the united states over two centuries. *American Economic Review 111*(2), 580–608.

Abramitzky, R., L. Greska, S. Pérez, J. Price, C. Schwarz, and F. Waldinger (2024, December). Climbing the ivory tower: How socio-economic background shapes academia. Working Paper 33289, National Bureau of Economic Research.

Adermon, A., M. Lindahl, and D. Waldenström (2018). Intergenerational wealth mobility and the role of inheritance: Evidence from multiple generations. *The Economic Journal 128*(612), F482–F513.

Ager, P., L. Boustan, and K. Eriksson (2021). The intergenerational effects of a large wealth shock: white southerners after the civil war. *American Economic Review 111*(11), 3767–3794.

Airoldi, A. and P. Moser (2024, October). Inequality in science: Who becomes a star? Working Paper 33063, National Bureau of Economic Research.

Alesina, A. F., M. Seror, D. Y. Yang, Y. You, and W. Zeng (2020, April). Persistence despite revolutions. Working Paper 27053, National Bureau of Economic Research.

Alfani, G. (2023). *As Gods Among Men: A History of the Rich in the West*. Princeton University Press.

Auten, G., G. Gee, and N. Turner (2013). Income inequality, mobility, and turnover at the top in the us, 1987–2010. *American Economic Review 103*(3), 168–172.

Bailey, M., C. Cole, and C. Massey (2020). Simple strategies for improving inference with linked data: A case study of the 1850–1930 ipums linked representative historical samples. *Historical Methods: A Journal of Quantitative and Interdisciplinary History 53*(2), 80–93.

Bailey, M. J., C. Cole, M. Henderson, and C. Massey (2020). How well do automated linking methods perform? lessons from us historical data. *Journal of economic literature 58*(4), 997–1044.

Björklund, A., J. Roine, and D. Waldenström (2012). Intergenerational top income mobility in sweden: Capitalist dynasties in the land of equal opportunity? *Journal of Public Economics 96*(5-6), 474–484.

Black, S. E., P. J. Devereux, P. Lundborg, and K. Majlesi (2020). Poor little rich kids? the role of nature versus nurture in wealth and other economic outcomes and behaviours. *The Review of Economic Studies 87*(4), 1683–1725.

Bleakley, H. and J. Ferrie (2016). Shocking behavior: Random wealth in antebellum georgia and human capital across generations. *The quarterly journal of economics 131*(3), 1455–1495.

Boserup, S. H., W. Kopczuk, and C. T. Kreiner (2018). Born with a silver spoon? danish evidence on wealth inequality in childhood. *The Economic Journal 128*(612), F514–F544.

Braun, S. T. and J. Stuhler (2018). The transmission of inequality across multiple generations: testing recent theories with evidence from germany. *The Economic Journal 128*(609), 576–611.

Buckles, K., A. Haws, J. Price, and H. E. Wilbert (2023). Breakthroughs in historical record linking using genealogy data: The census tree project. Technical report, National Bureau of Economic Research.

Buckles, K., J. Price, Z. Ward, and H. E. Wilbert (2023). Family trees and falling apples: Historical intergenerational mobility estimates for women and men. Technical report, National Bureau of Economic Research, Inc.

Charles, K. K. and E. Hurst (2003). The correlation of wealth across generations. *Journal of political Economy 111*(6), 1155–1182.

Chetty, R., J. N. Friedman, N. Hendren, M. R. Jones, and S. R. Porter (2018). The opportunity atlas: Mapping the childhood roots of social mobility. Technical report, National Bureau of Economic Research.

Chetty, R., J. N. Friedman, E. Saez, N. Turner, and D. Yagan (2020). Income segregation and intergenerational mobility across colleges in the united states. *The Quarterly Journal of Economics 135*(3), 1567–1633.

Chetty, R., N. Hendren, M. R. Jones, and S. R. Porter (2020). Race and economic opportunity in the united states: An intergenerational perspective. *The Quarterly Journal of Economics 135*(2), 711–783.

Chetty, R., N. Hendren, P. Kline, and E. Saez (2014). Where is the land of opportunity? the geography of intergenerational mobility in the united states. *The Quarterly Journal of Economics 129*(4), 1553–1623.

Collins, W. J. and M. H. Wanamaker (2022). African american intergenerational economic mobility since 1880. *American Economic Journal: Applied Economics 14*(3), 84–117.

Connor, D. S. and M. Storper (2020). The changing geography of social mobility in the united states. *Proceedings of the National Academy of Sciences 117*(48), 30309–30317.

Dal Bó, E., P. Dal Bó, and J. Snyder (2009, 01). Political dynasties. *The Review of Economic Studies 76*(1), 115–142.

Derenoncourt, E., C. H. Kim, M. Kuhn, and M. Schularick (2023, 09). Wealth of Two Nations: The U.S. Racial Wealth Gap, 1860–2020*. *The Quarterly Journal of Economics*, qjad044.

Dray, S., C. Landais, and S. Stantcheva (2023). Wealth and property taxation in the united states. Technical report, National Bureau of Economic Research.

Dudden, F. E. (1986). Experts and servants: The national council on household employment and the decline of domestic service in the twentieth century. *Journal of Social History 20*(2), 269–289.

Dupont, B. and J. L. Rosenbloom (2018). The economic origins of the postwar southern elite. *Explorations in Economic History 68*, 119–131.

Dupont, B. and J. L. Rosenbloom (2022). Wealth mobility in the united states: 1860–1870. *Social Science History 46*(4), 801–829.

Eisenstein, L. (1955). The rise and decline of the estate tax. *Tax L. Rev. 11*, 223.

Feigenbaum, J. J. (2018). Multiple measures of historical intergenerational mobility: Iowa 1915 to 1940. *The Economic Journal 128*(612), F446–F481.

Ferrie, J., C. Massey, and J. Rothbaum (2021). Do grandparents matter? multigenerational mobility in the united states, 1940–2015. *Journal of Labor Economics 39*(3), 597–637.

Ferrie, J. P. (1994). The wealth accumulation of antebellum european immigrants to the us, 1840–60. *The Journal of Economic History 54*(1), 1–33.

Fishback, P. and T. Kollmann (2014). New multicity estimates of the changes in home values, 1920-1940. In *Housing and mortgage markets in historical perspective*, pp. 203–244. University of Chicago Press.

Galenson, D. W. and C. L. Pope (1989). Economic and geographic mobility on the farming frontier: Evidence from appanoose county, iowa, 1850–1870. *The Journal of Economic History 49*(3), 635–655.

Geloso, V. J., P. Magness, J. Moore, and P. Schlosser (2022). How pronounced is the u-curve? revisiting income inequality in the united states, 1917–60. *The Economic Journal 132*(647), 2366–2391.

George, H. (1879). *Progress and Poverty: An Inquiry Into the Cause of Industrial Depressions, and of Increase of Want with Increase of Wealth. The Remendy*. D. Appleton.

Ghosh, A., S. I. M. Hwang, and M. Squires (2023). Links and legibility: Making sense of historical us census automated linking methods. *Journal of Business & Economic Statistics*, 1–12.

Gomez, M. (2023). Decomposing the growth of top wealth shares. *Econometrica 91*(3), 979–1024.

Guvenen, F., G. Kaplan, and J. Song (2021). The glass ceiling and the paper floor: Changing gender composition of top earners since the 1980s. *NBER Macroeconomics Annual 35*(1), 309–373.

Jácome, E., I. Kuziemko, and S. Naidu (2025). Mobility for all: Representative intergenerational mobility estimates over the twentieth century. *Journal of Political Economy 133*(1), 000–000.

Kearl, J. R. and C. L. Pope (1984). Mobility and distribution. *The Review of Economics and Statistics*, 192–199.

King, W. I. (1915). *The wealth and income of the people of the United States*. New York [and] London: Macmillan.

Klein, H. H. (1921). *Dynastic America: And Those who Own it*. HH Klein.

Kopczuk, W. and E. Saez (2004). Top wealth shares in the united states, 1916–2000: Evidence from estate tax returns. *National Tax Journal 57*(2), 445–487.

Kopczuk, W., E. Saez, and J. Song (2010, 02). Earnings inequality and mobility in the united states: Evidence from social security data since 1937*. *The Quarterly Journal of Economics 125*(1), 91–128.

Kuhn, M., M. Schularick, and U. I. Steins (2020). Income and wealth inequality in america, 1949–2016. *Journal of Political Economy 128*(9), 3469–3519.

Lindert, P. H. and J. G. Williamson (2016). *Unequal Gains: American Growth and Inequality since 1700*. Princeton University Press.

Logan, T. D. and J. M. Parman (2017). The national rise in residential segregation. *The Journal of Economic History 77*(1), 127–170.

Long, J. and J. Ferrie (2013). Intergenerational occupational mobility in great britain and the united states since 1850. *American Economic Review 103*(4), 1109–1137.

Long, J. and J. Ferrie (2018). Grandfathers matter (ed): occupational mobility across three generations in the us and britain, 1850–1911. *The Economic Journal 128*(612), F422–F445.

Marcin, D. (2017, Feb). United states individual income tax payments, 1923-1924. ICPSR36640-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research/Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributors].

Moreira, D. and S. Pérez (2022). Who benefits from meritocracy? Technical report, National Bureau of Economic Research.

Nicholas, T. and A. Scherbina (2013). Real estate prices during the roaring twenties and the great depression. *Real Estate Economics 41*(2), 278–309.

Olivetti, C. and M. D. Paserman (2015). In the name of the son (and the daughter): Intergenerational mobility in the united states, 1850–1940. *American Economic Review 105*(8), 2695–2724.

Ozkan, S., J. Hubmer, S. Salgado, and E. Halvorsen (2023). Why are the wealthiest so wealthy? a longitudinal empirical investigation. *A Longitudinal Empirical Investigation (March 9, 2023)*.

Parman, J. (2011). American mobility and the expansion of public education. *The Journal of Economic History 71*(1), 105–132.

Pfeffer, F. T. and A. Killewald (2018). Generations of advantage. multigenerational correlations in family wealth. *Social Forces 96*(4), 1411–1442.

Pfeffer, F. T., R. F. Schoeni, A. Kennickell, and P. Andreski (2016). Measuring wealth and wealth inequality: Comparing two us surveys. *Journal of economic and social measurement 41*(2), 103–120.

Piketty, T. (2014). *Capital in the twenty-first century*. Harvard University Press.

Piketty, T., E. Saez, and G. Zucman (2018). Distributional national accounts: methods and estimates for the united states. *The Quarterly Journal of Economics 133*(2), 553–609.

Querubin, P., J. M. Snyder Jr, et al. (2013). The control of politicians in normal times and times of crisis: Wealth accumulation by us congressmen, 1850–1880. *Quarterly Journal of Political Science 8*(4), 409–450.

Riis, J. A. (1890). *How the other half lives*. Macmillan.

Rockoff, H. (2008). Great fortunes of the gilded age. Technical report, National Bureau of Economic Research.

Rosenbloom, J. L. and W. A. Sundstrom (1999). The sources of regional variation in the severity of the great depression: Evidence from us manufacturing, 1919–1937. *The Journal of Economic History 59*(3), 714–747.

Ruggles, S., S. Flood, M. Sobek, D. Backman, A. Chen, G. Cooper, S. Richards, R. Rodgers, and M. Schouweiler (2024). IPUMS USA: Version 15.0 [dataset].

Ruggles, S., M. A. Nelson, M. Sobek, C. A. Fitch, R. Goeken, J. D. Hacker, E. Roberts, and J. R. Warren (2024). Ipums ancestry full count data: Version 4.0 [dataset].

Saavedra, M. and T. Twinam (2020). A machine learning approach to improving occupational income scores. *Explorations in Economic History 75*, 101304.

Saez, E. and G. Zucman (2016). Wealth inequality in the united states since 1913: Evidence from capitalized income tax data. *The Quarterly Journal of Economics 131*(2), 519–578.

Saez, E. and G. Zucman (2020). The rise of income and wealth inequality in america: Evidence from distributional macroeconomic accounts. *Journal of Economic Perspectives 34*(4), 3–26.

Sinclair, U. (1906). *The Jungle*. United States: Project Gutenberg. Release Date: June, 1994 [eBook #140]. Most recently updated: January 17, 2021.

Smith, M., O. Zidar, and E. Zwick (2023). Top wealth in america: New estimates under heterogeneous returns. *The Quarterly Journal of Economics 138*(1), 515–573.

Snowden, K. A. (2003). The transition from building and loan to savings and loan, 1890-1940. *Finance, intermediaries and economic development*, 157–208.

Solon, G. (1992). Intergenerational income mobility in the united states. *The American Economic Review*, 393–408.

Soltow, L. (1975). *Men and wealth in the United States, 1850-1870*. Yale University Press.

Song, X., C. G. Massey, K. A. Rolf, J. P. Ferrie, J. L. Rothbaum, and Y. Xie (2020). Long-term decline in intergenerational mobility in the united states since the 1850s. *Proceedings of the National Academy of Sciences 117*(1), 251–258.

Splinter, D. and J. Larrimore (2024, December). Income mobility among the top one percent.

Steckel, R. H. (1994). Census manuscript schedules matched with property tax lists: A source of information on long-term trends in wealth inequality. *Historical Methods: A Journal of Quantitative and Interdisciplinary History 27*(2), 71–85.

Steckel, R. H. et al. (1990). Poverty and prosperity: A longitudinal study of wealth accumulation, 1850-1860. *The Review of Economics and Statistics 72*(2), 275–285.

Sutch, R. (2016). The accumulation, inheritance, and concentration of wealth during the gilded age: An exception to thomas piketty's analysis. *University of California, Riverside Emeriti/ae Association, Orbach Science Library, University of California, Riverside, February 4*.

Sutch, R. (2017). The one percent across two centuries: A replication of thomas piketty's data on the concentration of wealth in the united states. *Social Science History 41*(4), 587–613.

Tan, H. R. (2023). A different land of opportunity: The geography of intergenerational mobility in the early twentieth-century united states. *Journal of Labor Economics 41*(1), 77–102.

Thompson, D. M., J. J. Feigenbaum, A. B. Hall, and J. Yoder (2019, August). Who becomes a member of congress? evidence from de-anonymized census data. Working Paper 26156, National Bureau of Economic Research.

Veblen, T. (1899). *The Theory of the Leisure Class: An Economic Study in the Evolution of Institutions*. The Macmillan Company.

Ward, Z. (2020). The not-so-hot melting pot: The persistence of outcomes for descendants of the age of mass migration. *American Economic Journal: Applied Economics 12*(4), 73–102.

Ward, Z. (2022). Internal migration, education, and intergenerational mobility: Evidence from american history. *Journal of Human Resources 57*(6), 1981–2011.

Ward, Z. (2023). Intergenerational mobility in american history: Accounting for race and measurement error. *American Economic Review 113*(12), 3213–3248.

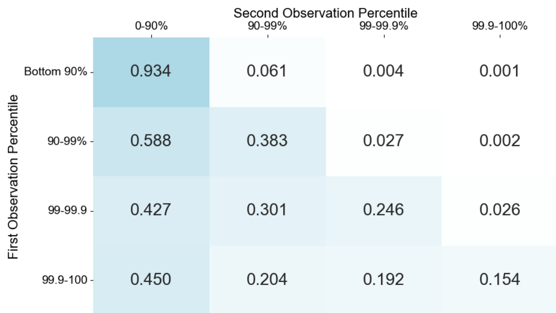
Watkins, G. P. (1907). The growth of large fortunes. *Publications of the American Economic Association 8*(4), 1–170.

Williamson, J. G. and P. H. Lindert (1980). *American inequality: A macroeconomic history*. Academic Press.

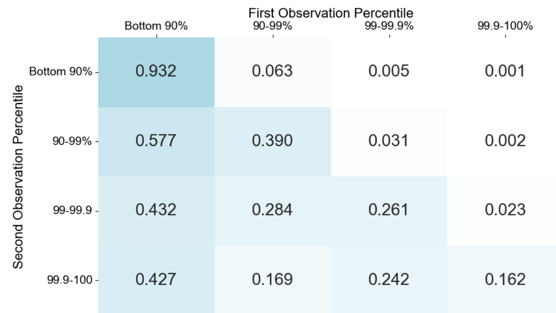
Figures and Tables

Figure 1: Transition Matrix within lifetime

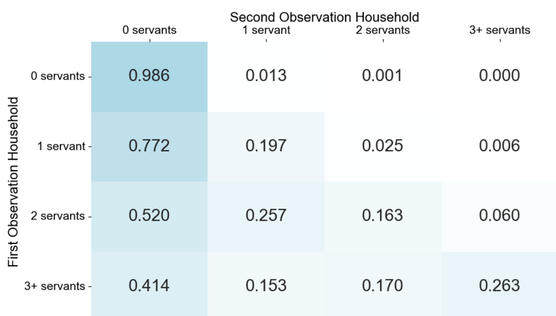
(a) Initial Wealth Ranks



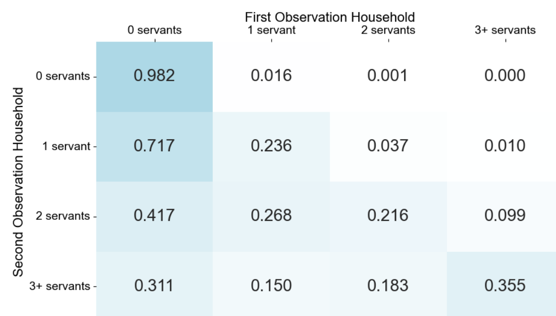
(b) Ending Wealth Ranks



(c) Initial Servant households



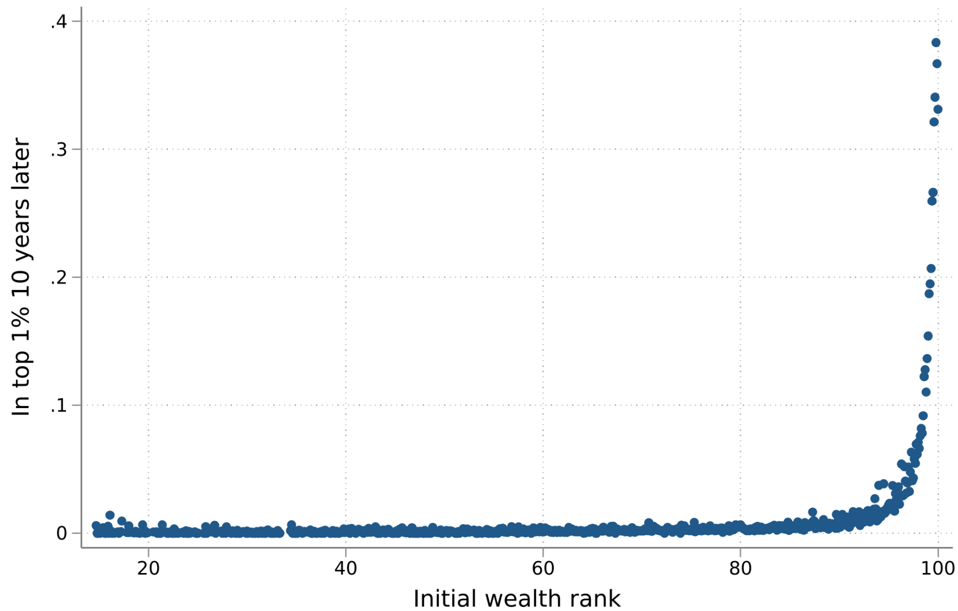
(d) Ending Servant Households



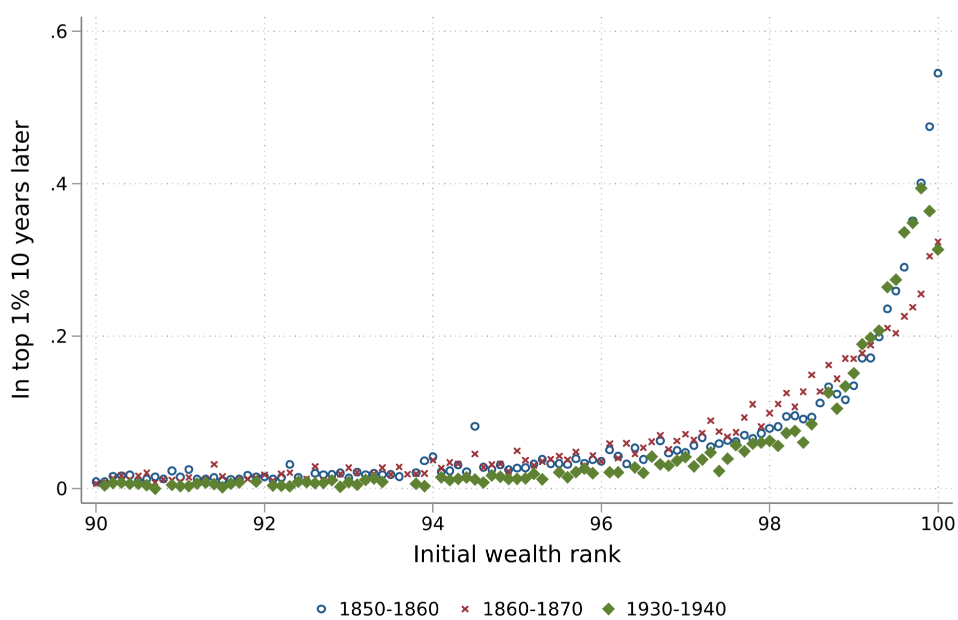
Notes: These figures use full-count data from IPUMS (Ruggles et al., 2024) and links from the Census Tree (Buckles et al., 2023). The unit of analysis is an individual. The second observation is observed 10 years after the first. The rows sum to one and estimates are weighted to be representative of the population. The top two figures pool linked data from 1850-1860, 1860-1870, and 1930-1940, where wealth is measured by personal property in 1850, real estate and personal property values 1860-1870, and home values in 1930-1940. The bottom two figures pool linked data between 1900-10, 1910-20, 1920-30 and 1930-40 for the number of live-in servants in the household. See Figure 5 for estimates of downward mobility separated by census year. Panels (a) and (c) are "forward-looking" transitions based on initial wealth, and Panels (b) and (d) are "backward-looking" transitions based on ending wealth.

Figure 2: Nonlinear relationship between initial wealth and ending in the top 1%

(a) Initial wealth matters for ending in the top 1%

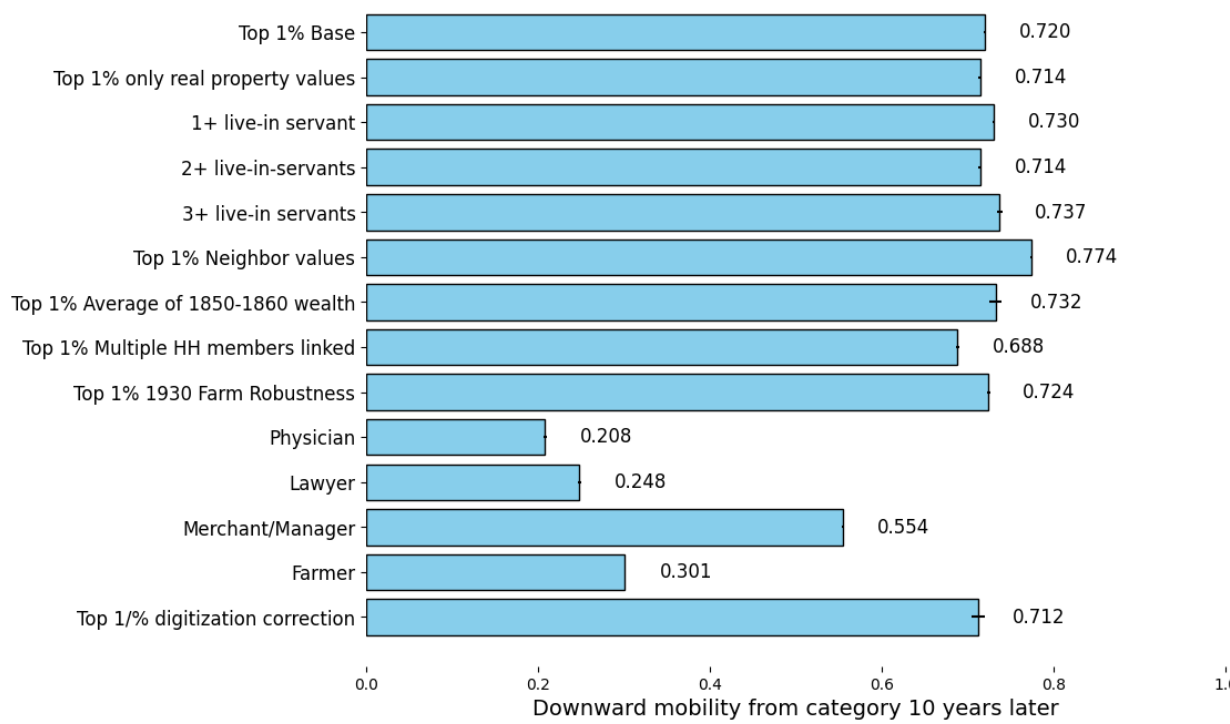


(b) By decade, focus on those who started in the top 10%



Notes: These figures use full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). The unit of analysis is an individual. The binscatter plots show the fraction of those within a percentile (rounded to the nearest 0.1) who are in the top 1% ten years later. The bottom figure splits the data by census year and focuses on the top 10%

Figure 3: Robustness checks verify that most people fall out of top categories

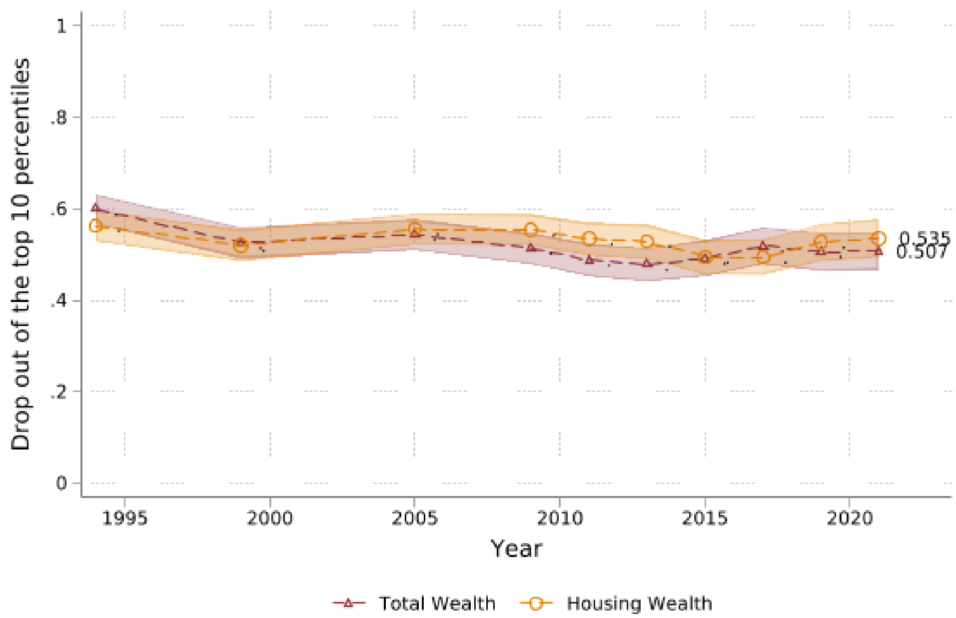


Notes: Based on full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). 95% confidence intervals are included but often invisible due to the large sample size. The figure plots the fraction of individuals starting in the top tier who experienced downward mobility after 10 years ($E[Y_i,t+10}=0 ∣ Y_i,t}=1]$). Each row represents a distinct estimate based on different markers of the top tail or sample linkage.

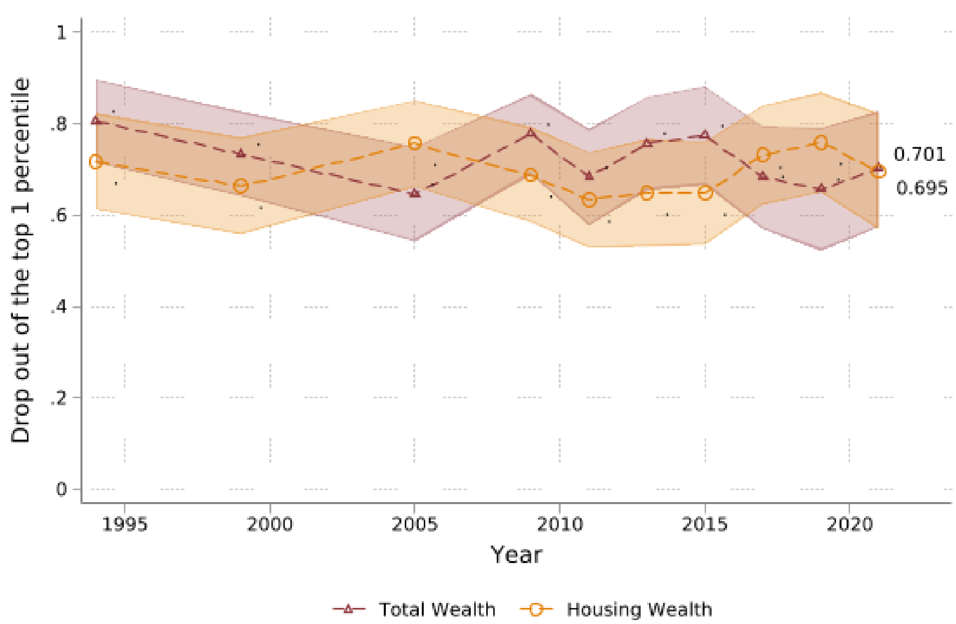
- "Top 1% Base" is our main estimate, based on 1850 real property values, the sum of personal and real property in 1860 and 1870, and 1930 and 1940 home values.
- "Top 1% only real property values" uses the same wealth information in 1850, 1930, and 1940, but only real property values in 1860 and 1870.
- "Live-in Servant" measures the number of domestic servants in the household, observed in 1900-1940.
- "Top 1% Neighbor values" averages the real estate values of the six closest neighbors and then takes the top 1% based on this average.
- "Top 1% Average of 1850-1860 wealth" attaches the 1850 real estate property to the 1860-1870 link, averages the wealth information in 1850 and 1860, and then re-ranks the top 1% of wealth information based on this average. Note the overall level of downward mobility between 1860-1870 was 77.4%.
- "Top 1% Multiple HH Members Linked" keeps households with 2 or more links across censuses in the same household, to reduce bias from false positives.
- "Top 1% 1930 Farm robustness" adds in 1930 home values for farm households based on original Ancestry.com transcriptions for about 20% of farm households. The sample is re-ranked based on these values, and then we measure the downward mobility rate.
- Occupations are those who are in a specific occ1950 code at first observation, and not in it 10 years later.
- "Top 1% digitization correction" uses a subsample additionally linked to either the 1850 1%, 1860 1.2%, or 1930 5% IPUMS samples, keeps only those with the same digitized wealth, assumes the same error rate in the first census occurs in the second census, and then percentile ranks the data.

Figure 4: Downward mobility is similar for housing wealth or total wealth in the PSID

(a) Downward from the top 10 percent

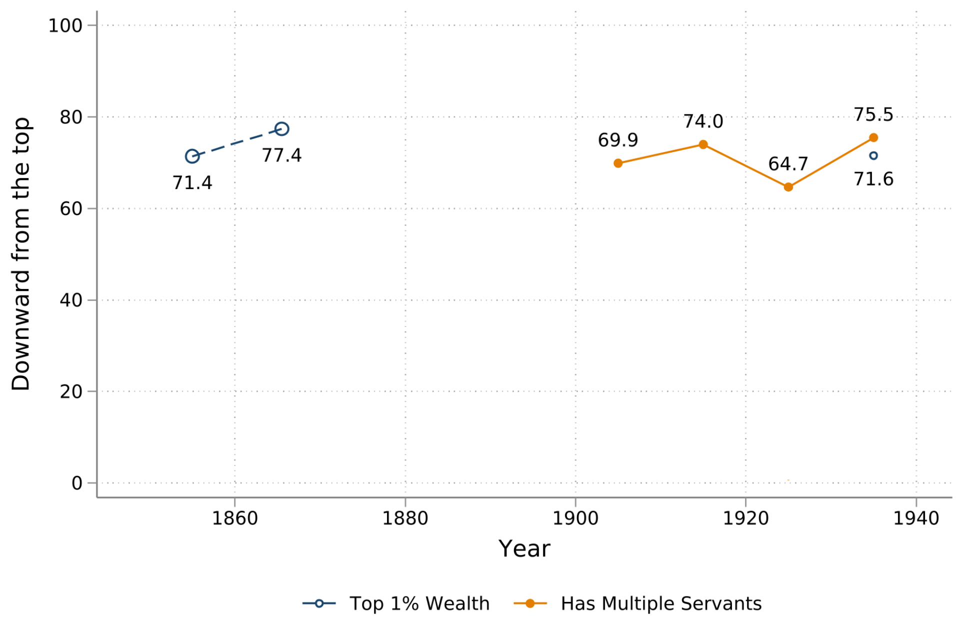


(b) Downward from the top 1 percent



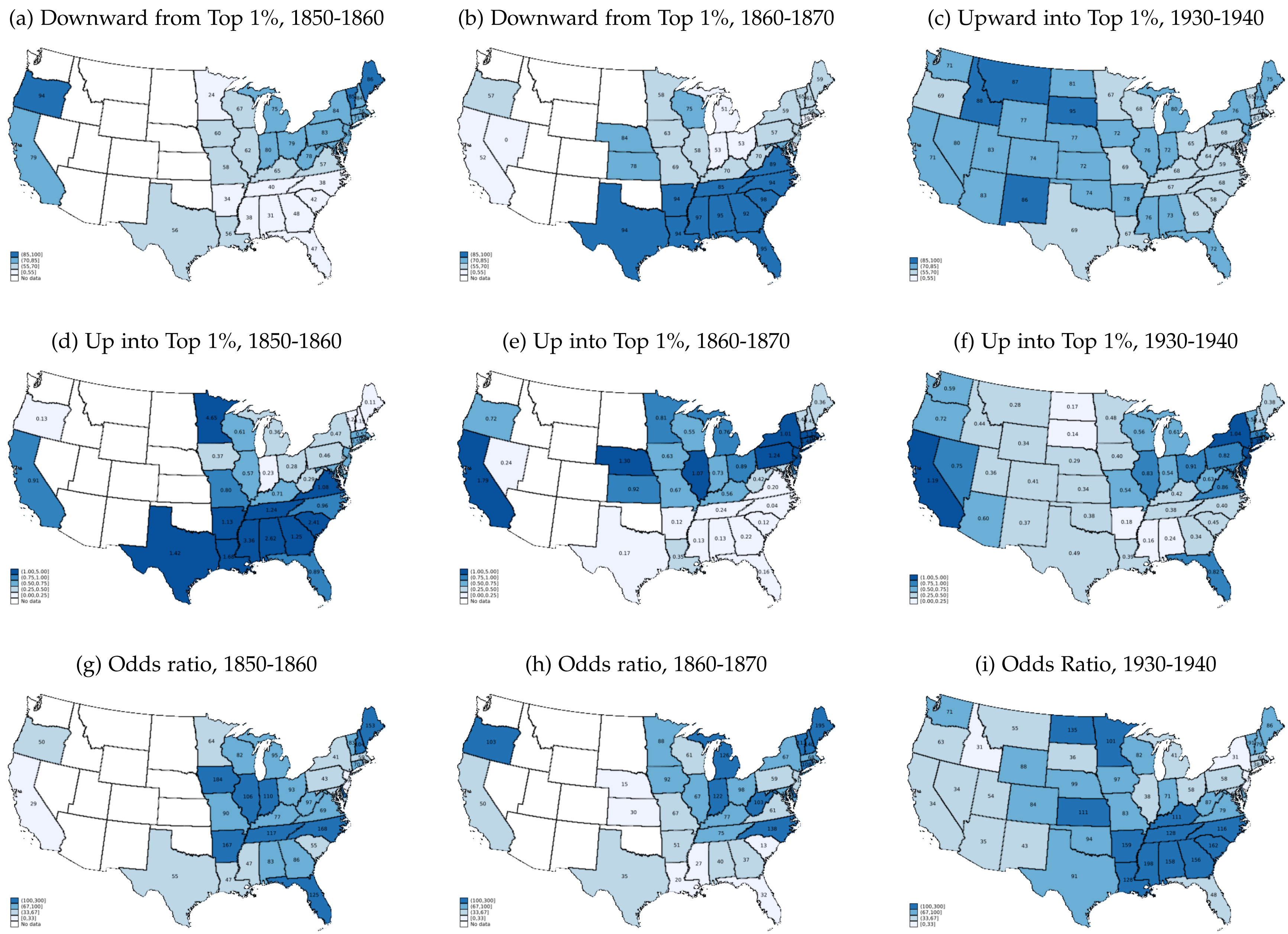
Notes: Data are from the Panel Study of Income Dynamics. The estimates plot the fraction of individuals who started in the top percentiles (10% in Panel A and 1% in Panel B) and experienced downward mobility. All estimates are compared to wealth 10 years prior, except for 2005 which compared to 1994 wealth. All estimates are weighted based on PSID-provided weights. 95% confidence intervals are plotted. See details on sample construction in Appendix D.

Figure 5: Downward mobility rates over a 10-year period were similar over time



Notes: The intargenerational data are full-count Census data (Ruggles et al., 2024) linked at 10-year intervals via the Census Tree (Buckles et al., 2023). The figure shows the percent of individuals who were in the elite category and dropped out of it ten years later ($E[Elite_{i,t+10} = 0|Elite_{i,t} = 1]$), or downward mobility from the top. Top 1% wealth is based on real property in 1850, the sum of real and personal property in 1860 and 1870, and home values in 1930 and 1940. The servant proxy is available between 1900 and 1940 and is based on having at least 2 domestic servants in the household. Data are weighted to be representative of the population.

Figure 6: Upward and Downward Mobility across States



Notes: These figures use full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). Downward is the fraction in the top 1% who are no longer there, upward is the fraction in the bottom 99% no longer there.

Figure 7: Transition Matrices for 2 generations

(a) Forward-looking matrix based on initial servant households

Father's Household \ Child's Household	0 servants	1 servant	2 servants	3+ servants
0 servants	0.984	0.014	0.001	0.000
1 servant	0.908	0.077	0.011	0.004
2 servants	0.762	0.159	0.056	0.024
3+ servants	0.616	0.182	0.107	0.095

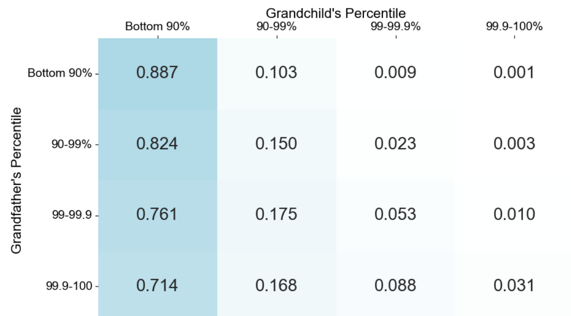
(b) Backward-looking matrix based on ending servant households

Child's Household \ Father's Household	0 servants	1 servant	2 servants	3+ servants
0 servants	0.978	0.020	0.002	0.001
1 servant	0.862	0.102	0.024	0.012
2 servants	0.672	0.161	0.090	0.077
3+ servants	0.605	0.139	0.094	0.163

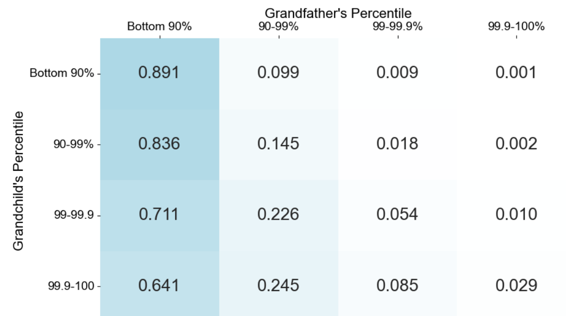
Notes: These figures use full-count 1880-1940 US Census data from IPUMS (Ruggles et al., 2024) and links from the Census Tree (Buckles et al., 2023). A unit of observation is the child-parent pair. The rows sum to one and are weighted to be representative of the population.

Figure 8: Transition Matrix across 3 generations

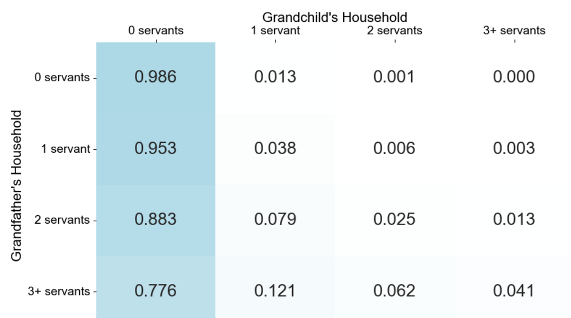
(a) Starting Grandfather Wealth Ranks



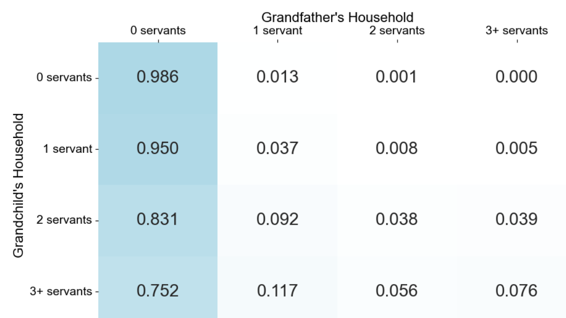
(b) Ending Grandchild Wealth Ranks



(c) Starting Grandfather Servant households

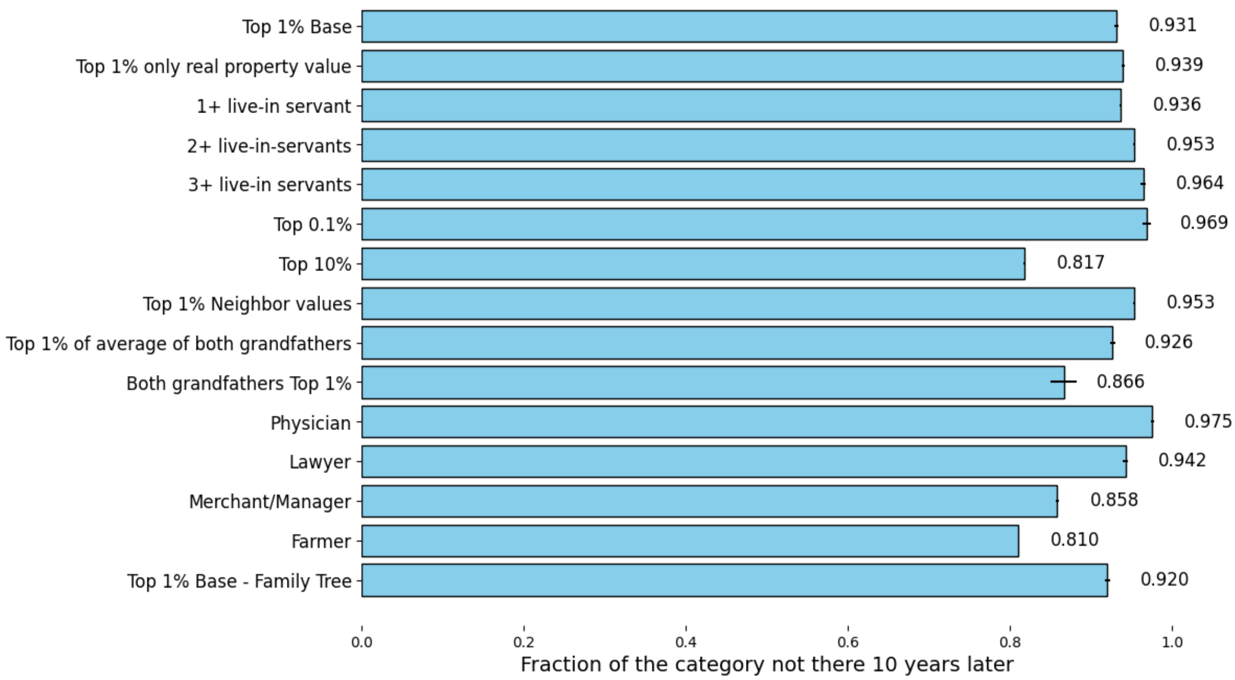


(d) Ending Grandchild Servant Households



Notes: These figures use full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). A row in the dataset is a grandchild-grandparent pair. For the transition matrices, the rows sum to one and estimates are weighted to be representative of the population. The top two figures are based on data from 1850-1870 or 1930-1940, where wealth is measured by personal property in 1850, real estate and personal property values 1860-1870, and home values in 1930-1940. The bottom two figures are based on data between 1880 and 1940 for the number of live-in servants in the household. All estimates are pooled; see Figures for estimates by period.

Figure 9: Robustness of estimates for fraction falling out of the top tail across 3 generations

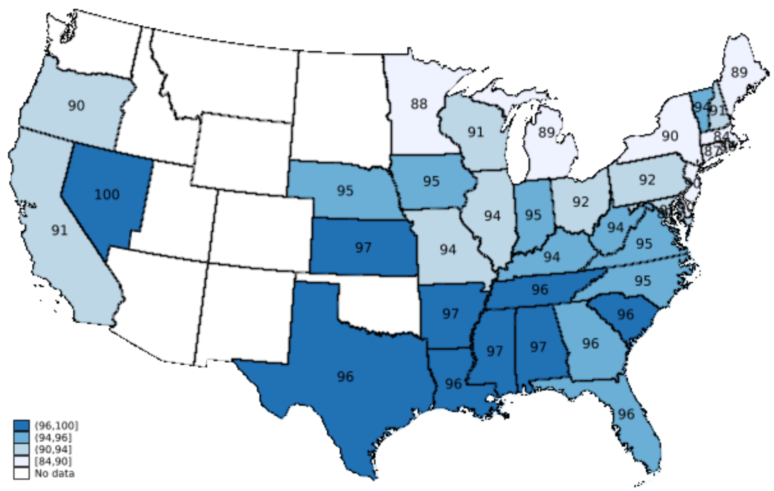


Notes: These figures use full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). The estimates plot the fraction of those with a grandfather in the category who are not in the same category ($E[Y_{i,G3} = 0|Y_{i,G1} = 1]$). Each row represents a different estimate based on a distinct marker of the top tail or a different linked sample.

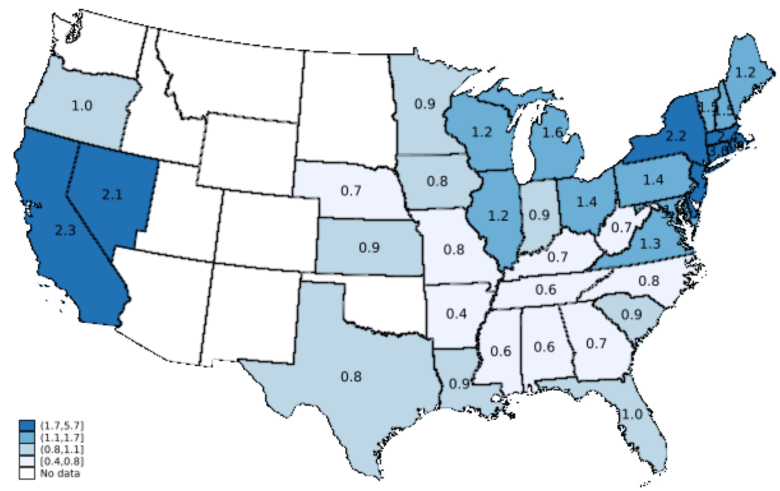
- "Top 1% Base" is our main estimate, which uses 1850 real property values, the sum of personal and real property in 1860 and 1870, and 1930 and 1940 home values.
- "Top 1% only real property values" uses the same wealth information in 1850, 1930, and 1940, but only real property values in 1860 and 1870.
- "Live-in Servant" measure captures the number of servants in the household.
- "Top 0.1% and top 10% use the base value measure, but instead consider the top 0.1 or 10%.
- "Top 1% Neighbor values" averages the real estate values of the six closest neighbors and then takes the top 1% based on this average.
- "Average of paternal and maternal grandfather consider the subsample where both grandfathers are observed, averages their values, and then calculates the top 1%. The base sample uses the maximum value of either observed one.
- "Physician," "Lawyer," "Merchant/Manager," "Farmer" plot for the subsample of grandsons and grandfathers, the fraction of grandchildren who are in that occupation given their grandfather was in that occupation.

Figure 10: Top 1% across three generations, by state

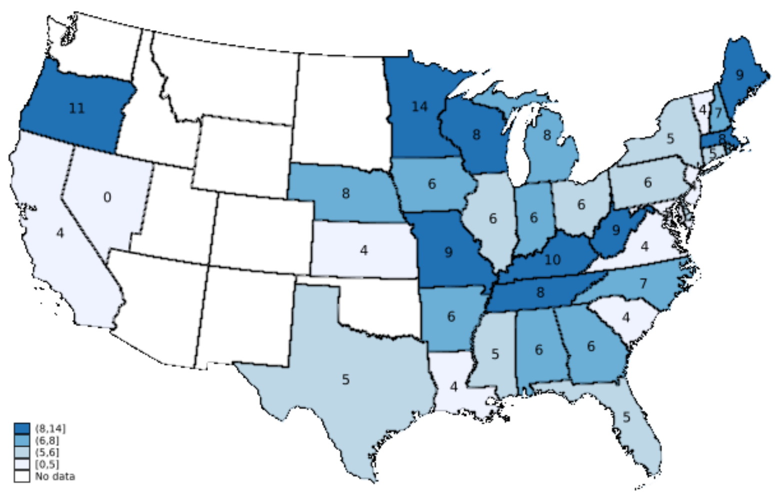
(a) Downward mobility for falling out of the Top 1%



(b) Upward mobility for entering the Top 1%



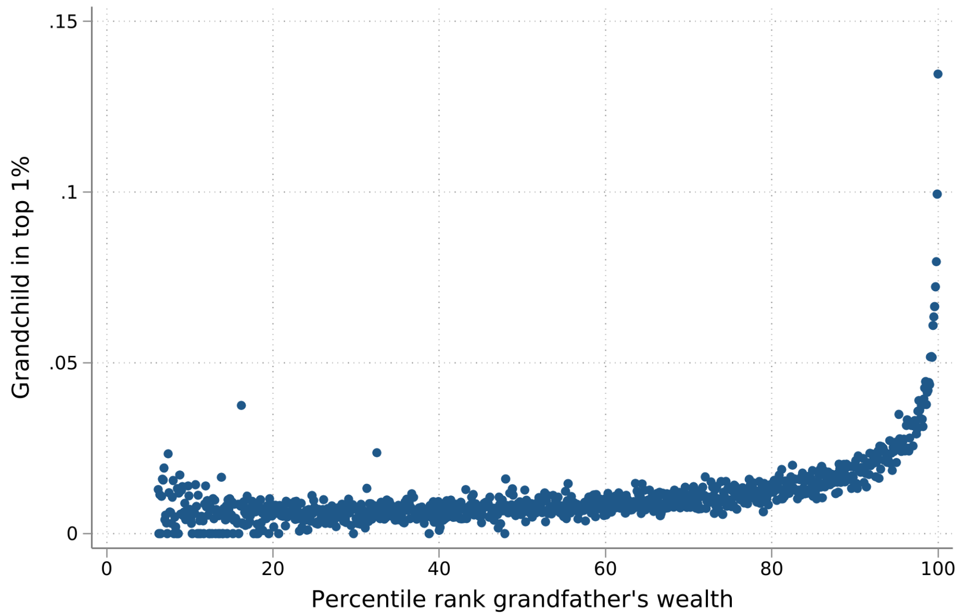
(c) Odds ratio for ending in the Top 1%



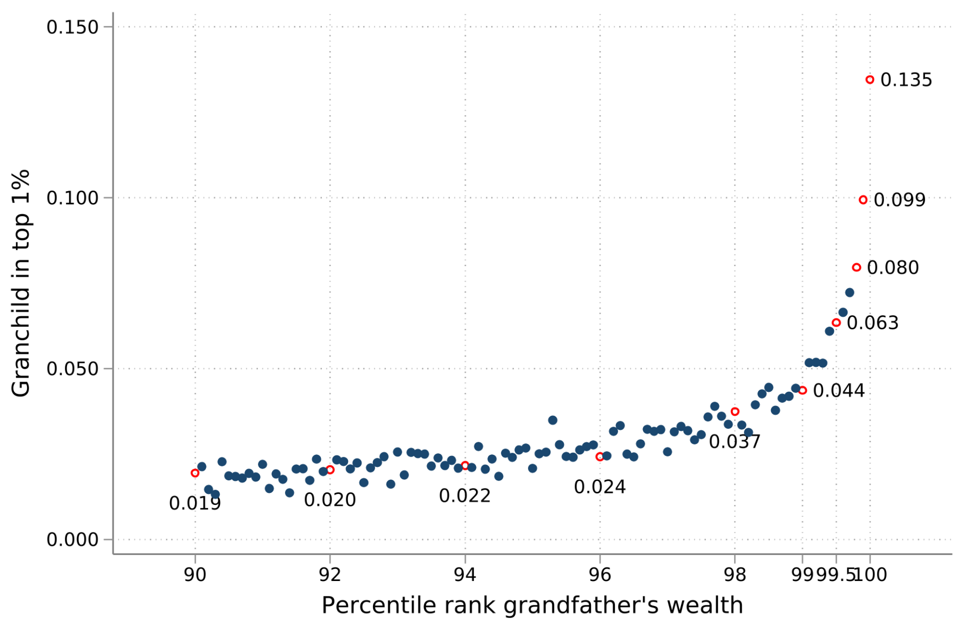
Notes: These figures use full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). The figures calculate the downward mobility rate, upward mobility rate and odds ratio based on grandfather's state.

Figure 11: Elite wealth matters but most descendants of rich grandparents are not top 1%

(a) Non-linearities at the top



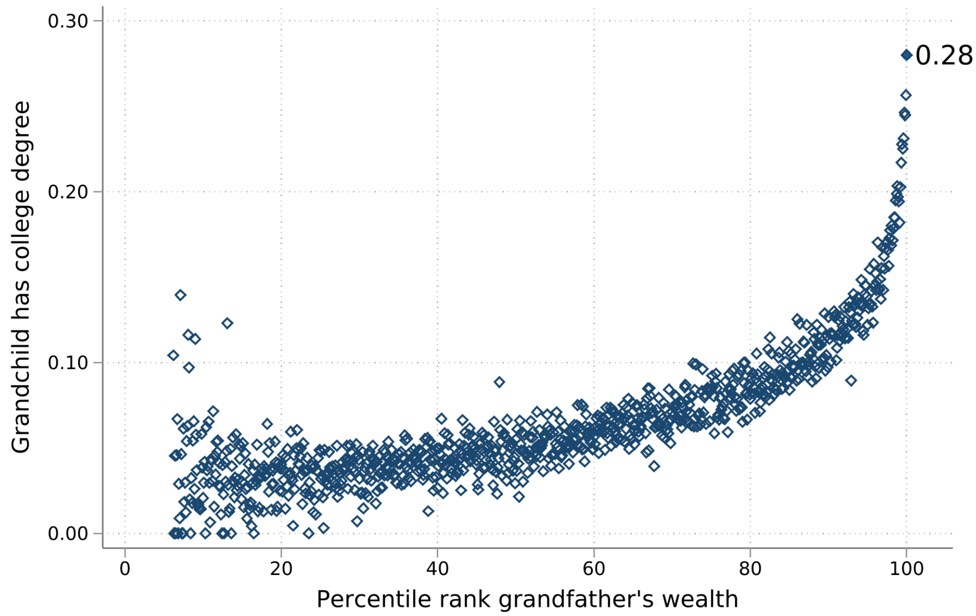
(b) Zooming in on top 10% grandfathers



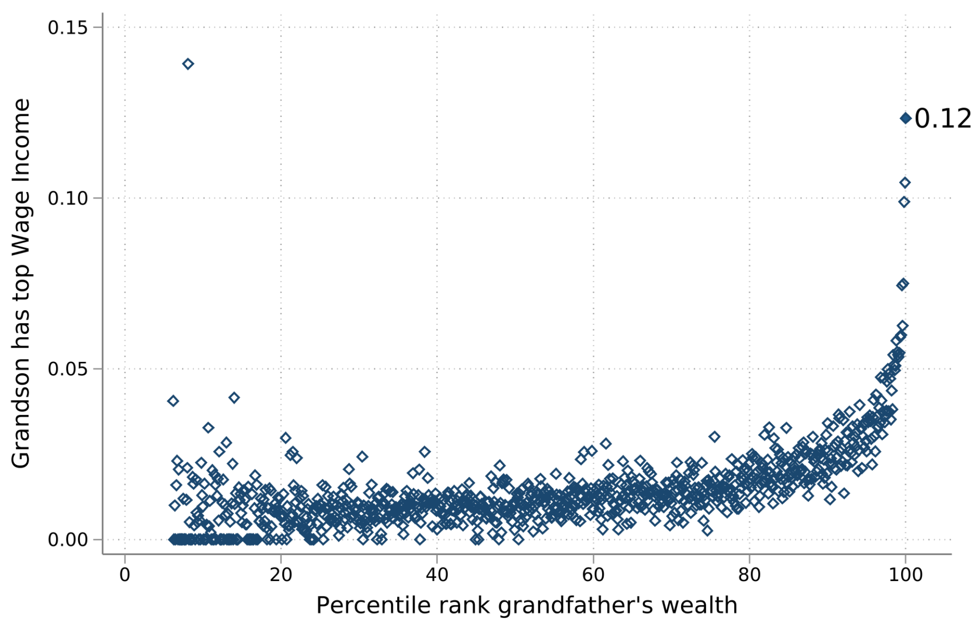
Notes: These figures use full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). The unit of analysis is a grandchild-grandfather pair. Panel (a) plots the fraction within a grandfather's wealth rank (rounded to the nearest 0.1) who are in the top 1%. Panel (b) shows the same for the top 10%, highlighting the 90.0, 92.0, 94.0, 96.0, 98.0, 99.0., 99.5, 99.8, 99.9, and 100th percentiles. Grandparental wealth ranks are measured between 1850 and 1870. Grandchild ranks are based on home values in 1930 or 1940.

Figure 12: Non-linear relationships with top education and wage income

(a) Grandchild has college degree



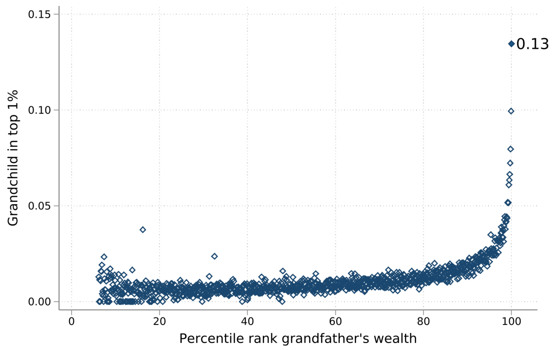
(b) Grandson has Top Wage Income ($5000)



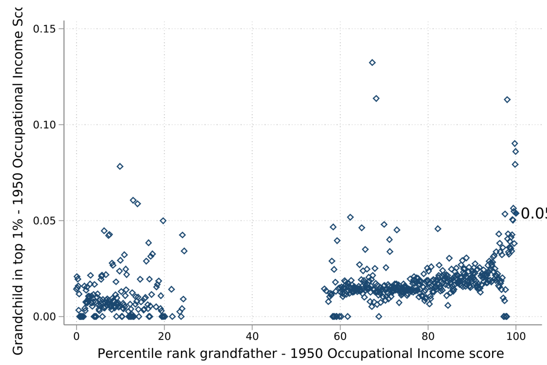
Notes: These figures use full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). The top figure uses whether the grandchild has a college degree as a dependent variable, and the bottom figure uses whether grandsons have top-coded wage income at 5,000.

Figure 13: Three-generational mobility when using occupational-based measures

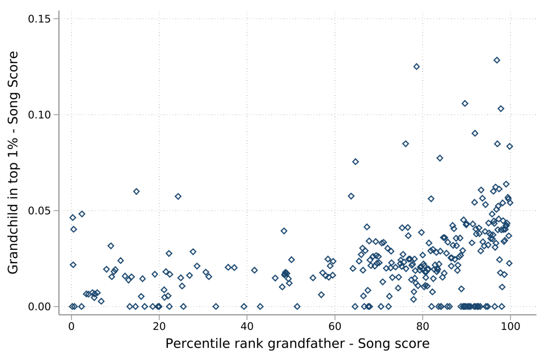
(a) Wealth - base measure



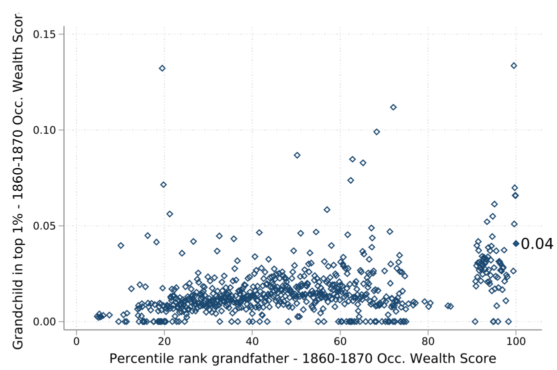
(b) 1950 Occupational Income (IPUMS)



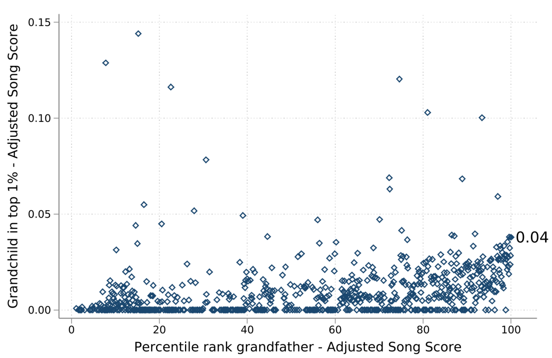
(c) Song Score (Song et al., 2020)



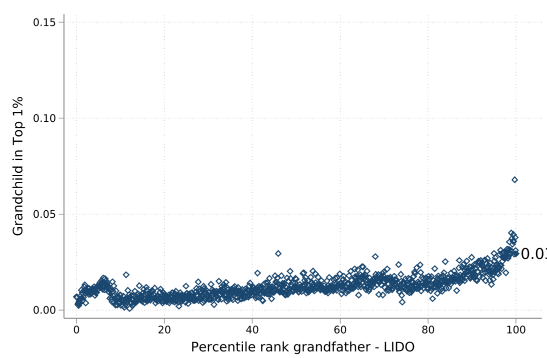
(d) 1860-1870 Occupational Wealth



(e) Adjusted Song Score (Ward, 2023)



(f) 1950 LIDO (Saavedra and Twinam, 2020)



Notes: These figures use full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). Each figure uses a different measure to estimate transition into the top 1% based on grandfather's rank. We limit the y-axis to be the same as our base-measure, although some measures have noisy estimates above 0.15.

I. Online Appendix

Figure A.1: Number of servants by percentile rank

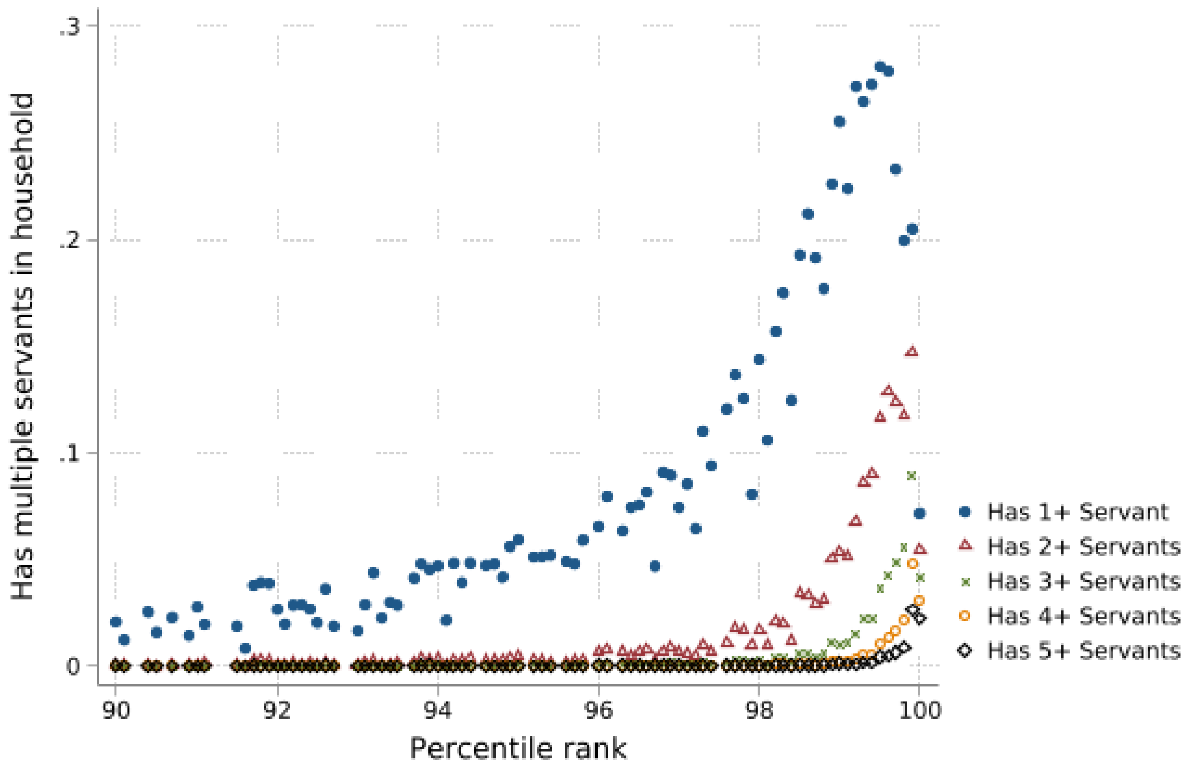
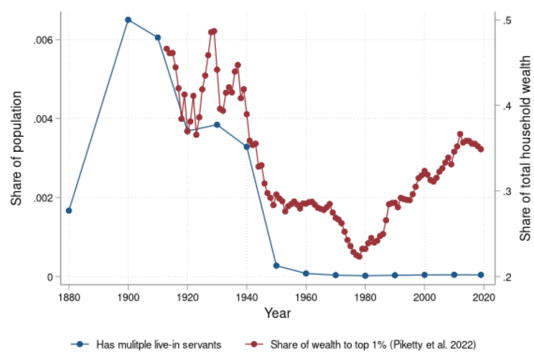
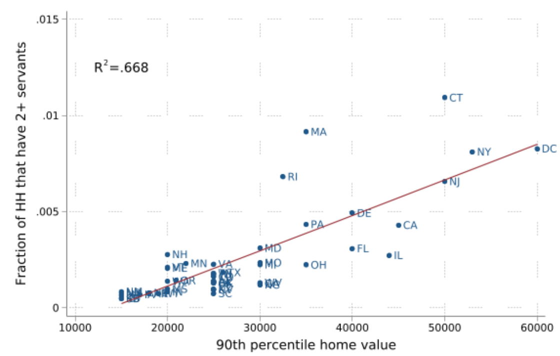


Figure A.2: Servants as a proxy for top wealth

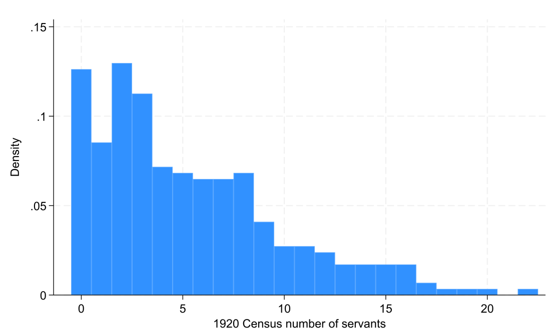
(a) The share of households with multiple servants is temporally correlated with top 1% wealth share



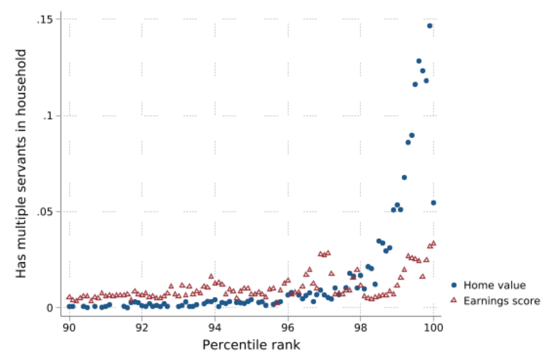
(b) Share of households with multiple servants is spatially correlated with higher home values



(c) Top tax payers had multiple servants (Marcin 2014)



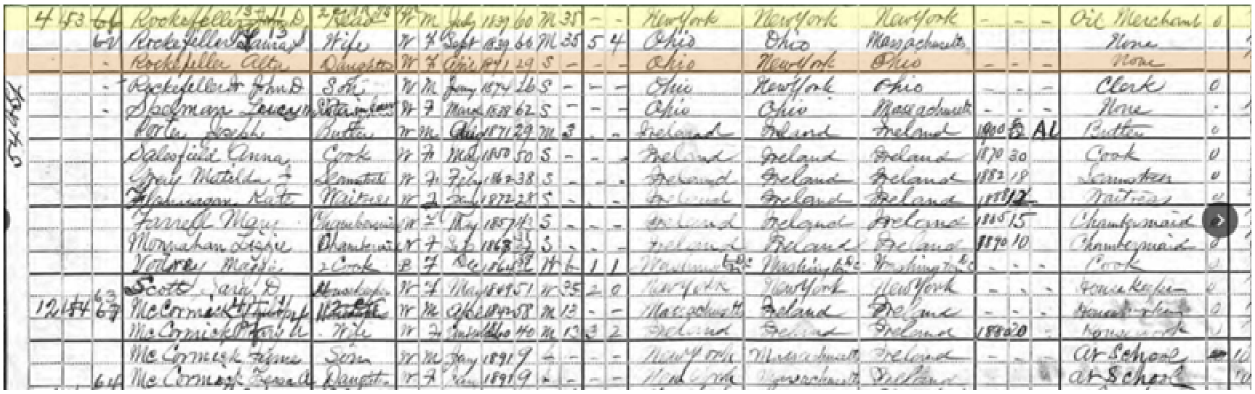
(d) Home values capture rich households better than earning scores



Notes: The top left panel compares the time trend of the fraction of households with multiple servants to the share of total household wealth held by the top 1% based on data from the World Inequality Database. The top right panel compares the 90th percentile home value to the fraction of households with multiple servants by state in 1930. The bottom left panel uses data from (Marcin, 2017), which links top taxpayer lists to the 1920 Census, and shows the distribution of servants in households. The bottom right panel calculates percentile ranks separately for 1930 home values and earnings scores (calculated following Collins and Wanamaker (2022)), and shows that the top percentiles of home values are more likely to have servants than the top percentiles of earnings scores.

Figure A.3: Servants in the Rockefeller Households

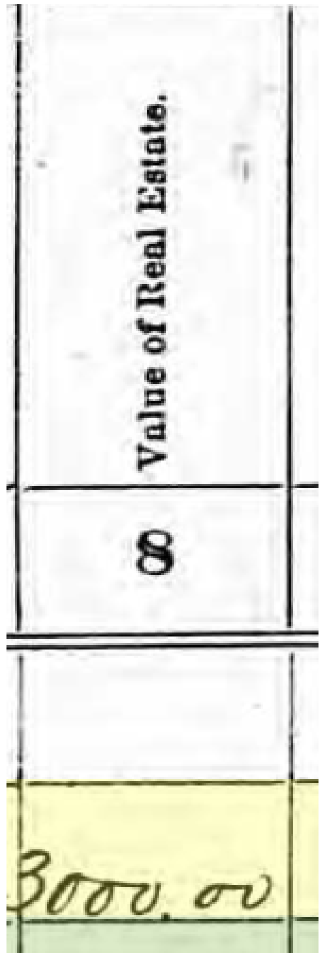
(a) John D. Rockefeller Sr. in 1900



(b) John D. Rockefeller Jr. in 1920

Notes: Panel A shows John D. Rockefeller Senior's household in 1900. John D. Jr is listed as the fourth member of the household and there are 8 observable live-in servants. Panel B shows John D. Jr's outcome 20 years later in the 1920 Census, where he is observed with 19 servants.

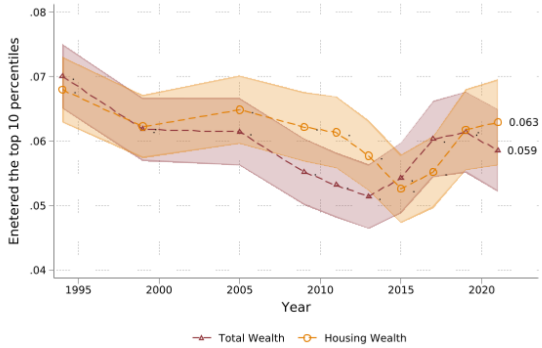
Figure A.4: Example of digitization error



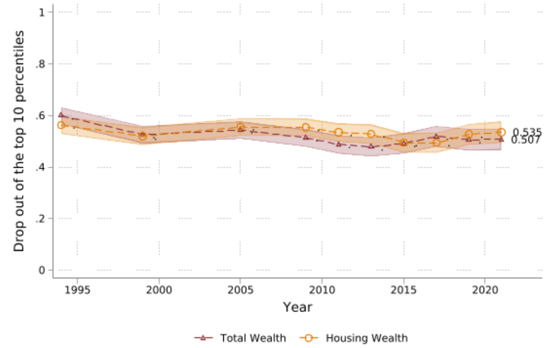
Notes: The image shows the value of real estate of 3,000.00, which has been digitized as 300,000.

Figure A.5: Comparing total and housing wealth for top 10 percent in the PSID

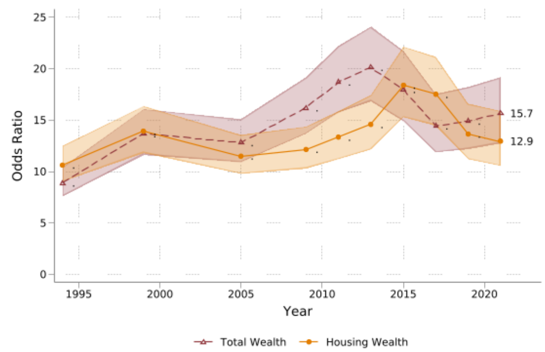
(a) Upward into the top 10 percent



(b) Downward from the top 10 percent



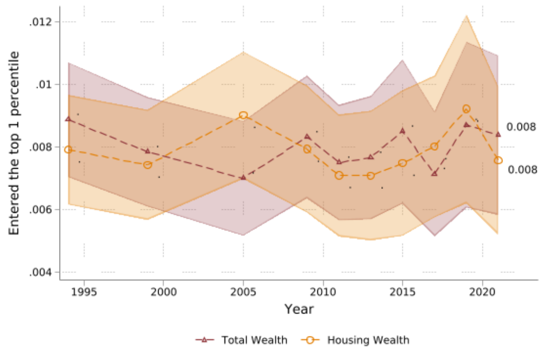
(c) Trend in odds ratio



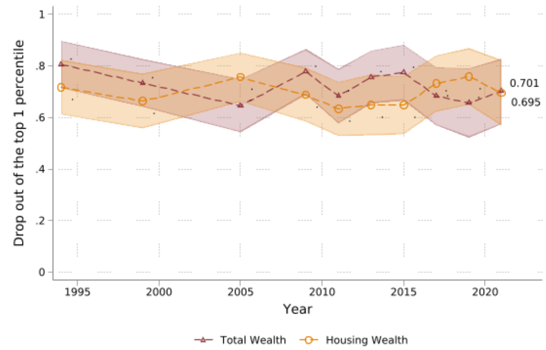
Notes: Data are from the Panel Study of Income Dynamics. The trend compares current wealth to wealth 10 years prior within individual, except for 2005 which compared to 1994 wealth. Panel A shows the fraction of people outside the top 10 percent at first observation who end up in the top 10 percent ten years later. Panel B shows the fraction of people in the top 10 percent who are no longer there 10 years later. Panel C shows the odds ratio based on a logistic regression of being in the top 10 percent on being in the top 10 percent 10 years prior. All estimates are weighted based on PSID-provided weights. 95% confidence intervals are plotted.

Figure A.6: Comparing total and housing wealth for top 1 percent in the PSID

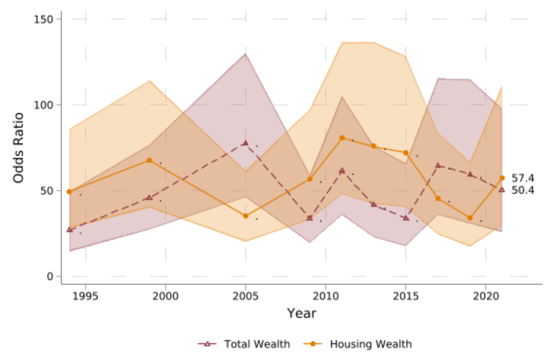
(a) Upward into the top 1 percent



(b) Downward from the top 1 percent



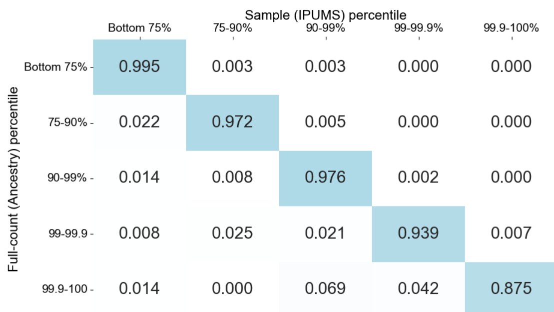
(c) Trend in odds ratio



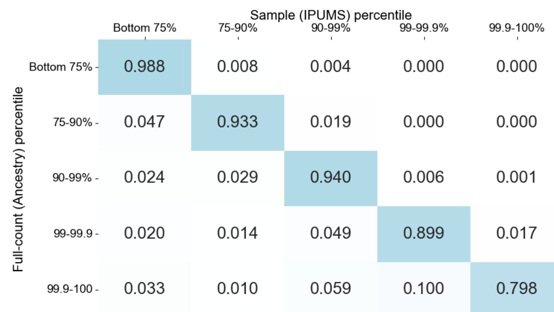
Notes: Data are from the Panel Study of Income Dynamics. The trend compares current wealth to wealth 10 years prior within individual, except for 2005 which compared to 1994 wealth. Panel A shows the fraction of people outside the top 1 percent at first observation who end up in the top 1 percent ten years later. Panel B shows the fraction of people in the top 10 percent who are no longer there 1 years later. Panel C shows the odds ratio based on a logistic regression of being in the top 1 percent on being in the top 10 percent 10 years prior. All estimates are weighted based on PSID-provided weights. 95% confidence intervals are plotted.

Figure A.7: Digitization Error

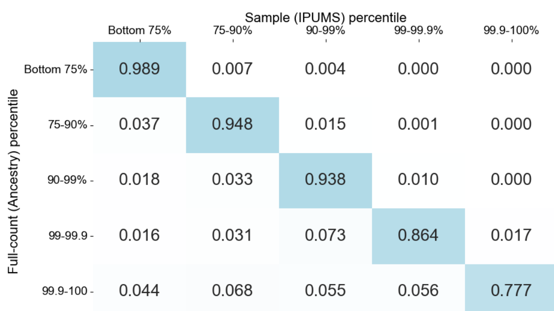
(a) 1850 Real Estate



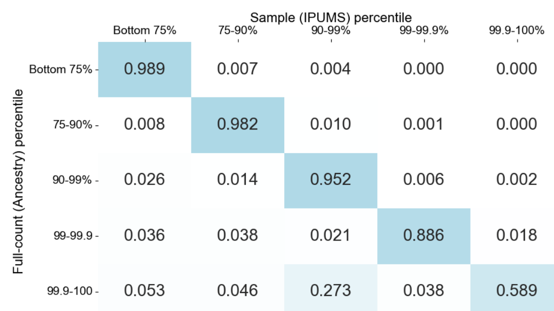
(b) 1860 Real Estate and Personal Property



(c) 1870 Real Estate and Personal Property



(d) 1930 Home Values

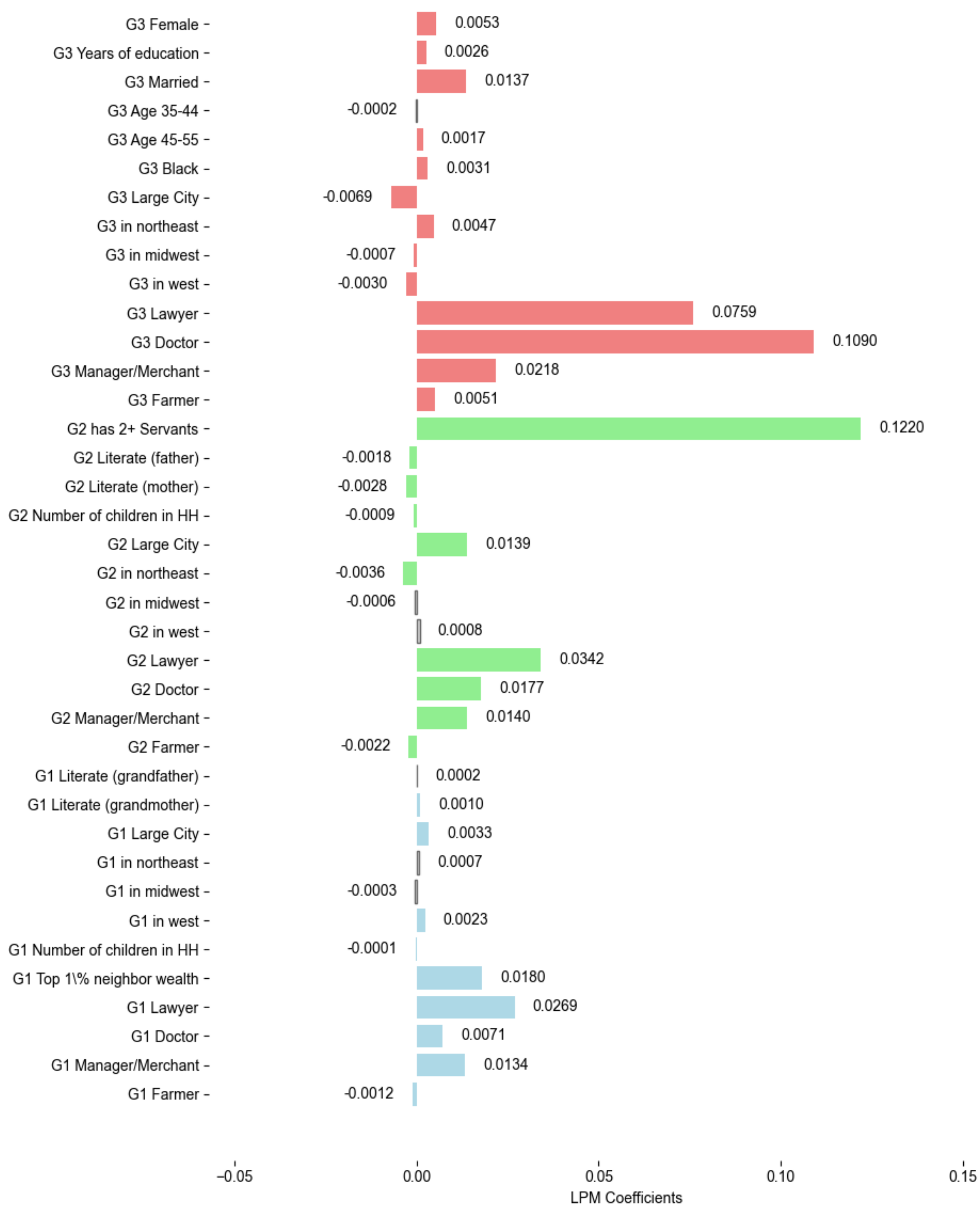


Notes: Data are based on the 1% sample for 1850, 1.2% samples for 1860 and 1870, the 5% 1930 samples from IPUMS (Ruggles et al., 2024) linked to the full-count data from the same years (Ruggles et al., 2024). We sum real estate and personal property in 1860 and 1870. These are two separate digitizations of the same underlying data in 1850, 1860, 1870, or 1930. This figure shows the disagreement by wealth category based on digitizations. The main sample use the "Ancestry" or full-count digitization.

Figure A.8: Relationship between initial wealth and ending in top 1% - Robustness check 1930 farms

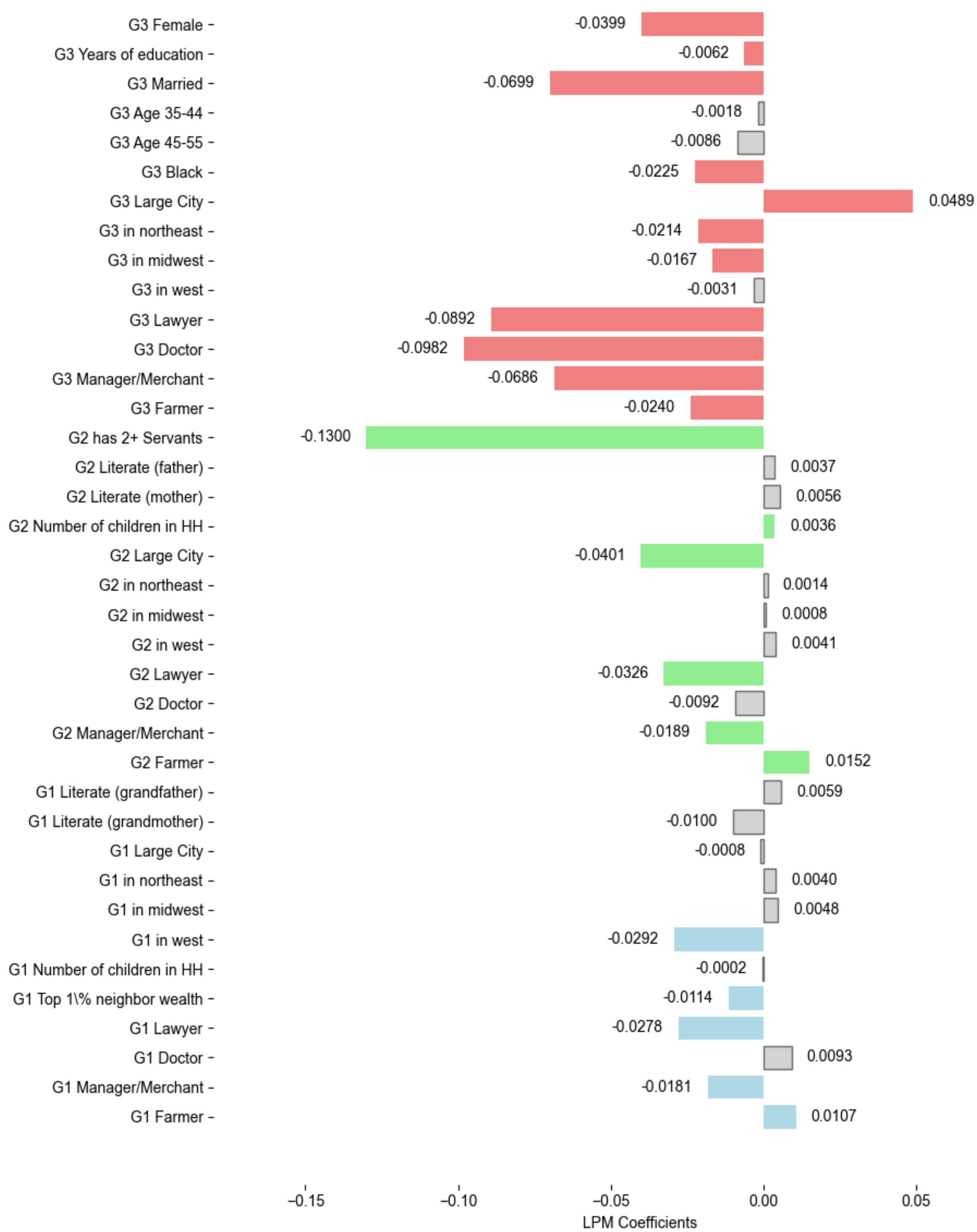
Notes: These figures use full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). The unit of analysis is an individual. The binscatter plots show the fraction of those within a percentile (rounded to the nearest 0.1) who are in the top 1% ten years later. The data includes the 15% of farms in 1930 who had a reported value. The figure is split by those who were in a 1930 farm household and those who were not in a 1930 farm household.

Figure A.9: Correlates of being in the top 1%



Notes: This figure reports coefficients from logistic regression a grandchild being in the top 1% of wealth on observable characteristics. Gray-filled boxes are statistically insignificant at a 95% level. Otherwise, red boxes are observables from the third generation, green boxes are observables from the second-generation, and blue boxes are from the first generation.

Figure A.10: Correlates of falling out of the top 1%



Notes: This figure reports regression coefficients from regression of an indicator variable for being in the bottom 99% of wealth on observable characteristics. The sample is limited to those who with grandfathers in the top 1% of wealth. Thus negative coefficients indicate that someone is less likely to fall out of the top 1%. Gray-filled boxes are statistically insignificant at a 95% level. Otherwise, red boxes are observables from the third generation, green boxes are observables from the second-generation, and blue boxes are from the first generation.

Table A.1: Wealth concentration by census year and wealth proxy

Census Year	Wealth Proxy	Top 0.1%	Top 1%	Top 10%
1850	Real Estate	0.102	0.289	0.711
1860	Real Estate	0.117	0.313	0.714
1860	Personal	0.137	0.405	0.809
1860	Wealth (Real+Personal)	0.109	0.319	0.718
1870	Real Estate	0.116	0.299	0.703
1870	Personal	0.177	0.410	0.747
1870	Wealth (Real+Personal)	0.120	0.307	0.686
1930	Home value	0.101	0.261	0.713
1940	Home value	0.066	0.202	0.644

Notes: Data are cross-sectional full-count censuses from IPUMS.

Table A.2: Fraction of individuals with live-in servant

Year	0 Servants	1 Servant	2 servants	3+ servants
1880	0.9894	0.0089	0.0012	0.0005
1900	0.9643	0.0299	0.0040	0.0018
1910	0.9712	0.0238	0.0033	0.0017
1920	0.9833	0.0138	0.0019	0.0010
1930	0.9801	0.0168	0.0021	0.0010
1940	0.9785	0.0189	0.0019	0.0007

Table A.3: Descriptive Statistics of the Top percentiles at 1st observation, Within-generation wealth sample

	(1) Bottom 90%	(2) 90-99	(3) 99-99.9	(4) 99.9-100
First observation:				
Age	37.64	37.86	38.32	38.02
	(8.259)	(8.081)	(8.060)	(8.177)
Wealth rank	69.79	94.45	99.46	99.95
	(14.26)	(2.655)	(0.250)	(0.0290)
Northeast	0.302	0.410	0.466	0.454
	(0.459)	(0.492)	(0.499)	(0.498)
Midwest	0.344	0.349	0.275	0.272
	(0.475)	(0.477)	(0.447)	(0.445)
South	0.258	0.164	0.191	0.179
	(0.437)	(0.371)	(0.393)	(0.384)
West	0.0883	0.0770	0.0676	
	(0.284)	(0.267)	(0.251)	
Lawyer	0.00180	0.00629	0.0190	0.0194
	(0.0424)	(0.0791)	(0.136)	(0.138)
Physician	0.00209	0.00648	0.0170	0.0102
	(0.0456)	(0.0803)	(0.129)	(0.100)
Manager/Proprietor	0.0362	0.0842	0.144	0.147
	(0.187)	(0.278)	(0.351)	(0.354)
Farmer	0.123	0.0620	0.0442	0.0295
	(0.328)	(0.241)	(0.206)	(0.169)
No occupation	0.459	0.565	0.615	0.635
	(0.498)	(0.496)	(0.486)	(0.482)
Second observation:				
Wealth rank	62.32	80.37	82.84	82.21
	(16.87)	(18.03)	(20.82)	(21.11)
Lawyer	0.00196	0.00618	0.0180	0.0172
	(0.0442)	(0.0784)	(0.133)	(0.130)
Physician	0.00223	0.00615	0.0161	0.00983
	(0.0472)	(0.0782)	(0.126)	(0.0987)
Manager/Proprietor	0.0423	0.0817	0.133	0.137
	(0.201)	(0.274)	(0.339)	(0.344)
Farmer	0.122	0.0633	0.0451	0.0320
	(0.327)	(0.244)	(0.207)	(0.176)
No occupation	0.452	0.538	0.580	0.601
	(0.498)	(0.499)	(0.493)	(0.490)
Observations	29,594,044	3,271,483	321,041	36,110

Notes: This table uses full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). The descriptive statistics are shown based on the percentile of a person at first observation. Wealth is measured by real estate property in 1850, the sum of real estate and personal property in 1860 and 1870, and home values in 1930 and 1940

Table A.4: Descriptive Statistics of the Top 1% at 1st observation, 3 generation wealth sample

	(1) Bottom 90%	(2) 90-99	(3) 99-99.9	(4) 99.9-100
Top 1% G3	0.00927	0.0246	0.0656	0.131
	(0.0959)	(0.155)	(0.248)	(0.337)
Female	0.469	0.475	0.471	0.471
	(0.499)	(0.499)	(0.499)	(0.499)
Married	0.806	0.793	0.768	0.761
	(0.395)	(0.405)	(0.422)	(0.426)
First observation:				
Age 35-44	0.767	0.783	0.777	0.754
	(0.423)	(0.412)	(0.416)	(0.431)
Age 45-55	0.0779	0.0781	0.0825	0.0928
	(0.268)	(0.268)	(0.275)	(0.290)
Black	0.0181	0.00418	0.00698	0.00914
	(0.133)	(0.0645)	(0.0832)	(0.0952)
Large City G3	0.184	0.201	0.265	0.325
	(0.387)	(0.401)	(0.441)	(0.468)
G1 in northeast	0.186	0.209	0.265	0.312
	(0.389)	(0.406)	(0.441)	(0.463)
G1 in midwest	0.381	0.425	0.291	0.238
	(0.486)	(0.494)	(0.454)	(0.426)
G1 in west	0.113	0.125	0.117	0.134
	(0.316)	(0.331)	(0.321)	(0.341)
Lawyer	0.00279	0.00678	0.0137	0.0195
	(0.0528)	(0.0820)	(0.116)	(0.138)
Doctor	0.00242	0.00542	0.00776	0.00966
	(0.0492)	(0.0734)	(0.0878)	(0.0978)
Manager/Merchant	0.0528	0.0761	0.107	0.129
	(0.224)	(0.265)	(0.309)	(0.335)
Farmer	0.113	0.110	0.0756	0.0499
	(0.316)	(0.313)	(0.264)	(0.218)
G2 has 2+ Servants	0.00380	0.0166	0.0846	0.219
	(0.0615)	(0.128)	(0.278)	(0.414)
G2 Literate	0.932	0.981	0.984	0.981
	(0.252)	(0.138)	(0.126)	(0.135)
Mother Literate	0.935	0.985	0.987	0.985
	(0.247)	(0.122)	(0.115)	(0.121)
Number of children in G2's HH	4.640	4.144	3.897	3.855
	(2.117)	(2.069)	(2.019)	(2.012)
Large City G2	0.0763	0.0822	0.163	0.248
	(0.265)	(0.275)	(0.369)	(0.432)
G2 in northeast	0.190	0.212	0.264	0.306
	(0.392)	(0.409)	(0.441)	(0.461)
G2 in midwest	0.417	0.486	0.334	0.282
	(0.493)	(0.500)	(0.472)	(0.450)
G2 in west	0.0566	0.0598	0.0633	0.0878
	(0.231)	(0.237)	(0.243)	(0.283)
G2 Lawyer	0.00364	0.0132	0.0363	0.0502
	(0.0602)	(0.114)	(0.187)	(0.218)
G2 Doctor	0.00513	0.0141	0.0272	0.0305
	(0.0714)	(0.118)	(0.163)	(0.172)
G2 Manager/Merchant	0.0534	0.0932	0.154	0.210
	(0.225)	(0.291)	(0.361)	(0.407)
G2 Farmer	0.509	0.505	0.346	0.233
	(0.500)	(0.500)	(0.476)	(0.423)
G1 grandfather Literate	0.862	0.969	0.979	0.982
	(0.345)	(0.174)	(0.143)	(0.133)
G1 grandmother Literate	0.803	0.945	0.970	0.976
	(0.397)	(0.228)	(0.170)	(0.153)
Large City G1	0.0361	0.0312	0.0955	0.180
	(0.187)	(0.174)	(0.294)	(0.385)
G1 in northeast	0.212	0.240	0.287	0.322
	(0.408)	(0.427)	(0.453)	(0.467)
G1 in midwest	0.430	0.502	0.343	0.288
	(0.495)	(0.500)	(0.475)	(0.453)
G1 in west	0.0234	0.0216	0.0296	0.0530
	(0.151)	(0.145)	(0.170)	(0.224)
Number of children in G1's HH	4.537	4.499	4.306	4.238
	(2.120)	(2.166)	(2.112)	(2.052)
Top 1% neighbor wealth G1	0.00636	0.0214	0.125	0.346
	(0.0795)	(0.145)	(0.330)	(0.476)
G1 Lawyer	0.00192	0.00946	0.0316	0.0464
	(0.0437)	(0.0968)	(0.175)	(0.210)
G1 Doctor	0.00498	0.0127	0.0203	0.0159
	(0.0704)	(0.112)	(0.141)	(0.125)
G1 Manager/Merchant	0.0266	0.0915	0.213	0.317
	(0.161)	(0.288)	(0.410)	(0.465)
G1 Farmer	0.589	0.732	0.527	0.358
	(0.492)	(0.443)	(0.499)	(0.480)
Observations	4,637,074	581,372	54,476	5,796

Notes: This table uses full-count data from IPUMS (Ruggles et al., 2024) and the Census Tree (Buckles et al., 2023). The descriptive statistics are shown based on the percentile of a person's grandparent.

Table A.5: Grandparent effects in a multigenerational model

	(1)	(2)	(3)	(4)	(5)	(6)
G2 servants	61.96		52.06	58.58	55.21	52.58
	(1.517)		(1.460)	(1.491)	(1.493)	(1.462)
G1 servants (max)		24.41	3.770			
		(1.061)	(0.225)			
Paternal G1 servants				3.213		2.987
				(0.258)		(0.253)
Maternal G1 servants					3.660	3.526
					(0.273)	(0.269)
Observations	7,519,151	7,519,151	7,519,151	7,519,151	7,519,151	7,519,151

Notes: Data are from 1880-1940 full-count censuses from IPUMS-USA (Ruggles et al., 2024) linked with Census Tree data (Buckles et al., 2023). The sample is limited to those who we observe both maternal and paternal grandfathers.