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African American Intergenerational Economic Mobility Since 1880
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ABSTRACT

We document the intergenerational mobility of black and white American men from 1880 through 2000 by building new historical datasets and combining them with modern data to cover the middle and late twentieth century. We find large disparities, with white children having far better chances of escaping the bottom of the income distribution than black children in every generation. This mobility gap was more important in proximately determining each generation's racial income gap than was the gap in parents' economic status. Evidence suggests that human capital disparities, conditional on parents' status, underpinned a substantial part of the mobility gap.

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In 1870, five years after the Civil War and Thirteenth Amendment abolished slavery in the United States, African Americans' income per capita was approximately 28 percent of whites' income (Margo 2016). By 2010, the black-white income ratio had risen to 64 percent, a convergence that remains incomplete and that has far-reaching social ramifications. This paper quantifies the role of intergenerational mobility in determining the relative economic status of black men over more than 100 years, from the end of Reconstruction, when federal troops left the South, to the beginning of the twenty-first century. Specifically, for several cohorts of father-son pairs, we measure the extent to which black men's relatively poor labor market outcomes reflected their fathers' disadvantaged economic status as opposed to racial differences in outcomes conditional on fathers' status.

Our data encompass nearly the full span of economic and political change for black Americans since the Civil War, including the rise of discriminatory "Jim Crow" institutions, the Great Migration from the South, and the Civil Rights revolution and its aftermath. Developing an intergenerational perspective over the long run requires information that is simply unavailable in census microdata samples, which are the foundation for most studies of U.S. labor markets before the 1960s. To overcome the most binding limitations, we have built new intergenerational datasets by linking individuals' census records from 1880 to 1900, and again, for a different set of individuals, from 1910 to 1930. Linked census records are valuable in this early period because no other nationally representative datasets contain information on both parents' and children's labor market outcomes.¹ For the post-1930 period, we use modern datasets with intergenerational information to complete the portrait of black men's economic mobility in comparison to whites. We rely on the Occupational Changes in a Generation data (OCG), which were collected in 1962 and 1973, and the National Longitudinal Survey of Youth 1979 data (NLSY79), which follow a young cohort from 1979 into adulthood.

Our main metrics of mobility compare each son's estimated position in the national earnings distribution to his father's position in the distribution two decades earlier.² This rank-based approach follows Dahl and DeLeire (2008), Mazumder (2014), Davis and Mazumder (2018), and Chetty et al. (2014a, 2019). It conforms to notions of "moving up" or "falling behind" relative to one's peers from generation to generation, and it dovetails with the economics literature's longstanding emphasis

¹ See Ferrie (1996), Long and Ferrie (2013), Abramitzky, Boustan, and Eriksson (2014), and Feigenbaum (2018) for prominent examples of census record linkage. See Bailey et al. (2019) and Abramitzky et al (2019) for discussion of methodological issues. See Olivetti and Paserman (2015) for an approach to studying intergenerational mobility that relies on children's names rather than linked microdata.

² Studies using linked census records have focused on men because women's names changed at marriage.

on studying changes in blacks' relative status (Smith and Welch 1989, Donohue and Heckman 1991, and Margo 2016). Because the Census of Population did not collect income data before 1940, our measures of economic status are necessarily based on what we know about the men's occupation, race, and location; this entails a detailed "earnings score" assignment process that we describe below.

In the absence of group-specific conditions that would curtail convergence, population-wide estimates of intergenerational income transmission in the modern literature would predict a fairly rapid narrowing of average income gaps between blacks and whites (Margo 2016, p. 314). But, in fact, in each generation in our data, we find large racial differences in sons' economic status conditional on their fathers' economic status, suggesting that population-wide estimates of intergenerational mobility mask deep heterogeneity. In particular, the children of low-status white families have had much higher rates of upward mobility than similarly situated blacks since 1880. Based on these data, we conclude that it was not only, or even primarily, initial poverty *per se* that limited the pace of blacks' economic progress in the historical samples. Rather, our results show a sharp disadvantage for blacks relative to whites in the likelihood of escaping the bottom ranks of the income distribution throughout US history. It is striking that in the historical samples (1880-1900 and 1910-30) children from the poorest white families could expect, on average, to be better off as adults than children from the best off black families. It is also striking that large black-white differences in economic status conditional on parents' status continued into the post-World War II era despite the Great Migration and civil rights legislation. This mobility gap was comparable in magnitude in 1973, nearly a decade after the Civil Rights Act, to what it was in 1900, at the height of Jim Crow institutions. We also find that the gap cannot be accounted for by differences in readily observable characteristics of families, such as region of residence or parents' educational attainment.

These differences in intergenerational mobility are empirically essential to understanding the history of racial disparities in US labor markets. In each generation that we observe, if black children had transitioned up or down the income distribution in the same way as white children with similarly situated parents, they would have greatly improved their average labor market outcomes relative to the actual course of history. In this sense, paraphrasing sociologist Otis Duncan (1968a), the inheritance of race rather than the inheritance of poverty has been the first-order determinant of racial disparities since emancipation.

Our work builds on and contributes to two closely related but distinct economics literatures. First, a burgeoning literature studies the transmission of labor market outcomes across generations (e.g., Becker and Tomes 1979, 1986; Solon 1992, 1999; Mazumder 2005; Black and Devereux 2011; Long and Ferrie 2013; Chetty et al. 2014a,b; Olivetti and Paserman 2015). Within the

intergenerational mobility literature, several studies investigate racial differences in intergenerational income mobility in recent decades (Hertz 2005, Isaacs 2008, Bhattacharya and Mazumder 2011, Mazumder 2014, Chetty et al. 2019). Typically, they find substantial racial differences in mobility out of the lower end of the income distribution and in maintaining positions higher in the distribution. Second, a long-standing economics literature studies the evolution of black-white differences in average income and human capital. A number of important studies trace the convergence process far back into history, encountering many of the same data limitations that we confront in this paper (e.g., Higgs 1977, Smith 1984, Card and Krueger 1992, Sacerdote 2005, Margo 2016, Carruthers and Wanamaker 2017). In addition, there is a sizable literature on intergenerational mobility in sociology, which we reference later in the paper (Duncan 1968a,b, Featherman and Hauser 1976, Hout 1984, Sharkey 2013). Relative to these lines of research, our goal is to develop evidence that consistently measures the interaction of race, intergenerational mobility, and labor market outcomes over a long period of American history, covering a variety of institutional and policy regimes since the Civil War.

Our focus on the rank of individuals in the national income distribution, rather than their income *per se*, is borne of necessity but carries limitations. Most important, the income level represented by an income rank depends on the overall distribution of income. Recent evidence for the twentieth century suggests that even a constant relative income rank for black men after 1940 would disguise a deterioration in real level income, as the income distribution compressed and fell at the lower end while stretching and growing at the upper end (Bayer and Charles 2018, Manduca 2018). Our focus is on income ranks, with the understanding that they do not provide a complete picture of income levels and household welfare.

The implications of finding large differences in economic mobility over many generations and policy regimes are far reaching. First, although being from a better off family was advantageous for both black and white children relative to others of the same race, it is important that narrowing the black-white gap in parental earnings in a single generation would still leave large gaps in expected income for children due to stark differences in mobility patterns. Thus, one-off transfers of income, in and of themselves, might not have made a large and lasting impression on the evolution of the black-white income gap because the groups tended to revert to different means. Deeper and more sustained economic, political, and social reform may have been required for black Americans to close the income gap permanently.

Second, the changes in institutions, policies, and racial animus that did take place over the past century, including the Civil Rights Movement, have not led to great improvements in the adult

outcomes of black children relative to white children from households with similar economic characteristics. Rather, a sizable and fairly consistent mobility gap spans more than a century of data. One proximate and partial explanation is the persistence of gaps in human capital, byproducts of social forces that disproportionately affected black Americans. We discuss models of intergenerational mobility in which an individual's human capital accumulation depends on expectations about labor market opportunities and on the resources of parents and the communities where they live (Loury 1977, Lundberg and Startz 1998, Margo 2016). These resources have been shaped by the long history of segregation and discrimination. We find suggestive evidence that racial differences in test scores underpinned a large part of the racial mobility gap observed in the early twentieth century, echoing findings from the NLSY79 cohort for the late twentieth century (Neal and Johnson 1996, Mazumder 2014). Taken at face value, these findings suggest that sons from black and white families at similar points in the income distribution accumulated substantially different levels of human capital for several generations, with significant implications for racial disparities in labor market outcomes.

I. Background on Black-White Differences in Economic Status and Mobility

A. Historical Context

In 1880, at the start of our period of study, the overwhelming majority of African Americans were former slaves or directly descended from slaves, and 92 percent lived in the South.³ Black men were primarily engaged in agriculture as farm laborers, sharecroppers, or tenant farmers, and most of the rest were unskilled non-farm laborers. Most were also illiterate because slaves had been forbidden from learning to read and write (Williams 2005). There was no widespread redistribution of property or compensation paid to former slaves in the wake of the Civil War, despite calls for “40 acres and a mule” (Oubre 1978). Thus, on average, black Americans were a relatively poor population and concentrated in a relatively poor region, as the South lagged behind the rest of the US (Engerman 1966, Margo 2004). The immediate post-bellum South presented additional headwinds, including high rates of incarceration, “black codes” that limited blacks’ mobility, and scarce credit (Myrdal 1944, Ransom and Sutch 1977, Woodman 1995, Hutchinson and Margo 2006).

In the late nineteenth and early twentieth century, blacks did gain relative to whites in literacy, property ownership, and per capita income (Higgs 1977, 1982; Margo 1984, 1990, 2016),

³ It is not possible to ascertain from the from post-Civil War censuses whether someone had been a slave. In 1860, at the time of the last census before the Civil War, about 96 percent of blacks residing in the South were slaves (Ransom 2006), including Kentucky but not Maryland, Delaware, or Missouri.

but they started from a very low base. Opportunities to acquire human capital were limited and unequal across races. Public schools, established in the South after the Civil War, were segregated, and racial gaps in school quality widened after 1880 (Margo 1990, Carruthers and Wanamaker 2017). This reflected whites' control over both local and state-allocated funding in the wake of widespread disenfranchisement of black voters (Kousser 1974, Klarman 2004). Although gaps in literacy narrowed sharply for cohorts born after the Civil War (Sacerdote 2005), it is likely that gaps in actual educational attainment widened for birth cohorts between 1880 and 1910 (Collins and Margo 2006), as whites gained faster than blacks at the national level. In addition to disparities in access to schooling, black workers were denied entry into many skilled occupations and new lines of work in southern manufacturing and services (Myrdal 1944, Ch. 13; Wright 1986, pp. 177-195).

Large-scale black migration to the North began during World War I, when northern employers began recruiting and hiring more black workers (Vickery 1977, Gill 1979, Collins 1997, Boustan 2017). The "Great Migration" of southern blacks to cities in the North and West continued into the 1960s, and by 1970, approximately one-third of southern-born adult blacks had left the South.⁴ Although discrimination was common in non-southern labor markets (Myrdal 1944; Foote, Whatley, Wright 2003), the economic returns to blacks' inter-regional migration were substantial and contributed to some narrowing of the black-white income gap (Collins and Wanamaker 2014). Black men's relative wage gains were especially large in the 1940s, as migration from the South surged and the US income distribution compressed (Maloney 1994, Margo 1995). During this long period of mass migration and urbanization, measures of residential segregation increased throughout the US (Cutler, Glaeser, and Vigdor 1999; Logan and Parman 2017), an issue we return to later in the paper.

During the 1960s, the Civil Rights Movement transformed race relations in the South by dismantling *de jure* segregation and curbing discrimination in labor markets, voting, education, healthcare, and public accommodations (Wright 2013). Space does not allow a full recounting here, but the upshot was an increase in the black-white wage ratio during the 1960s (Freeman 1981, Donohue and Heckman 1991, Derenoncourt and Montialoux 2018, Aneja and Avenancio-Leon 2019). This momentum did not continue for black men past 1980, however, leading scholars to take up the question of "What went wrong?" (Bound and Freeman 1992).⁵ Bayer and Charles (2018, Figures IV and V) show that the median earnings gap between black and white men, including those

⁴ Authors' calculations with 1970 Form 1 State one-percent sample from IPUMS (Ruggles et al. 2015), restricted to those age 18 and above.

⁵ The time series for women's wages is different, showing more black-white convergence, but it is complicated by differences and changes in selection into the labor force (Neal 2004, Collins and Moody 2017).

out of the labor force, has widened since 1980, and, in 2010, was roughly equivalent to its value in 1950.

In sum, black-white income convergence since 1880 has been substantial but slow, with temporary accelerations in the 1940s and 1960s. Large gaps in men's labor market outcomes remain. In this paper, we seek to document and understand the role of differences in intergenerational mobility patterns in perpetuating this gap.

B. Closely Related Work on Black-White Differences in Intergenerational Mobility

As mentioned above, a relatively small number of empirical papers in economics study black-white differences in intergenerational economic mobility. Three that are close in spirit to our analysis are Hertz (2005), Mazumder (2014), and Chetty et al. (2019), which use panel datasets to characterize income mobility in recent decades, from the 1970s through 2015.⁶ They consistently find that black men were less likely than whites to move out of the bottom of the income distribution, conditional on starting at the bottom as children. Black men were also more likely than whites to fall out of the upper levels of the income distribution, conditional on starting there.⁷ Like this paper, these studies highlight the quantitative importance of differences in mobility patterns, as opposed to differences in parental income, in transmitting racial disparities over generations. Our paper's main contribution relative to this literature is to expand the scope of investigation, covering cohorts from the first post-emancipation generations to the end of the twentieth century and developing consistent comparative analyses over eras that had very different institutional and economic environments.

Margo (2016) also emphasizes the importance of intergenerational factors in understanding the black-white income gap since the Civil War, albeit without the benefit of panel data. In his theoretical framework, large differences in income may persist if human capital is strongly transmitted across generations, or if black children's human capital accumulation is hindered by discrimination in education or through social capital channels. Discrimination and differences in access to social capital are also featured in Lundberg and Startz (1998), which develops a framework

⁶ Hertz (2005) uses data from the Panel Study of Income Dynamics (PSID), which began in 1968. Mazumder (2014) uses data from the National Longitudinal Survey of Youth 1979 (NLSY79) and several waves of the Survey of Income and Program Participation (SIPP) matched to Social Security Administration earnings records. Chetty et al. (2019) combine income tax data and census records to study the intergenerational mobility of children born between 1978 and 1983. Hilger (2016) studies intergenerational educational mobility in census data from 1940 forward, finding evidence of increasing mobility for black and white southerners (i.e., flattening slopes of children's education relative to parents' education or income).

⁷ Chetty et al. (2019) point out that the patterns for black women are fairly similar those for white women in recent decades, implying that the mobility gap is primarily due to differences in men's patterns.

in which black-white income inequality is perpetuated through the combination of segregation and previous generations' black-white differences in human capital, such that “the damage inflicted by past oppression can weigh indefinitely on future generations” (p. 320). We return to these models later in the paper when discussing our results.

There is also a large sociology literature on intergenerational mobility, some of which focuses on racial disparities and uses the same data that we examine for the mid-twentieth century. Duncan (1968b) studies racial differences in the first wave of the OCG dataset for men observed in 1962. A key conclusion is that “[a]lthough Negro social origins [occupations of fathers] are not as favorable as those of whites, this is the lesser part of the explanation of racial differences in occupation achievement. *The greater part of the explanation lies in the inequalities within the process of mobility itself*” (p. 11, emphasis added).⁸ Our data and methods allow us to expand the scope of investigation forwards and backwards in time relative to the mid-century OCG samples, providing a longer-run perspective on black-white differences in intergenerational mobility. In more recent work, Sharkey (2013) develops evidence from the Panel Study of Income Dynamics (PSID) to argue that childhood neighborhoods are an important intergenerational conduit for black-white inequality. This line of research is focused on the post-1960 period and draws on Wilson (1987), who argues that deindustrialization intensified poverty in central-city black neighborhoods in the 1970s and 1980s; Massey and Denton (1993), who argue that high levels of residential segregation exacerbated the effects of deteriorating labor markets; and Pattillo (1999), who argues that residential segregation made it difficult for middle-class black families to insulate themselves from the social problems of ghettos. The spatial dimensions of poverty and mobility are beyond this paper’s scope, but again, we return to these ideas in the discussion of our empirical findings.

II. Data and Measurement

A. Historical and Modern Datasets for Studying Economic Mobility

We have built new datasets of linked census records that cover one set of father-son pairs observed in 1880 (providing the father’s labor market outcome) and 1900 (for the son’s outcome) and a second set of father-son pairs observed in 1910 and 1930. Since these datasets are new, we

⁸ Featherman and Hauser (1976) and Hout (1984) also study racial differences in the OCG data, including the second wave of the survey taken in 1973. Featherman and Hauser find gains in average occupational status for black men observed in 1973 relative to their fathers (measured by Duncan’s socioeconomic index), whereas the cohort of black men observed in 1962 had only small intergenerational gains. Their interpretation emphasizes improvements in black men’s educational attainment and labor market returns to education between the survey dates. Hout (1984) finds that the black men who experienced occupational upgrades during the 1960s tended to come from better off backgrounds in terms of their fathers’ occupations.

introduce them here at some length and describe them in more detail in the data appendix (Appendix I). The modern datasets that we use to complete the long-run portrait of mobility, the OCG surveys for 1962 and 1973 (Blau et al. 1999) and the NLSY79, are more familiar to scholars. We spend less space on their basic description here, but we highlight some issues of comparability between the historical and modern samples.

To build the 1880 to 1900 linked dataset, we started with the full count files of the 1880 Census of Population (Ruggles et al. 2015; Minnesota Population Center 2017). We limited the sample to black and white males born in the United States, aged 0 to 17 with their father or stepfather present in the household.⁹ We searched for the sons two decades later in the full count files of the 1900 Census of Population, based on state of birth, age, race, sex, and first and last name. We followed a similar process for the 1910 to 1930 period.¹⁰

Our linking method follows a recommendation from Bailey et al. (2019) by taking the intersection of links made by two well defined and widely used approaches, which are described in detail in Appendix I. The first is a variant of Ferrie's method (1996), based on code provided by Bailey and Cole (2019). The second is a variant of Abramitzky, Boustan, and Eriksson's method (2014). Taking the intersection of links should improve match quality by ensuring the uniqueness of matches based on multiple criteria. Potentially unreliable matches from one method might be weeded out by the other method. A predictable tradeoff in using the intersection strategy is that match rates are low in comparison to studies that use only one approach (approximately 9 percent for 1880-1900 and 12 percent for 1910-30), but the sheer size of the complete count datasets results in linked datasets that are also fairly large.¹¹ To account for selection into the linked sample, we weight the sample based on inverse probability of linkage; this is based on a probit model of successful matches using characteristics of sons in the initial year (1880, 1910). Key summary statistics of the weighted analysis sample resemble those in the IPUMS samples from which the matches are made.

Many of the fathers in the 1880-based dataset were farmers, but the 1880 Census of Population does not provide information to differentiate their economic status, apart from race and location. Farm ownership was a major distinction in economic and legal status at the time and is a distinction we can also make in 1900, 1910, and 1930 by relying on the Census of Population's home

⁹ Thirteen percent of sons in the sample are dropped because of missing fathers in 1880; nine percent are dropped for this reason in 1910.

¹⁰ The 1900, 1910, and 1930 complete count databases were accessed through the NBER.

¹¹ We match 1,959,000 father-son pairs between 1910 and 1930 and 913,860 between 1880 and 1900. The difference in sample sizes reflects a growing population of 0 to 17 year olds between 1880 and 1910 and a higher match rate in the 1910-1930 sample. The working sample in both years is smaller as a result of missing data on occupation for fathers or sons and the farmer matching procedure for 1880 described below.

ownership question.¹² To learn more about farmers in 1880, we conducted a second linking exercise to locate a random subsample of the linked Census of Population records in the farm-level manuscripts of the 1880 Census of Agriculture. We searched Ancestry.com for approximately 14,000 farmers “by hand” and located approximately 74 percent of them (both white and black).¹³ We then transcribed information about their farms from the manuscripts, focusing on whether the farmer owned the farm. An unfortunate drawback is that a limited number of states’ agricultural census manuscripts are searchable online. The “searchable” states include approximately 57.5 percent of all male farmers (58.2 percent of black farmers) in 1880. The farm ownership rate in the searchable states is similar to that in US as a whole (73.4 percent versus 74.4 percent), suggesting that the searchable states are fairly representative on this dimension.¹⁴ In addition, the ownership rate in “found” farms (from our search of manuscripts) is similar to that in published tables from the Census of Agriculture. Again, details are provided in Appendix I.

Some matched pairs are missing occupational data for fathers, sons, or both, either because no occupation was reported, or because the occupation coding procedure is incomplete in the full count files.¹⁵ In addition, farmers in 1880 (and their sons) who are not linked to the Census of Agriculture manuscripts (described above) are not part of the final linked sample. For 1880 to 1900, the working sample contains 282,980 white father-son pairs and 25,119 black father-son pairs; for 1910 to 1930, the sample includes 1,415,312 white father-son pairs and 82,223 black father-son

¹² Of course, some farmers did not own their home but did own the land they farmed, and vice versa. Still, we find a close correspondence between rates of home ownership in the 1920 Census of Population and rates of farm ownership in the 1920 Census of Agriculture (as reported in Goldenweiser and Truesdell 1924, p. 53). Goldenweiser and Truesdell report that 38.1 percent of farmers were tenants (including croppers); we calculate that 39.1 percent were renters in the 1920 1-percent IPUMS sample. Collins and Margo (2011) similarly equate farm ownership with home ownership.

¹³ There are several reasons we might not find a farmer in the Census of Agriculture manuscripts. Names could be enumerated or transcribed differently across the Census of Population and Census of Agriculture records; self-reported “farmers” in the Census of Population might not have been the sole operator of a farm (the Census of Agriculture lists only one); census enumerators might not have filled out a schedule for every farm (e.g., marginal farms could be missed) or the schedule might not have been preserved; or we might have simply not found a farmer who is actually in the manuscripts somewhere. Our search protocol is described in the Appendix I.a.iii. For sons of farmers in the 1880 cohort, the final analysis weights are the product of the probability weights that adjust for selection into linkage multiplied by the number of farmers in the linked sample divided by the number of farmers successfully matched to the agriculture census, separately by race.

¹⁴ States with searchable records are Alabama, California, Connecticut, Georgia, Illinois, Iowa, Kansas, Maine, Massachusetts, Michigan, Nebraska, New York, Ohio, South Carolina, Tennessee, Texas, Virginia, and Washington. The most notable lack of coverage is in the Mountain states, but only 0.9 percent of farmers were located there in 1880.

¹⁵ Not all occupation strings have been coded in the underlying IPUMS data for 1900 and 1930. We perform a supplemental occupation coding process to fill in some omitted values, as described in Appendix I.a.ii.

pairs.¹⁶ Linked census data cannot be constructed for men in the second half of the twentieth century due to confidentiality restrictions on the use of census manuscripts. Instead, we rely on modern datasets that contain intergenerational information spanning the middle to late twentieth century. The OCG data were originally compiled as supplements to the Current Population Surveys in 1962 and 1973 (Blau et al. 1999). They provide information on current labor market outcomes, as well as retrospective information about the father's (or household head's) occupation when the respondent was 16 years old. One advantage of the OCG dataset is its timing in 1962 and 1973, which provides a view of labor market outcomes just before and several years after landmark civil rights legislation.

Next, we use the NLSY79, which began with over 12,000 males and females who were age 14 to 22 in 1979. Respondents were interviewed each year until 1994 and then every other year. The NLSY79 data are similar to the OCG data in that they report the father's (or household head's) occupation when the respondent was 14 years old based on a retrospective question posed at the start of the survey. We focus on males for consistency with the earlier datasets. The data appendix (Appendix I) provides additional details on the OCG and NLSY79 samples.

Differences in data structure pose a challenge when comparing the historical samples to the OCG or NLSY data. Because most of our analyses compare black-white mobility *within* samples, the incongruities across datasets are not a paramount concern, but we highlight the issues here for clarity.¹⁷ First, in the historical datasets, we see the sons in the labor market exactly 20 years after we see the fathers. But in the OCG and NLSY data, the reference is to the father's occupation when the son was 16 or 14 years old, which could be any number of years prior to the survey (e.g., for a 30-year old respondent in the OCG survey, the question pertains to 14 years prior). There is no way to make the datasets perfectly comparable in this regard while retaining useful sample sizes, but we can see how sensitive results are to age restrictions for sons in the modern samples. (See Appendix IV for details.) For instance, an age range of 20-37 in the OCG is most directly comparable to the ages at which we see adult sons in the historical samples, but the range 28-44 (centered on 36) gets closer to the historical samples' 20-year difference between the observation of father's and son's occupation.¹⁸

A second issue relates to the reference parent. In the historical samples, approximately 90 percent of sons resided with fathers or stepfathers, and we base our analyses on this group. Because

¹⁶ The 1880 numbers are substantially smaller because while all linked non-farmers are included, only the subset of farmers who are linked to their agricultural census record in 1880 can be included in the analysis sample. Successfully linked farmers are re-weighted to account for their smaller numbers.

¹⁷ There is precedent for this exercise. Long and Ferrie (2013) compare a dataset of linked historical census records to the OCG data for 1973 in their characterization of US intergenerational mobility.

¹⁸ We discuss a related concern about "life-cycle bias" below (Grawe 2006, Haider and Solon 2006).

occupations are often not reported for female household heads in these censuses, it would be difficult to assign an income score.¹⁹ The OCG and NLSY79 surveys asked respondents about the adults with whom they resided at age 16 or 14, respectively, and about the adults' occupations at that juncture. We use these responses to assign income scores based on the father's occupation if the father was present and on the mother's occupation if the father was not present. Alternatively, Appendix IV includes a sensitivity check that uses an "other male head"-based score for those living with their mother and another adult male, which makes little difference to our results. A small number of individuals who resided with neither their mother nor father at age 16 or 14 are dropped from the analysis.²⁰ For brevity, when we refer to "fathers" throughout the rest of this paper, we mean fathers or stepfathers in the historical samples, and we mean fathers or household-head mothers in the modern samples.

B. Assigning Income Scores and Ranks

In all of the intergenerational samples we examine, we can observe an individual's detailed occupation, race, region of residence, and gender. Our approach entails ranking men based on income within the cells defined by these characteristics. We assign income scores based on the average earnings of individuals in the same occupation, race, region of residence, and gender cell, drawn from the decennial census with earnings information that is closest in time. This is similar in spirit to the often-used *occscore* variable from IPUMS (Ruggles et al. 2015), which is based on occupation-specific earnings in 1950. But the scoring used here has much more flexibility, reflecting recent evidence that more flexible scoring provides more reliable comparisons across groups (Inwood, Minns, and Summerfield 2019; Ward 2020; Saavedra and Twinam 2020). Income assignments that would be based on fewer than 50 underlying census observations are supplanted with scores based on a race- and occupation-specific national average (not region-specific) or, if necessary, based on a race-specific one-digit occupation (rather than the three-digit code). Later in the paper, we discuss robustness to using alternative methods of assigning occupational scores.

For fathers observed in 1880 and 1910 and for sons observed in 1900 and 1930, income score assignments are based primarily on wage and salary data from the full count files of the 1940 census. The size of the 1940 full count dataset is advantageous because it allows for the finely sliced

¹⁹ For instance, in 1910, more than 40 percent of female-headed households with children present (under age 18) do not have an occupation reported in the 1-percent IPUMS sample. See Goldin (1990, chapter 2 and its appendix) for discussion of how the census enumerated women's gainful employment before 1940.

²⁰ This represents 3 percent of the sample in the 1962 OCG, 5 percent of the sample in the 1973 OCG, and 4 percent of the NLSY79 sample.

occupation-race-region-gender cells mentioned above, and the timing is advantageous because it comes before the “great compression” of the 1940s wage distribution (Goldin and Margo 1992). Because the 1940 census did not collect information on self-employment income, we use within-occupation ratios of mean earnings for self-employed workers relative to wage-and-salary workers from 1960 to impute earnings for self-employed non-farm workers in 1940.

In the historical samples, we allow income scores for farmers to vary by ownership status. Moreover, we account for non-wage farm income in the form of perquisites for all agriculture workers (both agricultural laborers and farmers), using information from the US Department of Agriculture (USDA) as described in Appendix I.²¹ Because farmers’ self-employment income is not reported directly in the 1940 census, we assign an earnings score by assuming that the ratio of farmers’ total compensation (including in-kind income) relative to farm laborers’ total compensation was the same in 1940 as it was in 1960 (within race, region, and farm ownership cells).²²

For an alternative scoring scheme, we have estimated farmers’ income from published tables in the 1900 Census of Agriculture on farm-level production and inputs (again, by race, region, and ownership status). We then combined those estimates with estimates of non-farmers’ 1900 income from Preston and Haines (1991), which are again adjusted for variation by race and region using 1940’s census data (as described in Appendix IVa).²³

For the OCG cohorts, sons observed in 1962 are assigned income scores based on the 1960 census. Their fathers are assigned the average of 1940- and 1960-based income scores since the retrospective information on their occupation pertains to this period.²⁴ Sons observed in the 1973 OCG data are assigned 1970-based scores, whereas their fathers are assigned 1960-based scores. For the NLSY79 cohort, the information on fathers’ (or heads’) occupations pertains to the 1970s, and so their income scores are 1970-based. We observe the sons’ labor market outcomes in 1990 and 2000 and assign income scores based on census data from those years.

One limitation of this score-based approach is that it cannot capture between-cell changes in

²¹ We use perquisite rates inferred from U.S. Department of Agriculture (1957) measures of cash wages and non-cash compensation. See Appendix I for a more detailed description.

²² In 1960, one observes earnings for both farmers and farm laborers. This approach allows for changes in earnings between region and race cells between 1940 and 1960 (as reflected in laborers’ earnings), but it does not allow for differential changes in farmer versus farm laborer earnings. This approach relies on earnings information from the Census of Population, where the unit of observation is the worker. This is relevant because self-reported farmers may earn income in ways other than operating their own farm. Information from the Census of Agriculture, on the other than, is farm-level.

²³ The paper’s main results using this alternative scoring scheme are in Appendix Table A7.

²⁴ The 1950 decennial census asks income only of “sample line” individuals, and we quickly encounter sample size problems in the income assignment methodology using 1950 data.

the wage structure over time in the historical samples. Improvement would be difficult given the fragmentary and non-representative nature of race-specific wage information prior to 1940. Because the analyses focus on ranks within the distribution of scores, between-cell changes in wages would matter only to the extent that the cells change rank. A second limitation is that there is no within-cell variation in score assignments, whereas there is, of course, within-cell variation in true income. For this reason, distributions of scores do not mimic micro-level distributions of earnings.

We convert assigned income scores into rankings in the national income score distribution in each year. Using the national distribution as a reference point allows us to document economic status relative to the entire population, rather than mobility *within* subgroups defined by race.²⁵ This anchors the discussion in an important historical fact: black Americans were remarkably crowded into the lowest deciles of the national income distribution in the late nineteenth and early twentieth centuries. By focusing on position in the distribution, we would characterize a father-son pair that maintains the same rank as neither upwardly nor downwardly mobile. We find this property appropriate given the paper's motivation, which is grounded in the relative status of blacks rather than, say, their absolute level of income.

To rank sons and fathers for the historical samples, we first apply the income score assignment methods described above to nationally representative cross-sectional samples for 1880, 1900, 1910, and 1930 from IPUMS.²⁶ Then, we see where men in the linked samples fall relative to the appropriate national distribution in each year. For the OCG and NLSY79 datasets, we rank fathers and sons relative to peers within each dataset.

C. Summary of Rankings from Cross-Sections

Figures 1A-1E contain kernel density plots of the distributions of fathers and sons across national income rankings, separately for whites and blacks in each cohort. The plots highlight the strong concentration of black men at the lower end of the relative income distribution across the full time period, but with diminishing concentrations in the lower tail over time.

Underpinning these cross-sectional distributions are the occupation-based income assignments described above, and we can see how groups line up based on broad occupational

²⁵ Hertz (2005) and Mazumder (2014) point out that a regression of son's income on father's income for whites or blacks separately measures mobility within the group but does not indicate whether groups are converging.

²⁶ The IPUMS national sample includes all fathers of sons aged 0 to 17 in the beginning year (1880 or 1910). We rank all sons against males aged 20 to 37 in the ending year (1900 or 1930). We include only black and white males in these national samples as our race-specific scoring methods run into sample size issues for other races. Practically, this involves eliminating 0.58% of the national sample in 1880, 0.21% in 1900, 0.63% in 1910 and 0.74% in 1930.

categories and race. Table 1, Panel A reports income ranks for all fathers. This provides a check on whether the income assignments result in sensible rankings. Panel B shows how the prevalence of occupational groups varied over time and across races, though we emphasize that the income assignments are based on detailed (not broad) occupational categories. Because farming occupations (“Farmer, owns” and “Farmer, does not own”) and white-collar occupations (“White collar, professionals” and “White collar, managerial and clerical”) become relatively less and more prevalent over time, respectively, we combine the former into “All Farmers” in the modern samples and the latter into “All White Collar” in the historical samples.

First, we note that the relative rank of the broad categories matches our priors. White-collar and skilled blue-collar workers are relatively highly ranked within race; the “agricultural ladder” appears monotonic in income from farm laborers to non-owner farmers to owner operators; blacks earn less than whites within the occupational categories; and the black-white differences in rank are larger at higher levels of skill.²⁷ Second, the average rank for black fathers in the historical datasets is below the 10th percentile of the national distribution, and black fathers appear to have made little progress in terms of average rank between 1880 and 1910 and no progress between 1910 and circa 1950 (when fathers of 1962 OCG sons would have been of income earning age). Other studies have estimated somewhat larger growth as measured by the black-white ratio of mean income in the pre-1940 period. Margo (2016), for example, estimates a rise in the ratio from 0.28 to 0.32 from 1870 to 1900 and from 0.32 to 0.38 between 1900 and 1940. It is possible for the ratio of mean income to rise without a substantial change in the average black rank, but it is also possible that some growth came from blacks’ relative gains within or between occupation-region cells, which are not captured in the historical scoring described above.

For the latter part of the twentieth century, the average rank of black fathers is substantially higher than in the earlier cohorts. For sons in the 1973 OCG, the average rank for black fathers increases to the 15th percentile, as many fewer were reported to have held agricultural occupations relative to the historical samples and to fathers of the 1962 OCG, and as average ranks for black men within non-farm categories increased relative to the previous cohort. Finally, the NLSY79 sample, which measures parent’s status in the early 1970s, shows strong evidence of black fathers increasing employment in white collar and higher-skilled blue collar occupations, but also a sizable increase in

²⁷ Note that black blue collar, semi-skilled workers have higher income ranks than blue collar skilled workers in the 1900 cohort. This inversion is driven by regional concentration; black semi-skilled workers in the 1900 sample are disproportionately located in Maryland and Pennsylvania and, by virtue of region-based assignments, earn a higher income score than skilled black workers in the South.

white fathers' employment in professional and managerial positions (Panel B). The overall result is a rise in the average of black fathers' ranking to approximately the 18th percentile.

III. Black-White Differences in Intergenerational Mobility Since 1880

In the analysis that follows, we document intergenerational economic mobility for each cohort of sons in our sample. By “mobility,” we mean the movement of sons up or down the percentiles of the national income distribution of similarly aged men relative to the position their fathers held in the distribution of all fathers decades earlier.

First, we show the share of black and white sons who rose in the ranks relative to their father's position—this is “upward rank mobility,” as termed by Bhattacharya and Mazumder (2011). When arranged by father's decile, this provides a simple comparison of upward and downward mobility rates for similarly situated children, but it does not capture the magnitude of the differences in the sons' adult outcomes. We next use simple descriptive regressions to characterize the expected rank of sons conditional on fathers' rank and race. Finally, to illustrate the consequences of racial differences in mobility, we estimate counterfactual distributions of black sons' income score ranks, in which they experience the net mobility patterns of white sons who were similarly situated in terms of fathers' ranks.

A. Upward Rank Mobility Measures

Decile-to-decile transition matrices, a common method for displaying rank mobility, provide a rich characterization of mobility patterns, but with two race categories and five cohorts, they are unwieldy for presentation here.²⁸ Moreover, as Bhattacharya and Mazumder (2011) and Mazumder (2014) point out, since black fathers tend to rank lower than whites *within* income deciles, black sons would have to advance further up the ranks to transition over any given decile threshold. Instead, to provide a simple visual summary of racial differences in mobility, we start by illustrating the rate of upward rank mobility (URM), defined as the share of sons whose rank exceeds their father's rank in the national income distribution, conditional on the father's rank being within a certain interval.²⁹ Note that a son can exceed his father's rank without transitioning over the decile threshold.

Figures 2A-E summarize upward rank mobility by cohort, including bootstrapped 95%

²⁸ We provide broad occupational and decile-to-decile transition matrices in Appendix II.

²⁹ More formally, $U_{\tau,r} = Prob[(R_{son} - R_{father}) > \tau | (r_{lower} \leq R_{father} < r_{upper})]$, where $R_{son/father}$ represents rank of son or father; r_{lower} and r_{upper} represent the lower and upper bounds of some interval of percentiles (e.g., spanning the first decile of the fathers' distribution); and τ is equal to or greater than zero. Appendix Table A.5 reports complete URM results for $\tau = 0, 5,$ and 10 .

confidence intervals.³⁰ We do not plot results for cells containing fewer than 50 observations. The immediate impression from Figures 2A-E is that *conditional on father's decile*, there were stark racial differences in upward rank mobility in every cohort we can observe from the late nineteenth century through the end of the twentieth century.³¹ White children had far higher rates of upward rank mobility, implying lower rates of downward mobility because few had exactly the same rank as their parent.

In the historical samples, for those with the lowest earning fathers (1st decile), between 68 percent (1880-1900) and 85 (1910-1930) percent of whites exceeded their father's status compared to only 41 percent (1880-1900) or 59 percent (1910-1930) of blacks. The differences at the lowest two deciles in the early samples are both statistically significant and economically important; 97 percent of 1880 black fathers and 94 percent of 1910 black fathers were positioned in the two bottom deciles.

The basic pattern is similar for cohorts of men observed in the 1962 and 1973 OCG surveys. White sons exceeded black sons in upward rank mobility by about 20 to 30 percentage points at the bottom of the fathers' rank distribution. From this perspective, there is no clear evidence that the first cohort of post-Civil Rights era black sons (outcomes measured in 1973) fared substantially better in terms of intergenerational mobility than those that preceded them.

In 1990, racial differences in upward rank mobility appear less pronounced than in the earlier samples, particularly at higher deciles of fathers' income scores. But the differences are still quite large, and they appear to widen with age. That is, results for the NLSY79 sons observed in 2000, rather than 1990, show larger racial differences conditional on fathers' income scores. (See Appendix III.) Mazumder (2014) also finds large racial differences in URM in the NLSY79 data using observed income rather than occupation-based scores.

Consistent with these results, Appendix Table A.5 reports almost universally higher white mobility probabilities within deciles of fathers' income, for every generation observed, and for different thresholds of upward mobility (i.e., the share exceeding father's rank by 0, 5, or 10 percentiles). In sum, white children have had a far better chance than comparably situated black children of improving upon their father's status throughout U.S. history. The results are not entirely surprising given what is already known about the slow pace of black economic advance and the circumscribed nature of blacks' economic opportunities throughout much of the twentieth century.

³⁰ Bootstrapped standard errors based on 50 draws of 50. As a result, plots are limited to deciles of fathers' income score rank with more than 50 observations. In the modern samples, sample sizes dwindle quickly.

³¹ The unconditional rates of upward rank mobility for blacks were comparable to those of whites, if not higher. But this reflects that black fathers were concentrated at the bottom of the distribution and that upward mobility rates naturally decline as the father's rank rises, hence the downward slopes in Figures 2A-E.

And yet the disjuncture in outcomes for white and black sons from low-status families is striking because it suggests that that the slow pace of blacks' relative advance was not only, or even primarily, a function of their pre-existing level of poverty. It was also a function of much different likelihoods of getting ahead conditional on starting position throughout post-Civil War history. Figure 2 illustrates this clearly and consistently for the first time.

B. Expected Outcomes Conditional on Father's Status

In this section, we use simple descriptive regressions to characterize the racial gap in sons' outcomes conditional on fathers' ranks—the “racial mobility gap.” Then, we explore whether additional observable characteristics of fathers, sons, and households can account for the gap. The baseline “full sample” regressions include men (sons) observed in their 20s and 30s; we also report estimates that restrict the sample to sons observed at age 30 or higher, allowing more time for their careers to unfold and reducing life-cycle bias in the estimates (Grawe 2006, Haider and Solon 2006).

Panel A of Table 2 presents coefficients on an indicator variable for black sons in each cohort, conditioning only on the fathers' rank. For sons observed in 1900 and 1930, black sons ranked between 22 and 23 percentiles lower than white sons in the “full sample” regressions; the gaps are even larger in the “30+ year old” samples.³² In the later cohorts, the racial mobility gaps were 27 percentiles in 1962, 25 in 1973, and 19 in 1990. The NLSY cohort of sons can be re-examined in 2000, and the racial gap is approximately one percentile larger (not shown in Table 2; see Appendix III).

In Panel B of Table 2, we add several control variables reflecting early life circumstances, including measures of fathers' education (when available). In the 1910-30 sample, we observe the literacy rate of fathers, but unfortunately this variable is not available in the full count files for the 1880 census. In the OCG and NLSY samples, we add fixed effects for fathers' educational attainment, measured in years of completed schooling. For all cohorts, we control for whether the family's home was an urban, rural non-farm, or farm residence when the son was co-resident with his parents (i.e., in childhood). Including the combined set of additional characteristics reduces the magnitude of the coefficient on race by no more than 1 point relative to Panel A's results, and otherwise slightly widens differences (1900, 1962, 1973, and 1990 cohorts). Similar results obtain for the subsample of older sons (30-37).

In Panel C, we add controls for the age of sons at the time their occupation is observed, as

³² In 1880 subsamples of farm owners and renters, there is a positive correlation between farm value or farm production and sons' rank in 1900 (conditional on fathers' rank), but there is still a large racial mobility gap.

well as fixed effects for state or region of residence in childhood, while still including the covariates from Panel B. In the historical samples, the childhood location fixed effects are at the state level, whereas for 1962 and 1973 cohorts they are at the region level, and for the 1990 cohort they are at the South/non-South level, reflecting constraints inherent to the datasets.³³ This specification controls for racial differences in the age structure of the underlying samples as well as differences in place of origin that may affect labor market outcomes. Coefficients on race are somewhat reduced relative to the previous panel, but are still quite large.

Specifications in Panel D add controls for sons' educational attainment or literacy, and the (binary) presence of both parents in the childhood household, which is observable in all samples. In the 1880-1900 sample, we control for sons' literacy, as measured in adulthood in 1900. In the 1910 to 1930 sample, school attendance (for those over age 5) and literacy (measured in adulthood) are available, and using both reduces the sample size relative to previous panels. From 1962 forward, we see completed grades for all sons. Adding these controls has a relatively minor effect on the size of the racial mobility gap, despite a growing racial difference in the number of single parent households and the rising level of blacks' educational attainment in the modern samples. One caveat is that we only observe school attendance and literacy in the historical samples, two rough proxies for education. We return to the topic of human capital in Section V. In unreported results, we replace the continuous measure of fathers' income rank with fixed effects for income rank deciles to allow for a nonlinear relationship. This change matters little for the results in Table 2.

In addition to the stark racial differences in expected outcomes, Table 2 also shows a consistently positive and statistically significant relationship between father's rank and son's rank. In Panel A's parsimonious regressions, the slope coefficients range from 0.23 to 0.43, with only small differences in the samples restricted to men age 30 to 37. Given the nature of income score assignments here, these coefficients are *not* directly comparable to the intergenerational income elasticities commonly reported in the modern literature, nor are they suitable for strong inferences based on comparisons of coefficients across the different types of datasets we employ. (We discuss concerns about measurement error below.) More importantly for our purposes, the black-white differences in expected outcomes conditional on fathers' rank were large and persistent. In other words, while there is evidence of mean reversion in the data, it appears that whites and blacks were moving toward different means throughout US history.³⁴

³³ Moving to county over state fixed effects for the earliest cohorts makes for slightly larger racial differences.

³⁴ Immigration may contribute to the racial difference if sons of immigrants, almost exclusively white, are highly mobile. Sons of immigrants are a substantial share of the 1900 cohort, but much smaller for subsequent

For additional perspective, Figure 3 illustrates these differences with the raw data, binned by fathers' income percentile and averaged, for easier viewing. Here, we allow both the intercept and slope estimates to vary by race and sons' cohort. Recalling that black fathers are concentrated below the 30th percentile in every dataset, the economic significance of the gap in regression lines in the 0 to 30 range of fathers' rank is clear. We include the NLSY79 cohort of sons observed in both 1990 and 2000 to show that the relatively large slope depicted for black men in 1990 is somewhat sensitive to the age at observation; by 2000, the slope for black sons had fallen and was more similar to that observed for whites.³⁵ It is notable that the positive relationship between father's and son's rank is apparent in both populations at all points in time—it was beneficial to be born to a better off black family rather than to an impoverished one, despite the many barriers to advancement.

C. Robustness of Baseline Estimates

The racial differences in intergenerational mobility documented above may be sensitive to features of the underlying data or to choices made in the data construction process. To evaluate the robustness of our results, we first address two common sources of bias in the intergenerational mobility literature, lifecycle bias and attenuation bias due to measurement error, before moving on to income assignment assumptions specific to our setting. Each of these concerns is addressed in more detail in Appendix IV.

Lifecycle Bias. A common concern in the empirical intergenerational mobility literature is that father-to-son income correlations tend to vary depending on the ages at which fathers' and sons' incomes are measured. This, in turn, may confound comparisons across samples that observe men at different ages (e.g., see Haider and Solon 2006, Mazumder 2015). We observe sons when they are relatively young compared to what is considered ideal (around age 40) when using modern data and annual income. We acknowledge this limitation but are somewhat less concerned with this issue for two reasons. First, the income scores reflect average income for men in that occupation over all ages (for a given race/region), rather than an individual's actual annual income, which tends to vary substantially with age. Second, we emphasize black-white comparisons of rank within datasets where black and white men are observed with similar age distributions. So, biases that affect blacks

cohorts. See Appendix Table A11 for a comparison of black father-son pairs in each cohort to non-immigrant white father-son pairs. The racial mobility gap is smaller, but only by a few percentiles.

³⁵ There is some attrition between the 1990 and 2000 observations of the NLSY79 cohort. Restricting to a balanced sample has no effect on the calculated slopes from Figure 3.

and whites equally would, in a sense, difference out.³⁶ Still, it is useful to (a) test the robustness of the paper's main conclusions to samples of sons measured closer to age 40 and (b) utilize the NLSY79 panel structure to capture sons at two points in time, 1990 and 2000. These additional results, detailed more fully in Appendix IV, confirm the paper's main conclusions.

Measurement error. A second common concern is that a single year, or even several years, of fathers' annual income might be a noisy measure of permanent income, tending to attenuate measures of intergenerational persistence and to overstate intergenerational mobility. Our approach may have some advantages in this regard. First, rank-rank regressions tend to be less sensitive to measurement error in income than log-linear regressions (Nybom and Stuhler 2017, Ward 2020). Second, occupation-based measures of fathers' status may be more accurate gauges of economic status than single-year measures of annual income.³⁷ It is unlikely that many of the relatively poor individuals we observe (e.g., unskilled laborers) were merely having a temporary negative shock to their status or that affluent individuals (e.g., professionals) were having a temporary positive shock. On the other hand, our approach has vulnerabilities. Occupation-based income scores mask permanent individual-level productivity differences within race/occupation/region cells. Moreover, there are bound to be some mismatches between father and son in the historical samples, and some cases where an individual's occupation is misreported.

To assess whether measurement error in economic status is likely to greatly erode the black-white mobility gap estimated in regressions such as those in Table 2, we generated simulations in which we added measurement error to both fathers' and sons' income scores and then ran rank-rank regressions. The results from error-ridden data revealed no remarkable difference in the coefficient on race relative to the coefficient from the simulated model without measurement error.³⁸ We concluded that measurement error is unlikely to account for the black-white mobility gap.³⁹

³⁶ If black men progress through occupational hierarchies at slower rates than their white peers over the lifecycle, then we are likely to *understate* racial differences in sons' status by observing them at relatively young ages. We therefore test the robustness of the paper's main conclusions to samples of sons measured closer to age 40. These results, found in Appendix IV.c., confirm the paper's main conclusions.

³⁷ For instance, in the historical samples, census enumerators collected occupational information even for those who were temporarily unemployed, thereby avoiding temporary zero income measures. For reference, Björklund and Jäntti (1997, p. 1015) estimate similar intergenerational income elasticities when using 5-year averages of fathers' income and predictions of fathers' income based on occupation and education.

³⁸ To approximate our empirical setting, the simulation has black fathers and sons earn half of what white fathers and sons earn on average; sons' earnings rise with fathers' earnings by a factor of 0.4, but with a lower intercept for black sons; blacks make up 10 percent of the sample. Classical measurement error is added to both fathers' and sons' earnings because rank-rank regressions are biased by error in both fathers' and sons' earnings (Nybom and Stuhler 2017). The standard deviation of the measurement error is race-specific, corresponding to the ratio of the standard error of income scores to mean income scores for each race based on

Method of Income Assignment. A concern that is more specific to this study is that the historical samples all rely heavily on the 1940 census data for income assignments, while the 1962, 1973, and 1990 cohort results rely on contemporary census data for income assignments, as described above and in the data appendix (Appendix I). We have built two alternative scoring schemes. First, we combine information from the published tables of the 1900 Census of Agriculture for farmers (by race, region, and ownership status) and information from Preston and Haines (1991) for other occupations to form a 1900-based set of scores, which we apply to the 1880-1900 sample.⁴⁰ To introduce flexibility by race and region for the non-farmer assignments, we rely on ratios derived from the 1940 complete count census files. Second, we undertake analyses using the 1960-based scores for all cohorts. Our main conclusions are not much affected by this sensitivity test, as discussed more fully in Appendix IV.a.

IV. Counterfactual Distributions

Given the racial differences in mobility documented above, it is natural to ask how far such differences go toward explaining differences in the distributions of sons' labor market outcomes. For perspective, we estimate counterfactuals using re-weighting techniques developed in DiNardo, Fortin, and Lemieux (1996). Following their notation, we can specify the joint distribution of sons' status, fathers' status and their respective races as $F(s, z, r_s, r_z)$ where s is the status of a son and z is the status of his father; r_s, r_z are binary variables that indicate the race category for which s or z is observed. The joint distribution of sons' and fathers' status for a given race, r , can be written as $F(s, z | r_s = r, r_z = r)$. In the observed data, $r_s = r_z$, but as described below, in the counterfactuals r_s will not equal r_z .

In this framework, the marginal density of status for black sons can be written as the integral of the density of sons' status conditional on fathers' status for blacks, ($f(s|z, r_s = Black)$), over the distribution of fathers' status for blacks $F(z|r_z = Black)$.

income scores derived from the 1940 U.S. Census. (Assigning the same measurement error to both races does not change our conclusions.) We rank fathers and sons and run rank-rank regressions. The coefficient on race is -21.7 in the results without adding measurement error and -22.3 in the results with measurement error added.³⁹ Zach Ward generously ran extra regression specifications at our request, based on Ward (2020). In those specifications, he ran regressions analogous to those in Table 2 for fathers observed in 1910 and sons in 1940. Ward instrumented for fathers' income rank using the same father's income rank in another Census year (1900 or 1920). The racial gap in intergenerational mobility fell from 25 percentiles of the income distribution to 16 percentiles of the income distribution with the instrument, but remained statistically significant.

⁴⁰ We thank Laura Salisbury for insight and assistance with the Preston and Haines data. The black-white mobility gap in 1880-1900 is smaller by 3 to 6 percentiles with that scoring scheme (Appendix Table A7).

$$f_{Black}(s) = \int_z f(s|z, r_s = Black) dF(z|r_z = Black).$$

The counterfactual seeks to replace the conditional density of black sons' status with the conditional density of white sons' status, while retaining the distribution of black fathers' status. This yields a counterfactual, $f_{cf}(s)$, in which black sons are ranked like whites with similarly ranked fathers.

$$f_{cf}(s) = \int f(s|z, r_s = White) dF(z|r_z = Black)$$

The key insight of DiNardo, Fortin, and Lemieux (1996) is that a term $\psi_z(z)$, which equals $dF(z|r_z = Black)/dF(z|r_z = White)$, can reweight the actual white distribution to produce the counterfactual distribution $f_{cf}(s)$.

$$f_{cf}(s) = \int f(s|z, r_s = White) \psi_z(z) dF(z|r_z = White)$$

In practice, this entails using estimates from probit regressions to up-weight white observations that are similarly situated to blacks and down-weight white observations that are not. The result is a counterfactual for black sons that has fathers distributed as they are in the black sample but has the mobility patterns of whites. To be clear, this counterfactual is mechanical in the sense that it simply reshapes a given distribution of ranks. But it does provide quantitative perspective on how strongly the racial mobility gap has played into disparities in outcomes.

Figure 4 shows actual and counterfactual distributions of black sons' rank. These kernel densities are smoothed distributions of the underlying data.⁴¹ In each panel, the solid lines, representing counterfactual outcomes for black sons, closely follow the long dashed lines representing actual outcomes of white sons. The result of equalizing mobility patterns is stark for all cohorts in the sample. Equality in transitions, conditional on fathers' income ranks, would have greatly improved the outcomes of black men. The counterfactuals suggest that differences in transition patterns were the primary proximate cause of racial inequality in each generation.

It is not easy to imagine this counterfactual world of rapid black progress—obviously the course of American economic and social history would have been much different if, by 1900, black men had achieved the counterfactual distribution shown in Figure 4A. For reference, in census data, the median black male ranked at the 30th percentile of the national distribution of earned income in 2000.⁴² Thus, it took 100 additional years for the middle of the black male earnings distribution to

⁴¹ Densities are estimated using an adaptive bandwidth inversely proportional to the number of observations in a particular area of the distribution. Results for other bandwidth choices are similar.

⁴² Calculated with IPUMS 2000 Census 5% sample, ranking white and black men, not in school, age 25-59.

reach the point that it might have reached in 1900 had black sons in our sample transitioned across income ranks like white sons with similar fathers.

For a final and simpler counterfactual perspective, we return to the underlying occupational categories. Figure 5 shows the distribution of sons in each of the five cohorts across broad occupation categories (as in Table 1). The solid bars reflect the distribution of black sons in each cohort, whereas the white bars reflect the distribution of white sons in each cohort. The counterfactual distribution of black sons' occupations in each cohort is shown in gray bars, where once again the counterfactual has black sons transitioning as white sons did from the same occupational category of fathers.⁴³ Differences between the actual and counterfactual distribution of black sons in each cohort are stark (comparing solid to gray bars). Again, the proximate cause of black over-representation in lower status occupations, including blue-collar laborers, farm tenants, and, in some cohorts, farm laborers, is the different transition patterns relative to white sons and not the base year's occupational status of fathers. In nearly all cases, the counterfactual distribution of black sons is closer to the actual distribution of white sons than of black.

V. Persistence of the Mobility Gap: Discussion and Additional Evidence

The findings described thus far show that the United States has had a large and persistent racial gap in intergenerational mobility since 1880 *and* that this mobility gap accounts for the lion's share of racial disparities in occupational income for each generation. How the mobility gap has persisted, despite major changes in the economy and civil rights policy since 1880, is an important and open question. Fully resolving that question is beyond this paper's scope, but in this section, we develop an interpretation that emphasizes the intergenerational interaction of discrimination and human capital formation in determining labor market outcomes. We also present new, albeit imperfect, evidence that the mobility gap was strongly associated with differences in human capital throughout the twentieth century, though it appears such differences cannot fully account for the gap.

To fix ideas, suppose that a son's rank depends on his productive human capital, race, and a random error term. If, on average, a cohort of black sons falls behind a cohort of white sons with similarly ranked fathers, it is either because they accumulated less human capital or because their human capital was not equally rewarded in the labor market, perhaps due to discrimination.⁴⁴

⁴³ Appendix II.b. reports the occupational transition matrices for black and white sons in each cohort.

⁴⁴ Highlighting labor market discrimination here is not meant to discount other forms of discrimination, including in the public provision of education or in housing market discrimination that results in residential segregation, issues we engage below.

A model of intergenerational mobility, in turn, may posit that human capital depends on parental investments during childhood, endowments, and a random error term (e.g., Becker and Tomes 1979, 1986; Solon 2014). Investments may include families' expenditures of time and resources on education, healthcare, and other aspects of human development. Endowments may include inherited genetic traits but also access to social connections and community-level resources that influence human capital accumulation; in essence, this captures factors relevant to human capital formation that are not a direct result of parental investment. Group disparities in parental and community resources reflect both historical and contemporary discrimination.

From the parents' perspective, assuming that they cannot borrow against children's future earnings, Solon (2014) shows that optimal investment in a child's human capital can be expressed as a function of parents' income, their altruism (the weight given to children's earnings in the parents' utility function), and the expected return to investment in children's human capital. This expected return to investment reflects both the marginal product of investment in generating human capital and the labor market returns to human capital. Human capital is thus endogenous to discrimination, and for this reason, we do not attempt to separate one from the other in our intergenerational data.

Empirical studies of intergenerational mobility attempt to hold parental income constant. But a simple upshot of the framework outlined above is that even for children of parents with the same income and preferences, differences in endowments, including social connections and community-level resources, may affect children's human capital and subsequent labor market outcomes. The idea that such factors matter is prominent in the theoretical literature on race and intergenerational mobility. For instance, in Loury (1977, p. 157), human capital production is described as "a social process; that is, interactions of home, community, and an educational institution convert a young person's innate capabilities into marketable characteristics." Racial segregation and group differences in average economic status or human capital will distinguish the human capital accumulation of individuals with otherwise similar observables. In another example, Lundberg and Startz (1998) highlight externalities in the production of human capital; that is, the productivity of human capital investment in a child is increasing in the surrounding community's level of human capital. Thus (again), segregation and historical differences in groups' average human capital levels may have left black children at a persistent disadvantage. In Margo (2016), race *per se* enters directly into the child's human capital equation, but the rationale is similar to those described above: "racial identity influences access to institutions and social networks complementary to human capital production" (p. 316). This disparity in access was glaring in the era of *de jure* segregated schooling, but Margo also points out that "spatial mismatch" and "bad ghettos" (Kain 1968; Cutler and Glaeser

1997)—the geographic concentration of blacks in areas with worse economic opportunities—may have extended black children’s disadvantage into the late twentieth century and beyond.⁴⁵ Much of this resonates with the sociology literature discussed earlier in that human development is thought to be influenced by one’s surroundings and access to resources in childhood and early adulthood, and throughout American history, one’s surroundings and access to resources that build human capital have often depended on one’s race (Wilson 1987, Massey and Denton 1993, Sharkey 2013).

This paper’s data and analyses do not attempt to econometrically identify community-level influences on human capital and employment outcomes (as in Chetty, Hendren, and Katz 2016), nor how they interact with race and vary over time (Derenoncourt 2019). Instead, we focus on characterizing the proximate role of human capital in underpinning the black-white mobility gaps that we documented above.

An extensive literature on the black-white income gap, typically viewed in cross-sectional data (without intergenerational information), indicates that differences in human capital are important. The literature is particularly deep for the years after 1980, when both educational attainment and test scores are available (Neal and Johnson 1996, Altonji and Blank 1999, Carneiro et al. 2005, Fryer 2011, Lang and Manove 2011), though such proxies might not accurately measure human capital and the inaccuracy may differ by race. In sum (and roughly), conditioning on human capital variables tends to reduce the black-white wage gap for men by half or more (see Table 1 of Carruthers and Wanamaker 2017). For the period before 1980, fewer human capital variables are available in standard data sources, but educational attainment was clearly relevant to racial differences in labor market outcomes (Smith and Welch 1989, Donohue and Heckman 1991, Card and Krueger 1992, Bayer and Charles 2018). Carruthers and Wanamaker (2017) study the black-white wage gap in 1940 and incorporate measures of educational attainment, local school quality and test scores (imputed from World War II enlistment records). They find that human capital variables account for a large share of the pre-war black-white wage gap, leaving a residual gap of about 10 log points relative to the baseline gap of approximately 50 log points.

These cross-sectional income gap studies do not speak directly to the black-white *intergenerational mobility gap* (i.e., the gap in outcomes conditional on fathers’ status), but

⁴⁵ Margo’s reference to “spatial mismatch” includes both blacks’ concentration in the South, a relatively low-wage region for much of US history, and later, their concentration in central-city neighborhoods as jobs relocated to suburban areas (see Kain 1968, Wilson 1987). His reference to “bad ghettos” refers to the negative correlation between the level of residential segregation and blacks’ labor market outcomes, which strengthens after 1970 (Cutler and Glaeser 1997, Collins and Margo 2000). Though not focused on racial disparities, Tan (2019) emphasizes the importance of local labor markets for intergenerational mobility in the early twentieth century in contrast to the emphasis on childhood environment in more recent decades.

Bhattacharya and Mazumder (2011) and Mazumder (2014) do. They show that conditioning on sons' Armed Forces Qualification Test (AFQT) scores greatly narrows black-white differences in upward rank mobility in the NLSY79 cohort.⁴⁶

Using the earnings ranks that form the basis of this paper's analyses, we too find that human capital differences between black and white sons are empirically important in explaining racial differences in intergenerational mobility in the two cohorts for which human capital measures are available. For the 1990 cohort, we follow Bhattacharya and Mazumder and use reported AFQT scores as a proxy for human capital. Figure 6, Panel A, contains the average AFQT score for white and black sons of household heads in each income score decile. The test score gaps are substantial, but declining with father's income decile, suggesting that human capital disadvantages were particularly pronounced among the sons of poorer black households. A simple counterfactual exercise shows that raising AFQT scores for black sons from their documented level to the 90th percentile of the AFQT distribution for blacks would raise the predicted average income rank of black sons by 10 percentile points: from the 28th to 38th percentile of the income distribution, roughly half of the mobility gap measured in that year.⁴⁷ Although this counterfactual may seem dramatic, the 90th percentile of the black AFQT distribution corresponds to the sample median for whites.

A similar exercise for the 1930 cohort of sons gives consistent results. In this case, we follow Carruthers and Wanamaker (2017) and impute Army General Classification Test (AGCT) scores based on occupation-region-race categories and a subsample of World War II enlistees in 1943 (National Archives and Records Administration 2002; Ferrie, Rolf, and Troesken 2012).⁴⁸ Average

⁴⁶ The AFQT was administered to the NLSY79 cohort in 1980 regardless of whether they joined the military. The black-white gap in moving out of the bottom quintile of income is only 5 percentage points for those with median AFQT79 scores compared to an unconditional gap of 27 percentage points (Mazumder 2014, p. 12).

⁴⁷ We run the Table 2, Panel D specification for blacks only, with AFQT score as an additional covariate. We then predict the counterfactual income score ranks for sons after replacing AFQT scores with the 90th percentile of the same. A simpler exercise where we add AFQT scores to the pooled regression (of blacks and whites) in Panel D of Table 2 and observe the associated decline in the coefficient on the race indicator is not advisable because of limited overlap in the AFQT score distribution of blacks and whites. We run the analogous regressions for the 1930 sample using AGCT scores.

⁴⁸ The Army General Classification Test (AGCT) was designed to help sort men into military occupations; the tests emphasized arithmetic, vocabulary, and block counting (i.e., visualizing three-dimensional relationships) (Ferrie, Rolf, and Troesken 2012). As with AFQT, we interpret group differences in AGCT test scores as the cumulative result of educational experiences in and out of school, including both substantive knowledge and test-taking skills. We use the enlistment sample to calculate men's mean test scores in occupation-by-region-by-race categories, and then merge this information with our 1910-30 cohort data. When there were fewer than 50 observations in a race-by-region-by-occupation cell, we moved to race-by-occupation cells. This approach is imperfect due to selection into the military sample and timing (i.e., 1943 versus 1930). Moreover, we do not know if the tests were administered in a way that varied by race (Jenkins et al. 1944, p. 15 suggests similar conditions), or whether the test itself was an equally accurate measure of skill for black and white respondents.

(imputed) AGCT scores by race and parental income decile are shown in Panel B of Figure 6. (Please note that the scales of the two tests, AGCT and AFQT, are not the same.) Again, the black-white gaps are stark within each decile of the fathers' income distribution, and again they are empirically important. A counterfactual exercise where black sons all obtain AGCT scores at the 90th percentile of the black distribution would more than double their predicted average income rank: from the 15th to 31st percentile of the income distribution, a change equal to roughly three-quarters of the racial mobility gap for this cohort.⁴⁹

The persistence of the racial mobility gap over time is striking, and it poses a challenge to social scientists and policymakers: How did the mobility gap survive the Great Migration, the Civil Rights Movement, the dismantling of rigid segregation in the South, and the implementation of anti-discrimination policies in labor markets? This section highlights the importance of differences in men's observable human capital, as reflected in test scores. In this sense, the mobility gap has long been rooted, at least in part, in the complex processes of human capital accumulation that begin early in life and that have diverged, even for children whose parents had similar observable economic status.

VI. Conclusion

After the Civil War, African Americans occupied the lowest rungs on the national income ladder. A substantial literature documents that, more than 150 years later, black men's average and median incomes remain far below those of whites. Indeed, black men are still disproportionately concentrated in the lowest tiers of the income distribution. The new data and analyses developed in this paper show that the headwinds black men have faced are race-specific in the sense that whites from similarly disadvantaged backgrounds experienced greater upward mobility and higher average income in every cohort since 1880. In terms of expected rank in the occupational income distribution conditional on their father's rank, the size of the black disadvantage has remained large and relatively consistent from the late nineteenth to the end of twentieth century, at around 20 percentile points.

Our results highlight that racial differences in intergenerational mobility patterns have been an important proximate cause of black-white income inequality from the Civil War until today. This finding echoes Otis Duncan's conclusion for mid-century data (1968a)—that the “inheritance of

⁴⁹ The imputation of test scores by occupation, race, and region results in distributions that are compressed relative to actual individual-level scores (which are not observed for 1910-30); therefore, there is little overlap between the white and black imputed scores. Moving to the 90th percentile of the black distribution is equivalent to giving all men the average income score of southern black white-collar workers.

race” is key—but the work here extends our perspective over a much wider frame of American history. Counterfactuals that equalize mobility across races, conditional on parents’ status, result in large relative income gains for black men in every generation we examine. In contrast, the actual rate of black-white convergence has been slow and is far from complete.

Perhaps surprisingly, even major changes in discriminatory policies and institutions associated with the Civil Rights Movement have had limited power to alter the intergenerational dynamics that propagate racial disparities in material wellbeing.⁵⁰ We caution that the results do not imply that these major social changes did not matter—it is entirely plausible that economic and social trends since the 1960s have disproportionately affected black men and offset gains that otherwise might have accrued to them. In other words, a relatively constant net mobility gap is consistent with there being changing and countervailing underlying causes. Future research that disentangles the underlying determinants of differences and changes in the mobility gap will be valuable.

In a proximate sense, our results suggest that differences in human capital accumulation, conditional on parents’ economic status, have underpinned a substantial portion of the black-white mobility gap throughout the twentieth century. Although the barriers have varied over time, structural impediments to black children’s accumulation of human capital have been a long-standing feature of American society, most obviously through slavery and then a century of separate and unequal schools (Williams 2005, Margo 1990, Carruthers and Wanamaker 2017). Even after school desegregation in the 1960s and 1970s, residential segregation, which peaked around 1970 (Cutler, Glaeser, and Vigdor 1999, Logan and Parman 2017), continued to limit black children’s exposure to high social capital environments and access to high quality educational and employment opportunities. The re-segregation of schools since 1990 (UCLA Civil Rights Project 2014) and substantial racial gaps in children’s test scores today (Fryer 2011) are reminders that the history of inequality in children’s opportunities to build human capital is not behind us. Indeed, without more effective efforts to improve the life chances of black children, racial disparities in mobility and income may endure for generations to come.

⁵⁰ Hilger (2016) suggests that changes in the South after 1930 may have increased educational mobility of both black and white children (i.e., weakened the correlation with parents’ attainment). In our analyses, this apparently did not translate into sizable changes in the black-white gap in occupational outcomes conditional on parents’ outcomes.

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TABLE 1: NATIONAL INCOME SCORE RANKINGS AND SHARES BY OCCUPATION, BLACK AND WHITE FATHERS

PANEL A: FATHERS' AVERAGE INCOME SCORE RANKS BY OCCUPATION CATEGORY

Sons' Cohort Year	1900		1930		1962		1973		1990	
	White	Black	White	Black	White	Black	White	Black	White	Black
Farmer, owns	56.6	8.4	53.9	8.0	43.7*	3.3	45.5	4.7	60.3	4.0
Farmer, does not own	42.4	3.9	42.0	3.9						
Farm laborer	13.0	2.3	14.6	2.5	8.2	1.6	10.6	2.1	18.6	1.4
White collar, professionals	91.4*	28.2	88.7	33.0	87.6	37.1	86.8	41.0	80.8	42.0
White collar, managerial and clerical					64.2	23.5	60.4	24.7	50.3	20.7
Blue collar, skilled	65.5	16.4	66.5	20.3	61.1	20.4	59.8	23.9	54.2	23.0
Blue collar, semi skilled	52.9	21.4	52.1	21.7	39.2	13.7	41.3	16.0	32.6	14.5
Blue collar, laborer	21.7	11.5	23.8	12.6	16.3	8.30	19.4	10.0	17.7	7.1
<i>AVERAGE</i>	57.1	7.1	56.4	8.0	53.7	10.2	55.6	15.3	56.4	17.9
<i>N</i>	282,980	25,119	1,415,312	82,223	8,950	719	13,849	1,175	2,233	826

PANEL B: FATHERS' SHARE BY OCCUPATION CATEGORY (%)

Sons' Cohort Year	1900		1930		1962		1973		1990	
	White	Black	White	Black	White	Black	White	Black	White	Black
Farmer, owns	43.6	12.5	26.6	15.3						
Farmer, does not own	11.0	37.5	14.3	45.7	20.7	36.5	12.4	16.0	2.9	0.9
Farm laborer	2.6	20.5	4.0	11.3	2.3	7.8	3.4	9.3	0.5	2.6
White collar, professionals					18.0	5.3	21.8	9.2	33.1	10.3
White collar, managerial and clerical	13.9	1.1	18.7	2.3	9.0	2.5	10.3	5.5	13.4	9.3
Blue collar, skilled	12.5	2.5	17.2	3.2	22.2	11.8	24.2	12.9	25.6	21.6
Blue collar, semi skilled	9.5	3.9	10.2	5.2	21.3	16.2	21.2	23.1	19.6	36.8
Blue collar, laborer	7.0	22.1	9.1	17.0	6.5	19.9	6.7	24.0	4.9	18.6

Notes and Sources: Table presents average income score rankings (Panel A) and percentage distribution (Panel B) of sample fathers by broad occupation category for each cohort of sons in our data. See text for definition of “father” in each sample. Average income score ranks for fathers are not monotonic in skill within the blue-collar category due to geographic concentrations. Specifically, in 1880, black fathers in the semi-skilled blue collar category were disproportionately located outside the South, where incomes were higher.

*Farming occupations (Farmer, owns and Farmer, does not own) are collapsed in the modern samples; White collar occupations are collapsed in historical samples.

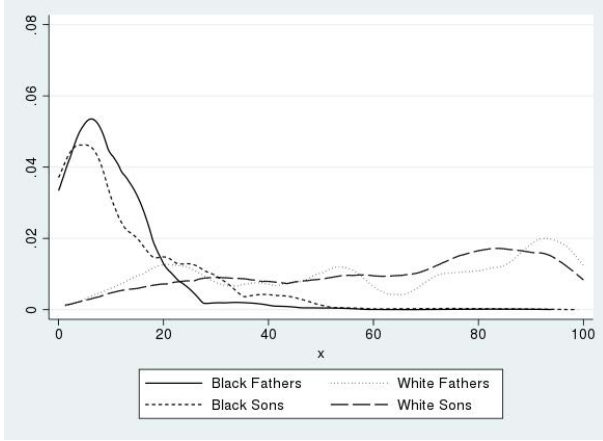
TABLE 2: SONS' INCOME RANK REGRESSIONS, INCLUDING FATHERS' INCOME SCORE RANK AND RACE

Sons' Cohort Year	Full Sample					Age 30-37 only				
	1900	1930	1962	1973	1990	1900	1930	1962	1973	1990
PANEL A: WITH FATHERS' INCOME RANK CONTROLS										
BLACK	-22.50*** (0.429)	-22.82*** (0.0711)	-27.41*** (0.800)	-25.19*** (0.700)	-18.94*** (1.554)	-29.19*** (0.750)	-27.04*** (0.119)	-26.94*** (1.379)	-26.94*** (1.335)	-20.19*** (2.569)
Parent's Income Rank	0.432*** (0.00663)	0.398*** (0.000890)	0.308*** (0.0109)	0.227*** (0.00882)	0.254*** (0.0239)	0.399*** (0.0113)	0.383*** (0.00136)	0.336*** (0.0177)	0.267*** (0.0152)	0.269*** (0.0393)
N	308,099	1,497,535	9,025	13,848	2,595	100,912	604,441	3,361	4,267	990
R-Squared	0.354	0.307	0.226	0.164	0.146	0.416	0.341	0.256	0.200	0.160
PANEL B: ADD FATHERS' EDUCATION OR LITERACY, FARM, AND URBAN CONTROLS										
BLACK	-25.17*** (0.392)	-22.42*** (0.0714)	-28.13*** (0.781)	-25.62*** (0.697)	-19.81*** (1.571)	-31.22*** (0.702)	-25.93*** (0.121)	-27.75*** (1.355)	-27.16*** (1.359)	-20.90*** (2.633)
Parent's Income Rank	0.361*** (0.00678)	0.285*** (0.000903)	0.224*** (0.0120)	0.162*** (0.00989)	0.182*** (0.0270)	0.345*** (0.0114)	0.276*** (0.00137)	0.238*** (0.0197)	0.176*** (0.0171)	0.221*** (0.0457)
R-Squared	0.409	0.381	0.259	0.182	0.188	0.451	0.409	0.300	0.235	0.216
PANEL C: ADD AGE AND STATE/REGION OF ORIGIN FIXED EFFECTS										
BLACK	-23.49*** (0.453)	-21.70*** (0.0751)	-26.79*** (0.776)	-22.98*** (0.677)	-19.02*** (1.576)	-28.89*** (0.836)	-24.84*** (0.128)	-28.13*** (1.276)	-25.30*** (1.323)	-19.62*** (2.663)
Parent's Income Rank	0.269*** (0.00393)	0.214*** (0.000939)	0.168*** (0.0120)	0.125*** (0.00981)	0.163*** (0.0273)	0.267*** (0.00646)	0.219*** (0.00146)	0.200*** (0.0202)	0.129*** (0.0178)	0.198*** (0.0462)
R-Squared	0.462	0.430	0.329	0.277	0.202	0.471	0.425	0.320	0.256	0.229
PANEL D: ADD SONS' EDUCATION OR LITERACY CONTROLS + PARENTAL PRESENCE										
BLACK	-21.82*** (0.435)	-20.90*** (0.0753)	-26.72*** (0.779)	-23.37*** (0.619)	-20.27*** (1.508)	-27.00*** (0.812)	-23.89*** (0.128)	-28.00*** (1.294)	-24.98*** (1.224)	-20.55*** (2.548)
Parent's Income Rank	0.266*** (0.00393)	0.210*** (0.000938)	0.173*** (0.0126)	0.0787*** (0.00990)	0.124*** (0.0283)	0.264*** (0.00647)	0.211*** (0.00146)	0.207*** (0.0213)	0.0785*** (0.0176)	0.152*** (0.0492)
R-Squared	0.465	0.433	0.329	0.368	0.306	0.475	0.430	0.320	0.378	0.341

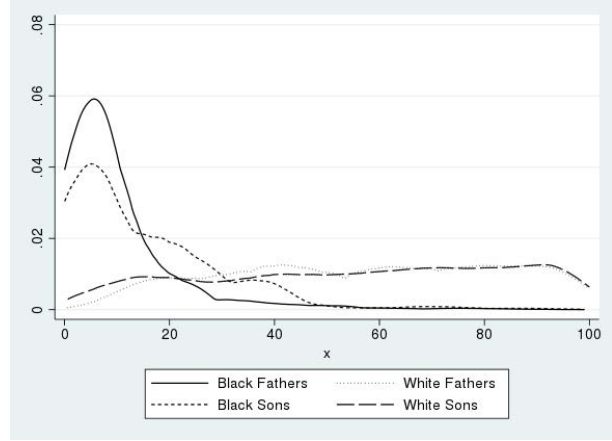
Notes and Sources: Table contains estimated coefficients from an OLS regression where Sons' Income Rank is regressed on an indicator for Black as well as Fathers' income rank (Panel A), parental education or literacy (not available in 1900), farm residence, and urban residence (Panel B), age and (childhood) state of origin fixed effects (Panel C), and sons' school attendance (1930 sample), sons' education level (1962, 1973, 1990 samples), sons' literacy in adulthood (1900, 1930 samples) and an indicator for the presence of both parents in the childhood home (Panel D). Standard errors in parentheses. Age range in the Full Sample varies by cohort: 20-37 for 1900 and 1930 cohorts; 20-43 for 1962 and 1973 cohorts; 25-33 for 1990 cohort. The set of columns on the right restricts all samples to a common support of sons' ages at observation: 30-37. Sample sizes do not change as you move down a column with the exception of Panel D for the 1930 cohort where sample size for Panel D column 2 is 604,441. School attendance is not measured for ages younger than 6 in the year of childhood observation (1910) so adding sons' education controls in the last panel effectively limits the sample to those aged 26 and older in 1930. See text for definition of "father" in each sample.

**FIGURE 1: KERNEL DENSITY PLOTS: INCOME SCORE PERCENTILES,
BLACK AND WHITE FATHERS AND SONS BY COHORT**

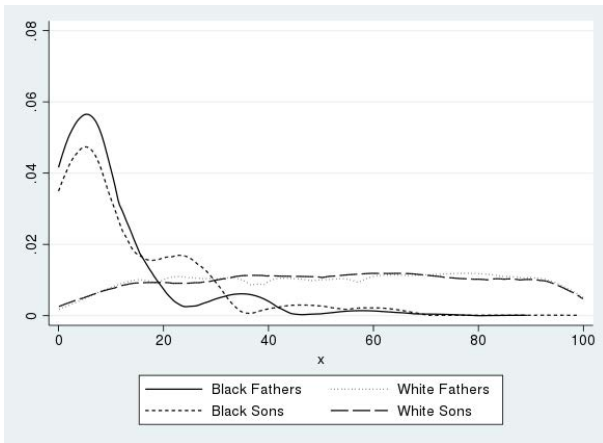
PANEL A: 1900 COHORT



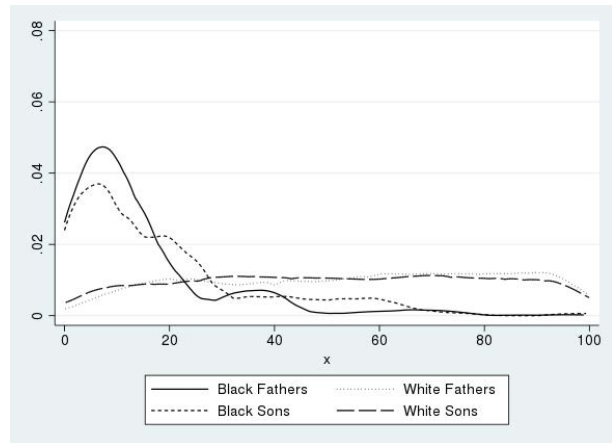
PANEL B: 1930 COHORT



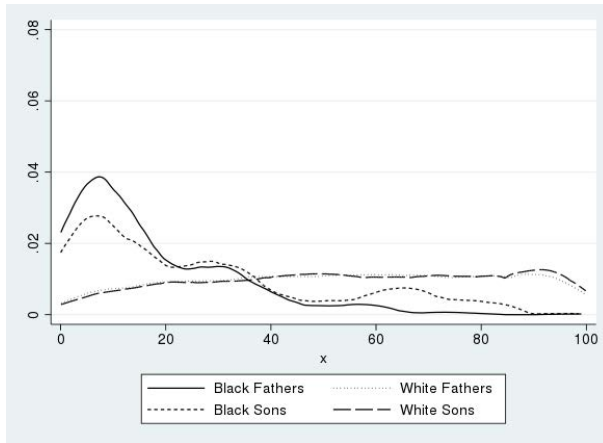
PANEL C: 1962 COHORT



PANEL D: 1973 COHORT

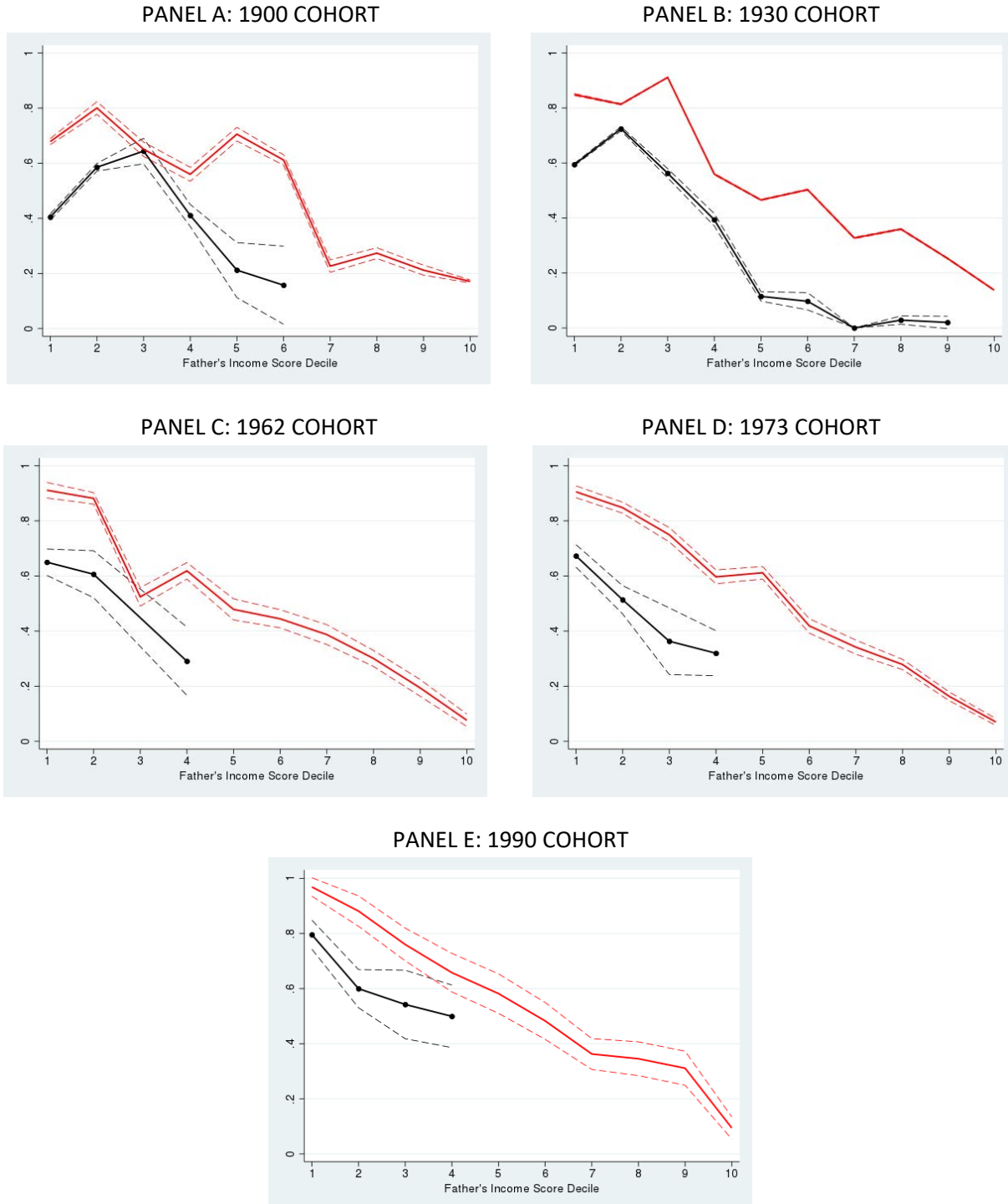


PANEL E: 1990 COHORT



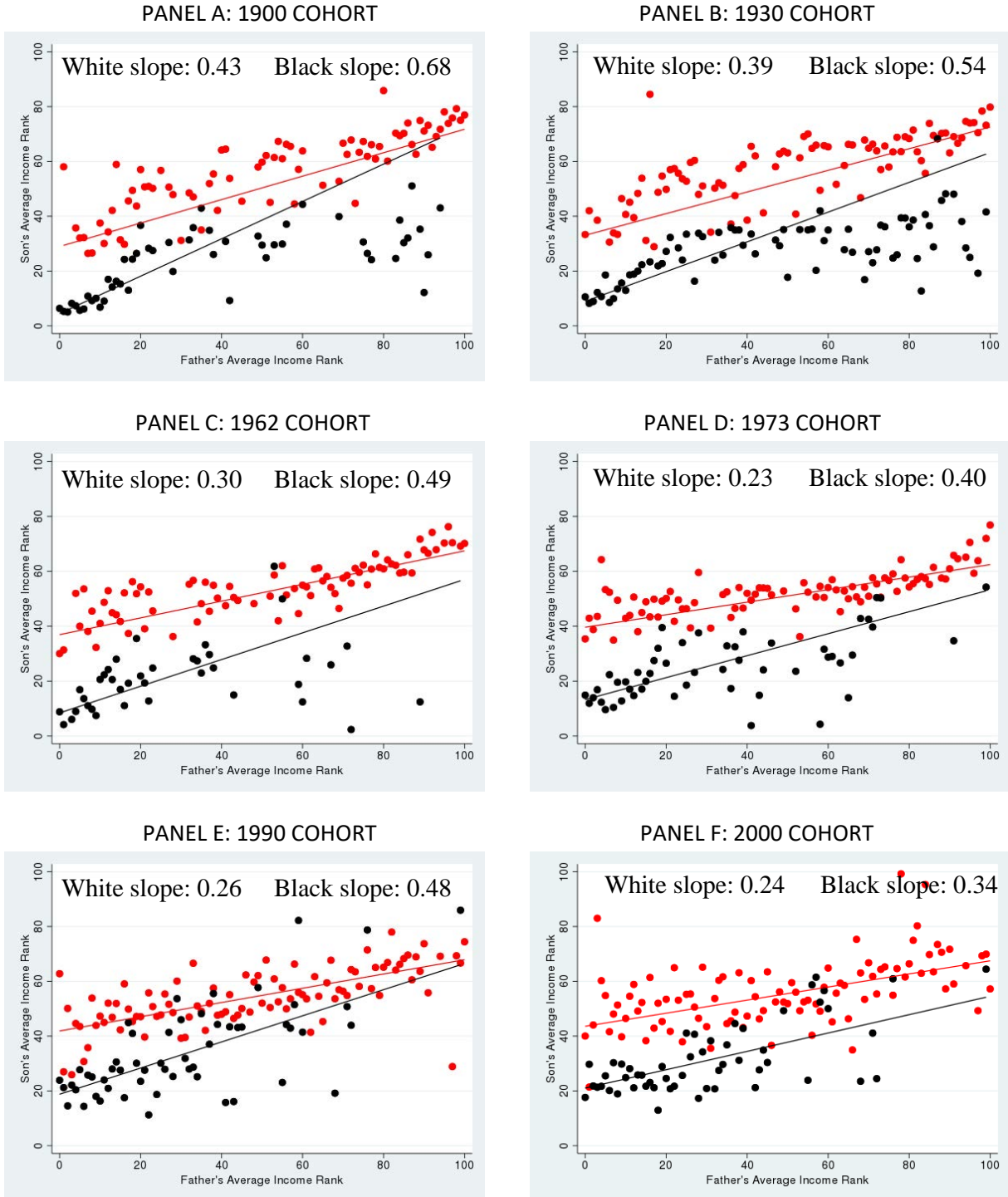
Notes and Sources: See main paper for sources and sample construction.

FIGURE 2: UPWARD RANK MOBILITY BY FATHERS' INCOME SCORE DECILE, BY COHORT AND RACE



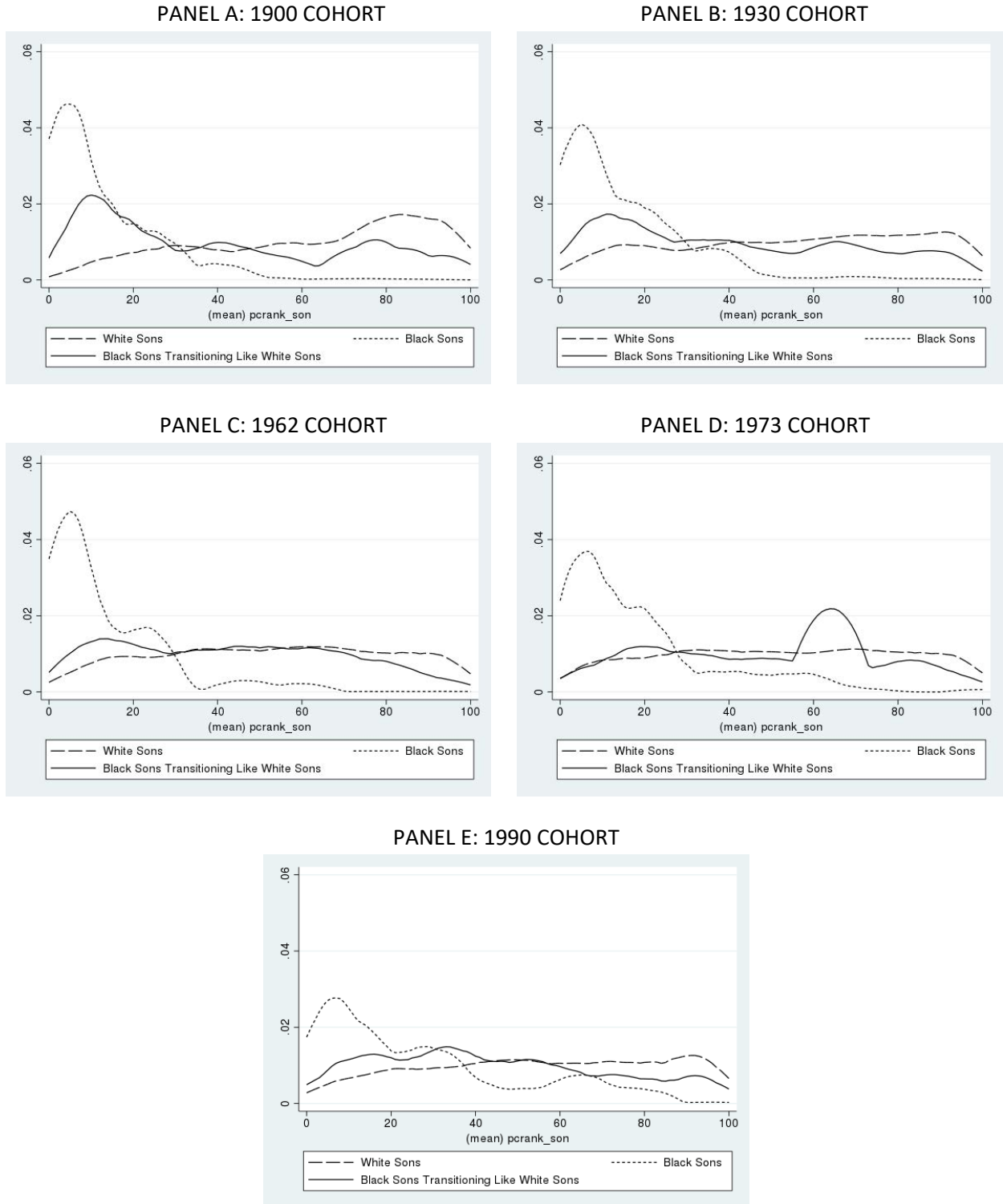
Notes: Black solid lines represent black sons' Upward Rank Mobility values at each value of head's income decile; dotted lines are 95% confidence intervals. Red solid lines represent the same for white sons. Standard errors generated by bootstrap method following Corak, Lindquist, and Mazumder (2014). Bootstrapping based on 50 draws of 50 father-son pairs within an income score rank decile. Therefore, plots are limited to fathers' income score rank deciles with greater than 50 observations. In Panel C, the URM value for black sons of fathers at the 3rd income score decile is imputed; there are not 50 observations in that bucket.

FIGURE 3: AVERAGE SON'S INCOME SCORE RANK BY FATHER'S INCOME SCORE RANK



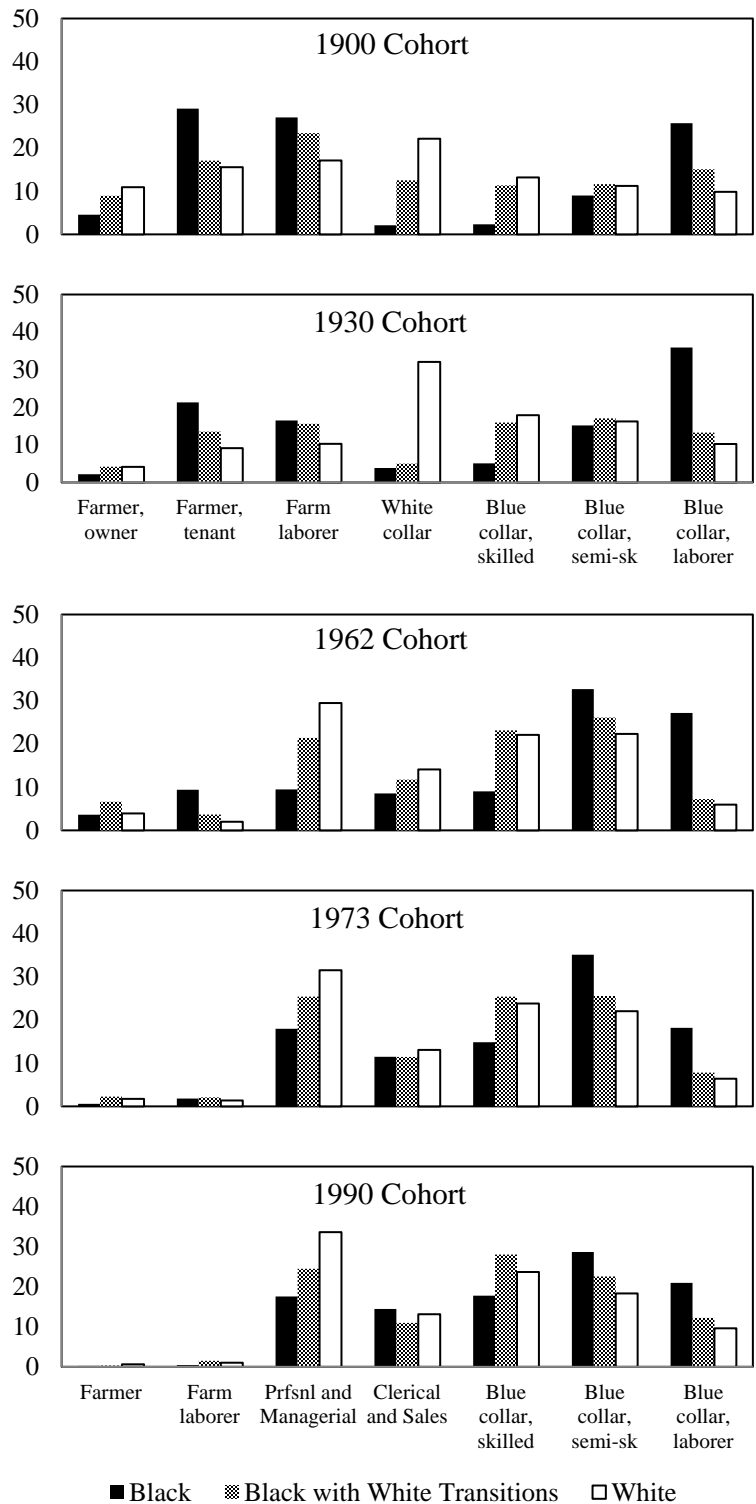
Notes: Black dots represent black parents and sons; red dots reflect white parents and sons. Average values of sons' income ranks for each fathers' income rank (rounded to the nearest unit) are plotted. Linear lines of best fit are for the underlying data, not for the plotted data points (which represent average sons' outcome for each value of fathers' rank).

FIGURE 4: COUNTERFACTUAL KERNEL DENSITY PLOTS FOR BLACK SONS INCOME SCORE RANKS UNDER WHITE SONS' TRANSITION RATES



Notes: Long dashes represent the transition patterns of white sons and short dashes represent transition patterns of black sons. Solid lines reflect predicted black sons' outcomes based on actual black fathers' income ranks and white transition probabilities.

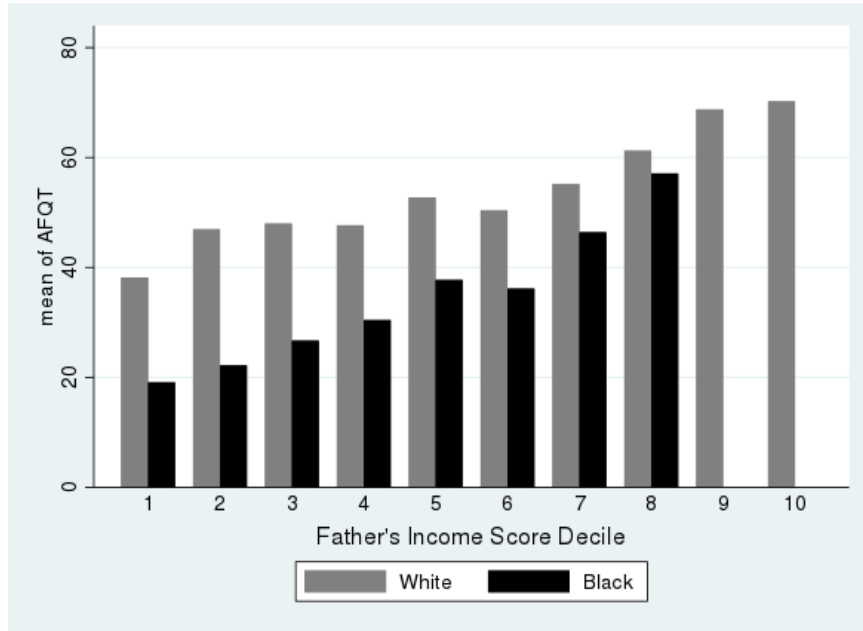
FIGURE 5: OCCUPATIONAL STATUS OF SONS UNDER COUNTERFACTUAL TRANSITIONS



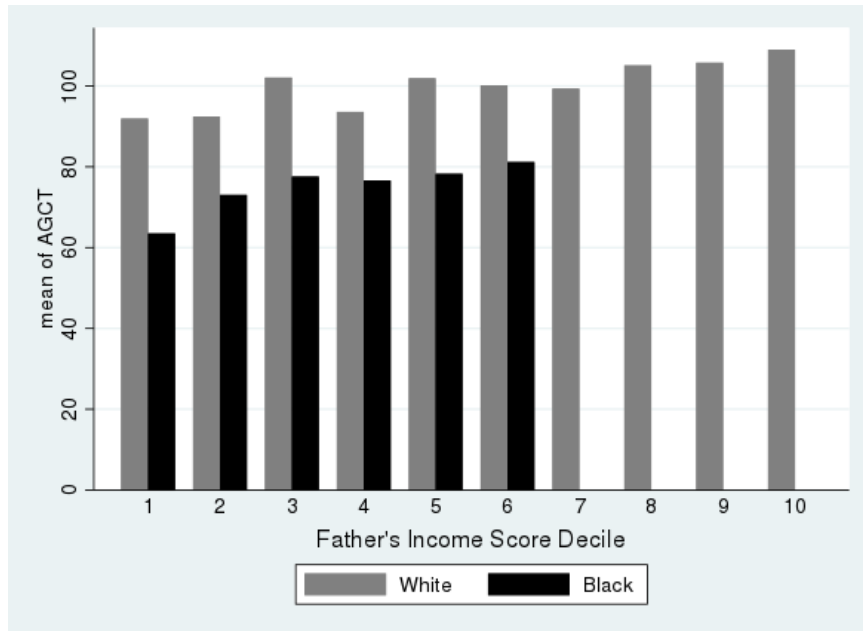
Notes: White bars reflect actual occupation distributions of white sons. Black bars reflect actual distributions of black sons. Gray hatched bars reflect the distributions of black sons keeping the occupation distribution of black fathers fixed, but invoking white father-son occupation transitions.

FIGURE 6: STANDARDIZED TEST SCORES OF SONS, BY FATHER'S INCOME SCORE DECILE

PANEL A: 1990 COHORT (AFQT SCORE)



PANEL B: 1930 COHORT (IMPUTED AGCT SCORES)



Notes: See text for sources and imputation methods (AGCT scores only). The scales for AFQT and AGCT scores are not the same so direct comparisons are not valid. For the 1930 cohort, we do not report values for black income deciles above the 6th due to sample size concerns.