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UP FROM SLAVERY? AFRICAN AMERICAN INTERGENERATIONAL ECONOMIC MOBILITY SINCE 1880

William J. Collins
Marianne H. Wanamaker

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ABSTRACT

We document the intergenerational mobility of black and white American men from 1880 through 2000 by building new datasets to study the late 19th and early 20th century and combining them with modern data to cover the mid- to late 20th century. We find large disparities in intergenerational mobility, with white children having far better chances of escaping the bottom of the distribution than black children in every generation. This mobility gap was more important than the gap in parents' status in proximately determining each new generation's racial income gap. Evidence suggests that human capital disparities underpinned the mobility gap.

William J. Collins
Department of Economics
Vanderbilt University
VU Station B #351819
2301 Vanderbilt Place
Nashville, TN 37235-1819
and NBER
william.collins@vanderbilt.edu

Marianne H. Wanamaker
Department of Economics
University of Tennessee
524 Stokely Management Center
Knoxville, TN 37996
and NBER
wanamaker@utk.edu

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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 woefully 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 21st century.[1] In particular, for several cohorts of father-son pairs, we measure the extent to which black men's relatively poor labor market outcomes reflected their father's disadvantaged economic status as opposed to racial differences in outcomes conditional on fathers' status.

Our data encompass nearly the full span of blacks' struggle for economic and political progress since the Civil War, including the rise of discriminatory "Jim Crow" institutions, the Great Migration of African Americans 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, which are the foundation for most studies of the U.S. labor market 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 essential in this early period because no other representative datasets contain information on both parents' and children's labor market outcomes (e.g., Ferrie 2005, Abramitzky, Boustan, and Eriksson 2012, Long and Ferrie 2013, Feigenbaum 2017).[2] For the post-1930 period, we use modern datasets with intergenerational information to complete the portrait of blacks' economic mobility in comparison to whites. Specifically, 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 decades earlier. This rank-based approach follows Dahl and DeLeire (2008), Mazumder (2014), and Chetty et al. (2014a,b). It

[1] The paper's title derives from Booker T. Washington's *Up from Slavery* (1901), which describes his extraordinary rise from slavery to national prominence as the leader of Alabama's Tuskegee Institute.
[2] Studies using linked census records have focused on men because names are central to the linking process, and women's names change at marriage. Because the complete census manuscripts (including names) are not accessible after 1940, the linking methods we describe can only be used to build historical samples.

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 on studying changes in blacks' relative status (Smith and Welch 1989, Donohue and Heckman 1991, and Margo 2016).[3] 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 detailed occupation, race, and location; this entails an "earnings score" assignment process that we describe below.

In each generation, we find large racial differences in sons' economic status conditional on their fathers' economic status; 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, poverty per se that limited the pace of blacks' economic progress in the historical samples. Rather, our results indicate a sharp disadvantage for black sons relative to whites in the likelihood of escaping the bottom ranks of the income distribution. It is striking that in the historical samples (1880-1900 and 1910-30) children from the poorest southern white families could expect, on average, to be better off as adults than children from even the best off black families. It is also striking that large racial differences in economic mobility, conditional on parents' status, continued into the post-World War II era despite the Great Migration and the passage of Civil Rights legislation. For instance, conditional on father's occupational status, the black-white gap in son's expected status was comparable in 1973, nearly a decade after the Civil Rights Act, to what it was in 1900, at the height of Jim Crow.

These racial differences in mobility cannot be accounted for by differences in other readily observable characteristics of families, such as parents' education or location, and they are empirically important.[4] Racial differences in intergenerational mobility account for most of the black-white gap in men's labor market outcomes at any point in time. That is, in each generation that we observe, when black children are allowed to transition up or down the income

[3] We recognize that absolute real income gains are also of interest, though they are even more difficult to study given limitations of historical wage and price data. Also, the data are not well-suited to estimating unbiased intergenerational income elasticities for direct comparison with modern studies, though we present some relevant evidence later in the paper.

[4] Later in the paper, we discuss Mazumder (2014), which finds that the black-white gap in likelihood of transitioning from the bottom quintile in modern data can be partly accounted for by differences in test scores and other observables.

distribution in the same way as white children with similarly situated parents, the counterfactual black-white gap in their adult outcomes is a small fraction of the actual gap. For perspective, if black children had transitioned in the same way as white children with similarly situated fathers from 1880 to 1900, the median black worker in 1900 would have placed near the 30th percentile of the national income distribution. This is comparable to the actual rank of the median black male in 2000, a full 100 years later and more than 30 years after the Civil Rights Movement's major legislative accomplishments. In this sense, paraphrasing Otis Duncan (1968), 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 two closely related but distinct economics literatures. First, a burgeoning literature studies the transmission of labor market outcomes across generations (Becker and Tomes 1986, Solon 1992 and 1999, Mazumder 2005, Black and Devereux 2011, Long and Ferrie 2013, Chetty et al. 2014a,b).[5] Within the intergenerational mobility literature, a much smaller group of studies investigates racial differences in intergenerational income mobility in recent decades (Hertz 2005, Isaacs 2008, Bhattacharya and Mazumder 2011, Mazumder 2014). Typically, the studies 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). Our goal is to develop evidence that explicitly addresses questions about the interaction of race and intergenerational mobility over a long period of American history, covering a variety of institutional and policy regimes.

The implications of finding large differences in economic mobility over many generations 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 notable that narrowing the black-white gap in parental earnings in our samples would still leave large gaps in expected income for children. Thus, one-off transfers of income, in and of themselves, might not have

[5] There is also an important literature on intergenerational mobility in sociology, which we reference later in the paper.

made a large and lasting impression on the evolution of the black-white income gap because the groups tended to revert to different means.[6] From this perspective, deeper and more sustained economic, political, and social reform would have been required for black Americans to close the racial gap permanently.

Second, the changes in institutions, policies, and racial animus that did take place over the last century have not led to great improvements in the adult outcomes of poor black children relative to comparably poor white children. One possible proximate explanation is the persistence of gaps in human capital, which have endured despite educational reforms such as school desegregation. Although imperfect, there is suggestive evidence that racial differences in test scores underpinned the racial mobility gap observed in 1930's data, echoing findings from the NLSY79 cohort (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 and direct implications for racial disparities in labor market outcomes. The deeper explanations for these human capital gaps lie in the history of slavery, discrimination, and racial segregation.

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.[7] Typically, they were poor in terms of both physical and human capital. With few exceptions, there was no mass 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, as we show below, most black men in 1880 were either farm laborers or farmers who did not own land (i.e., sharecroppers or tenant farmers). Most of the rest were unskilled non-farm laborers. The

[6] It is conceivable that a mass redistribution of land to freedmen and a more sustained federal presence would have led to a different political economy in the South, a counterfactual that is beyond this paper but that is closer to the "deeper reform" we mention. See Miller (2016) for a study of land redistribution to former slaves in Oklahoma.

[7] 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. It is not possible to ascertain from the from post-Civil War censuses whether someone had been a slave. We restrict our sample to Southern blacks, as described later in the paper.

illiteracy rate was high among former slaves because it was generally forbidden for slaves to learn to read or write. Public school systems were established throughout the South after the Civil War, but schools for black children were separate from those for whites, and racial gaps in school quality widened between 1880 and 1910 (Margo 1990), a result of whites' control over both local and state-allocated funding. By 1910, the political disenfranchisement of southern blacks was nearly complete (Kousser 1974) and, therefore, redress through the political system was impossible. Although African Americans did gain in literacy and property ownership over time (Higgs 1982, Margo 1984, Margo 1990), they started from a low base, and the obstacles to their economic advance were formidable (Myrdal 1944, Ransom and Sutch 1977, Wright 1986, Woodman 1995). Geographic mobility was helpful in this context, but large-scale migration from the South to the North did not begin until World War I. Migration declined during the Great Depression before rising again during World War II and continuing into the 1960s (Vickery 1977, Vigdor 2002, Collins and Wanamaker 2014, Boustan 2016).

World War II and the 1940s brought significant gains in income for black men relative to whites, in part due to the compression of income distribution (Maloney 1994, Margo 1995). Yet it is the decade following the 1964 Civil Rights Act that stands out in retrospect. The Civil Rights Movement revolutionized race relations in the South by dismantling *de jure* segregation and discouraging discrimination in labor markets, education, healthcare, voting rights, and public accommodations (Wright 2013). Space does not allow a full recounting here, but the black-white ratio in men's average wages increased markedly in the 1965-75 timeframe (Freeman 1981, Donohue and Heckman 1991). The momentum did not continue into the post-1980 period, however, leading scholars to take up the question of "what went wrong?" (e.g., Bound and Freeman 1992). Bayer and Charles (2016, Appendix Table 2) show that the median earnings gap between black and white native-born men, including those out of the labor force, has widened since 1980, and that the median rank gap has narrowed since 1960, but only slightly. In sum, the pace of convergence has been slow and uneven, large gaps in men's labor market outcomes remain, and the gains of the Civil Rights era have not translated into a sustained path toward economic equality.

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

As mentioned above, a relatively small number of papers in economics study black-white

differences in intergenerational economic mobility. Two that are close in spirit to our analysis are Hertz (2005) and Mazumder (2014), which use modern longitudinal datasets to characterize income mobility patterns in recent decades, from the late 1970s through 2005.[8] 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. Blacks were also more likely than whites to fall out of the upper levels of the income distribution, conditional on starting there. Like this paper, these studies highlight the quantitative importance of differences in mobility, as opposed to differences in parental income per se, in transmitting racial disparities over generations. This paper's main contribution relative to Hertz's and Mazumder's work is to expand the scope of investigation, covering from the first post-emancipation generations to the end of the 20th century and developing consistent comparative analyses over eras with different institutional and economic environments.

Margo (2016) also emphasizes the importance of studying intergenerational factors when trying to understand long-run black-white differences in income. He outlines an intergenerational model that seeks to reconcile the slow pace of average income convergence with results from the broader economics literature that focuses on the intergenerational elasticity of income.[9] His model includes race directly in equations determining labor market outcomes and (separately) human capital accumulation. In this framework, racial differences in income may be large and persistent if race and human capital are strongly transmitted across generations or if race strongly affects human capital accumulation (e.g., through social capital channels or discrimination in access to educational resources), all of which is consistent with American history.

There is also a large sociology literature on intergenerational mobility, some of which focuses on racial disparities and uses data that we examine for the mid-20th century. Duncan (1968) 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

[8] 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.

[9] Stuhler (2014) and Solon (2015) also address this issue; Margo builds on their insights and situates the discussion in historical context.

occupation achievement. The greater part of the explanation lies in the inequalities within the process of mobility itself" (p. 11). 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 substantial 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. Our methodology allows us to study these occupational mobility results for two mid-century cohorts in terms of relative income mobility and to place them in long-run perspective.

II. Data and Measurement

A. Historical and Modern Datasets for Studying Economic Mobility

As mentioned in the introduction, 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 introduce them here at some length and describe them in more detail in the data appendix. 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 data, 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 1-percent public use sample of the 1880 Census of Population (Ruggles et al. 2010).[10] We limited the sample to black males, aged 0 to 17, residing in one of thirteen southern states with their father or stepfather present in the household.[11] We focus on families in the South in 1880 given the overwhelming

[10] Collins and Wanamaker (2014, 2015) use similar samples of southern men observed in 1910 and 1930 to study gains from inter-regional migration and migration patterns. However, prior work with black and white linked census data has not studied differences in intergenerational mobility patterns, and the linked data for 1880 to 1900, including links to the 1880 Census of Agriculture, are entirely new to this paper.

[11] The dataset includes fathers and sons originating in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

concentration of blacks in that region and the high cost of data construction. Sons who leave the South remain in the sample. The 1880 census provides information on county of residence, whether the household lived on a farm or in an urban area, whether the child attended school, and literacy (for those age 10 or over), as well as information about the son's father and mother, such as their age, occupation, and literacy. We searched for the sons two decades later in the full set of manuscripts from the 1900 Census of Population, based on state of birth, age, race, sex, and first and last name.[12] Our analysis sample contains 2,314 black sons and 4,406 white sons. From the hand-written census manuscripts in 1900, we transcribed information on the son's occupation, home ownership, and employment status. The data appendix describes the linking process in more detail and shows that the linked sample is fairly representative of the base population.

One downside of the historical samples in comparison with true longitudinal data is the possibility of mismatches in the link between fathers and sons across census years. The appendix contains both a sensitivity analysis based on the quality of the underlying intercensal match and simulations to quantify the bias under an assumed rate of mismatch (Bailey et al. 2016). The paper's conclusions are not sensitive to these adjustments.

Many of the fathers in the 1880-based dataset were farmers. In the absence of further information, they would occupy a single occupational category, leaving only race and region of residence as income score differentiators. To learn more about their economic status, we conducted another linking exercise to locate them in the manuscripts of the 1880 Census of Agriculture, which were recorded and stored separately from the Census of Population manuscripts.[13] We then transcribed key information about their farms. We focus on whether the farmer owned his farm, as this 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. We assume that men who reported themselves as a farmer in the population census but could not be linked to an actual

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Maryland, Delaware, and Washington D.C., although in the "Census South," are not included in our data. 11 percent of sons in the original sample are dropped because of missing fathers in 1880; 12 percent are dropped for this reason in the 1910 dataset.

[12] See the data appendix for details on the matching process. The final match rate was 26 percent,

[13] Linking them often entailed searching "by hand" through microfilmed records that are organized by location. We were able to use Ancestry.com database searches for Alabama, Georgia, South Carolina, Tennessee, Texas, and Virginia. Microfilm searches of the original Census of Agriculture manuscripts were performed by hand for Arkansas, Florida, Kentucky, Louisiana, Mississippi, North Carolina, and West Virginia residents. In the Census of Agriculture manuscripts, we located 82 percent of the white fathers who reported their occupation as "farmer" in the population census and 76 percent of black farmers.

farm in the agricultural census did not, in fact, own the land underlying their agricultural production.[14]

For the 1910 to 1930 period, we followed a similar process, beginning with the 1-percent public use sample of the 1910 Census of Population (Ruggles et al. 2010) and linking forward to the full count of the 1930 Census to generate a sample of 10,645 white sons and 2,289 black sons.[15] Again, the 1910 public use sample provides a number of relevant background variables, and we transcribed information on the son's outcomes from the 1930 manuscripts. In 1910, homeownership was recorded in the Census of Population, and we rely on that information to distinguish farmers who were homeowners and, presumably, farm owners from those who were not.[16] It is fortunate that the population census included this information because the manuscripts of the 1910 Census of Agriculture were destroyed by Congressional order. Thus, one cannot link farm households to farm manuscripts in 1910. Again, the data appendix shows that the linked sample is fairly representative of the larger base sample.

Linked census data cannot be constructed for men in the second half of the 20th century due to confidentially restrictions on the use of census manuscripts. Instead, we rely on modern datasets that contain intergenerational information that spans the middle to late 20th century. The OCG datasets were originally compiled as supplements to the Current Population Surveys (CPS) in 1962 and 1973 (Blau et al. 1999). The datasets provide information on men's 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 major 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 the landmark Civil Rights Act legislation.

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[14] The census enumeration form sought the name of "the person who conducts this farm." It seems unlikely that a farmer who owned and operated his farm would not be recorded as such, though mistakes cannot be ruled out. It seems more likely that those tenuously connected to farms through sharecropping arrangements, those on sub-tenancies, or those co-operating with another farmer (e.g., a brother or relative) would be missing from the rolls. Only one name per farm is listed. In the appendix, we show that the unmatched farmers are disadvantaged in a number of socioeconomic dimensions, including literacy, age, and eventual homeownership status of their sons, confirming that they are unlikely to be land owners or missing at random from our data. For analysis, we group all non-owners together; it is impossible to distinguish croppers from tenants.

[15] The match rate was 27 percent in this sample.

[16] Of course, some farmers did not own their home but did own the land they farmed, and vice versa. Still, Goldenweiser and Truesdell (1924, p. 53) provide breakdowns of farm ownership and tenancy by race and region for 1920 based on the Census of Agriculture. Using the 1920 IPUMS sample from the Census of Population, we find a close correspondence between rates of home ownership among southern farmers and the rates of farm ownership reported by Goldenweiser and Truesdell (GT): 49.6 percent of farmers are tenants (including croppers) in GT; 50.3 are "not home owners" in IPUMS.

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 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 differences in mobility *within* samples, the incongruities across datasets are not a paramount concern, but we want to 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 changing age restrictions for sons in the modern samples. (See the appendix 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 incongruity between the historical and modern datasets pertains to the geographic scope in the base year. In the historical samples, we started with father-son pairs who resided in the South, where more than 90 percent of black Americans resided. By the time the OCG and NLSY surveys were carried out, however, blacks were much more geographically dispersed as a result of the Great Migration. In 1970, 50 percent of black men between the ages of 20 and 50 resided outside the South and 33 percent had been born outside the South. Therefore, it is appropriate to use the full scope of the OCG and NLSY data for the post-war analyses. It is straightforward to check the sensitivity of key results to restricting the samples to men who were born in the South; we provide this information in the appendix.

[17] 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).

A third issue relates to the reference parent. In the historical samples, approximately 90 percent of sons reside with fathers or stepfathers, and we base our analyses on this group. Given that women's labor force participation and occupations were recorded inconsistently and with considerable error in these samples, it would be difficult to impute income to female-headed households. 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 household 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, the appendix includes a sensitivity check that uses an "other male head"-based score for those living with their mother and another adult male. It 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.[19] For brevity, when we refer to "fathers" throughout the rest of this paper, readers should recognize that in the historical samples we mean fathers or stepfathers, and in the modern samples we mean fathers or household-head mothers.

B. Assigning Income Scores and Ranks

In all the intergenerational samples we examine across a 120-year period, we can observe an individual's occupation, race, region of residence, and gender. 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 that is closest in timing and that has earnings information. This approach 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. 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 3-digit code).[20]

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[19] 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.

[20] Björklund and Jäntti (2000) provide an insightful discussion of how the economics and sociology literatures on mobility have evolved in parallel. Mazumder and Acosta (2015) provide a comparison of occupation and income-based results with modern data, with particular attention to issues of life-cycle bias and measurement error. An alternative approach, which we do not pursue here, is to quantify occupational mobility per se using broad, unordered occupation categories and Altham statistics, as described in Long and Ferrie (2013).

For fathers observed in 1880 and 1910 and for sons observed in 1900 and 1930, income score assignments are based on wage data from the full count 1940 census. (Inferences using 1960-based scores are similar, as shown in the appendix.) In these samples, income scores for self-reported farmers vary by ownership status, and we account for non-wage farm income in the form of perquisites for all agriculture workers.[21] 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.[22] Sons observed in the 1973 OCG data are assigned 1970-based scores, whereas their fathers are assigned 1960-based scores, again reflecting the retrospective nature of the information on fathers' occupation. 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 approach is that it cannot capture between-cell changes in the wage structure over time in the historical samples (observations between 1880 and 1930). Not much improvement can be made given the fragmentary and non-representative nature of race-specific wage information prior to 1940. Note that because the analyses focus on ranks within the distribution of scores (as discussed in the next section), between-cell changes in wages matter only to the extent that the cells change rank.[23] 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 distribution in each year. Using the national distribution as a reference point is useful for several reasons. First, we are primarily interested in documenting economic status relative to the entire population, not

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

[22] The 1950 decennial census asks income only of "sample line" individuals, and we quickly encounter sample size problems in the income assignment methodology described in the data appendix.

[23] The income scoring based on 1940's income distribution versus 1960's is highly correlated even though the "Great Compression" occurred between these dates (Goldin and Margo 1992). For the sons in the 1910-30 sample, the correlation coefficient is 0.93. A regression of sons' ranks with an alternative 1960-based scoring on sons' ranks with 1940-based scoring has a slope of 0.94 (s.e.=0.003) and R-squared of 0.88. Because some information from 1960's income distribution is carried over into the 1940 income assignments (see the data appendix), the scores are not completely independent, however.

mobility *within* subgroups defined by race or region.[24] For this purpose, a common, national basis for comparison is most useful. Second, measuring blacks' status relative to the national distribution anchors the discussion in an important historical fact: southern blacks were remarkably crowded into the lowest deciles of the national income distribution in the late 19th and early 20th centuries. Thus, studying the frequency and correlates of upward mobility from the bottom is critical to understanding the course of black economic progress. Third, by focusing on position in the distribution, we would characterize a father-son pair that maintains the same rank as neither up- 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 per capita.

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.[25] Then, we see where men in the linked samples fall relative to the appropriate national distribution in each year. To be clear, even if the son and father pursue the same line of work in the same place (thus receiving the same income score), there could be a change in rank due to the change in the composition of the national labor force. For instance, southern fathers who are tenant farmers in 1910 might have a higher rank relative to their peers than sons who are tenant farmers in 1930 because the composition of the national labor force shifted toward more highly paid occupations in the sons' generation. For the OCG and NLSY79 datasets, the original samples are national in scope, and 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

[24] Hertz (2005) and Mazumder (2014) point out that a regression of son's income on father's income for whites or blacks separately provides a measure of mobility within the group but conveys nothing about whether groups are converging.

[25] 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 38 in the ending year (1900 or 1930). We include only black and white males in these national samples as our race-specific inference 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.

the full time period, but with diminishing concentrations in the lower tail over time. White fathers and sons are found much less commonly than blacks at the bottom of the distribution, though the early white cohorts are concentrated in the lower half of the distribution, reflecting the historical samples' restriction to southern families in 1880 and 1910. By 1930, however, white sons are approaching a more uniform distribution across income percentiles. In the modern datasets, which are national in scope, white fathers and sons are evenly spread over the distribution, except at the very bottom, as would be expected from a nationally representative sample of the white population.

Underpinning these cross-sectional distributions are occupation-based income assignments, and we can see how groups line up based on broad occupational categories and race. This provides a check on whether the income assignments result in sensible rankings. It also shows how the prevalence of occupational groups varied over time and across races, though we emphasize that the micro-level income assignments are based on detailed (not broad) occupational categories. Table 1, Panel A reports income ranks for southern fathers in 1880 and in 1910 and for all fathers in the OCG and NLSY79 samples. We focus on fathers in these tables for ease of exposition. 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 collapse 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. Second, the average rank for black fathers in the historical datasets is below the 10th percentile of the national distribution, and black fathers in the South appear to have made no progress in terms of average rank between 1880 and 1910. Other studies have found growth in the black-white ratio of mean income in the pre-1900 period. Margo (2016), for example, estimates a rise in the ratio from 0.28 to 0.32 from 1870 to 1900. 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 such 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 20th century, when the data are no longer constrained to southern fathers, the average rank of black fathers (observed circa 1950) is substantially higher than in the earlier cohorts, though just barely above the 10th percentile in the 1962 OCG. In large part, this is due to the smaller share of black men in low-paying agricultural occupations, an outcome at least partially attributable to inter-regional migration. In the 1973 OCG sample, the average rank for black fathers increases to the 16th percentile, as even fewer were reported to have held agricultural occupations and as average ranks for black men within non-farm categories increased relative to the previous cohort. Finally, the NLSY79 sample, which measures fathers' or mothers' 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 white fathers' employment in professional and managerial positions. The overall result is a rise in the average of black fathers' ranking to approximately the 18th percentile.

III. Black-White Differences in Intergenerational Income 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. As mentioned earlier, this rank-based approach is similar in spirit to recent work by Dahl and DeLeire (2008), Mazumder (2014), and Chetty et al. (2014a,b), and it reflects whether men "get ahead" or "fall behind" relative to their peers from one generation to the next.[26]

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

[26] Readers might also be interested in the distribution of absolute real income or wealth, which is related to but distinct from the study of intergenerational mobility emphasized here. For efforts to measure race-specific levels of income or wealth prior to 1940, we refer readers to Ransom and Sutch (1977), Higgs (1977 and 1982), and Margo (1984). Alternatively, the historical and sociological literatures on intergenerational mobility often focus on father-son transitions between broad occupational categories. In the appendix, we report transition matrices across broad occupational categories for each of the father-son samples, and on occasion we refer to especially noteworthy patterns in the text below.

the differences in the sons' adult outcomes. We next use descriptive regressions to characterize the expected rank of sons as a function of fathers' rank and race. The racial gap is large, and it remains so even when a large number of additional background variables are included in the regressions. 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 of fathers and sons, they are unwieldy for presentation here.[27] 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.[28] Note that a son can exceed his father's rank without transitioning over the decile threshold. URM rates can be calculated for varying degrees of upward mobility, measuring the share of sons who exceed their father's rank by a certain number of percentiles (□□.

Figures 2A-E summarize upward rank mobility by cohort for $\tau = 0$, including bootstrapped 95% confidence intervals.[29] Table 2 reports additional results for $\tau = 5$ and $\tau = 10$. 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 19th century through the end of the 20th century.[30] White children had far higher rates of

[27] We provide decile-to-decile transition matrices for reference in Appendix II.

[28] More formally, $U_{\tau,r} = Prob\left[\left(R_{son} - R_{father}\right) > \tau \,\middle|\, (r_{lower} \leq R_{father} < r_{upper})\right]$, where R 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.

[29] 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.

[30] The unconditional rates of upward rank mobility for blacks were comparable to those of whites, if not higher. But this simply 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.

upward mobility, implying lower rates of downward mobility because few maintained exactly the same rank as their parent.

In the historical samples, the plots for African Americans cover only a short range of fathers' potential income deciles, reflecting the overwhelming concentration of black fathers at the bottom of the national income distribution. (We do not plot results for cells containing fewer than 50 observations.) For those with the lowest earning fathers (1st decile), between 72 percent (1880-1900) and 90 (1910-1930) percent of whites exceeded their father's status compared to only 51 percent (1880-1900) or 68 percent (1910-1930) of blacks. The differences at the lowest deciles in the early samples are statistically significant, and they are economically important because a large share of black sons originated from families in those lowest 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 (measured in 1973) fared substantially better in terms of intergenerational mobility than those that preceded them.

In 1990 (NLSY79 data), 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, Table 2 indicates sizable white advantages within every decile of fathers' income, for every level of □□□and for every generation observed. 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 20th century. 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.

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. Then, we explore whether additional observable characteristics of fathers, sons, and households can account for the racial gap.[31] The baseline "full sample" regressions include men 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 (Grawe 2006, Haider and Solon 2006).

Panel A of Table 3 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, blacks ranked between 20 and 23 percentiles lower than whites in the "full sample" regressions; the gaps are even larger in the "30+ year old" sample. In the later cohorts (in samples that are national in scope), the black-white rank gaps conditional on fathers' status were 27, 25, and 19 percentiles, respectively. The NLSY cohort of sons can be re-examined in 2000, and the racial gap is approximately one percentile larger (not shown in Table 3; see Appendix III).

In Panel B of Table 3, we add controls for fathers' human capital and for other conditions in the home when the son was young. In the historical samples, we observe the literacy rate of fathers when sons were observed in their households (1880 and 1910). In the OCG and NLSY samples, we add fixed effects for fathers' educational attainment, measured in years of completed schooling. We also 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. Including the combined set of additional characteristics reduces the magnitude of the coefficient on race by no more than 1 point (1900 cohort), and sometimes widens differences compared to Panel A (1962, 1973, and 1990 cohorts). Similar results obtain for the subsample of older sons (aged 30-37).

In Panel C, we add controls for the age of sons at the time their occupation is observed, as well as fixed effects for state or region of residence in childhood, retaining the covariates from Panel B as well. 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

[31] Conditional measures of upward rank mobility are an alternative way to measure the importance of additional observable characteristics, but the main conclusions are more easily interpreted using conditional regression specifications.

they are at the South/non-South level, reflecting constraints inherent to the datasets.[32] This specification controls for any racial differences in the age structure of the underlying samples as well as differences in place of origin that may affect labor market outcomes. The results are quite similar to those in the preceding panels.

Specifications in Panel D also include controls for sons' schooling and the presence of both parents in the childhood household. In the historical samples, school attendance (for those over age 5) and childhood literacy (for those over age 10 in the base year) are the only measures of education, and using them reduces the sample size relative to previous panels. From 1962 forward, we see completed grades for all sons. For all the samples, we observe whether their mother and father were present in the childhood household. Again, adding the controls has only a small effect on the size of the racial gap in income rank relative to the parsimonious regression in Panel A, despite a growing racial difference in the number of single parent households and the rising level of blacks' educational attainment. 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 Table 3's results.

In addition to the stark racial differences in expected outcomes, Table 3 also highlights a consistently positive and statistically significant relationship between father's rank and son's rank. Most of the slope coefficients in Table 3 range between 0.12 and 0.32, and in Panel A's parsimonious regressions for men in their 30s, they range from 0.26 to 0.34. Given the somewhat rough nature of income 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 different types of datasets. It is, nonetheless, notable that the positive relationship between father's and son's rank is apparent in both the white and black populations at all points in time—it was helpful to be born to a better off black family in 1910 rather than to an impoverished one, despite the many barriers to advancement. But the intercept differences between whites and blacks were large and persistent, as reflected in the *BLACK* coefficients. In other words, both populations show evidence of mean reversion, but toward much different means throughout US history.

For additional perspective, Figure 3 illustrates these differences with the raw data, binned

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

by fathers' income percentile and averaged, for easier viewing. Here, we allow both the intercept and slope to vary by race and by son's cohort. Recalling that black fathers are concentrated below the 30th percentile in every dataset, the economic significance of the intercept difference is immediately 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 similar to that observed in the 1973 OCG data.[33]

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 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 actual annual income, which tends to change 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 and whites equally would, in a sense, difference out.[34] Still, it is useful to (a) test the robustness of the paper's main conclusions to samples of sons measured

[33] 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.

[34] However, 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 the appendix, confirm the paper's main conclusions.

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 confirm the paper's main conclusions.

Measurement Error. A second common concern in the modern literature 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. In this regard, our occupation-based measure of fathers' status may have some advantages over annual income. It may hew closer to an individual's long-term labor market status. Further, in the historical samples, census enumerators collected occupational information even for those who were temporarily unemployed, thereby avoiding temporary zero income measures. Although the occupation-based income scores mask permanent individual-level productivity differences within race/occupation/region cells, which is a limitation, it is at the same time unlikely that many of the relatively poor families we observe (e.g., unskilled laborers) were merely having a temporary negative shock to their status or that the affluent families (e.g., professionals) were having a temporary positive shock.

Year 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. There is not much that can be done to improve upon these historical assignments; the main alternatives for wage information prior to 1940 pertain to selected urban samples while our historical samples are concentrated in the rural South. But we can assess the sensitivity of our results in the historical samples using 1960 as an alternative census reference year. Our main estimates are unaffected by this sensitivity test.

Parent Definitions. The appendix also contains evidence regarding the sensitivity of our results to definitions of "parent" in the intergenerational mobility estimates. Specifically, we examine whether our conclusions are altered by substituting the income scores of co-resident males, stepfathers or otherwise, for that of the mother in the 1962, 1973, and 1990 cohorts in cases where the father is not present. Our results are robust to these substitutions.

IV. Counterfactuals

Given the racial differences in mobility conditional on fathers' income documented above, it is natural to ask how far such differences go toward explaining differences in the

distributions of sons' labor market outcomes. Figure 4 shows actual and counterfactual distributions of black sons' income rank, where the counterfactual allows black sons to experience the transition patterns of their white peers conditional on parental income score. These kernel densities are smoothed distributions of discrete underlying data, reflecting the occupation-region-race-gender-based income score assignment process.[35] We estimate the counterfactual using re-weighting techniques developed in DiNardo, Fortin and Lemieux (1996). In essence, we up-weight white observations who are similarly situated to blacks and down-weight white observations who are not; the result is a counterfactual sample that has fathers distributed like blacks but has the mobility patterns of whites.

The counterfactuals indicate that differences in transition patterns are the primary "proximate cause" of racial inequality in each generation of sons. That is, for each cohort, equality in transitions, conditional on fathers' income ranks, would have greatly reduced the racial inequality in sons' incomes. In each panel of Figure 4, the solid lines, representing counterfactual outcomes for black sons, closely follow the dashed lines representing actual outcomes of white sons. The effect of equalizing mobility patterns is particularly stark in the lowest decile of fathers' income scores and for the earlier cohorts in our sample. The counterfactual distributions imply that up to 55 percent of the 1900 and the 1930 cohorts of black sons would have achieved "middle class" status (30th percentile or greater) under this alternative set of transitions. For cohorts measured in the latter part of the 20th century, the counterfactual scenario displayed in Figure 4 panels C through E cannot fully explain the black men's higher concentration in the lower part of the income distribution, nor their lower concentration at higher parts of the income distribution. Still, the counterfactual black distribution makes substantial strides toward narrowing the difference in black and white sons' actual income score rankings.

To summarize the importance of differences in mobility patterns, we calculate standard measures of distance and dissimilarity between black and white sons' actual and counterfactual distributions. We find that a dissimilarity index, based on ventiles of sons' ranks, falls by between 66 and 81 percent when black sons experience white transition rates. That is, relative to the actual dissimilarity index value, the counterfactual index value is much smaller for every cohort. When we use adaptive kernel density estimates (discretized into 100 bins) and Hellinger

[35] 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.

measures of distance, the distance under the counterfactual scenario is reduced by 71 to 87 percent compared to the distance for the actual kernel densities. More detailed discussion of the calculations is provided in the appendix.

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, nearly half of African Americans men had achieved roughly middle class status, as evidenced in Figure 4B. For perspective, in census data, the median black male ranked at the 30th percentile of the national distribution of earned income in 2000.[36] Thus, it took 100 additional years for the middle of the black male earnings distribution to reach the point that it would have reached in 1900 had the black sons in our sample transitioned across income ranks like white sons with similar fathers.

V. The Role of Human Capital Accumulation

The mechanisms that underlie racial differences in intergenerational mobility and the slow pace of black-white convergence are difficult to pinpoint. Although the datasets we examine contain fairly rich background information by historical standards, we found in Table 3 that controlling for observables beyond the father's rank does little to narrow the black-white gap in sons' outcomes. However, Bhattacharya and Mazumder (2011) and Mazumder (2014) show that conditioning on sons' Armed Forces Qualification Test (AFQT) scores narrows black-white differences in upward rank mobility in the NLSY79 cohort.[37] Using the earnings ranks that form the basis of this paper's analyses, we too find that controlling for AFQT in the NLSY79 substantially reduces the coefficient on race in descriptive regressions similar to those in Table 3. For instance, adding fixed effects for AFQT percentile to a parsimonious regression that controls for fathers' rank reduces the magnitude of the coefficient on race to -10.6 in 1990 (down from -18.9 in the parsimonious regression without AFQT for the same sample.)

If human capital gaps were a strong determinant of conditional income rank gaps circa 1990, what, then, of the earliest cohorts in this study? For these cohorts, slavery's legacy in

[36] Calculated using IPUMS 2000 Census 5% sample, ranking white and black men who were not in school, age 25-59.

[37] The AFQT was administered to the NLSY79 cohort in 1980 regardless of whether they joined the military. See Neal and Johnson (1996) for further description of the AFQT in the context of a study of black-white income differences.

terms of literacy and the denial of education was still fresh—directly impacting their parents and grandparents—and even though southern states established public schools during Reconstruction, the schools were strictly segregated and diverged in quality. By 1880, in most places in the South, children in poor black families and poor white families experienced not only different school environments in terms of physical quality, days per term, and teacher quality (Margo 1990), but also different peers and different expectations regarding their future economic prospects. In short, controls for fathers' income score ranks and other family and community covariates in Table 3 do not capture the full set of potentially relevant differences in sons' opportunities for human capital investment.

Individual-level test scores are unavailable for these cohorts, but we can rely on test score information gleaned from World War II enlistees in 1943 to further explore the relevance of human capital disparities for the cohort of sons observed in 1930 (National Archives and Records Administration 2002). Although imperfect due to selection into the military sample and timing (i.e., 1943 versus 1930), we use this sample to calculate black and white men's mean test scores in occupation-by-region categories.[38] 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 the AGCT test scores as the cumulative result of educational experiences in and out of school, including both substantive knowledge and test-taking skills. We merge the test score information, by race, region, and occupation, with our 1910-30 dataset. Blacks' imputed test scores are lower than whites' on average, and the test scores are strongly, positively correlated with the sons' earnings rank. In a parsimonious regression that controls for fathers' rank, adding flexible controls for AGCT score reduces the race coefficient to -6.8 (from -22.7).[39]

Thus, in both historical and modern datasets, black-white differences in test scores are strongly connected to differences in economic mobility. Human capital differences cannot fully account for the racial mobility gap, but their empirical relevance is clear. Understanding the origins of human capital gaps and reducing their intergenerational transmission may be a critical

[38] When there were fewer than 50 observations in a race-by-region-by-occupation cell, we moved to race-by-occupation cells.

[39] The race coefficient is statistically significant at the 1 percent level. The regression includes AGCT fixed effects after rounding imputed AGCT to nearest integer. Restricting the sample to the range of AGCT scores that includes both white and black men, the coefficient on race is -5.7.

step in narrowing the racial gap in mobility and, ultimately, income and material well-being.

VI. Conclusion

After the Civil War, African Americans occupied the lowest rungs on the national income ladder. A substantial literature documents that, 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 white men from similarly disadvantaged backgrounds experienced greater upward mobility and higher average income in every cohort. In terms of expected rank in the income distribution conditional on their father's rank, the size of the black disadvantage has remained large and consistent from the late 19th to the end of 20th century, at around 20 percentile points. 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.

Our results suggest that racial differences in intergenerational mobility have been the most important proximate cause of black-white income inequality from the Civil War until today. Counterfactuals that equalize mobility across races, conditional on parents' status, go a long way toward equalizing distributions of earnings scores in every generation we examine. Simple measures of dissimilarity or distance between earnings score distributions fall by more than half when black children are allowed to have the intergenerational mobility patterns of white children. In contrast, the actual rate of black-white convergence has been regrettably slow and is far from complete.

Analyses for the early and late 20th century suggest that weaker human capital accumulation in black children, conditional on parents' economic status, has hindered the pace of intergenerational convergence in labor market outcomes. Although the barriers have varied over time, structural impediments to black children's accumulation of human capital have been a long-standing feature of U.S. history, most obviously through slavery and then a century of separate and unequal schools. 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 their access to high-quality educational opportunities. The re-segregation of schools since 1990 (UCLA Civil Rights Project 2014) and substantial racial gaps in children's test scores today (Fryer 2009) 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.

VII. References

Abramitzky, Ran, Leah Platt Boustan, and Katherine Eriksson. 2012. "Europe's Tired, Poor, Huddled Masses: Self-Selection and Economic Outcomes in the Age of Mass Migration." *American Economic Review* 102, 5: 1832-1856.

Bailey, Martha, Morgan Henderson, and Catherine Massey. 2016. "How Do Automated Linking Methods Perform? Evidence from the LIFE-M Project." *Working Paper.*

Becker, Gary S. and Nigel Tomes. 1986. "Human Capital and the Rise and Fall of Families." *Journal of Labor Economics* 4, 3: S1-39.

Bhattacharya, Debopam and Bhashkar Mazumder. 2011. "A Nonparametric Analysis of Black-White Differences in Intergenerational Income Mobility in the United States." *Quantitative Economics* 2, 3: 335-379.

Björklund, Anders and Markus Jäntti. 2000. "Intergenerational Mobility of Socio-economic Status in Comparative Perspective." *Nordic Journal of Political Economy* 26, 1: 3-32.

Black, Sandra E. and Paul J. Devereux. 2011. "Recent Developments in Intergenerational Mobility." In O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*, *Volume 4*. Amsterdam: Elsevier, pp. 1487-1541.

Blau, Peter M., Otis Dudley Duncan, David L. Featherman, and Robert M. Hauser. 1999. *Occupational Changes in a Generation, 1962-1973: 1962 and 1973 Replicate Data, A User's Guide to the Machine Readable Data File, Volume 1*. Ann Arbor, MI: ICPSR 6162.

Bound, John and Richard B. Freeman. 1992. "What Went Wrong? The Erosion of the Relative Earnings and Employment among Young Black Men in the 1980s," *Quarterly Journal of Economics* 107: 201- 232.

Boustan, Leah Platt. 2016. *Competition in the Promised Land: Black Migrants in Northern Labor Markets and Cities*. Princeton, NJ: Princeton University Press.

Card, David and Alan B. Krueger. 1992. "School Quality and Black-White Relative Earnings: A Direct Assessment." *Quarterly Journal of Economics* 107, 1: 151-200.

Chetty, Raj, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez. 2014a. "Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States." *Quarterly Journal of Economics* 129, 4: 1553-1623.

Chetty, Raj, Nathaniel Hendren, Patrick Kline, Emmanuel Saez, and Nicholas Turner. 2014b. "Is the United States Still a Land of Opportunity? Recent Trends in Intergenerational Mobility*." American Economic Review Papers and Proceedings* 104, 5: 141-147.

Collins, William J. and Marianne H. Wanamaker. 2014. "Selection and Economic Gains in the Great Migration of African Americans: New Evidence from Linked Census Data." *American Economic Journal: Applied Economics* 6, 1: 220-252.

Collins, William J. and Marianne H. Wanamaker. 2015. "The Great Migration in Black and White: New Evidence on the Selection and Sorting of Southern Migrants." *Journal of Economic History* 75, 4: 947-992.

Corak, Miles, Matthew J. Lindquist, and Bhashkar Mazumder. 2014. "A Comparison of Upward

and Downward Intergenerational Mobility in Canada, Sweden, and the United States." *Labour Economics* 30, 185-200.

Cutler, David M., Edward L. Glaeser and Jacob L. Vigdor. 1999. "The Rise and Decline of the American Ghetto." *Journal of Political Economy* 107, 3: 455-506.

Dahl, Molly and Thomas DeLeire. 2008. "The Association between Children's Earnings and Fathers' Lifetime Earnings: Estimates Using Administrative Data." Institute for Research on Poverty Discussion Paper 1342-08.

DiNardo, John, Nicole M. Fortin, and Thomas Lemieux. 1996. "Labor Market Institutions and the Distribution of Wages, 1973-1992: A Semiparametric Approach. " *Econometrica*. 64, 5: 1001-1044.

Donohue, John J. III, and James Heckman. 1991. "Continuous versus Episodic Chance: The Impact of Civil Rights Policy on the Economic Status of Blacks." *Journal of Economic Literature* 29, 4: 1603-1643.

Duncan, Otis Dudley. 1968. "Patterns of Occupational Mobility Among Negro Men." *Demography* 5, 1: 11-22.

Featherman, David L. and Robert M. Hauser. 1976. "Changes in the Socioeconomic Stratification of the Races, 1962-73." *American Journal of Sociology* 82, 3: 621-51.

Feigenbaum, James. 2016. "Automated Census Record Linking: A Machine Learning Approach." *Working Paper.*

Feigenbaum, James. 2017. "Multiple Measures of Historical Intergenerational Mobility: Iowa 1915 to 1940." Forthcoming at *Economic Journal*.

Ferrie, Joseph P. 2005. "The End of American Exceptionalism? Mobility in the United States since 1850." Journal of Economic Perspectives 19, 3: 199-215.

Ferrie, Joseph P, Karen Rolf and Werner Troesken. 2012. "Cognitive Disparities, Lead Plumbing, and Water Chemistry: Prior Exposure to Water-Borne Lead and Intelligence Test Scores among World War Two U.S. Army Enlistees." *Economics and Human Biology* 10, 1: 98-111.

Freeman, Richard. 1981. "Black Economic Progress after 1964: Who Has Gained and Why?" In S. Rosen (ed.), *Studies in Labor Markets*. Chicago, IL: University of Chicago Press, pp. 247-294.

Goldenweiser, E.A. and Leon E. Truesdell. 1924. *Farm Tenancy in the United States*. Washington, DC: Government Printing Office.

Goldin, Claudia and Robert A. Margo. 1992. "The Great Compression: The US Wage Structure at Mid-Century." *Quarterly Journal of Economics* 107, 1-34.

Grawe, Nathan. 2006 "Lifecycle Bias in Estimates of Intergenerational Earnings Persistence." *Labour Economics* 13, 5:551-570.

Haider, Steven and Gary Solon. 2006. "Life-Cycle Variation in the Association between Current and Lifetime Earnings." *American Economic Review* 96, 4: 1308-1320.

Hertz, Tom. 2005. "Rags, Riches, and Race: The Intergenerational Economic Mobility of Black and White Families in the United States." In S. Bowles, H. Gintis, and M. Osborne (eds.),

Unequal Chances: Family Background and Economic Success. New York: Russell Sage and Princeton University Press, pp. 165-191.

Higgs, Robert. 1977. *Competition and Coercion: Blacks in the American Economy, 1865-1914*. New York, NY: Cambridge University Press.

Higgs, Robert. 1982. "Accumulation of Property by Southern Blacks before World War I." *American Economic Review* 72, 4: 725-737.

Hout, Michael. 1984. "Occupational Mobility of Black Men: 1962 to 1973." *American Sociological Review* 49, 3: 308-322.

Isaacs, Julia B. 2008. "Economic Mobility of Black and White Families." In by J.B. Isaacs, I.V. Sawhill, and R. Haskins (eds.) *Getting Ahead or Losing Ground: Economic Mobility in America*. Washington, DC: Brookings Institution, pp: 71-79.

Kousser, J. Morgan. 1974. *The Shaping of Southern Politics: Suffrage Restrictions and the Establishment of the One-Party South.* New Haven: CT: Yale University Press.

Logan, Trevon and John Parman. 2017. "The National Rise in Residential Segregation." Forthcoming at *Journal of Economic History*.

Long, Jason and Joseph Ferrie. 2013. "Intergenerational Occupational Mobility in Britain and the U.S. Since 1850." *American Economic Review* 103, 4: 1109-1137.

Maloney, Thomas N. 1994. "Wage Compression and Wage Inequality between Black and White Males in the United States, 1940-1960." *Journal of Economic History* 54, 2: 358-81.

Margo, Robert A. 1984. "Accumulation of Property by Southern Blacks before World War I: Comment and Further Evidence*." American Economic Review* 74, 4: 768-776.

Margo, Robert A. 1990. *Race and Schooling in the South, 1880-1950: An Economic History*. Chicago, IL: University of Chicago Press.

Margo, Robert A. 1995. "Explaining Black-White Wage Convergence, 1940-1950." *ILR Review* 48(3): 470-481.

Margo, Robert A. 2016. "Obama, Katrina, and the Persistence of Racial Inequality." *Journal of Economic History* 76(2): 301-341.

Mazumder, Bhashkar. 2005. "Fortunate Sons: New Estimates of Intergenerational Mobility in the U.S. Using Social Security Earnings Data." *Review of Economics and Statistics* 87(2): 235-255.

Mazumder, Bhashkar. 2014. "Black-White Differences in Intergenerational Economic Mobility in the US." *Economic Perspectives* 38, 1: 1-18.

Mazumder, Bhashkar. 2015. "Estimating Intergenerational Elasticity and Rank Association in the United States: Overcoming the Current Limitations of Tax Data." Federal Reserve Bank of Chicago Working Paper 2015-04.

Mazumder, Bhashkar and Miguel Acosta. 2015. "Using Occupation to Measure Intergenerational Mobility." *Annals of American Academy of Political and Social Science* 657: 174-193.

Miller, Melinda C. 2016. "The Righteous and Reasonable Ambition to Become a Landholder: Land and Racial Inequality in the Postbellum South." *Working Paper.*

Myrdal, Gunnar. 1944. *An American Dilemma: The Negro Problem and Modern Democracy*. New York, NY: Harper & Row.

National Archives and Records Administration, 2002. World War II Army Enlistment Records. Record Group 64.

Neal, Derek A. and William R. Johnson. 1996. "The Role of Premarket Factors in Black-White Wage Differences." *Journal of Political Economy* 104: 869-895.

Oubre, Claude F. *Forty Acres and a Mule: The Freedmen's Bureau and Black Land Ownership*. Baton Rouge, LA: LSU Press.

Ransom, Roger L. and Richard Sutch. 2001 [1977]. *One Kind of Freedom: The Economic Consequences of Emancipation*. Cambridge, UK: Cambridge University Press.

Ransom, Roger L. 2006. "Table Eh1-7: Population of the Slave States, by State, Race, and Slave Status: 1860-1870." In S. Carter et al. (eds.), *Historical Statistics of the United States, Millennial Edition*. New York: Cambridge University Press, p. 5-783.

Ruggles, Steven, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. 2010. *Integrated Public Use Microdata Series: Version 5.0* [Machine-readable database]. Minneapolis: University of Minnesota.

Sacerdote, Bruce. 2005. "Slavery and the Intergenerational Transmission of Human Capital." *Review of Economics and Statistics* 87, 2: 217-234.

Smith, James P. 1984. "Race and Human Capital." *American Economic Review* 74, 4: 685-698.

Smith, James P. and Finis Welch. 1989. "Black Economic Progress After Myrdal." *Journal of Economic Literature* 27, 2: 519-64.

Solon, Gary. 1992. "Intergenerational Income Mobility in the United States." *American Economic Review* 82 (June): 393-408.

Solon, Gary. 1999. "Intergenerational Mobility in the Labor Market." In O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*, *Volume 3A*. Amsterdam: Elsevier, pp. 1762-1796.

Solon, Gary. 2015. "What Do We Know So Far about Multigenerational Mobility?" Forthcoming at *Economic Journal*. Thernstrom, Stephan. 1973. *The Other Bostonians: Poverty and Progress in the American Metropolis, 1880-1970*. Cambridge, MA: Harvard University Press.

Stuhler, Jan. 2014. "Mobility Across Multiple Generations: The Iterated Regression Fallacy." Working Paper, University College London.

UCLA Civil Rights Project. 2014. "Brown at 60: Great Progress, a Long Retreat, and an Uncertain Future." Retrieved from the Civil Rights Project website: https://www.civilrightsproject.ucla.edu/research/k-12-education/integration-and-diversity/brown-at-60-great-progress-a-long-retreat-and-an-uncertain-future/Brown-at-60-051814.pdf

U.S. Department of Agriculture. 1957. *Major Statistical Series of the U.S. Department of Agriculture*. Volumes 3 and 7. Washington, DC: Government Printing Office.

Vickery, William E. 1977. The Economics of Negro Migration, 1900-1960. New York: Arno Press.

Vigdor, Jacob L. 2002. "The Pursuit of Opportunity: Explaining Selective Black Migration." Journal of Urban Economics 51, 3: 391-417.

Washington, Booker T. 1995 [1901]. *Up from Slavery*. New York: Dover Publications.

Woodman, Harold D. 1995. *New South—New Law*. Baton Rouge, LA: Louisiana State University Press.

Wright, Gavin. 1986. *Old South, New South: Revolutions in the Southern Economy since the Civil War*. New York: Basic Books.

Wright, Gavin. 2013. *Sharing the Prize: The Economics of the Civil Rights Revolution in the American South*. Cambridge, MA: Harvard University Press.

VIII. Figures and Tables

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	41.9	6.8	43.0	6.4	43.8*	3.2	45.5	4.8	60.0	4.0
Farmer, does not own	23.1	3.8	28.7	3.0						
Farm laborer	7.5	1.9	8.8	1.6	8.0	1.6	10.6	2.0	17.8	1.4
White collar, professionals	89.8*	21.1	84.3	19.2	87.7	38.7	86.9	41.5	80.6	41.8
White collar, managerial and clerical					64.2	22.7	60.6	25.4	50.1	20.5
Blue collar, skilled	42.6	14.5	53.1	18.3	61.1	20.3	59.7	24.9	53.8	22.6
Blue collar, semi skilled	34.9	13.5	35.3	17.5	39.1	13.6	41.3	16.1	32.6	14.3
Blue collar, laborer	12.2	9.8	10.8	8.7	16.4	8.1	19.4	10.2	17.5	7.1
AVERAGE	38.0	5.6	42.6	5.5	54.0	10.2	56.1	15.7	56.2	17.6
N	4,345	2,277	10,531	2,270	9,435	772	14,860	1,323	2,325	905

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	44.1	9.8	37.5	13.0	20.4	37.1	12.0	16.0	2.8	0.8
Farmer, does not own	26.2	39.4	23.0	50.8						
Farm laborer	4.6	22.9	4.2	12.3	2.2	7.8	3.4	9.5	0.6	2.3
White collar, professionals	9.7	1.1	13.6	1.7	18.6	5.3	22.6	9.5	32.8	10.0
White collar, managerial and clerical					9.1	2.4	10.4	5.2	13.8	9.7
Blue collar, skilled	7.6	2.9	9.8	2.3	21.9	11.2	24.0	12.9	25.7	20.6
Blue collar, semi skilled	2.9	2.2	5.9	4.9	21.4	16.6	21.0	23.0	19.5	38.0
Blue collar, laborer	4.9	21.7	5.9	15.1	6.4	19.6	6.6	24.1	4.8	18.7

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.
*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: UPWARD RANK MOBILITY BY FATHERS' INCOME SCORE DECILE, BY COHORT AND RACE

PANEL A: τ=0

Sons' Cohort Year		1900		1930		1962		1973		1990	
		White	Black	White	Black	White	Black	White	Black	White	Black
Father's Income Score Decile	1	0.72	0.51	0.90	0.68	0.91	0.65	0.91	0.67	0.97	0.80
	2	0.72	0.25	0.82	0.44	0.88	0.61	0.85	0.51	0.88	0.60
	3	0.55	0.00	0.59	0.31	0.52	0.49	0.75	0.36	0.76	0.54
	4	0.49	0.00	0.58	0.47	0.62	0.29	0.60	0.32	0.66	0.50
	5	0.55	---	0.38	0.00	0.48	0.00	0.61	0.23	0.58	0.51
	6	0.53	---	0.46	---	0.45	0.13	0.42	0.15	0.48	0.33
	7	0.34	---	0.28	0.00	0.39	0.00	0.34	0.06	0.36	0.00
	8	0.18	---	0.26	0.00	0.30	0.27	0.28	0.16	0.35	0.40
	9	0.15	---	0.16	---	0.19	0.00	0.16	---	0.31	---
	10	0.10	0.00	0.07	0.00	0.08	---	0.07	0.00	0.10	0.00
	All	0.50	0.47	0.51	0.65	0.45	0.60	0.45	0.54	0.49	0.64

PANEL B: τ=5

Sons' Cohort Year		1900		1930		1962		1973		1990	
		White	Black	White	Black	White	Black	White	Black	White	Black
Father's Income Score Decile	1	0.68	0.28	0.82	0.41	0.85	0.30	0.85	0.46	0.88	0.62
	2	0.63	0.13	0.61	0.27	0.82	0.53	0.77	0.37	0.84	0.54
	3	0.54	0.00	0.45	0.22	0.49	0.17	0.68	0.32	0.72	0.42
	4	0.45	0.00	0.43	0.28	0.56	0.29	0.54	0.27	0.61	0.46
	5	0.45	---	0.34	0.00	0.42	0.00	0.54	0.18	0.53	0.49
	6	0.32	---	0.39	---	0.37	0.07	0.36	0.09	0.44	0.28
	7	0.34	---	0.23	0.00	0.30	0.00	0.28	0.06	0.30	0.00
	8	0.11	---	0.21	0.00	0.25	0.27	0.24	0.13	0.27	0.11
	9	0.14	---	0.09	---	0.13	0.00	0.11	---	0.18	---
	10	0.02	0.00	0.04	0.00	0.04	---	0.03	0.00	0.02	0.00
	All	0.44	0.26	0.40	0.39	0.39	0.33	0.39	0.39	0.42	0.53

PANEL C: τ=10

Sons' Cohort Year		1900		1930		1962		1973		1990	
		White	Black	White	Black	White	Black	White	Black	White	Black
Father's Income Score Decile	1	0.58	0.20	0.73	0.31	0.76	0.19	0.81	0.34	0.82	0.47
	2	0.45	0.06	0.57	0.21	0.78	0.39	0.71	0.26	0.79	0.46
	3	0.32	0.00	0.42	0.22	0.45	0.08	0.62	0.29	0.63	0.35
	4	0.27	0.00	0.40	0.13	0.52	0.22	0.46	0.25	0.56	0.34
	5	0.42	---	0.28	0.00	0.37	0.00	0.46	0.18	0.47	0.32
	6	0.31	---	0.33	---	0.31	0.00	0.32	0.05	0.38	0.28
	7	0.34	---	0.18	0.00	0.25	0.00	0.22	0.06	0.26	0.00
	8	0.09	---	0.15	0.00	0.18	0.00	0.18	0.13	0.19	0.11
	9	0.09	---	0.03	---	0.08	0.00	0.06	---	0.10	---
	10	0.00	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00
	All	0.30	0.18	0.35	0.29	0.34	0.22	0.33	0.29	0.36	0.42

Notes and Sources: Table contains probability that a son exceeds the income ranking of his father by τ points for each cohort and race, separately by the income decile of household head. See text for expanded definition and for . definition of "father" in each sample.

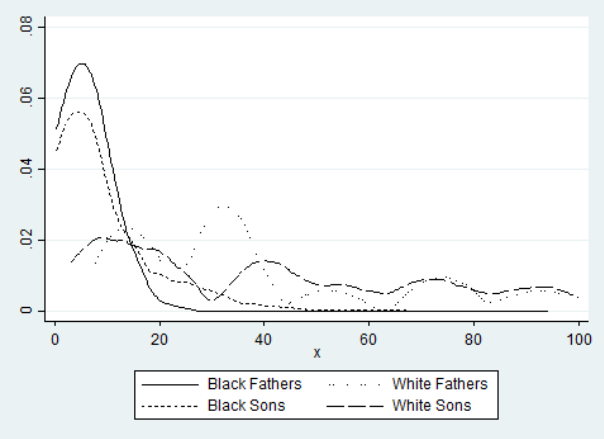
TABLE 3: SONS' INCOME RANK REGRESSIONS, INCLUDING FATHERS' INCOME SCORE RANK AND RACE

	Full Sample					Age 30-37 only				
Sons' Cohort Year	1900	1930	1962	1973	1990	1900	1930	1962	1973	1990
PANEL A: WITH FATHERS' INCOME RANK CONTROLS										
BLACK	-20.84***	-22.68***	-27.41***	-25.19***	-18.94***	-26.33***	-24.32***	-26.94***	-26.94***	-20.19***
	(0.761)	(0.548)	(0.800)	(0.700)	(1.554)	(1.298)	(0.915)	(1.379)	(1.335)	(2.569)
Parent's Income Rank	0.323***	0.258***	0.308***	0.227***	0.254***	0.335***	0.275***	0.336***	0.267***	0.269***
	(0.0185)	(0.0105)	(0.0109)	(0.00882)	(0.0239)	(0.0291)	(0.0166)	(0.0177)	(0.0152)	(0.0393)
N	6,205	12,446	9,025	13,848	2,595	2,008	5,118	3,361	4,267	990
R-Squared	0.334	0.187	0.226	0.164	0.145	0.423	0.201	0.256	0.200	0.158
PANEL B: ADD FATHERS' HUMAN CAPITAL CONTROLS										
BLACK	-20.01***	-22.65***	-28.13***	-25.62***	-19.81***	-25.82***	-24.17***	-27.75***	-27.16***	-20.90***
	(0.847)	(0.565)	(0.781)	(0.697)	(1.571)	(1.552)	(0.951)	(1.355)	(1.359)	(2.633)
Parent's Income Rank	0.275***	0.215***	0.224***	0.162***	0.182***	0.284***	0.215***	0.238***	0.176***	0.221***
	(0.0191)	(0.0109)	(0.0120)	(0.00989)	(0.0270)	(0.0307)	(0.0173)	(0.0197)	(0.0171)	(0.0457)
R-Squared	0.345	0.198	0.258	0.181	0.174	0.432	0.219	0.297	0.233	0.181
PANEL C: ADD AGE AND STATE/REGION OF ORIGIN FIXED EFFECTS										
BLACK	-20.29***	-23.21***	-26.79***	-22.98***	-19.02***	-25.49***	-23.99***	-28.13***	-25.30***	-19.62***
	(0.915)	(0.614)	(0.776)	(0.677)	(1.576)	(1.712)	(1.032)	(1.276)	(1.323)	(2.663)
Parent's Income Rank	0.255***	0.178***	0.168***	0.125***	0.163***	0.280***	0.199***	0.200***	0.129***	0.198***
	(0.0202)	(0.0118)	(0.0120)	(0.00981)	(0.0273)	(0.0334)	(0.0192)	(0.0202)	(0.0178)	(0.0462)
R-Squared	0.382	0.226	0.326	0.275	0.186	0.437	0.223	0.315	0.252	0.191
PANEL D: ADD SONS' HUMAN CAPITAL CONTROLS										
BLACK	-25.10***	-23.33***	-26.72***	-23.37***	-20.27***	-25.10***	-23.33***	-28.00***	-24.98***	-20.55***
	(1.717)	(1.050)	(0.779)	(0.619)	(1.508)	(1.717)	(1.050)	(1.294)	(1.224)	(2.548)
Parent's Income Rank	0.265***	0.196***	0.173***	0.0787***	0.124***	0.265***	0.196***	0.207***	0.0785***	0.152***
	(0.0334)	(0.0193)	(0.0126)	(0.00990)	(0.0283)	(0.0334)	(0.0193)	(0.0213)	(0.0176)	(0.0492)
R-Squared	0.443	0.224	0.326	0.365	0.287	0.443	0.224	0.315	0.372	0.298

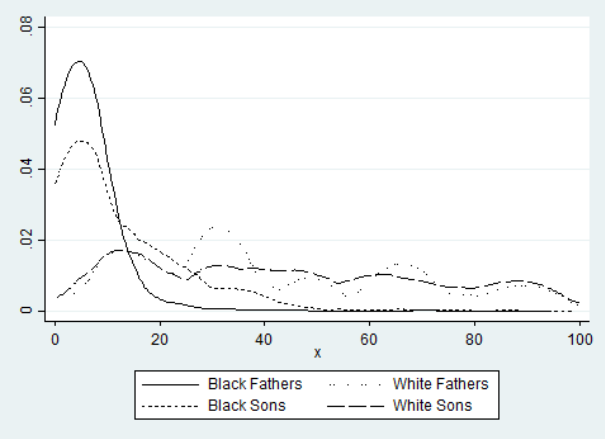
Notes and Sources: Table contains estimated coefficients from an OLS regression where Sons' Income Rank is regressed on an indicator for Black as well as Fathers' income rank (Panel A), parental education, farm residence, and urban residence (Panel B), age and state of origin (childhood) fixed effects (Panel C), and sons' education level/literacy 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 within columns across panels with the exception of Panel D, columns 1 and 2. School attendance is not measured for ages younger than 6 in the year of childhood observation (1880 and 1910, respectively), and literacy is not measured for ages younger than 10. Sample sizes for these regressions are 2,008 for the 1900 cohort and 5,118 for the 1930 cohort. 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

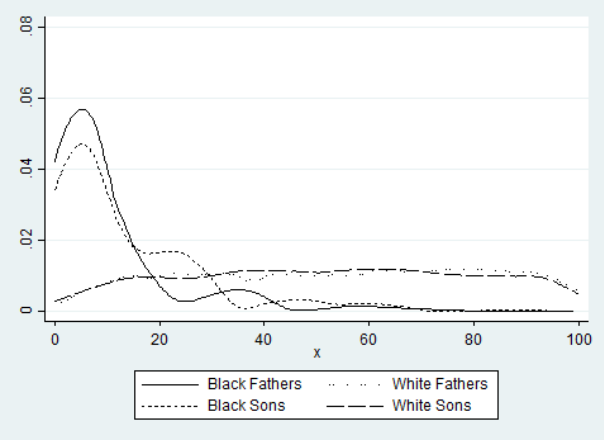
PANEL A: 1900 COHORT



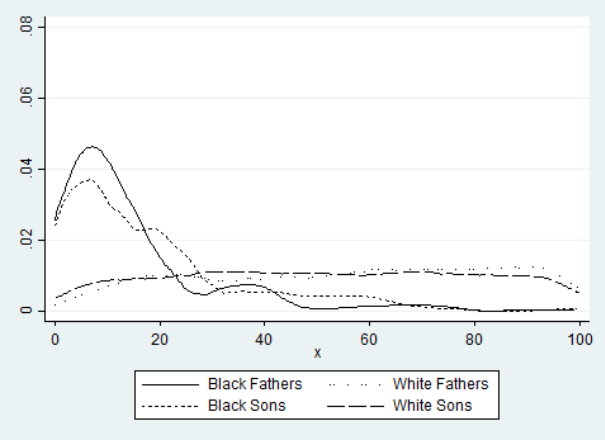
PANEL B: 1930 COHORT



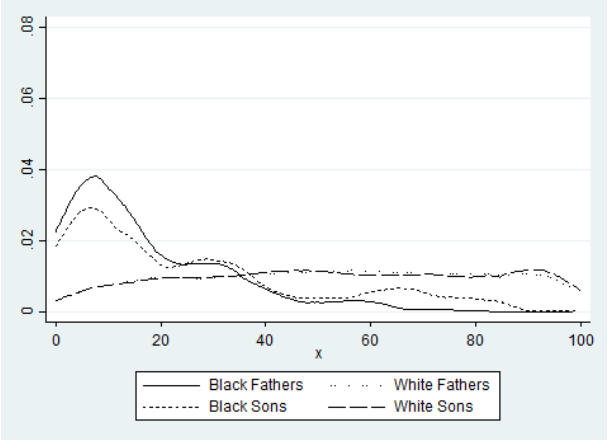
PANEL C: 1962 COHORT



PANEL D: 1973 COHORT



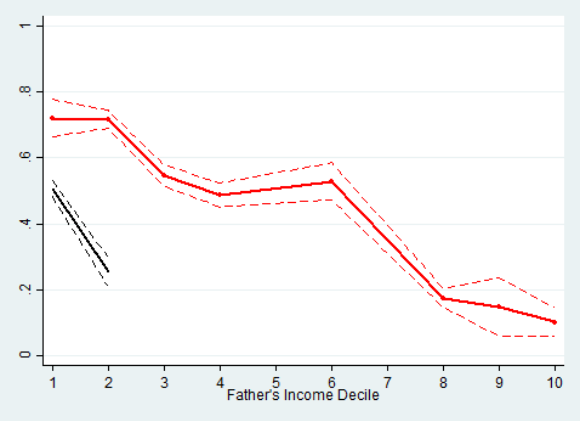
PANEL E: 1990 COHORT



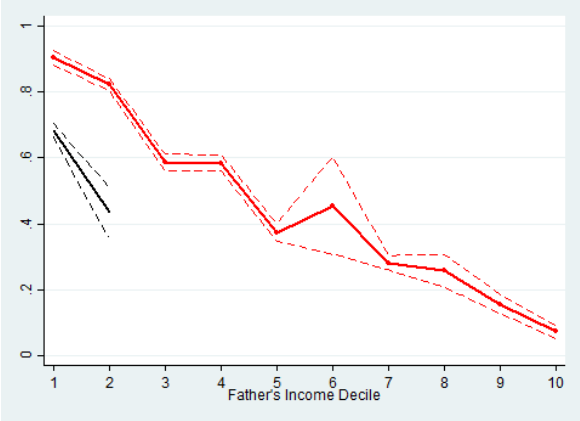
Notes and Sources: See main paper for sources and sample construction.

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

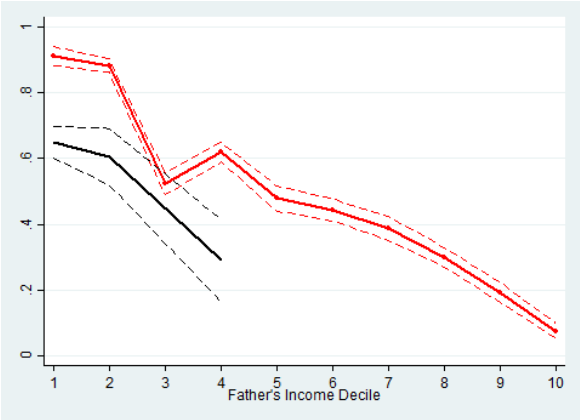
PANEL A: 1900 COHORT



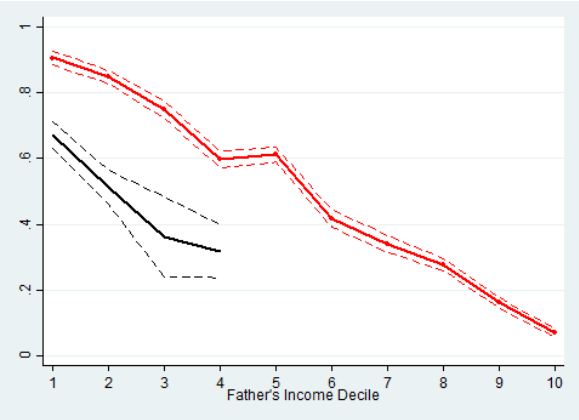
PANEL B: 1930 COHORT



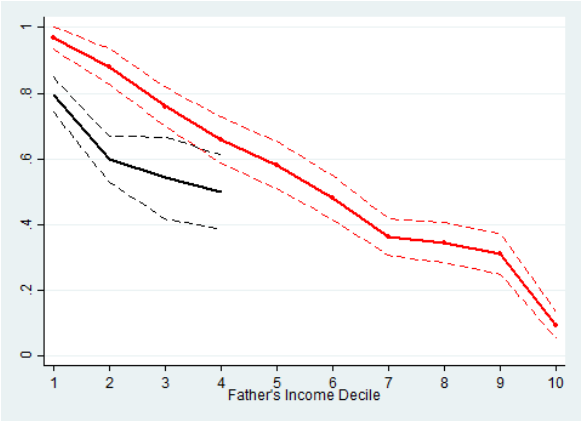
PANEL C: 1962 COHORT



PANEL D: 1973 COHORT



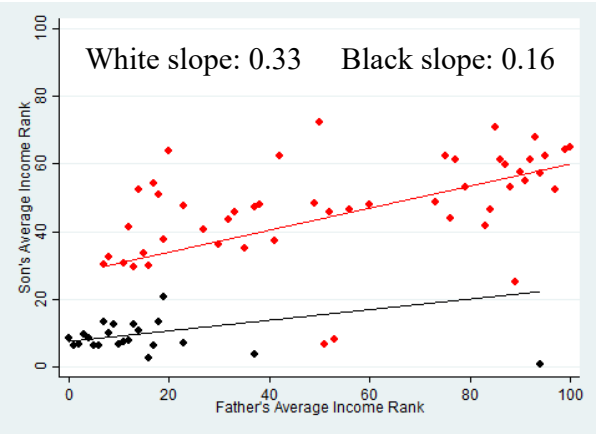
PANEL E: 1990 COHORT



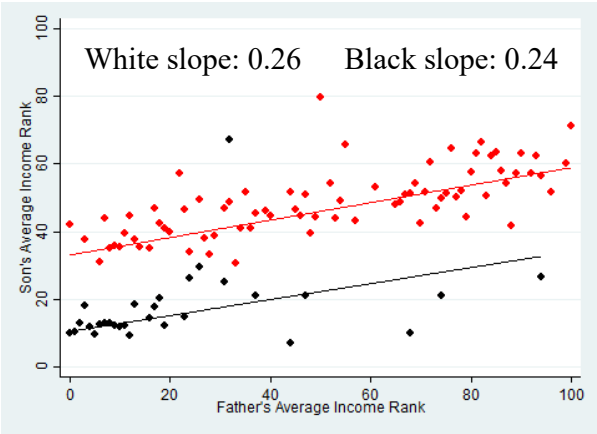
Notes and Sources: Black (red) solid lines represent black (white) sons' Upward Rank Mobility values at each value of head's income decile; dotted lines are 95% confidence intervals. Standard errors generated by bootstrap method following Corak, Lindquist, and Mazumder (2014). Bootstrapping based on 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.

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

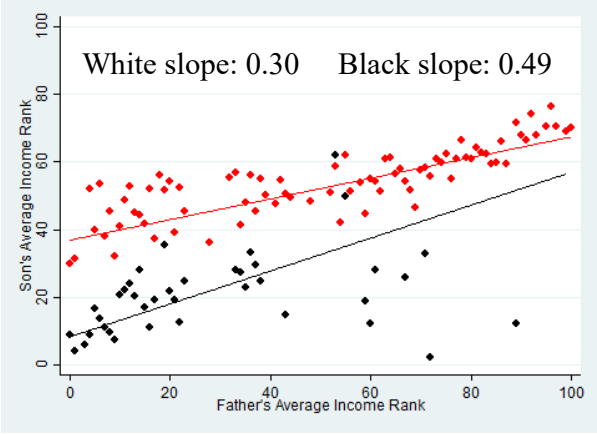
PANEL A: 1900 COHORT



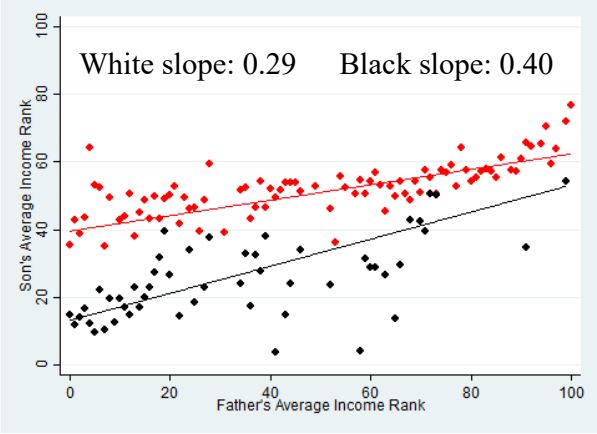
PANEL B: 1930 COHORT



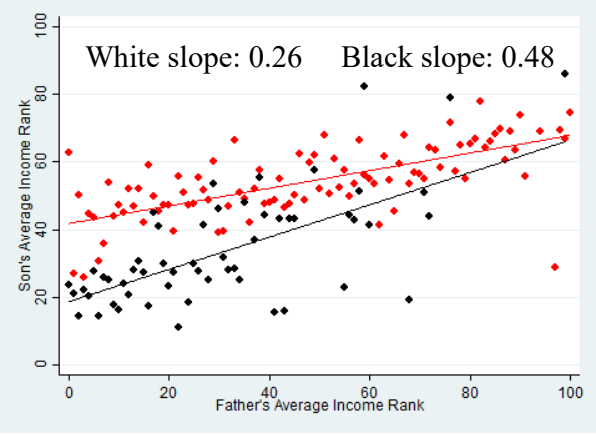
PANEL C: 1962 COHORT



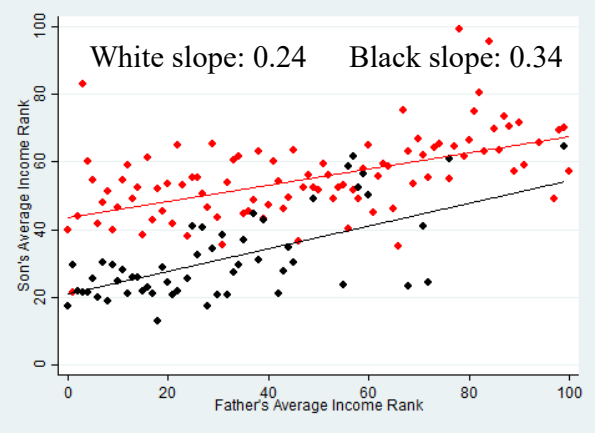
PANEL D: 1973 COHORT



PANEL E: 1990 COHORT



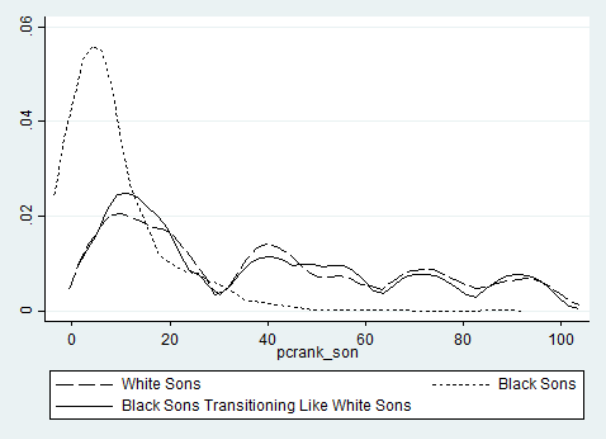
PANEL F: 2000 COHORT



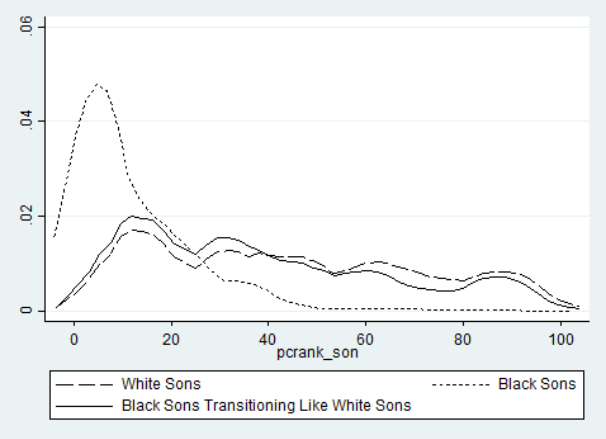
Notes and Sources: Black dots represent black parents and sons; red dots reflect white parents and sons. Average values of sons' income ranks for each fathers' income rank (rounded to the nearest unit) are plotted. Linear lines of best fit are for the underlying data, not for the data points (which represent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

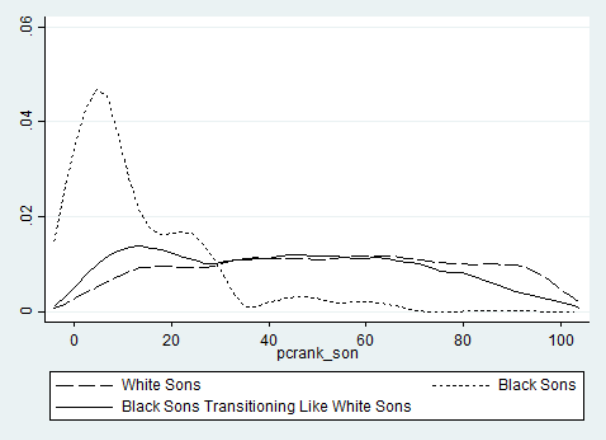
PANEL A: 1900 COHORT



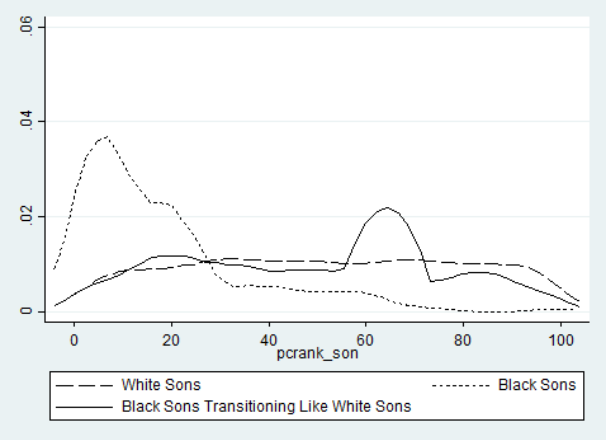
PANEL B: 1930 COHORT



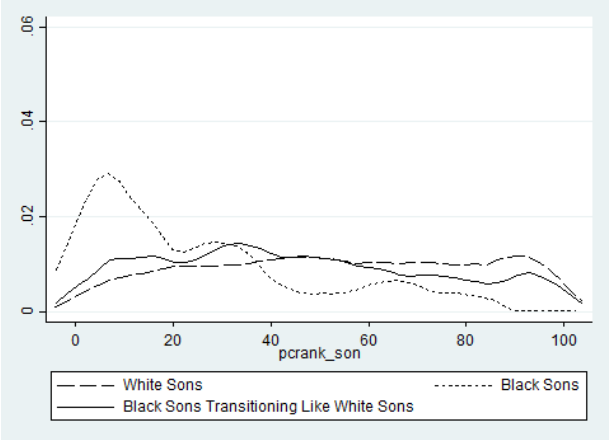
PANEL C: 1962 COHORT



PANEL D: 1973 COHORT



PANEL E: 1990 COHORT



Notes and Sources: Red solid lines represent the counterfactual income score percentile distribution of black sons under white transition probabilities. Blue (dotted) lines represent the observed distribution of white sons in each cohort. See the text for details on the counterfactual calculations.